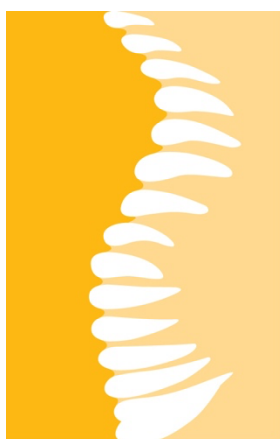


# ANNUAL REPORT

2021

Març 2022



**KCP<sup>R</sup>**

Institut Català de Paleontologia  
Miquel Crusafont



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# ANNUAL REPORT 2021

**INSTITUT CATALÀ DE PALEONTOLOGIA** MIQUEL CRUSAFONT

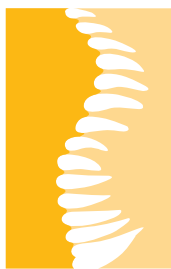


**DAVID M. ALBA**

**Director**

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**ICP**<sup>R</sup>

Institut Català de Paleontologia  
Miquel Crusafont

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**Institució  
CERCA**  
Centres de Recerca  
de Catalunya





## WELCOME TO THE ICP

### *Greetings from the Director*

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At the ICP we are convinced that Paleontology, as a discipline halfway between Biology and Geology, should make fundamental contributions not only to the history of life, but also to evolutionary theory. Therefore, the research performed at the ICP clearly follows a paleobiological approach. In other words, for us it is not enough to know how past living beings were and what are their kinship relationships with extant ones. We also aim to know how they lived, how they moved, what they ate, how they developed and reproduced, how they interacted with one another, what environment they inhabited and, ultimately, how past interactions between organisms and environment have shaped the ecosystems that we know today. It is precisely the access to deep time (or geological time, the one which is measured in millions and millions of years), by means of the study of fossil remains, what provides Paleobiology with a unique perspective of utmost importance for understanding why and how living beings have evolved in relation to the environment that surrounds them through Earth's history.

For our research team, it is important to perform all the various steps of paleontological research, beginning with fieldwork (excavations and samplings), continuing with the study and analysis of fossil remains, and ending with the publication and dissemination of the results. In these regards, the basic task of description and taxonomic identification of the remains is still an essential aspect of our work. However, more and more, the study and analysis of the fossils is carried out using more sophisticated and computer-assisted techniques. Most noteworthy among them are virtual paleontology and three-dimensional visualization techniques, such as X-ray computed tomography, which enables the non-invasive study of the internal anatomy preserved by fossil remains. Also particularly remarkable are the analytical techniques allowing for quantitative comparisons and analyses, such as 3D geometric morphometrics, phylogenetic reconstruction software, or numerical analyses of paleobiodiversity dynamics, just to mention a few examples.

The specialized technicians of the ICP, in turn, perform a fundamental step between fieldwork and research, consisting in the preparation and conservation of the fossil remains that constitute the paleontological collections of our Institute. These collections are continuously growing thanks to the excavations and samplings performed by our researchers. However, before being able to study a particular specimen, it is required that specialized technicians carry out a process of paleontological preparation (cleaning, consolidation and, if necessary, reintegration). The process of paleontological preparation not only enables the manipulation of fossils, but it also guarantees their proper conservation once deposited in the collections. This process is of utmost significance, given that fossils are our main source of data. In this regard, the ICP aims to become the benchmark center in Catalonia with regard to the conservation of

the paleontological heritage of vertebrates. This is why we offer our technical advice, in this and any other paleontological matter, to those institutions and companies that request it.

Besides paleontological research, preparation and conservation, at the ICP we further place particular importance to outreach activities to popularize paleontological heritage. In this regard, exhibiting the fossils is not enough; it is required to disseminate to the general public our research results, so as to make understandable the stories that hide in all these petrified bones. Transmitting paleontological knowledge to society, especially based on the finds and research results of our investigators, is for us a heartwarming moral obligation. In the words of the late North-American paleontologist Stephen Jay Gould: "Science is an integral part of culture. It's not this foreign thing, done by an arcane priesthood. It's one of the glories of the human intellectual tradition". This is why at the ICP we have the vocation to make it available to those who are interested the conceptual and material tools that enable a cultural and ludic use of paleontological heritage. And we do so not only by means of the exhibition halls of the ICP Museum, located at the center of Sabadell, but also by collaborating in the establishment and management of a network of local paleontological interpretation centers all over the country. Moreover, at these times of rampant antiscientific and creationist offensive, we feel a duty to help disseminating one of the most relevant scientific facts to comprehend the place of human being in nature: organic evolution.

I do not want to finish without addressing those youngsters that, captivated by the secrets of evolution, perceive the grandeur in this view of life (the one alluded by Charles Darwin on the last sentence of the Origin of Species) and aim to devote themselves to Paleontology. Becoming a researcher, from any discipline, is not an easy task... It requires a lot of study, tenacity, and sacrifice. And yet, if your fascination for fossils and your curiosity for evolution transcend any logical argument, if it is already too late for you, then I can only advise you to let yourselves be guided by your vocation. That you get trained in life and earth sciences, that you be ambitious and realistic at the same time, and that you try to put your talent at the service of paleontological research. You, as young people, are the future, not only of the ICP, but of the paleontological profession and of the scientific community as a whole. And only you, if you choose the correct questions, might hope to answer the multiple enigmas about the history of life that thus far remain unsettled.

With my warmest greetings,



David M. Alba  
Director



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## FOREWORD

### *Envisioning the future*

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Following the replacement of the former Director and the design of new policies and strategic aims, 2017 was a year of turnover and intense planning at the Institut Català de Paleontologia Miquel Crusafont (ICP). Then, 2018 was a year of very intense work with the main aim to take the ICP out of the 'survival mode' in which it had been installed for several years, as a result of the budget downsizing caused by the economic crisis. Many of the work performed was aligned with the aims of the new Strategic Plan (2018-2021) and/or with the HRS4R Action Plan following the Human Resources Excellence Award of the EU granted to the ICP in March 2018. Also very significant was the evaluation of the ICP performed by the CERCA institution at the end of the 2018, which confirmed that the ICP was performing well but had still plenty of room for improvement. During 2019, the ICP continued implementing the Strategic Plan and the HRS4R Action Plan, devised a plan to implement the multiple recommendations provided by the CERCA Evaluation Committee in 2018, started applying the recruitment protocol elaborated the year before, and released new important documents (such as the manual of best practices in research). In turn, the results of 2020 confirmed the trend of improvement started in 2018 in terms of scientific outputs and service provision—despite the complicated situation generated by the COVID-19 pandemic. In parallel, the implementation of the HRS4R progressed at a good pace (including the elaboration of a new Equality Plan), the Scientific Advisory Board (SAB) was partially renewed, research groups were restructured, and the accumulated deficit was finally overcome.

The results for 2021 also very satisfactory in terms of research outputs and service provision, although the financial situation has been subject to various upheavals due to several contingent factors that we have managed to overcome. But, above all, 2021 has been a year of intense planning due to the elaboration of the new Strategic Plan for 2022-2025. I am glad that this time, the elaboration of this plan has truly been a choral effort in which many researchers and technicians, plus the SAB members, have participated one way or another. The past year has also been characterized by the same guidelines as the previous ones, i.e., the implementation of CERCA recommendations, the recruitment of new researchers and technicians, the implementation of HRS4R, further renewal of the SAB, etc. Hopefully the new Strategic Plan will help us keep out track toward consolidation.

Finally, I would like to take this opportunity to thank all the ICP personnel, the Board of Trustees, and the SAB members for all their efforts to consolidate further the ICP as a benchmark and leading institution in vertebrate and human paleobiology worldwide.



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## PART 1

# OVERVIEW OF THE ICP

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*Established as a CERCA center in 2006, the ICP is the heir of a longstanding tradition of vertebrate paleontology research in Catalonia. It owes its existence to several succeeding generations of paleobiologists devoted to deciphering the intricacies of the history of life based on the extraordinary fossil record from Catalonia. Our mission is focused on research, conservation and dissemination of vertebrate and human paleontology at the highest international level.*

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## INTRODUCTION

### *Research, conservation, and dissemination in vertebrate paleontology*

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#### History

The Institut Català de Paleontologia Miquel Crusafont (ICP) is the heir of a longstanding tradition of vertebrate paleontology research in Catalonia. It owes its existence to several succeeding generations of paleontologists that have devoted their professional careers to decipher the intricacies of the history of life and the paleobiology of extinct organisms based on the extraordinary Catalan fossil record.

The ICP is the successor of the former Instituto Provincial de Paleontología de Sabadell (IPS), founded in 1969 under the auspices of the Diputació de Barcelona thanks to the efforts and charisma of paleontologist Miquel Crusafont—the ‘father’ of the Catalan school of vertebrate paleontology. After being renamed in his honor after Crusafont’s decease in 1983, and coinciding with the incorporation of a new generation of researchers, the Institut de Paleontologia M. Crusafont witnessed a couple of successful decades. Nonetheless, by the early 2000s it was in peril of becoming a local museum and its prospects were most uncertain.

The situation of the IPS was reverted in 2006, thanks to the refoundation of the ICP within the framework of CERCA (Research Centers of Catalonia) under the auspices of I-CERCA (Generalitat de Catalunya). The last decade has been most successful in terms of research, but not exempt of problems due to the effects of global financial crisis since 2012, which for many years restrained the growth of the ICP and the implementation of several other aspects. After several years in ‘survival mode’, beginning in 2017 the ICP started implementing new policies that emphasized service provision and ultimately enabled to reverse the previous delicate financial situation in 2020.

#### Mission

The mission of the ICP is focused on research, conservation and dissemination of vertebrate and human paleontology at the highest international level. We perform research based on the following premises:

- Fieldwork and collection-based research, focused on the extraordinarily rich fossil vertebrate record from Catalonia.
- Adherence to a paleobiological approach that departs from the classical descriptive paleontology (oriented toward stratigraphy), and instead aims to test evolutionary and macroecological hypotheses within the framework of life sciences.
- The use of modern visualization and analytical techniques (from CT to paleohistology).
- The distinction of different research groups, each one with clear research aims and scope.

Other important aspects of our mission include:

- The conservation of the paleontological heritage of Catalonia.
- The communication of the research results to the general public by means of scientific dissemination.
- The transfer of paleontological knowledge to the benefit of society as a whole by means of training and outreach activities, as well as the provision of services.

### Scientific policy

The ICP scientific policy in regard to paleontological research is based on the following premises:

- A modern approach to paleontological research must be grounded on the paleobiological approach, which envisions paleontology as deeply entrenched among life sciences.
- Among life sciences, paleobiology has a voice of its own by uniquely providing direct access to life in the past, thereby adding a deep-time perspective that is essential for testing hypotheses on a geological timescale.
- Paleobiology is not only an idiographic (descriptive) discipline that contributes to the progress in the knowledge of the history of life on Earth, but also a nomothetic discipline based on a rigorous and quantitative hypothesis-testing framework.
- Paleobiological research must be therefore guided by clear research aims and specific hypotheses to be tested.
- Vertebrates have the greatest potential among continental animals and therefore the study of their fossil record is most promising for investigating the evolution of terrestrial ecosystems in relation to paleoenvironmental changes through time.
- Although paleobiology is mostly devoted to basic (fundamental) research, it has important implications for other disciplines among life sciences, such as evolutionary biology, ecology and conservation (paleo)biology.
- Furthermore, paleobiological research is not devoid of applicability and has a great potential with regard to knowledge transfer related to cultural heritage.
- Finally, human origins and evolution need to be approached following the same scientific methods as that for any other group of animals, as regularly done in the subdisciplines of paleoprimatology and paleoanthropology.

### Vision

The ICP vision includes the following challenges:

- Perform high-impact paleobiological research at the international level.
- Promote the international visibility of the ICP as a worldwide renowned and benchmark center in vertebrate paleontology and paleoanthropology research.
- Contribute to the recuperation, conservation and dissemination of the paleontological heritage of Catalonia, including its valorization through research and the promotion of paleontological tourism based on it.

- Contribute to solving current societal challenges, with emphasis on the development of more efficient environmental policies to face climatic change, by means of providing data on a geological timescale as well as by testing macroecological and evolutionary hypotheses.
- Make paleontological knowledge and its evolutionary implications accessible to the society as a whole, by means of scientific dissemination, outreach, and training activities, with emphasis on humankind's origins and place in nature.
- Perform knowledge transfer activities by providing specialized paleontological services to research and educational institutions, public administrations, and private companies.
- Promote safe workspaces and working relationships based on freedom and respect among people.
- Adhere to a zero tolerance policy regarding any type of sexual harassment (due to sexual orientation, gender identity, or gender expression) and unambiguously reject offensive, discriminatory and/or abusive behaviors and attitudes.



## ORGANIZATION

### *Research groups, research support, communication and management*

#### Legal structure

The ICP is a public research institute established as a non-profit foundation endowed with public funds, with the Generalitat de Catalunya and the Universitat Autònoma de Barcelona as patrons. The staff is composed of ca. 50 people (researchers, technicians and administrative staff), including a Director and a General Manager with executive powers delegated by the Board of Trustees. As currently conceived, the ICP is an autonomous research institute from CERCA (Research Centers of Catalonia), which has scientific excellence as its main objective. It is supervised by the Board of Trustees under the auspices of CERCA Institution, and guided by a Director (who plans the scientific policy and strategic goals) with the aid of an external Scientific Advisory Board.

#### Organization chart

A new Organization Chart, proposed by the Director, was approved by the Steering Committee in late 2017 and subsequently ratified by the Board of Trustees in 2018, with the aim to facilitate the coordination between technical areas toward the attainment of common strategic goals. Subsequent updates and minor modifications of this Organization Chart were approved by the Steering Committee in 2018 and 2019, being subsequently ratified by the Board of Trustees. The information provided below is based on the updated Organization Chart ratified by the Board of Trustees in May 2021 and the subsequent update approved by the Steering Committee in December 2021.

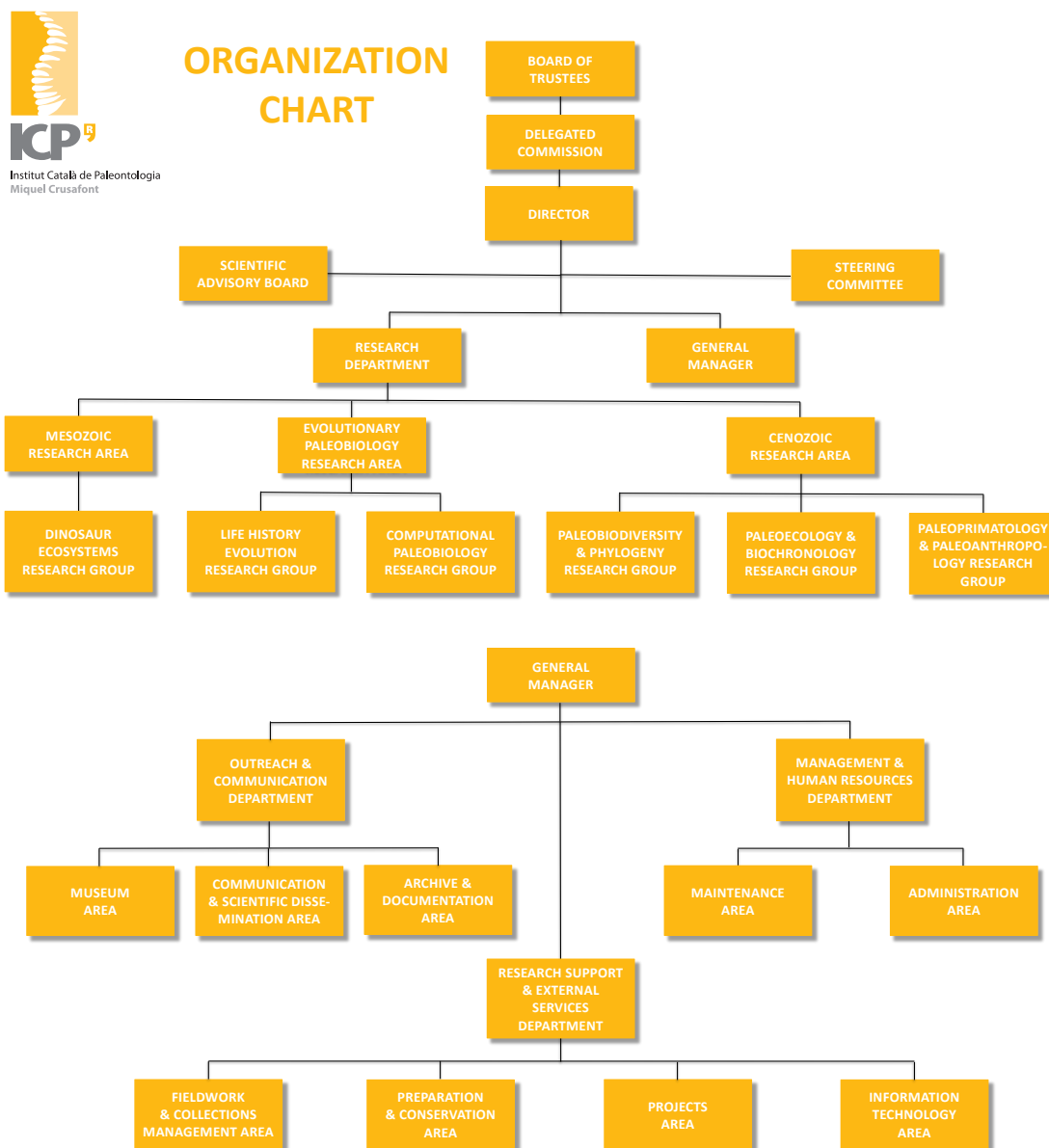
The hierarchical structure of our organization can be subdivided into the following bodies:

- Governing organs.
- Executive positions.
- Research groups.
- Technical departments.

GOVERNING ORGANS	EXECUTIVE POSITIONS	RESEARCH AREAS	TECHNICAL DEPARTMENTS
Board of Patrons	Scientific Directorship	Mesozoic	Outreach & Communication
Delegated Commission	General Managership	Cenozoic	Management & Human Resources
Scientific Advisory Board	Steering Committee	Evolutionary Paleobiology	Research Support & External Services
Directorship			

## Governing organs

- **Board of Trustees:** It is the highest governing, administrative and representative organ, without prejudice that some of its functions may be delegated.
  - **Delegated Commission:** Designated by the Board of Patrons to delegate some of its functions.
  - **Scientific Advisory Board:** Advisory organ designated by the Board of Trustees.
  - ✓ **Director:** Designated by the Board of Trustees.
    - **Steering Committee:** Consulting and decision-making organ, designated by the Director.
    - **Scientific Director:** Designated by the Director (if different).
    - **Managership:** Designated by the Board of Trustees upon proposal by the Director.



**Board of Trustees.** It is composed of three trustees from the Generalitat de Catalunya (60%) and two from the Universitat Autònoma de Barcelona (UAB, 40%). Two trustees are permanent and three are designated.

BOARD OF TRUSTEES		
TYPE	POSITION	NAME
Permanent	Minister from the Generalitat de Catalunya in charge of research	Dr. Gemma Geis i Carreras
Permanent	Rector of the UAB	Dr. Javier Lafuente Sancho
Designated	Pending designation (formerly the Secretary of Universities and Research), Generalitat de Catalunya	Pending designation
Designated	Director General of Research, Generalitat de Catalunya	Dr. Joan Gómez Pallarès
Designated	Vice-Rector for Research and Transference of the UAB	Dr. Armand Sánchez Bonastre

The main functions of the Board of Trustees are the following:

- Approval of our annual budget and investment plan, inventory, and annual financial accounts, ensuring the accomplishment of the endowment and the correct destination of our assets to our foundational aims.
- Highest representation and definition of our general program of action.
- Appointment of the Director, of the General Manager (upon proposal by the Director), the President of the Delegated Commission, and the President of the Scientific Advisory Board, and establishment of the remuneration of executive positions.
- Hiring of works, services and supplies, and approval of the rules of internal functioning, collaboration agreements with other entities, etc.

**Scientific Advisory Board.** It is constituted by seven senior researchers from several countries, including Spain, France, Italy, South Africa, and UK. Following the action plan for the implementation of CERCA recommendations approved by the Board of Trustees in 2019, three members were renewed in 2020 and two more in 2021 (including the designation of a new President), pending one further renewal for 2022.

SCIENTIFIC ADVISORY BOARD		
TYPE	NAME	AFFILIATION
President	Prof. Lorenzo Rook	Università di Firenze, Italy
Member	Prof. Jorge Morales	Museo Nacional de Ciencias Naturales-CSIC, Spain
Member	Prof. Anusuya Chinsamy-Turan	University of Cape Town, South Africa
Member	Dr. Beatriz Azanza	Universidad de Zaragoza, Spain
Member	Dr. Clément Zanolli	Université de Bordeaux, France
Member	Prof. Tracy Kivell	University of Kent, UK
Member	Prof. Richard J. Butler	University of Birmingham, UK

The main functions of the Scientific Advisory Board are the following:

- Providing advice with regard to our scientific activities.
- Participation in the periodic evaluation of the ICP.

- Eventual participation in specific advisory commissions.

### Executive and managerial hierarchy

- Director: Dr. David M. Alba.
  - Steering Committee: Director, General Manager, Heads of Department.
  - Scientific Director: Dr. David M. Alba.
    - ✓ Research Department:
      - Mesozoic Research Area: Dr. Àngel Galobart (Head of Area).
      - Cenozoic Research Area: Dr. David M. Alba (Head of Area).
      - Evolutionary Paleobiology Research Area: Prof. Meike Köhler (Head of Area).
  - General Manager: Enric Menéndez.
    - ✓ Departments:
      - Outreach & Communication: Pere Figuerola (Head of Dept.).
      - Management & Human Resources: Enric Menéndez (Head of Dept.).
      - Research Support & External Services: David Basanta (Head of Dept.).

Both the Director and the General Manager have multiple functions and responsibilities, including some specific of these positions, as well as others delegated by the Board of Trustees.

**The Director.** In brief, the Director has chief executive officer functions, including the direction, organization management, execution and inspection of research activities, as well as the determination of the strategic aims of the ICP and the proposal of a Strategic Plan to the Board of Trustees. The Director is appointed by the Board of Trustees following an open, transparent and merit-based selection process at the international level.

**The General Manager.** In turn, the General Manager has chief administrative officer functions, including the financial, accounting and treasury management, as well as administrative contracting and preparation of the documentation required to elaborate the annual accounts and balance sheet. It is appointed by the Board of Trustees upon proposal by the Director.

### Committees and commissions

The ICP has several committees and commissions, aimed to boost the internal coordination as well as to promote the participation of the ICP staff in decision-making.

**Committees.** They are the following:

- **Steering Committee:** Involved in planning, organizational, foresight, strategic, decision-making and advisory functions.



- **Information Systems Security Committee:** Involved in guaranteeing the security of information systems, the safeguard of data, and the fulfillment of personal data protection laws.
- **HRS4R Implementation Committee & Working Group:** Involved in the implementation of the Human Resources Strategy for Researchers (HRS4R) of the European Union.
- **Non-Discrimination Committee:** Involved in the improvement and implementation of the Equality Plan.

STEERING COMMITTEE		
POSITION	NAME	ICP POSITION
Chair	Dr. David M. Alba	Director
Vice-Chair	Enric Menéndez	General Manager
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	David Basanta	Head of the Research Support & External Services Dpt.

INFORMATION SYSTEMS SECURITY COMMITTEE		
POSITION	NAME	ICP POSITION
Chair	Dr. David M. Alba	Director
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	Enric Menéndez	General Manager
IT External Consultant	Josep Torres	External

HRS4R IMPLEMENTATION COMMITTEE & WORKING GROUP		
POSITION	NAME	ICP POSITION
Chair	Enric Menéndez	General Manager
Vice-Chair	Dr. David M. Alba	Director
Rapporteur	Xènia Aymerich	Head of the Preparation & Conservation Area
Committee Member	David Basanta	Head of the Research Support & External Services Dpt.
Committee Member	Pere Figuerola	Head of the Outreach & Communication Dept.
Committee Member	Teresa Esquirol	Head of the Museum Area
Committee Member	Dr. Judit Marigó	Rapporteur of the Researchers Commission
Working Group Member	Mónica Vincent	Administrative Officer

NON-DISCRIMINATION COMMITTEE		
POSITION	NAME	ICP POSITION
Chair	Xènia Aymerich	Head of the Preparation & Conservation Area
Vice-Chair	Dr. Judit Marigó	Rapporteur of the Researchers Commission
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	Dr. Júlia Arias-Martorell	R2 Researcher

**Commissions.** They are the following:

- **Researchers Commission:** Involved in providing advice to the Director, the Steering Committee, and other committees on HRS4R implementation and other aspects related to researchers.
- **Fieldwork Commission:** Internal coordination of resources for paleontological fieldwork performed and provision of external services to third parties.

- **Responsible Research & Innovation (RRI) Commission:** Aimed to provide advice and coordinate various aspects (governance, project management, knowledge transfer, outreach and public engagement, research and publishing ethics, open access and open data...) to ensure that R+D is optimally aligned with societal values, needs, and expectations.

RESEARCHERS COMMISSION		
Chair	Dr. Salvador Moyà-Solà	Representative of R4 (senior experienced researchers)
Vice-Chair	Dr. Judit Marigó	Representative of R3 (experienced researchers)
Rapporteur	Dr. Júlia Arias-Martorell	Representative of R2 (postdoctoral researchers)
Member	Teresa Calderón	Representative of R1 (predoctoral researchers)

FIELDWORK COMMISSION		
Chair	David Basanta	Head of the Research Support & External Services Dpt.
Vice-Chair	Dr. Josep M. Robles	Collection Manager
Rapporteur	Jordi Galindo	Head of the Fieldwork & Collections Management Area

RESPONSIBLE RESEARCH & INNOVATION (RRI) COMMISSION		
Chair	David Basanta	Head of the Research Support & External Services Dpt.
Vice-Chair	Pere Figuerola	Head of the Outreach & Communication Dept.
Rapporteur	Dr. David M. Alba	Director
Member	Xènia Aymerich	President of the Non-Discrimination Committee
Member	Dr. Josep Fortuny	Data Curator

**Coordination meetings.** In parallel to the meetings of the established committees and commissions, coordination meetings will take place on a quarterly basis, including the Director, the General Manager, the Heads of Research Groups, Departments and Areas, and the persons in charge of remaining Areas.

**Working groups.** Besides the aforementioned HRS4R Implementation Committee & Working Group, the following temporary working group was established in 2021:

- **Strategic Plan Working Group:** Composed by volunteers, it is aimed to perform a SWOT analysis and elaborate the ICP Strategic Plan for 2022-2025. It will be dissolved once the new plan is approved in early 2022.

STRATEGIC PLAN WORKING GROUP		
Chair	Dr. David M. Alba	Director
Vice-Chair	Xènia Aymerich	Head of the Preparation & Conservation Area
Rapporteur	David Basanta	Head of the Research Support & External Services Dpt.
Member	Dr. Júlia Arias-Martorell	'Beatriu de Pinós' postdoctoral researcher
Member	Dr. Isaac Casanovas-Vilar	Junior Leader of the Paleoeology & Biochronology Research Group
Member	Teresa Esquirol	Head of the Museum Area
Member	Pere Figuerola	Head of the Outreach & Communication Dpt.
Member	Dr. Josep Fortuny	Junior Leader of the Computational Paleobiology Research Group

Member	Dr. Sílvia Jovells-Vaqué	Research Associate
Member	Dr. Judit Marigó	Tenure-track Researcher
Member	Dr. Salvador Moyà-Solà	Senior Leader of the Paleoprimateology & Paleoanthropology Research Group
Member	Dr. Josep M. Robles	Collection Manager

**Persons in charge.** Some staff members have specific functions in addition to those corresponding to their respective positions in the Organization Chart or in the committees and commissions:

- Person in charge of Information Systems Security.
- Ombudspersons.
- Person in charge of University Teaching Coordination.
- Data curator.
- Data manager.
- Staff delegates.
- Occupational risk prevention delegate.

PERSONS IN CHARGE		
Information Systems Security	Pere Figuerola	Head of the Outreach & Communication Dept.
Ombudspersons	Pere Figuerola	Head of the Outreach & Communication Dept.
	Judit Marigó	R3 Researcher
University Teaching Coordination	Dr. Josep Fortuny	Computational Paleobiology Research Group Junior Leader
Data curator	Dr. Josep Fortuny	Computational Paleobiology Research Group Junior Leader
Interim data manager	Dr. Alejandro Serrano	Lab Technician
Staff delegates	Dr. Josep M. Robes	Collection Manager
	Xènia Aymerich	Head of the Preparation & Conservation Area
	Mònica Cucurella	Receptionist
Occupational risk prevention delegate	Dr. Josep M. Robes	Collection Manager

## Personnel

Our personnel can be divided into the following categories:

- **Staff sensu stricto:** Either tenured (with a permanent contract), temporary (with a fixed-term contract), or in tenure-track (with a fixed-term contract that may become permanent).
  - ✓ **Own staff:** With a contractual employment relationship with the ICP.
  - ✓ **Seconded staff:** With a contractual relationship with other institutions (civil servants from the Generalitat de Catalunya, research professors from the Institució Catalana de Recerca i Estudis Avançats, university professors) but ascribed to the ICP.
- **Other personnel:** Without a contractual relationship or formal ascription to the ICP:
  - ✓ **Research Associates:** With a written agreement that implies ICP affiliation.

- ✓ **Research Collaborators:** With a verbal (or, exceptionally, written) agreement that implies ICP affiliation.
- ✓ **PhD Students:** Students who perform their PhD dissertation at the ICP without a grant.
- ✓ **Other:** Trainees, visiting researchers, master and bachelor students, volunteers, etc.

**Researcher categories.** We distinguish several professional categories of researchers based on the EU researcher profiles (R1–R4) specified on the European Framework for Research Careers of the European Union. They are divided into early-stage researchers (R1 & R2) and experienced researchers (R3 & R4):

- **R1:** First Stage Researchers (up to the point of PhD).
- **R2:** Recognized Researchers (PhD holders not yet fully independent).
- **R3:** Established Researchers (with a certain level of independence).
- **R4:** Leading Researchers (leaders in their area or field).

RESEARCHER CATEGORIES			
ICP CATEGORY	PROFILE	TYPE	TYPE OF CONTRACT
Predocctoral Researcher	R1	Early-stage	ICP predoc / External agency fixed-term (e.g., FI, FPI, FPU)
Postdoctoral Researcher	R2	Early-stage	ICP postdoc / External agency fixed-term (e.g., JdC, BP...)
Researcher	R3	Experienced	ICP researcher (tenured or in tenure-track) or distinguished junior researcher / Civil servant / External agency tenure-track (e.g., RyC, ERC Starting or Consolidator Grant)
Senior Researcher	R4	Experienced	ICP researcher or distinguished senior researcher / Civil servant / External agency permanent (e.g., ICREA, ERC Advanced Grant)
Research Collaborator	R1–R2	Early-stage	Verbal agreement
Research Associate	R2–R4	Early-stage/ Experienced	Written agreement
Lab Technician	R1–R2	Early stage	ICP technician / External agency fixed-term (e.g., PTA)

## RESEARCH

*A single department with three areas and six research groups with definite aims and scope*

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### Scientific policy

**Main guiding principles.** The research performed at the ICP pivots on the following three main guiding principles:

- Collection- and fieldwork-based research focused on the study of fossils as the main source of raw data, with emphasis on the rich and varied vertebrate fossil record from Catalonia—especially for the Permo-Trias, the Late Cretaceous, the Eocene, the Miocene, and the Pleistocene—and with particular relevance of the paleoichnological record of the latest dinosaurs from Europe and the extraordinary record of Miocene apes.
- A paleobiological approach that clearly situates paleontology well within the framework of life sciences in general, and of evolutionary biology in particular, and which emphasizes a quantitative and nomothetic approach based on hypothesis testing—thereby far from the more classical descriptive approach to paleontology (largely oriented toward its stratigraphic implications).
- The application of modern techniques and methodological approaches to paleontological research, such as paleohistological analysis to infer the life-history of extinct organisms, computer-assisted imaging techniques that enable the non-invasive study of internal anatomy, or theoretical approaches to quantitatively analyze the dynamics of paleobiodiversity through time.

**Research areas and groups.** For many years, since the refoundation of the ICP as a CERCA center, the research performed was organized around four research groups. However, the recommendations provided by the CERCA Evaluation Committee in late 2018 included the need to define a strategy to replace the two group leaders that will retire during the next few years. The action plan elaborated by the ICP Steering Committee to cope with the CERCA recommendations, approved by the Board of Trustees in May 2019, proposed to reorganize the structure of the ICP research groups within more stable strategic research areas within a single Research Department. This enables more flexibility in terms of the number of research groups at the ICP and their specific aims, while ensuring the continuity of the main research lines on the long term. These changes—which expanded the number of research groups from four to six but reunited them into three research areas—were introduced in late 2019 and ratified by the Board of Trustees in May 2020. The current ICP research areas and groups are the following:

- Mesozoic Research Area (Head of Area: Dr. Àngel Galobart).
  - Dinosaur Ecosystems Research Group (Senior Group Leader: Dr. Àngel Galobart).
- Cenozoic Research Area (Head of Area: Dr. David M. Alba).
  - Paleobiodiversity & Phylogeny Research Group (Senior Group Leader: Dr. David M. Alba).
  - Paleoecology & Biochronology Research Group (Junior Group Leader: Dr. Isaac Casanovas-Vilar).
  - Paleoprimatology & Paleoanthropology Research Group (Senior Group Leader: Prof. Salvador Moyà-Solà).
- Evolutionary Paleobiology Research Area (Head of Area: Prof. Meike Köhler).
  - Life History Evolution Research Group (Senior Group Leader: Prof. Meike Köhler).
  - Computational Paleobiology Research Group (Junior Group Leader: Dr. Josep Fortuny).

The Head of the Research Department is established as the current Director of the ICP, although it must not necessarily be that way, being equivalent to the optional figure of Scientific Director as recognized in the Organization Chart. Each research area is led by a head of area, who is a senior researcher (R4), and may include one or more research groups, each led by a group leader, who may be a senior researcher (R4) or another (experienced) permanent researcher (R3). Each group may include other researchers (R3) and/or postdoctoral researchers (R2), predoctoral researchers (R1), as well as research associates, collaborators, and technicians.

The Mesozoic Research Area is focused on dinosaurs and associated faunas, and currently includes a single research group (Dinosaur Ecosystems), although it has possibilities to grow on the mid-term. The Cenozoic Research Area, in turn, is focused on primates and associated faunas, and currently includes three different groups: Paleobiodiversity & Phylogeny, Paleoecology & Biochronology, and Paleoprimatology & Paleoanthropology. Finally, the Evolutionary Paleobiology Research Area includes two different groups: Life History Evolution and Computational Paleobiology.

### **Mesozoic Research Area**

The Mesozoic Research Area focuses on the paleobiodiversity and paleoecology of terrestrial ecosystems during the Mesozoic era (252-66 Ma), with emphasis on those time intervals best represented in the fossil record of Catalonia, which include the Permo-Trias and the latest Cretaceous. Both the Permian-Triassic and the Cretaceous-Tertiary boundaries reflect important mass extinction events that took place, respectively, at 252 Ma (end-Permian extinction or 'Great Dying') and 66 Ma (K-T extinction). These mass extinctions wiped out a large proportion of terrestrial vertebrates (including the disappearance of non-avian dinosaurs at the K-T extinction), and therefore the study of the associated paleoecological changes at the community level is of utmost relevance. The Dinosaur Ecosystems Research Group builds on the extraordinary fossil record from the Catalan Pyrenees of the latest dinosaurs from Europe and

the associated fauna. Besides bony remains, the former also consists of an exceptional paleoichnological record (including eggs, tracks and even skin impressions), which overall provides a unique window to dinosaur paleobiology. Furthermore, the group takes a multidisciplinary approach that, besides paleontologists specializing in several groups and ichnological remains, also involves paleobotanists, geologists and ecologists, in order to provide with accurate datings and paleoenvironmental reconstructions, as well as to apply trophic network modeling techniques.

RESEARCH GROUP OF MESOZOIC FAUNAS				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Àngel Galobart	Research Group Leader	Senior Researcher	R4	Civil Servant (GC)
Dr. Albert Prieto-Márquez	'Ramón y Cajal'	Researcher	R3	Tenure-track (GE)
Dr. Bernat Vila	Tenure-Track Researcher	Researcher	R3	Fixed-term (ICP)
Dr. Albert G. Sellés*	Postdoc	Postdoctoral Researcher	R2	Fixed-term (ICP)
Rafel Matamalas-Andreu‡	Predoc	PhD Student	R1	—
Javier Párraga§	Predoc	PhD Student	R1	—
Dr. Fabio M. Dalla Vecchia	Researcher	Research Associate	R3	—
Dr. Nicolas Malchus	Researcher	Research Associate	R3	—
Dr. Víctor Fondevilla‡	Freelance/Independent	Research Collaborator	R2	—
Dr. Diego Castanera‡	Postdoc	Research Collaborator	R2	—

Abbreviations: \* = Part-time; § = The relationship with the ICP started or was resumed in 2021; † = The relationship with the ICP ended in 2021; ‡ = The relationship with the ICP changed in 2021.

### Cenozoic Research Area

The Cenozoic Research Area focuses on the paleobiodiversity, evolution and paleobiology of continental vertebrates from the Cenozoic era (66 Ma to present, including the Paleogene, Neogene and Quaternary periods), with emphasis on the rich fossil record of mammals from Catalonia and nearby areas.

The Paleobiodiversity & Phylogeny Research Group is devoted to the reconstruction of the evolutionary history of continental vertebrates during this time interval, with emphasis on the rich Miocene and Pleistocene record from the Vallès-Penedès Basin. Besides investigating the phylogenetic relationships and adaptations of various vertebrate taxa, the group further takes a more holistic approach by focusing on the dynamics of paleobiodiversity in relation to global climate change and local paleoenvironmental indicators through time. In relation to the latter, both the Miocene and the Pleistocene record important faunal turnover events—such as the Vallesian Crisis and the Mid-Pleistocene Revolution, respectively. Therefore, the extraordinarily complete, abundantly sampled and accurately dated vertebrate record from these periods in the Vallès-Penedès Basin provides a unique opportunity to test evolutionary hypotheses on the mechanisms and interactions between biotic and abiotic factors that drive the course of evolution on a geological timescale—with significant implications to predict the future and future viability of extant terrestrial ecosystems in the light of current global climate change.

RESEARCH GROUP OF PALEOBIODIVERSITY & PHYLOGENY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. David M. Alba	Research Group Leader	Senior Researcher	R4	Permanent (ICP)
Dr. Joan Madurell-Malapeira	Researcher	Researcher	R3	Permanent (ICP)
Dr. Àngel H. Luján‡	‘Beatriu de Pinós’	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
Dr. Andrea Villa	‘Juan de la Cierva’	Postdoctoral Researcher	R2	Fixed-term (MCIN)
Sharrah McKenzie	Predoc	Predoc Researcher	R1	Fixed-term (other)
Leonardo Sorbelli	FI Predoc	Predoc Researcher	R1	Fixed-term (AGAUR)
Maria Prat-Vericat	Predoc	PhD Student	R1	—
Guillem Pons-Monjo‡	Predoc	PhD Student	R1	—
Kelly A. Vega Pagán§	Predoc	PhD Student	R1	—
Dr. Massimo Delfino	Researcher	Research Associate	R3	—
Dr. Israel M. Sánchez	Researcher	Research Associate	R3	—
Dr. Daniel DeMiguel	Researcher	Research Associate	R3	—
Dr. Antonio Sánchez-Marco‡	Researcher	Research Associate	R3	—
Dr. Juan Abella‡	Researcher	Research Associate	R2	—
Josep Aurell	Freelance/Independent	Research Collaborator	R1	—
Jordi Balaguer	Freelance/Independent	Research Collaborator	R1	—

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The Paleoeology & Biochronology Research Group emphasizes the study of fossils in time and space. It provides the necessary temporal background for the fossil record and one of its main goals is the precise dating of main biological and environmental events. In this regard it takes a multidisciplinary approach, using index fossils to correlate sites and rock units in combination with various geological techniques. Concerning paleoeology, it considers two different approaches. On the one hand, it studies the interrelationships between ancient organisms and the environments in which they lived to unravel not only the function of single organisms but also the structure of fossil communities. In addition, it also analyzes ecological phenomena through protracted intervals of geological time. This approach, termed evolutionary paleoeology, makes use of biochronological information and provides an approach not available to ecologists working in the present day. In both cases multidisciplinary techniques, including for example geochemical methods, are applied to the fossil record. This research group mostly—but not exclusively—focuses on the rich and continuous Miocene small mammal record of Europe, which is ideal for addressing these ecological questions. In addition, small mammals are key elements in Cenozoic continental chronology.

RESEARCH GROUP OF PALEOECOLOGY & BIOCHRONOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Isaac Casanovas-Vilar‡	Junior Group Leader	Researcher	R3	Permanent (ICP)
Dr. Marc Furió‡	Lecturer+	Researcher	R3	Fixed-term (UAB)
Montse Grau§	Predoc	PhD Student	R1	—
Dr. Chiara Angelone	Researcher	Research Associate	R3	—
Dr. Jan van Dam	Researcher	Research Associate	R3	—
Dr. Israel García-Paredes	Researcher	Research Associate	R3	—



Dr. Yuri Kimura	Researcher	Research Associate	R3	—
Dr. Sílvia Jovells-Vaqué	Postdoc	Research Associate	R2	—

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The Paleoprimatology & Paleoanthropology Research Group, in turns, covers the entire evolutionary history of primates throughout the Cenozoic, with three main lines of research focused on the exceptionally rich primate fossil record from Catalonia and other nearby areas: Eocene primates; Miocene catarrhines, with emphasis on apes; and the Plio-Pleistocene record of monkeys and humans. The group studies the paleobiodiversity and phylogenetic relationships of these groups, as well as their paleobiology (diet, locomotion, etc.). Associated faunas are also investigated to contextualize the primate finds from a paleoenvironmental and chronological viewpoint, in collaboration with researchers from other groups within the Cenozoic area. Of particular relevance is the line of research focused on the evolution of hominoids—the group that includes lesser apes, great apes, and humans—with emphasis on the hotly debated phylogenetic and paleobiogeographic hypotheses on the origin and evolution of the great-ape-and-human clade, with further implications for deciphering the origin of gibbons, reconstructing the last common ancestor of apes and humans, and evaluating the importance of homoplasy in hominoid evolution.

RESEARCH GROUP OF PALEOPRIMATOLOGY & PALEOANTHROPOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Prof. Salvador Moyà-Solà	Senior Group Leader	Senior Researcher	R4	Permanent (ICREA)
Dr. Judit Marigó‡	Tenure-Track Researcher	Researcher	R3	Fixed-term (ICP)
Dr. Júlia Arias-Martorell	‘Beatriu de Pinós’	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
Dr. Arnau Bolet	‘Juan de la Cierva’	Postdoctoral Researcher	R2	Fixed-term (MCIN)
Florian Bouchet	FPI Predoc	Predoc	R1	Fixed-term (MCIN)
Oriol Monclús	FI Predoc	Predoc	R1	Fixed-term (AGAUR)
Georgina Raventós	Predoc	PhD Student	R1	—
Dr. Esther Lizano§	Lab Technician	Technician	R2	Fixed-term (ICP)
Oscar Castillo Visa§‡	Lab Technician	Technician	R1	Fixed-term (ICP)
Prof. Eric Delson	Senior Researcher	Research Associate	R4	—
Dr. Tomàs Marquès-Bonet	Senior Researcher	Research Associate	R4	—
Dr. Sergio Almécija	Senior Researcher	Research Associate	R4	—
Dr. Raef Minwer-Barakat	Researcher	Research Associate	R3	—
Dr. Amélie Beaudet§	Researcher	Research Associate	R3	—
Dr. Marta Pina	Postdoc	Research Associate	R2	—
Dr. Alessandro Urciuoli‡	Postdoc	Postdoctoral Researcher	R2	—
Dr. Joan Femenias-Gual	Freelance/Independent	Research Collaborator	R2	—

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## Evolutionary Paleobiology Research Area

The Evolutionary Biology Research Area is not restricted to a particular time span, but rather focused on the study of the patterns and causes of evolutionary change and extinction by combining fossil evidence with the biology of extant organisms.

The Life History Evolution Research Group is mostly devoted to the evolution of mammalian life-histories under changing ecological conditions. The group takes advantage of the unique deep-time perspective that only paleontology can provide to test hypotheses on the evolution of life-history strategies from the viewpoint of adaptation. To do so, this group takes a methodological approach that mostly relies on the paleohistological study of hard tissues (bone and teeth) of extinct mammals within the analytical framework provided by life history theory of biological evolution—which combines ecology, demography, physiology and adaptation, and further has significant implications for conservation biology (extinction) as well as evolutionary developmental biology (aging). By means of the study of skeletochronological markers and body mass estimation, the group can reconstruct the growth and developmental trajectories of extinct mammals and test the correlation of key life-history traits with environmental indicators, in order to test the evolutionary hypotheses of interest. Particularly relevant for this group is the study of the differential responses provided by large and small mammals to the peculiar ecological conditions provided by insular ecosystems, with emphasis on the study of extinct mammals from the fossil Mediterranean islands of the Mio-Pliocene.

RESEARCH GROUP OF LIFE HISTORY EVOLUTION				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Prof. Meike Köhler	Senior Group Leader	Senior Researcher	R4	Permanent (ICREA)
Dr. Josep Quintana*	Researcher	Researcher	R3	Permanent (ICP)
Dr. Carmen Nacarino§	Postdoc	Postdoctoral researcher	R2	Fixed-term (ICP)
Teresa Calderón‡	Predoc	PhD Student	R1	—
Manuel Fernández	Lab Technician	Technician	R1	Permanent (ICP)

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Finally, the Computational Paleobiology Research Group encompasses computational approaches that aim to digitally obtain paleobiological and evolutionary data of extinct organisms based on a wide range of techniques from imaging to functional approaches. To pursue these goals, the research group combines fossil evidence (particularly from Iberian fossil record, but also taking advantage of digital techniques to analyze fossil samples from all over the world) and biological samples. The researchers of this group are devoted to different groups of extant and extinct vertebrates, mainly (but not exclusively) amphibians and reptiles, with their efforts focused on the functional morphology, ontogeny, and evolutionary history of these groups—and, when applicable, implications for conservation (paleo)biology. Of particular interest for the lines of research of this group are feeding ecology studies based on 3D masticatory mechanic models using finite element analysis (FEA) and multibody dynamic

analysis (MDA), as well as inferences on past environmental conditions (given the great potential of ectothermic vertebrates in this regard).

RESEARCH GROUP OF COMPUTATIONAL PALEOBIOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Josep Fortuny	Junior Group Leader	Researcher	R3	Permanent (ICP)
Chabier de Jaime-Soguero	FI Predoc	Predoc Researcher	R1	Fixed-term (AGAUR)
Dr. Alejandro Serrano *	Lab Technician	Technician	R2	Fixed-term (ICP)
Marc Riccetto§†	Lab Technician	Technician	R1	Fixed-term (ICP)
Jordi Pérez Cano§†	Lab Technician	Technician	R1	Fixed-term (ICP)
Dr. Jordi Marcé-Nogué	Researcher	Research Associate	R3	—
Dr. Eudald Muijal	Postdoc	Research Associate	R2	—
Dr. Borja Holgado	Postdoc	Research Associate	R2	—
Dr. Soledad De Esteban-Trivigno	Freelance/Independent	Research Collaborator	R2	—
Dr. David P. Groenewald	Postdoc	Research Collaborator	R2	—
Joan Cartanyà	Freelance/Independent	Research Collaborator	R1	—
Sergio Llácer	Lab Technician	Research Collaborator	R1	—

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### Paleoproteomics and paleogenomics line of research

During the last couple of decades, the possibility to extract and sequence ancient DNA from fossils (first mitochondrial, and subsequently nuclear) has revolutionized fossil vertebrate phylogenetics, and particularly human evolutionary studies. However, ancient DNA is limited to remains younger than 0.5 Ma. A new discipline focused on the recovery of ancient proteins offers the prospect to go further back in time, and has already provided phylogenetically relevant data for fossils dating to 2 Ma. Since 2018, the ICP intends to establish a new research line focused on paleoproteomics and paleogenetics, with emphasis on fossil primates. With this aim in mind, in late 2018 the ICP reached a research collaboration agreement with ICREA Research Professor Tomàs Marquès-Bonet (Institut de Biologia Evolutiva, CSIC-UPF), who became research associate of the Paleoprimatology & Human Paleontology Research Group.

This collaboration was consolidated in 2019 thanks to the grant of a European Training Network (H2020-MSCA-ITN-ETN) project focused on primate paleoproteomics (PI Enric Capellini, University of Copenhagen), in which the ICP participates as a partner organization, with several group leaders involved. By virtue of this project, which started in 2020, the Paleobiodiversity & Phylogeny Research Group leader (Dr. Alba) is cosupervising two PhD dissertations on paleoproteomics with Prof. Marquès-Bonet and Prof. Rook (Università di Firenze). Further collaboration between the Paleoprimatology & Paleoanthropology Research Group and Prof. Tomàs-Marquès' research group is planned for the following years.

This research line is compatible with the aims and scope of various ICP research groups but represents a most significant broadening of the ICP scientific focus as a whole—being entirely

compatible with the ICP vision that paleobiology is deeply entrenched among the life sciences (and particularly evolutionary biology). It will be of upmost significance to further promote the ICP as one of the leading and benchmark centers of vertebrate and human paleobiology at an international level, because it offers the promise to boost the visibility, impact and competitiveness of the ICP much beyond their current levels.

### Research associates

Research associates are researchers that lack an employment relationship with the ICP but nevertheless actively contribute to the research performed at our institution. The terms of this collaboration (including the ICP and the researcher's commitments) are indicated on a written agreement that further stipulates the scope of the collaboration and can be more or less personalized depending on the strategic significance of the collaboration.

A complete list of current research associates is provided below. Note that the status of research associate is restricted to R2-R4 researchers (i.e., PhD). PhD students and other people that actively collaborate with ICP research but lack an employment relationship with the institution may be considered 'collaborators', a figure that does not require a written agreement but further implies signing research outputs with ICP affiliation. Note that many agreements are dated to 2017; in most instances this is merely the date in which previous verbal agreements were formalized.

Only research associates active at the end of 2021 are reported in the table above, but the end date has been updated if they were expected to renew in early 2022. They include 22 research associates, most with a different primary affiliation; 11 are from Spain, 3 from Italy, 2 from the USA, 2 from UK, 1 from Germany, 1 from The Netherlands, 1 from Japan, and 1 from Brazil.

RESEARCH ASSOCIATES (2021)						
NAME	PRIMARY AFFILIATION	POSITION	R.G.	START DATE	END DATE	
Dr. Sergio Almécija	American Museum of Natural History, New York, USA	Senior Researcher (R4)	PPPA	17/10/2017	17/10/2022	
Prof. Eric Delson	Lehman College, City University of New York, USA	Senior Researcher (R4)	PPPA	24/10/2017	24/10/2021	
Dr. Tomàs Marquès-Bonet	ICREA-Universitat Pompeu Fabra, Barcelona, Spain	Senior Researcher (R4)	PPPA	21/09/2018	21/09/2022	
Dr. Massimo Delfino	Università degli Studi di Torino, Turin, Italy	Researcher (R3)	PBDP	01/01/2011	01/01/2023	
Dr. Chiara Angelone	Università di Roma Tre, Rome, Italy	Researcher (R3)	PEBC	01/01/2012	01/01/2024	
Dr. Fabio M. Dalla Vecchia	Museo Friulano di Storia Naturale, Udine, Italy	Researcher (R3)	DE	10/11/2017	10/11/2022	
Dr. Israel M. Sánchez	ICP (independent researcher)	Researcher (R3)	PBDP	01/06/2016	01/06/2022	
Dr. Jan van Dam	Utrecht University, The Netherlands	Researcher (R3)	PEBC	01/11/2017	01/11/2022	
Dr. Daniel DeMiguel	ARAID-Universidad de Zaragoza, Spain	Researcher (R3)	PBDP	19/10/2017	19/10/2022	
Dr. Nikolaus Malchus	ICP (independent researcher)	Researcher (R3)	DE	01/11/2017	01/11/2022	
Dr. Raef Minwer-Barakat	Universidad de Granada, Spain	Researcher (R3)	PPPA	18/10/2017	18/10/2022	
Dr. Israel García-Paredes	Universidad Complutense de Madrid, Spain	Researcher (R3)	PEBC	12/01/2018	12/01/2022	
Dr. Jordi Marcé-Nogué	Universitat Rovira i Virgili, Spain	Researcher (R3)	CPB	22/12/2017	22/12/2023	
Dr. Yuri Kimura	National Museum of Nature and Science, Japan	Researcher (R3)	PEBC	01/01/2020	01/01/2024	
Dr. Amélie Beaudet	Cambridge University, UK	Researcher (R3)	PPPA	12/11/2020	12/11/2024	
Dr. Antonio Sánchez-Marco	ICP (independent researcher)	Researcher (R3)	PBDP	28/7/2021	28/7/2026	
Dr. Marta Pina	University of Manchester, UK	Postdoc (R2)	PPPA	11/11/2019	11/11/2022	
Dr. Eudald Muijal	Staatliches Museum für Naturkunde Stuttgart, Germany	Postdoc (R2)	CPB	10/01/2017	10/01/2025	
Dr. Borja Holgado	Universidade Federal do Rio de Janeiro, Brazil	Postdoc (R2)	CPB	22/09/2020	22/09/2024	
Dr. Sílvia Jovells	ICP (independent researcher)	Postdoc (R2)	PEBC	12/11/2020	12/11/2024	
Dr. Alessandro Urciuoli	ICP (independent researcher)	Postdoc (R2)	PPPA	26/5/2021	26/5/2025	
Dr. Juan Abella	ICP (independent researcher)	Postdoc (R2)	PBDP	21/12/2021	21/12/2025	

Abbreviations of Research Groups (R.G.): DE = Dinosaur Ecosystems; PBDP = Paleobiodiversity & Phylogeny; PEBC = Paleocology & Biochronology; PPPA = Paleoprimateology & Paleoanthropology; LHE = Life History Evolution; CPB = Computational Paleobiology.



## TECHNICAL DEPARTMENTS

### *Outreach, managements, research support, and service provision*

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#### Departmental organization

The ICP has three technical departments (Outreach & Communication, Management & Human Resources, and Research Support & External Services), each one directed by a Head of Department. They are supervised by and formally depend upon the General Manager. However, the Steering Committee (which includes the Director and the three Heads of Department) further contributes significantly to the coordination among these departments as well as between them and the various research groups. Each department includes several areas, which may have a Head of Area when an intermediate hierarchical level is required to coordinate the personnel included within.

- Outreach & Communication Dept.: Pere Figuerola (Head of Dept.).
  - ✓ Communication and Scientific Dissemination: Pere Figuerola (Head of Area).
  - ✓ Museum Area: Teresa Esquirol (Head of Area).
  - ✓ Archive & Documentation Area: Teresa Requena (Archivist & Documentalist).
  
- Management & Human Resources: Enric Menéndez (Head of Dept.).
  - ✓ Maintenance Area: Manel Llenas (Maintenance Technician).
  - ✓ Administration Area: Mónica Vincent (Administrative Officer).
  
- Research Support & External Services: David Basanta (Head of Dept.).
  - ✓ Fieldwork & Collections Management Area: Jordi Galindo (Head of Area).
  - ✓ Preparation & Conservation Area: Xènia Aymerich (Head of Area).
  - ✓ Projects Area: David Basanta (Project Manager).
  - ✓ Information Technology Area: Josep Torres (IT External Consultant).

#### Outreach & Communication

This department has the aim to improve internal communication as well as to better coordinate external communication, scientific dissemination and outreach activities. It includes the following areas:

- Communication & Scientific Dissemination.
- Museum.
- Archive & Documentation Area.

DEPARTMENT OF OUTREACH & COMMUNICATION			
NAME	POSITION	AREA	TYPE OF CONTRACT
Pere Figuerola	Head of Dept. & Area	Communication & Scientific Dissemination	Permanent (ICP)
Teresa Esquirol	Head of Area	Museum	Civil Servant (GC)
Mònica Cucurella	Receptionist	Museum	Permanent (ICP)
Mònica Ferré*	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Pilar Argerich*	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Irina Fernández§	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Alejandro Gil-Delgado‡	Monitor (Dinosfera)	Museum	Fixed-term (ICP)
Teresa Requena	Archivist & Documentalist	Archive & Documentation Area	Civil Servant (GC)

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## Management & Human Resources

This department has the aim to improve and give visibility to our human resources policies within the context of the implementation of HRS4R. It includes the following areas:

- Maintenance.
- Administration.

DEPARTMENT OF MANAGEMENT & HUMAN RESOURCES			
NAME	POSITION	AREA	TYPE OF CONTRACT
Enric Menéndez	Head of Dept.	—	Permanent (ICP)
Manel Llenas	Maintenance Technician	Maintenance	Civil Servant (GC)
Mónica Vincent‡	Administrative Officer	Administration	Permanent (ICP)
Maria Pérez†	Administrative Officer	Administration	Permanent (ICP)

Abbreviations: \* = Part-time; § = The relationship with the ICP started or was resumed in 2021; † = The relationship with the ICP ended in 2021; ‡ = The relationship with the ICP changed in 2021.

## Research Support & External Services

This department has the aim to boost remunerated external services provided to third parties, as well as to improve the coordination between the various areas involved in research support. It includes the following areas:

- Fieldwork & Collections Management.
- Preparation & Conservation.
- Projects.
- Information Technology.

DEPARTMENT OF RESEARCH SUPPORT & EXTERNAL SERVICES			
NAME	POSITION	AREA	TYPE OF CONTRACT
David Basanta	Head of Dept.	Projects	Permanent (ICP)
Jordi Galindo	Head of Area	Fieldwork & Collections Mgmt.	Permanent (ICP)
Dr. Josep M. Robles‡	Collection Manager	Fieldwork & Collections Mgmt.	Permanent (ICP)
Dr. Albert G. Sellés*	Collection Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Manel Llenas	Field Technician	Fieldwork & Collections Mgmt.	Civil Servant (GC)



Dr. Víctor Vinuesa§	Field Technician	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Manel Méndez	Field Assistant	Fieldwork & Collections Mgmt.	Permanent (ICP)
Itziar Llopart	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Ángel García Pérez§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Esteban Meseguer-Despons§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Montserrat Grau†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Montse Garcia§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Alejandro Martínez§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Lorena Palencia§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Alba Rico§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Rubén A. García Artigas§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Raquel Bellver§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Ana Mayayo§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Maties Pons§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Jorge Fernández§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Sergio Crespo§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Jorge Gasca§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Marc Riccetto§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Xènia Aymerich	Head of Area	Preparation & Conservation	Permanent (ICP)
Marina Rull	Prep. Technician	Preparation & Conservation	Permanent (ICP)
Almudena S. Yagüe§	Prep. Technician	Preparation & Conservation	Permanent (ICP)
Júlia Jiskoot§†	Prep. Technician	Preparation & Conservation	Fixed-term (ICP)
Ana Montemayor§†	Prep. Technician	Preparation & Conservation	Fixed-term (ICP)
Josep Torres*	IT External Consultant	Information Technology	—

Abbreviations: \* = Part-time; § = The relationship with the ICP started or was resumed in 2021; † = The relationship with the ICP ended in 2021; ‡ = The relationship with the ICP changed in 2021.



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## PART 2

### ICP ACTIVITIES 2021

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*In 2021, the ICP has increased further its scientific production and productivity while persisting in the recovery, conservation and dissemination of the paleontological heritage from Catalonia. Outreach and communication activities have pivoted around the ICP webpage and social networks; fundraising has maintained a good level thanks to service provision and competitive projects; and managerial activities have focused on HRS4R implementation, the goals of the Strategic Plan, the equality plan, and the recommendations by I-CERCA.*

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## RESEARCH OUTPUTS

### *High productivity and quality in scientific publications*

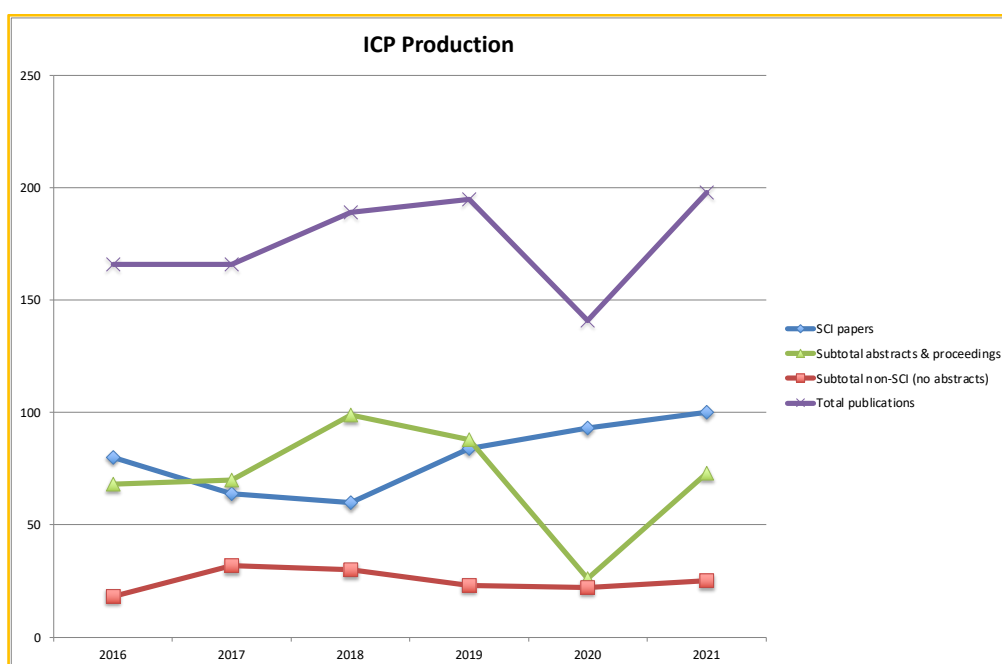
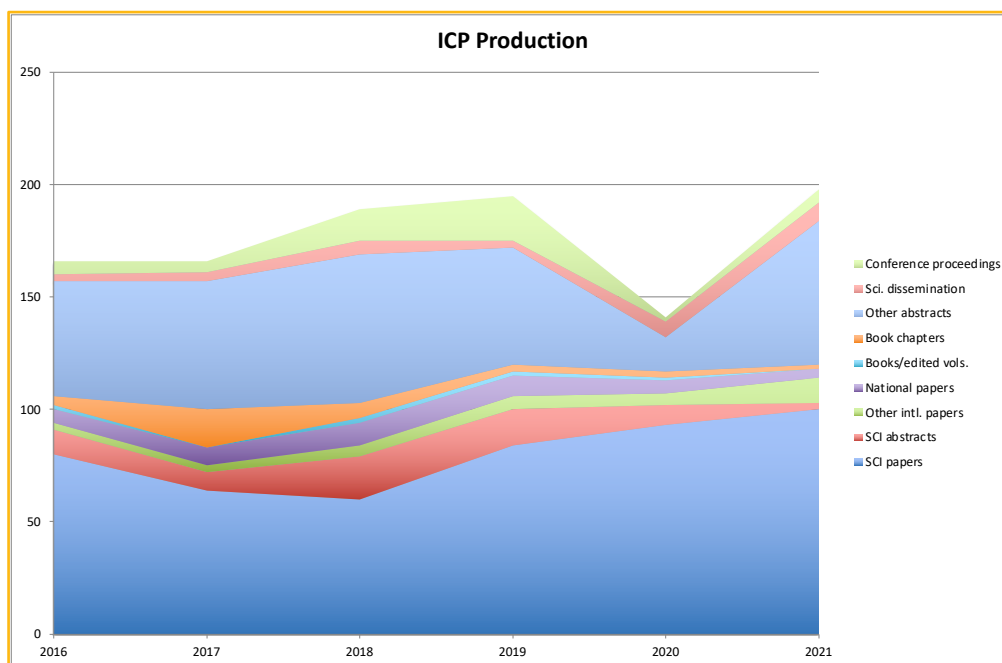
#### Publications

The publications of the ICP in 2021 are reported in the Appendix at the end of this document, being divided into the following categories (SCI refers to journals from the Science Citation Index, i.e., indexed by the Journal Citation Reports, JCR):

- SCI papers.
- SCI abstracts.
- Papers in other international journals.
- Papers in national journals.
- Books and edited volumes.
- Book chapters.
- Conference proceedings.
- Other abstracts.
- Scientific dissemination papers.

ICP PUBLICATIONS (2016–2020 vs. 2021)							
PUBLICATION CATEGORIES	2016	2017	2018	2019	2020	AVERAGE	2021
SCI papers	80	64	60	84	93	<b>76.2</b>	<b>100</b>
SCI abstracts	11	8	19	16	9	<b>12.6</b>	<b>3</b>
Papers in other international journals	3	3	5	6	6	<b>4.6</b>	<b>11</b>
Papers in national journals	6	8	10	9	6	<b>7.8</b>	<b>4</b>
Books and edited volumes	2	0	2	2	1	<b>1.4</b>	<b>0</b>
Book chapters	4	17	7	3	3	<b>6.8</b>	<b>2</b>
Conference proceedings	6	5	14	20	2	<b>9.4</b>	<b>6</b>
Other abstracts	51	57	66	52	15	<b>48.2</b>	<b>64</b>
Scientific dissemination papers	3	4	6	3	7	<b>4.6</b>	<b>8</b>
<b>TOTAL</b>	<b>166</b>	<b>166</b>	<b>189</b>	<b>195</b>	<b>142</b>	<b>171.4</b>	<b>198</b>

The number of total publications (198) is the highest ever in the history of the ICP, although very similar to the figure from 2019 (i.e., before the pandemic, when the number of abstracts and conference proceedings decreased due to the cancellation of many meetings). In turn, the number of SCI papers confirms the growing trend started in 2019, reaching for the first time the psychological threshold of 100, which is well above the average for the five preceding years (76). In other words, 2021 represents the best year of ICP history in terms of SCI production.



## Contributions to meetings

The number of published abstracts and conference proceedings (see above) is a good proxy for contributions to meetings (although there can be some delay in the publication of conference proceedings). The number of abstracts/conference proceedings published in 2021 (73) is similar to the average for the five preceding years (70), but much higher than that of 2020 (26). This indicates that attendance to meetings was normalized to a large extent in 2021, after the marked decrease in 2020 due to the pandemic, even if this was only possible thanks to the proliferation of online meetings (as travel restrictions still applied in 2021).

In particular, ICP researchers in 2021 coauthored 71 contributions to a total of 19 meetings, of which 14 international and many of them performed by telematic or hybrid means. Most remarkable are the 18 ICP contributions to the annual conference of the European Association of Vertebrate Palaeontologists. Also noteworthy are the 6 contributions to the annual meeting of the European Society for the Study of Human Evolution and the 5 contributions to the annual meeting of the Society of Vertebrate Paleontology.

MEETING	CITY (COUNTRY)	COMMS.
Society for Integrative and Comparative Biology 2021 Virtual Annual Meeting	(Virtual)	2
11th Annual Meeting of the European Society for the Study of Human Evolution	(Virtual)	6
5th International Meeting of Early-stage Researchers in Palaeontology	Lithuania (Virtual)	3
XIX Encuentro de Jóvenes Investigadores en Paleontología	Coimbra (Portugal)	5
XVIII annual conference of the European Association of Vertebrate Palaeontologists	(Virtual)	18
XXIV Biental de la Real Sociedad Española de Historia Natural	València (Spain, Hybrid)	2
XXXVI Jornadas de la Sociedad Española de Paleontología	Zaragoza (Spain, Virtual)	5
2nd Crossing the Paleontological-Ecological Gap	Berlin (Germany, Online)	2
3 <sup>rd</sup> Palaeontological Virtual Congress	(Virtual)	5
XXI Convegno della Società Paleontologica Italiana. Paleodays 2021	Bologna (Italy, Virtual)	4
90 <sup>th</sup> Annual Meeting of the American Association of Physical Anthropologists	(Virtual)	3
XI Congrés Internacional de Docència Universitària i Innovació	(Virtual)	2
X Congreso Geológico de España	Gasteiz (Spain, Hybrid)	1
81 <sup>st</sup> Annual Meeting Society of Vertebrate Paleontology	(Virtual)	5
XII Congresso Nazionale Societas Herpetologica Italica	Lipari (Italy)	2
RCR Hueso: 1 <sup>a</sup> Reunión Conservación y restauración de Hueso	Tarragona (Spain)	2
11th Symposium of Morphometrics and Evolution of Shape	(Virtual)	1
75th Annual Meeting Anthropological Society of Nippon	Japan (Virtual)	1
Turtle Evolution Symposium 2021	Trelew (Argentina)	2

## Scientific production, productivity, and impact

**Methods.** Whereas ‘production’ refers to the number of scientific outputs published in 2021, ‘productivity’ refers to the ratio between production and the total number of authors that have coauthored these publications with ICP affiliation. To compare the production, productivity, and quality/impact of ICP research outputs in 2021 with that of the five previous years, this report focuses on SCI ‘papers’, which include all publications (articles, technical notes, etc.) except abstracts in journals indexed by the JCR. Bibliometric indicators for these journals have been taken from the JCR of the year of definitive publication, except for 2021, which were taken from 2020 (since the 2021 edition of JCR has not been published yet). The following aspects and metrics were considered for each journal:

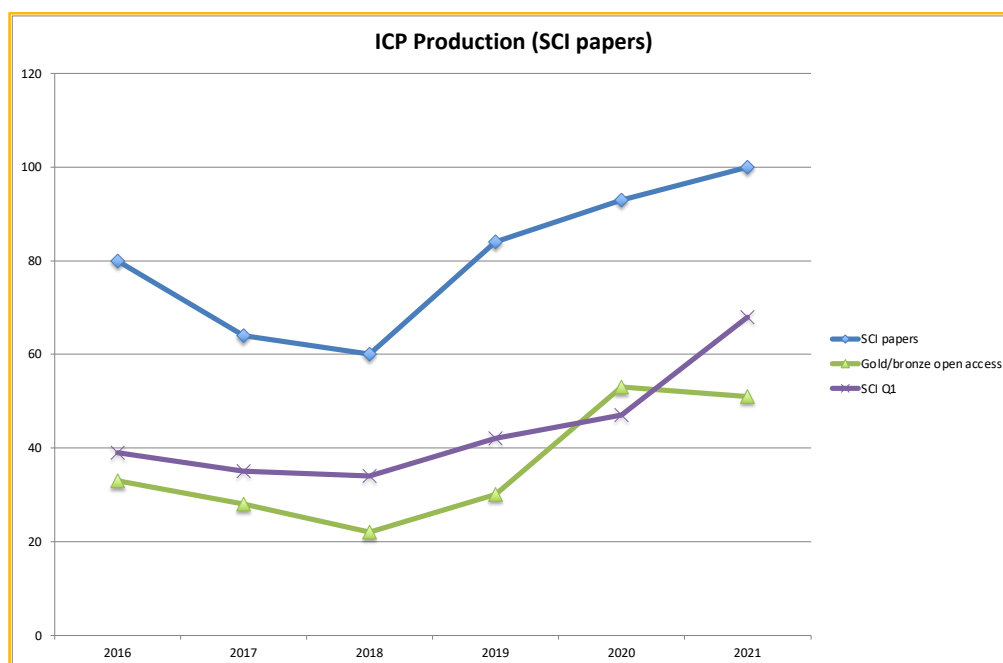
- Journal category (if several, the most favorable with respect to journal ranking).

- Journal impact factor (IF).
- Journal quartile (Q1 = first quartile, Q2 = second quartile, etc.).
- Journal impact factor percentile (JIF%).
- Open access (excluding green open access).

The following metrics of production, productivity and impact were computed for 2020:

- SCI = total number of SCI papers (excluding abstracts) coauthored by ICP authors.
- SCI productivity = SCI / number of ICP authors (those with ICP affiliation in SCI papers).
- Q1 = total number of Q1 papers coauthored by ICP authors.
- OA = total number of open access SCI papers coauthored by ICP authors.
- Q1 productivity = Q1 / number of ICP authors.
- Q1 ratio = Q1 / Production x 100 (in %).
- OA ratio = OA / Production x 100 (in %).
- Median JIF%.
- IF geometric mean (IFGM).

**Production.** The production of the ICP in terms of total SCI and first quartile SCI papers during 2021 is well above the average value for the preceding five years, and indeed highest than ever. In contrast, the production in terms of gold/bronze open access SCI papers is slightly lower than in 2020 (despite the increase in SCI production), albeit still much higher than the average for the five preceding years.



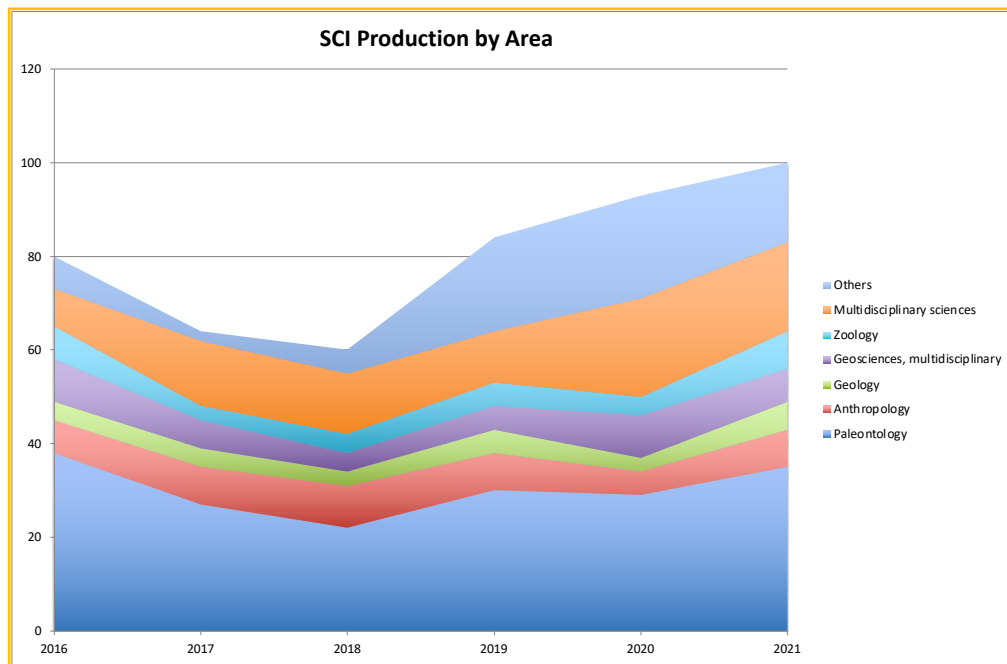
When SCI production is broken down by research areas of the JCR, it can be seen that a large proportion of ICP production corresponds to journals from the area of Paleontology (35% in 2021), followed by Multidisciplinary sciences (19% in 2021), and smaller contributions from the



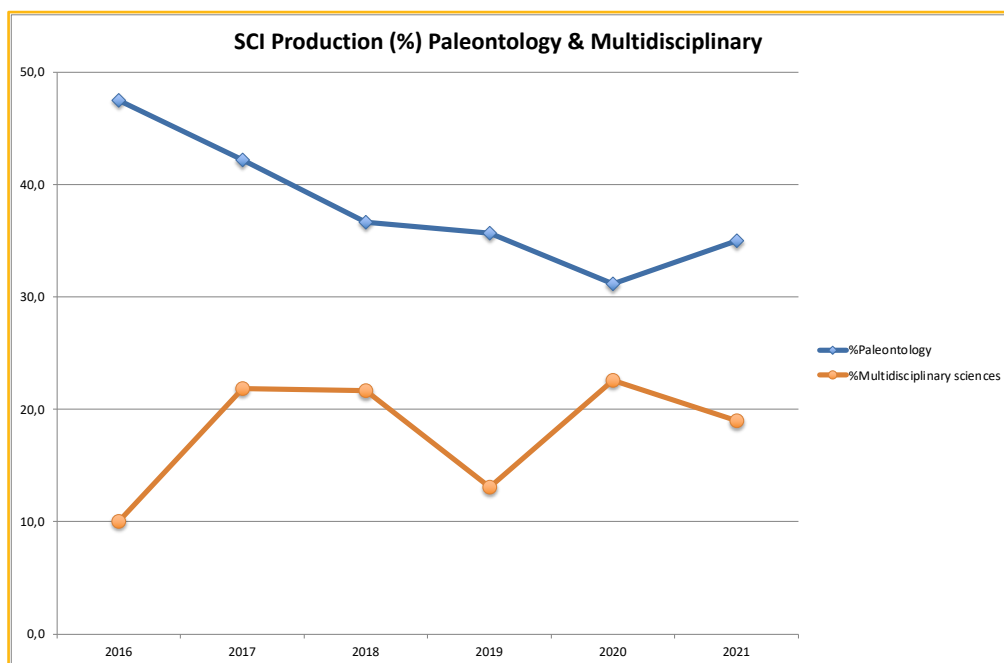
areas of Anthropology, Zoology, Geology, Geosciences multidisciplinary, and others. It is noteworthy the high proportion of papers published in Multidisciplinary sciences in 2020-2021 as compared with previous years.

SCI PRODUCTION (2016–2020 vs. 2021)							
METRICS	2016	2017	2018	2019	2020	AVERAGE	2021
SCI	80	64	60	84	93	<b>76.2</b>	<b>100</b>
Q1	39	35	34	42	51	<b>39.4</b>	<b>69</b>
OA*	33	28	22	30	53	<b>33.2</b>	<b>51</b>

\*Green open-access excluded.

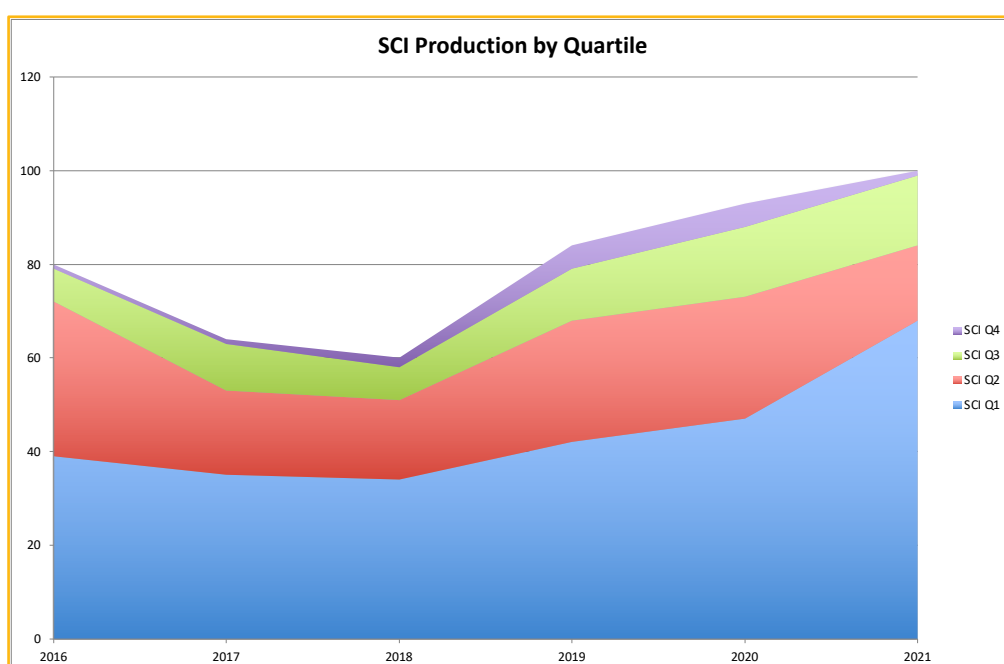


SCI PRODUCTION BY AREAS (2016–2020 vs. 2021)							
JCR AREAS	2016	2017	2018	2019	2020	AVERAGE	2021
Paleontology	38	27	22	30	29	<b>29.2</b>	<b>35</b>
Anthropology	7	8	9	8	5	<b>7.4</b>	<b>8</b>
Geology	4	4	3	5	3	<b>3.8</b>	<b>6</b>
Geosciences, multidisciplinary	9	6	4	5	9	<b>6.6</b>	<b>7</b>
Zoology	7	3	4	5	4	<b>4.6</b>	<b>8</b>
Multidisciplinary sciences	8	14	13	11	21	<b>13.4</b>	<b>19</b>
Others	7	2	5	20	22	<b>11.2</b>	<b>17</b>
%Paleontology	47.5	42.2	36.7	35.7	31.2	<b>38.3</b>	<b>35.0</b>
%Anthropology	8.8	12.5	15.0	9.6	5.4	<b>9.7</b>	<b>8.0</b>
%Geology	5.0	6.3	5.0	6.0	3.2	<b>5.0</b>	<b>6.0</b>
%Geosciences, multidisciplinary	11.3	9.4	6.7	6.0	9.7	<b>8.7</b>	<b>7.0</b>
%Zoology	8.8	4.7	6.7	6.0	4.3	<b>6.0</b>	<b>8.0</b>
%Multidisciplinary sciences	10.0	21.9	21.7	13.1	22.6	<b>17.6</b>	<b>19.0</b>
%Others	8.8	3.1	8.3	23.8	23.7	<b>14.7</b>	<b>17.0</b>

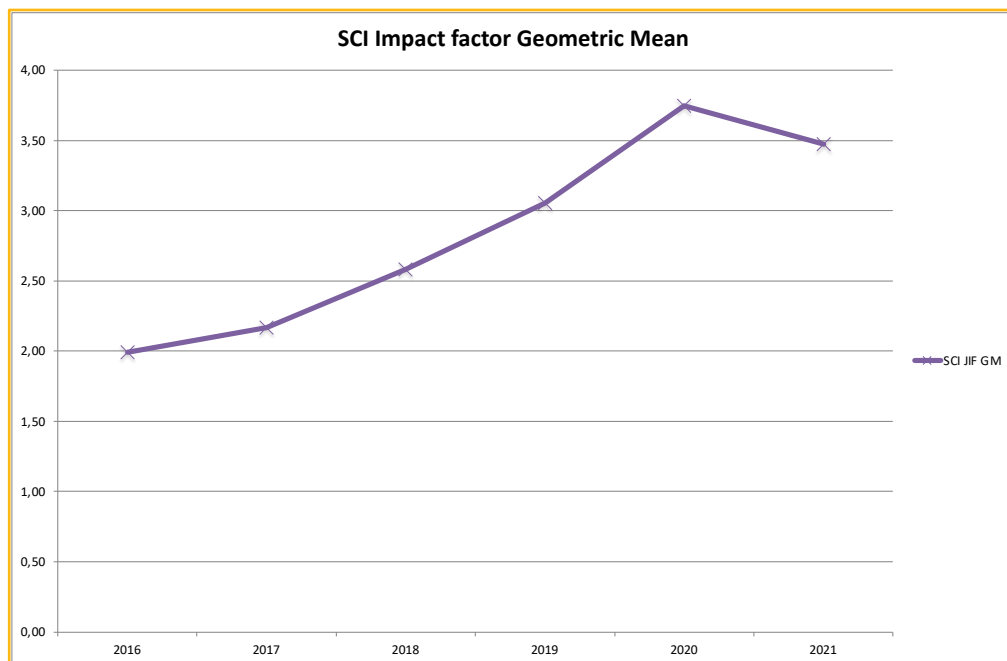
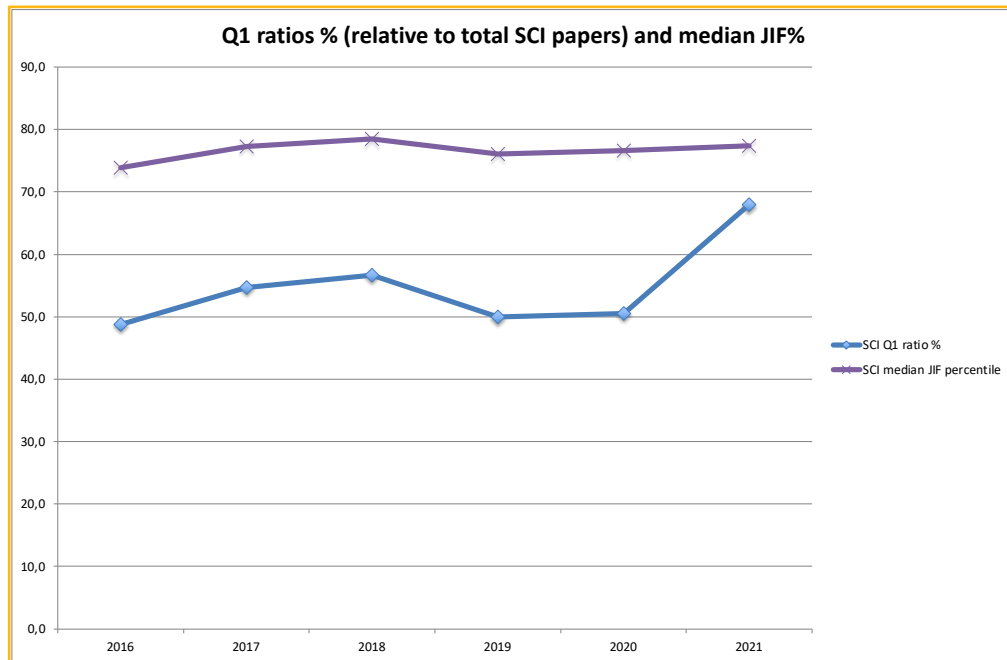


**Quality and impact.** If production is broken down by quartiles, it becomes obvious that most of the SCI production of the ICP is concentrated on the Q1 and that the increase in SCI production during 2021 is mostly attributable to a greater number of published papers in Q1 journals.

SCI PRODUCTION BY QUARTILES (2016–2020 vs. 2021)							
QUARTILE	2016	2017	2018	2019	2020	AVERAGE	2021
Q1	39	35	34	42	47	39.4	68
Q2	33	18	17	26	26	24.0	16
Q3	7	10	7	11	15	10.0	15
Q4	1	1	2	5	5	2.8	1



SCI PRODUCTION IMPACT & QUALITY (2016–2020 vs. 2021)							
METRICS	2016	2017	2018	2019	2020	AVERAGE	2021
Q1 ratio	48.8	54.7	56.7	50.0	50.5	<b>51.7</b>	<b>68.0</b>
Median JIF%	73.8	77.3	78.5	76.1	76.6	<b>76.8</b>	<b>77.4</b>
IFGM	1.99	2.17	2.58	3.05	3.75	<b>2.36</b>	<b>3.47</b>



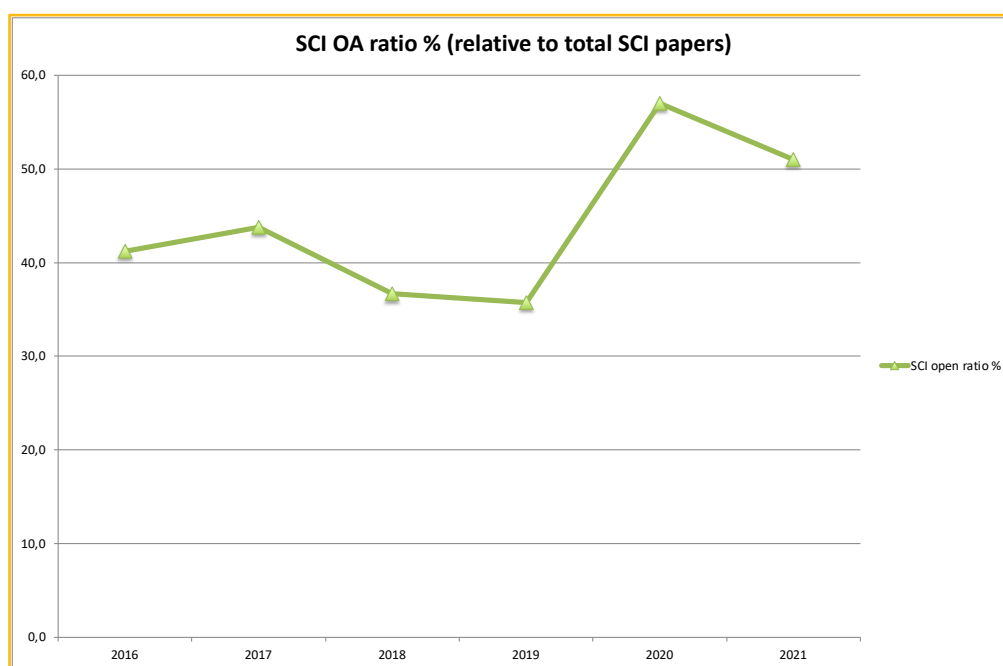
It is noteworthy that the percentage of papers published in Q1 has remained more or less stationary around 50%, whereas in contrast the figure for 2021 is higher than two-thirds (68%). In contrast, the JIF percentile median has not increased accordingly (being slightly higher than 75%). The impact factor geometric mean for 2021 (3.5) is much higher than the average for the

preceding five years (2.4), but slightly lower than the figure for 2020 (3.8). The increasing impact trend for the last years (even if the peak was in 2020) is related to a proportional increase of publications from other areas with higher impact than paleontology, whereas the increase in first quartile publications largely reflect recent changes in some paleontological journals that fluctuate between Q1 and Q2. It will be necessary to recalculate these numbers once the 2021 edition of the JCR is published later this year.

With regard to the open access ratio (including only gold and bronze open access), the 2021 percentage (51%) is slightly lower than that of 2020 (57%), but nevertheless above the average for the five preceding years (44%). It should be stressed that these figures do not take into account papers published using green open access (such as postprints subsequently posted in digital repositories). If these were included, the figures would be much higher.

OPEN ACCESS (2016–2020 vs. 2021)							
METRICS	2016	2017	2018	2019	2020	AVERAGE	2021
OA ratio*	41.3	43.8	36.7	35.7	57.0	<b>43.6</b>	<b>51.0</b>

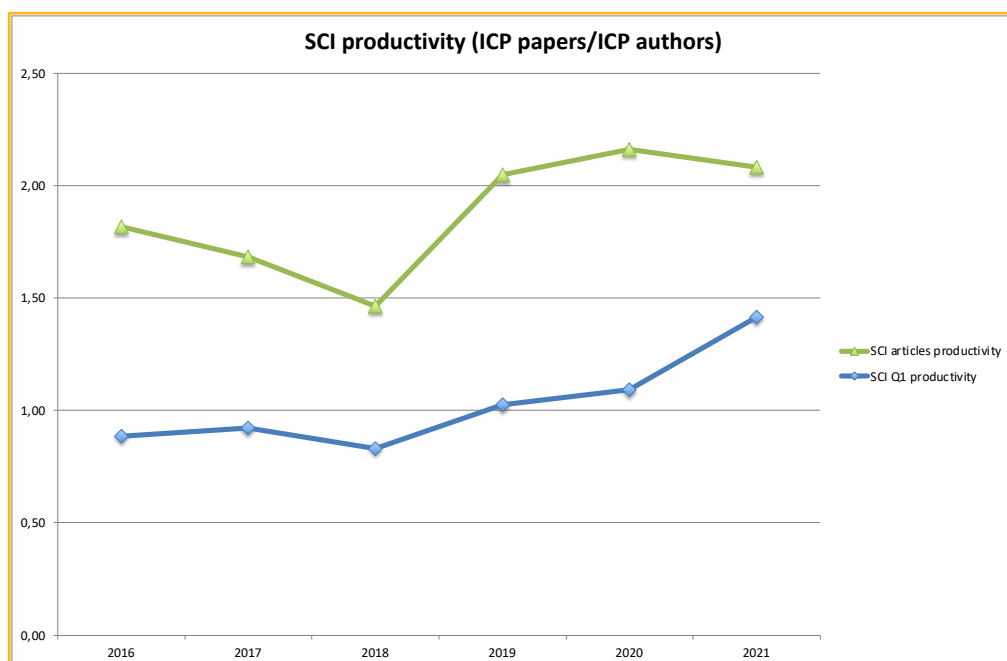
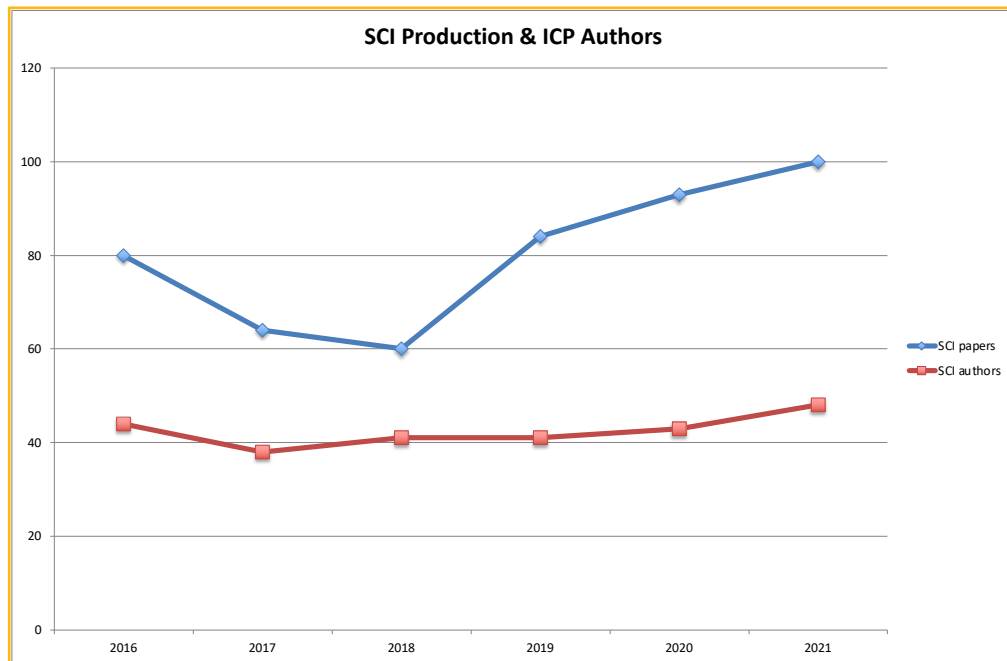
\*Green open-access excluded.



**Productivity.** The number of ICP authors (including researchers, research associates, collaborators, etc.) is lower than that of SCI papers published each year. The number of ICP authors for 2021 (48) is clearly higher than the average for the preceding five years (41). This important increase has resulted in a slight decrease in total sci productivity, which is nevertheless above the average for the five preceding years. However, it is noteworthy that first quartile SCI productivity experienced in 2021 a spectacular increase, despite the increase in number of authors, being almost 50% higher than the average of the five preceding years. Overall, this confirms the trend of the last years that the ICP not only publishes more papers

(both in absolute and relative terms), but also publishes better (i.e., in terms of impact of the journals where research outputs are published).

SCI PRODUCTIVITY (2016–2020 vs. 2021)							
METRICS	2016	2017	2018	2019	2020	AVERAGE	2021
ICP SCI authors	44	38	41	41	43	<b>41.4</b>	<b>48</b>
SCI productivity	1.82	1.68	1.46	2.05	2.16	<b>1.84</b>	<b>2.08</b>
Q1 productivity	0.89	0.92	0.83	1.02	1.09	<b>0.95</b>	<b>1.42</b>



## Leadership, collaborations, and internationalization

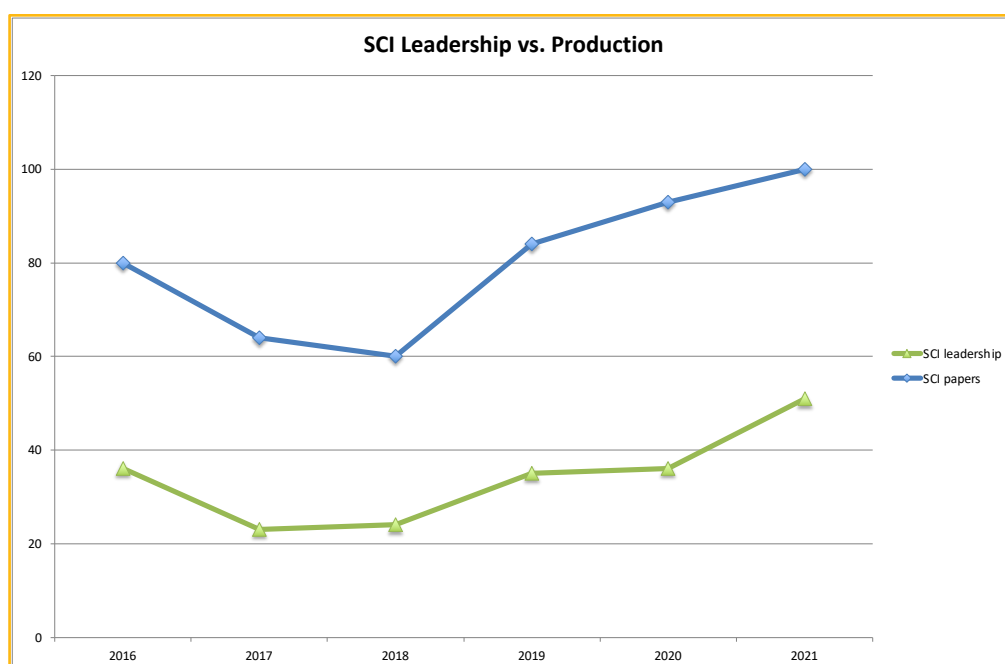
**Methods.** To measure leadership in publication, this report focuses on corresponding authors with ICP affiliation in SCI papers. The following metrics were computed:

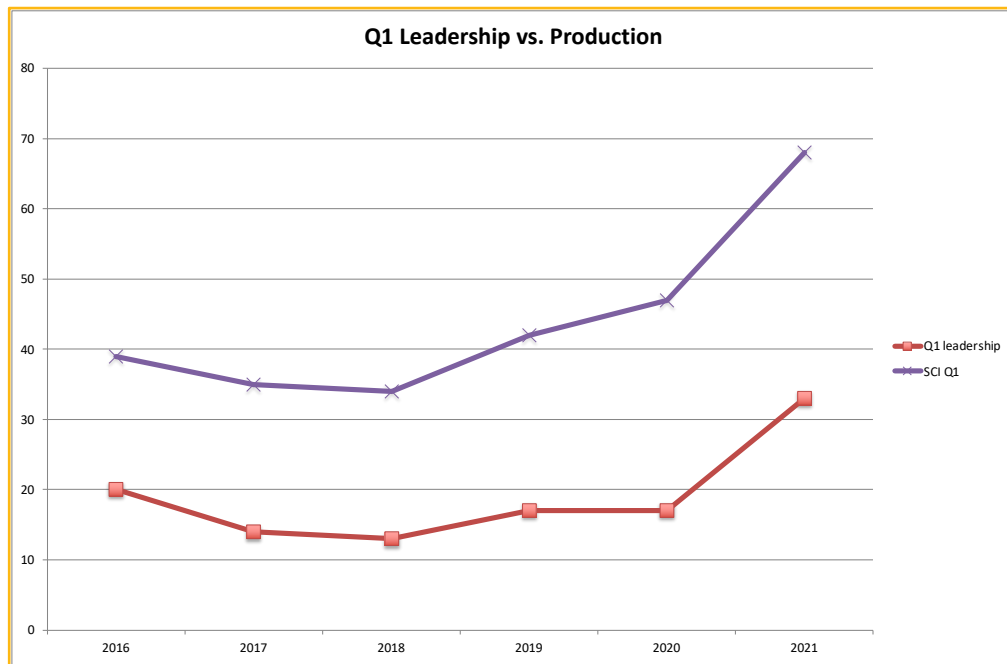
- SCI leadership = total number of SCI papers with ICP corresponding author.
- Q1 leadership = total number of Q1 papers with ICP corresponding author.
- SCI leadership ratio = SCI leadership / SCI x 100 (in %).
- Q1 leadership ratio = Q1 leadership / Q1 x 100 (in %).

In turn, to measure collaborations (with emphasis on international ones), SCI papers are divided into three categories based on the affiliations of the coauthors from other institutions (i.e., excluding other affiliations of ICP researchers or research associates with more than a single affiliation):

- ICP only: without other affiliations.
- Non-international collaborations: with other national affiliations.
- International collaborations: with foreign affiliations (irrespective of whether there are also other national affiliations or not).

**Leadership.** In terms of number of SCI and Q1 papers published with ICP leadership, the figures for 2021 are well above the average for the past five years (51 and 33 vs. 31 and 16, respectively), and indeed higher than ever in ICP history. In relative terms, the leadership ratios for both SCI and Q1 papers are also very satisfactory, being above the average of the five preceding years (51% and 49% vs. 40% and 41%, respectively), although still lower than those before 2016. This confirms the leadership recovery trend initiated in 2019 after a significant drop in 2017-2018.



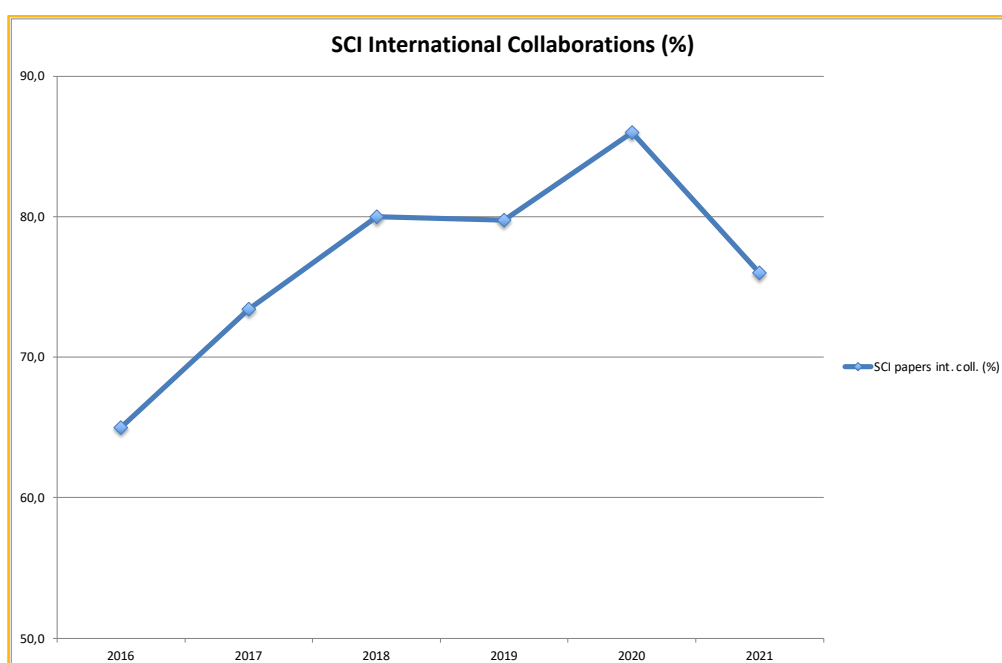
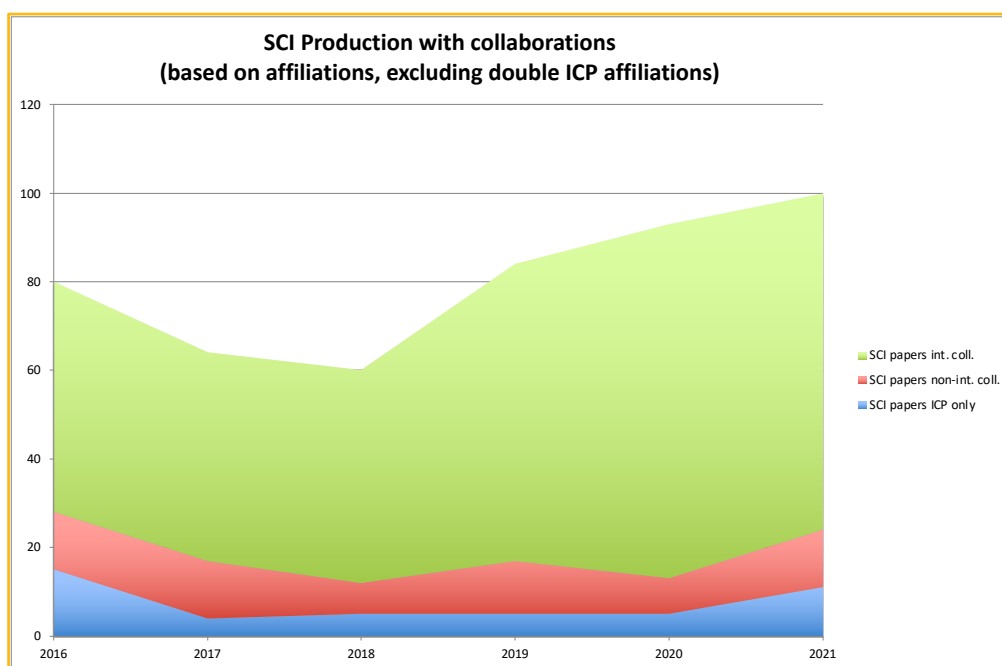


SCI LEADERSHIP (2016–2020 vs. 2021)							
LEADERSHIP	2016	2017	2018	2019	2020	AVERAGE	2021
SCI leadership	36	23	24	35	36	<b>30.8</b>	<b>51</b>
Q1 leadership	20	14	13	17	17	<b>16.2</b>	<b>33</b>
SCI leadership ratio (%)	45.0	35.9	40.0	41.7	38,7	<b>40.3</b>	<b>51,0</b>
Q1 leadership ratio (%)	51.3	40.0	38.2	40.5	36.2	<b>41.2</b>	<b>48.5</b>

**Collaborations.** During the last years there was a clear trend toward increasing international collaborations in SCI papers, which reached a peak in both absolute and relative terms in 2020.

In 2021, international collaborations somewhat decreased, with a percentage very similar to the average of the five preceding years.

SCI PRODUCTION WITH COLLABORATIONS (2016–2020 vs. 2021)							
PRODUCTION ACCORDING TO COLLABORATIONS	2016	2017	2018	2019	2020	AVERAGE	2021
SCI papers – ICP only	15	4	5	5	5	<b>6.8</b>	<b>11</b>
SCI papers – non-international collaboration	13	13	7	12	8	<b>10.6</b>	<b>13</b>
SCI papers – international collaboration	52	47	48	67	80	<b>58.8</b>	<b>76</b>
SCI papers – ICP only (%)	18.8	6.3	8.3	6.0	5.4	<b>8.9</b>	<b>11.0</b>
SCI papers – non-international collaboration (%)	16.3	20.3	11.7	14.3	8.6	<b>13.9</b>	<b>13.0</b>
SCI papers – international collaboration (%)	65.0	73.4	80.0	79.8	86.0	<b>77.2</b>	<b>76.0</b>





## PhD Dissertations

A single PhD dissertation of an ICP predoctoral researcher/PhD student was finished in 2021 at the ICP (this figure should not be mistaken with the number of completed theses supervised by ICP researchers, which further include four additional dissertations performed by PhD candidates from other institutions; see the relevant subsection on supervision later in this document). It is the following:

- **Alessandro Urciuoli:** “The evolution of semicircular canals in anthropoid primates: Phylogenetic implications for Miocene catarrhines” | Supervisors: S. Moyà-Solà (ICP), David M. Alba (ICP).

## Fieldwork

Paleontological fieldwork constitutes an essential component of the research performed by ICP researchers, given that fossils constitute the basic raw data for our research. Even if fieldwork results are not immediately reflected in ICP publications, this activity further results in the corresponding field reports and memoirs that are supplied to the Archeological and Paleontological Survey of the Culture Department of the Generalitat de Catalunya.

The following programmed paleontological interventions were performed in 2021 by the ICP, in most cases being partially funded by the new fieldwork grants from the Culture Department of the Generalitat de Catalunya for the quadrennium 2018–2021:

- **Berguedà (Castellar de n'Hug i Guardiola de Berguedà)** [Expedient ARQ003INVE-214-2021 (437 K121 N096 i N341 2021-1-32551)]: Prospection | Municipality: Castellar de n'Hug and Guardiola de Berguedà | Age: Permo-Triassic | Directors: E. Muià & C. de Jaime-Soguero.
- **Masquefa i els Hostalets de Pierola** [Expedient ARQ003INVE-242-2021 (437 K121 N419 i N352 2021-1-32717)]: Prospection | Municipality: Masquefa and els Hostalets de Pierola | Age: Miocene | Directors: J. Galindo & À.H. Luján.
- **Roc de Santa-1** [Expedient ARQ003INVE-240-2021 (437 K121 N946 2021-1-32711)]: Sampling | Municipality: Conca de Dalt | Age: Eocene | Directors: J. Marigó & R. Minwer-Barakat.
- **Santpedor-2** [Expedient ARQ003INVE-241-2021 (437 K121 N738 2021-1-32712)]: Sampling | Municipality: Santpedor | Age: Oligocene | Directors: J. Marigó & R. Minwer-Barakat.
- **Els Casots** [Expedient ARQ003INVE-244-2021 (437 K121 N790 2021-1-32762)]: Excavation | Municipality: Subirats | Age: Middle Miocene | Directors: I. Casanovas-Vilar, J. Abella & J. Madurell-Malapeira.
- **Riera Guinovarda** [Expedient ARQ003INVE-247-2021 (437 K538 2021-1-32791)]: Excavation | Municipality: Piera | Age: Miocene | Directors: J. Abella & S. Jovells-Vaqué.
- **Creu de Conill** [Expedient ARQ003INVE-248-2021 (437 K121 N810 2021-1-32797)]: Excavation | Municipality: Terrassa | Age: Late Miocene | Directors: M. Pina, J. Abella & À.H. Luján.

- **Can Pallars i Llobateres-M** [Expedient ARQ003INVE-249-2021 (437 K121 N748 2021-1-32799)]: Excavation | Municipality: Sant Quirze del Vallès | Age: Late Miocene | Directors: M. Pina, J. Abella & J. Arias-Martorell.
- **Garraf-Eramprunyà** [Expedient ARQ003INVE-261-2021 (437 K121 N095-N685-N318-N834 2021-1-32880)]: Prospection | Municipality: Begues, Sant Climent de Llobregat, Gavà, Torrelles de Llobregat | Age: Triassic | Directors: J. Fortuny, A. Bolet & R. Matamalles-Andreu.
- **Can Poncic** [Expedient ARQ003INVE-263-2021 (437 K121 N748 2021-1-32916)]: Prospection and sampling | Municipality: Sant Quirze del Vallès | Age: late Miocene | Directors: D.M. Alba, I. Casanovas-Vilar & J. Arias-Martorell.
- **Complex Incarcàl** [Expedient ARQ003INVE-265-2021 (437 K121 N251 2021-1-32927)]: Excavation | Municipality: Crespà | Age: Early Pleistocene | Directors: L. Sorbelli.
- **Berguedà (Castellar de n'Hug i Guardiola de Berguedà)** [Expedient ARQ003INVE-300-2021 (437 K121 N196 N341 2021-1-33069)]: Prospection | Municipality: Castellar de n'Hug and Guardiola de Berguedà | Age: Permo-Triassic | Directors: E. Mujal.
- **Barranc de Can Vila-1** [Expedient ARQ003INVE-284-2021 (437 K538 2021-1-33010)]: Excavation and sampling | Municipality: els Hostalets de Pierola | Age: Middle Miocene | Directors: D.M. Alba, J. Arias-Martorell & J. Galindo.
- **Coll de Creus-la Trava** [Expedient ARQ003INVE-313-2021 (437 K121 N874 2021-1-33115)]: Prospection and excavation | Municipality: la Vansa i Fórnsols | Age: Permo-Triassic | Directors: J. Fortuny, A. Bolet & E. Mujal.
- **Tremp, Isona i Conca Dellà, Abella de la Conca** [Expedient ARQ003INVE-317-2021 (437 K121 N001 N355 N845 2021-1-33158)]: Prospection | Municipality: Tremp, Isona i Conca Dellà and Abella de la Conca | Age: Late Cretaceous | Directors: R. Gaete.
- **Els Nerets** [Expedient ARQ003INVE-318-2021 (437 K121 N845 2021-1-33159)]: Excavation | Municipality: Tremp | Age: Late Cretaceous | Directors: À. Galobart & B. Vázquez.
- **Fontllonga-6** [Expedient ARQ003INVE-329-2021 (437 K121 N164 2021-1-33180)]: Excavation | Municipality: Camarasa | Age: Late Cretaceous | Directors: B. Vila.
- **El Pinetell-Alcover** [Expedient ARQ003INVE-344-2021 (437 K121 N025-N444-N607 2021-1-33222)]: Prospection | Municipality: Montblanc, Alcover, la Riba | Age: Triassic | Directors: J. Fortuny, A. Bolet & J. Cartanyà.
- **Pedrerres de Meià-Calcàries Litogràfiques del Montsec de Rúbies** [ARQ003INVE-383-2021 (437 K121 N914 2021-1-33400)]: Prospection, excavation, sampling, and documentation | Municipality: Vilanova de Meià | Age: Early Cretaceous | Directors: A. Gil & À. Galobart.
- **Ogassa** [Expedient ARQ003INVE-410-2021 (437 K121 N484, 172, 524 i 611 2021-1-35598)]: Prospection | Municipality: Ogassa, Camprodon, Pardines and Ribes de Freser | Age: Carboniferous and Permian | Directors: A. Bolet & J. Fortuny.
- **Port del Cantó-Estac** [Expedient ARQ003INVE-411-2021 (437 K121 N787, 788, 871 i 450 2021-1-35602)]: Prospection | Municipality: Soriguera, Sort, Valls d'Aguilar, Montferrer and

Castellbò | Age: Carboniferous and Permo-Triassic | Directors: A. Bolet, C. de Jaime-Soguero & J. Fortuny.

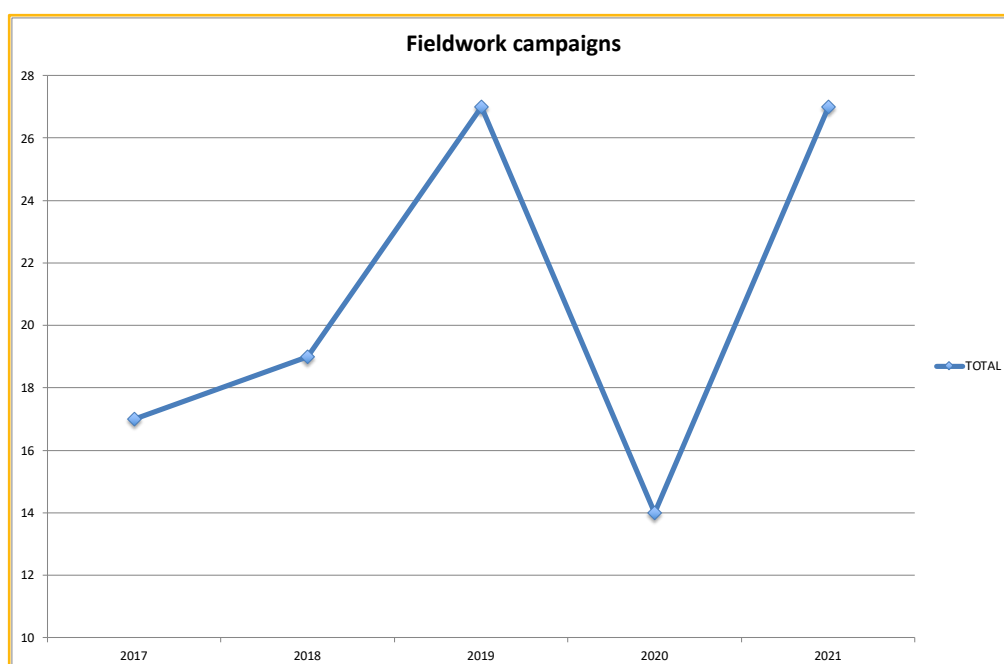
- **La Carrière** [76-2021-1026]: Excavation, sampling and documentation | Municipality: Corneilla-de-Conflent (França) | Age: Pleistocene | Director: J. Madurell-Malapeira.

Additionally, the following preventive paleontological interventions was also performed (see later in the report for additional preventive fieldwork campaigns performed in the framework of service provision):

- **Cal Torrades de Valldarques** [ARQ002PREV\_00001404 (R/N 470\_K0121-N-236-2021-1-32563)]: Excavation | Municipality: Coll de Nargó | Age: Late Cretaceous | Director: A. Gil-Delgado & Ó. Castillo-Visa.
- **Figuerola-3** [ARQ002PREV\_00002373 (494/K0121-N-164-2021-1-35701)]: Excavation | Municipality: Camarasa | Age: Late Cretaceous | Directors: À. Galobart & B. Vila.

The number of paleontological interventions performed by the ICP during the last years is summarized in a table and figure below.

ICP FIELDWORK (2017–2020 vs. 2021)						
PALEONTOLOGICAL INTERVENTIONS	2017	2018	2019	2020	AVERAGE	2021
Programmed – ICP	13	16	21	8	14.5	22
Preventive – ICP	0	0	1	2	0.8	1
Preventive – Service provision	4	3	5	4	4.0	4
TOTAL	17	19	27	14	19.3	27





## FUNDRAISING

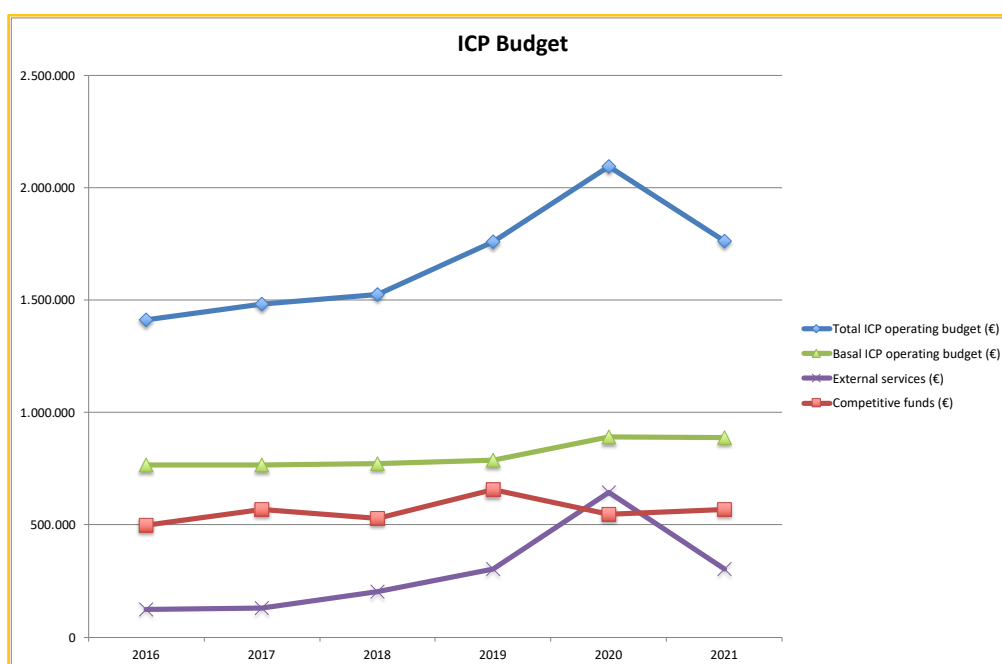
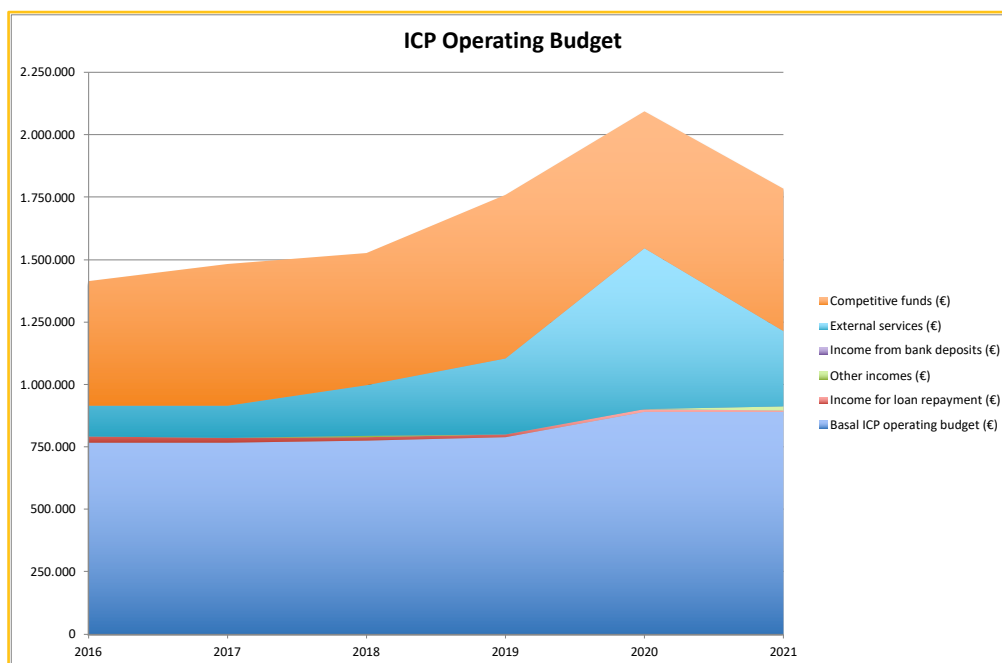
### Inspiration and innovation when seeking financial support

#### Competitive funds and provision of services

The ICP operating budget (i.e., excluding investments) includes the basal budget endowed by the Generalitat de Catalunya as well as the monetary income obtained by the ICP from other sources. The latter can be divided into several categories, such as competitive funds, revenues generated by the provision of external services, or income from bank deposits (although the latter is negligible). As in the last years, the two main sources of income for the ICP in 2021 (other than its basal budget) consisted of competitive funds and the provision of external services. Competitive funds refer to projects and grant applications that are evaluated on a competitive basis by external funding agencies, either public or private. A vast majority of competitive funds are associated with research activity, although sometimes they are associated to other activities performed at the ICP, such as research support or scientific dissemination and outreach. Revenues provided by the provision of external services to third parties (either public or private) are not competitive in this sense, although they imply competition with other institutions as well as private companies in the framework of market rules. These activities are mostly related to knowledge transfer, and therefore will be discussed in further detail later in this document. Taken together, competitive funds and external services ultimately reflect the fundraising capacity of the ICP, and are worth being reported here together before going into their particulars.

**Total operating budget.** Since the last significant decrease of the basal operating budget from 2012 to 2013, the total operating budget of the ICP had remained quite stationary until 2017-2018, when it started to increase slightly; in 2021 it was virtually the same as in 2020. The increase in the total operating budget has been much more marked during the last three years, with a peak in 2020 that was largely attributable to service provision.

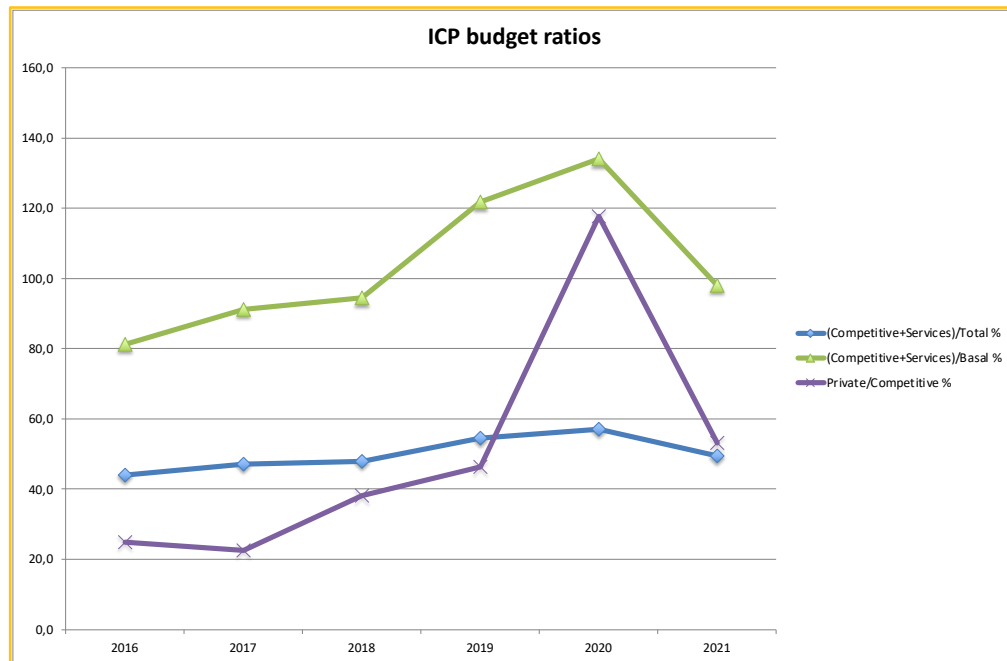
BUDGETARY INCOMES	OPERATING BUDGET (2016–2020 vs. 2021)						
	2016	2017	2018	2019	2020	AVERAGE	2021
Total operating budget (€)	1,412,922	1,482,826	1,526,060	1,759,511	<b>2,095,010</b>	<b>1,655,266</b>	<b>1,762,531</b>
Basal operating budget (€)	765,500	765,500	774,070	787,470	<b>890,206</b>	<b>796,549</b>	<b>889,332</b>
Income for loan repayment (€)	25,221	19,467	15,091	12,576	<b>10,309</b>	<b>16,532</b>	<b>5,176</b>
Other incomes (€)	0	0	4,676	111	<b>878</b>	<b>1,133</b>	<b>17,716</b>
Income from bank deposits (€)	0	0	0	0	<b>7</b>	<b>2</b>	<b>75</b>
Provision of external services (€)	123,872	128,416	202,317	303,574	<b>645,465</b>	<b>280,729</b>	<b>302,086</b>
Competitive funds (€)	498,329	569,443	529,905	655,780	<b>548,146</b>	<b>560,321</b>	<b>569,062</b>



**Budget ratios.** Competitive funds and external services can be considered together relative to the total and basal budgets by means of percentual ratios. In 2019, the former represented for the first time more than 50% of the total budget and more than the amount of the basal budget, and these figures improved further in 2020, but decreased slightly in 2021 due to the decrease in service provision relative to competitive funds (which is not surprising, given that the 2020 figure of service provision was extraordinary, the best ever in ICP history). All in all, the 2021 figures fall short of being satisfactory, but only by a small margin, with competitive+external funds representing almost half of the total operating budget (49%) or

almost as much as the basal budget (98%). The average for the five preceding years is slightly more satisfactory (50% and 105%, respectively).

BUDGET RATIOS (2016–2020 vs. 2021)							
RATIOS	2016	2017	2018	2019	2020	AVERAGE	2021
(Competitive+External services)/Total %	44.0	47.1	48.0	54.5	57.0	50.1	49.4
(Competitive+External services)/Basal %	81.3	91.2	94.6	121.8	134.1	104.6	98.0
Private/Competitive %	24.9	22.6	38.2	46.3	117.8	49.9	53.1



## Competitive funding sources

**Spanish Government.** Most of the competitive funds for research at the ICP come from the Spanish Agencia Estatal de Investigación—currently within the Ministerio de Ciencia e Innovación (MCIN)—by means of multiannual R+D projects. The following projects were active in 2021 (including a project funded with NextGenerationEU funds that started in December 2021):

- “How to build a giant? Life history and optimality theory are central to unravel the evolution towards ever larger insular endemics” (PID2020-117118GB-I00) | P.I.: M. Köhler, J. Fortuny | Duration: 2021–2025 (4 years).
- “Paleobiodiversity and paleoecology of Miocene vertebrate faunas during high resolution intervals in the Vallès-Penedès Basin” (PID2020-117289GB-I00) | P.I.: D.M. Alba, I. Casanovas-Vilar | Duration: 2021–2025 (4 years).
- “The Cenozoic primates from the Iberian Peninsula and their contribution to the reconstruction of the evolutionary history of the group” (PID2020-116908GB-I00) | P.I.: S. Moyà-Solà, J. Marigó | Duration: 2021–2025 (4 years).

- “Vertebrate evolution, biogeography, and paleoecology in an ancient insular ecosystem” (PID2020-119811GB-I00) | P.I.: B. Vila, A. Prieto-Márquez | Duration: 2021–2024 (3 years).
- “A natural open museum in the Pyrenees: virtual reality experience for dissemination and conservation of the geological and cultural heritage (VIGEOCULT)” (PLEC2021-007903) | P.I.: À. Galobart | Duration: 2021–2024 (3 years).

Research at the ICP is also funded by MCIN by means of cofunded contracts for postdoc (‘Ramón y Cajal’ and ‘Juan de la Cierva’) and predoc researchers and technicians. Two main types of predoctoral contracts are available, for the training of doctors (formerly Formación de Personal Investigador, FPI) and for the training of university personnel (Formación de Personal Universitario, FPU)—the latter further depending from the Ministerio de Universidades. Contracts for technicians are aimed at the training of technical support personnel (Personal Técnico de Apoyo, PTA). The following grants/contracts were active in 2021 (also listed is one granted in 2021, to start in 2022):

- Teresa Calderón (BES-2016-078938) | Modality: FPI predoc | Duration: 2017–2021 (4 years + 5 months of COVID extension).
- Rafel Matamales-Andreu (FPU17/01922) | Modality: FPU predoc | Duration: 2018–2022 (4 years, resigned in late 2021).
- Florian Bouchet (PRE2018-083299) | Modality: FPI predoc | Duration: 2019–2023 (4 years).
- Albert Prieto-Márquez (RYC-2015-17388) | Modality: RyC researcher | Duration: 2017–2022 (5 years + 5 months of COVID extension).
- Arnau Bolet (IJC2018-037685-I) | Modality: JdC Incorporación researcher | Duration: 2020–2023 (3 years).
- Andrea Villa (FJC2019-039443-I) | Modality: JdC Formación researcher | Duration: 2021–2023 (2 years).
- Saverio Bartolini Lucenti (FJC2020-045882-I) | Modality: JdC Formación researcher | Duration: 2022–2024 (2 years).

**Generalitat de Catalunya.** A large proportion of the competitive funding provided by the Generalitat de Catalunya in 2021 comes from various fieldwork grants from the Department of Culture, active from 2018 to 2021. They are the following:

- “Evolució dels ecosistemes durant la transició Paleozoic-Mesozoic a Catalunya” (CLT009/18/00066) | P.I.: J. Fortuny | Duration: 2018–2021.
- “Xarxes paleoecològiques dels jaciments amb dinosaures del Cretaci català” (CLT009/18/00067) | P.I.: À. Galobart | Duration: 2018–2021.
- “El jaciment paleontològic dels Casots, un ecosistema de fa 16 milions d’anys. Recerca, recuperació patrimonial i socialització” (CLT009/18/00068) | P.I.: I. Casanovas-Vilar | Duration: 2018–2021.



- “Els primats i altres vertebrats del Paleogen de Catalunya” (CLT009/18/00069) | P.I.: J. Marigó | Duration: 2018–2021.
- “La transició del Pleistocè inferior-mitjà a Catalunya” (CLT009/18/00070) | P.I.: J. Madurell-Malapeira | Duration: 2018–2021.
- “Els primats fòssils del Miocè de la conca del Vallès-Penedès” (CLT009/18/00071) | P.I.: S. Moyà-Solà | Duration: 2018–2021.

Also remarkable are the grants provided by the Catalan Government to the ICP, generally in relation to the management the ICP Museum and collections. The grant related to the pandemic was approved in late 2020 but not communicated until early 2021, and hence it is considered to apply in 2021:

- “Actualització del registre, inventari, documentació, catalogació i digitalització de la Col·lecció de l'Institut Català de Paleontologia Miquel Crusafont, any 2021” (CLT052/21/000026) | OSIC, Departament de Cultura, Generalitat de Catalunya | Duration: 2021.
- “Pèrdues per cancel·lació d'espectacles i activitats culturals amb motiu de la COVID-19” (CLT39C/20/000630) | Oficina de Suport a la Iniciativa Cultural, Departament de Cultura, Generalitat de Catalunya | Duration: 2021.

Research at the ICP is also funded by the Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) of the Department of Business and Knowledge (Generalitat de Catalunya) by means of a series of predoctoral and postdoctoral ('Beatriu de Pinós') grants:

- Leonardo Sorbelli (2019 FI\_B 00579) | Modality: FI predoc | Duration: 2019–2022 (3 years + 5 months of COVID extension).
- Chabier De Jaime-Soguero (2020 FI\_B 00472) | Modality: FI predoc | Duration: 2020–2023 (3 years).
- Oriol Monclús Gonzalo (2021 FI\_B 00524) | Modality: FI predoc | Duration: 2021–2024 (3 years).
- Judit Marigó (2017 BP 00003) | Modality: BP postdoc | Duration: 2019–2021 (2 years + 99 days of COVID extension).
- Diego Castanera (2017 BP 00195) | Modality: BP postdoc | Duration: 2019–2021 (2 years + 99 days of COVID extension).
- Juan Abella (2017 BP 00223) | Modality: BP postdoc | Duration: 2019–2021 (2 years + 99 days of COVID extension).
- Júlia Arias-Martorell (2018 BP 00058) | Modality: BP postdoc | Duration: 2020–2023 (3 years + 5 months of COVID extension).
- Àngel H. Luján (2019 BP 00154) | Modality: BP postdoc | Duration: 2021–2023 (3 years).

It is also noteworthy that three research groups of the ICP are currently recognized as Consolidated Research Group by AGAUR (although only one has associated funding). The validity of these research groups was extended from the end of 2020 to September 30, 2021:

- “Paleoprimatologia i paleontologia humana (PIPH)” (2017 SGR 00086 GRC) | P.I.: S. Moyà-Solà | Duration: 2017–2021. With funding.
- “Neogene and Quaternary Vertebrate Paleobiodiversity (NQVP)” (2017 SGR 00116 GRC) | P.I.: D.M. Alba | Duration: 2017–2021.
- “Paleoecology and Evolutionary Biology (PEB)” (2017 SGR 00960 GRC) | P.I.: M. Köhler | Duration: 2017–2021.

Finally, the ICP also has a research project funded by the Departament de la Presidència of the Generalitat de Catalunya:

- “Un milió d'anys de canvis climàtics als Pirineus” (PRE124/21/000011) | P.I.: J. Madurell-Malapeira | Duration: 2021–2022.

**Other public funds.** In 2021 the ICP also received a small nominative grant from the city council of Subirats in relation to the management and excavation of the els Casots fossil site:

- “Subvenció nominativa Institut Català de Paleontologia 2021” (exp.núm.2021\_885) | P.I.: I. Casanovas-Vilar | Duration: 2021.

The ICP also received a small grant from the Consell Insular de Menorca for actions to improve the knowledge, safeguard and dissemination of the historical heritage of Menorca:

- “Menorca abans dels dinosaures: estudi dels vertebrats fòssils del Permià del jaciment de la cala del Pilar (Menorca, Illes Balears, Mediterrània Occidental)” (EXP. 2112-2020-000001) | P.I.: J. Fortuny | Duration: 2020-2021.

Furthermore, during 2021 the ICP received several grants from the Consell Insular de Mallorca:

- “Restauració d'un esquelet complet d'un rèptil captorínid del Permià inferior (270 milions d'anys) del jaciment del torrent de na Nadala (Mallorca) recuperat l'any 2019” | P.I.: J. Fortuny | Duration: 2021.
- “Mallorca abans dels dinosaures: estudi dels ecosistemes continentals del Permià i Triàsic, amb especial èmfasi en les restes de vertebrats” (Sub 15\_20-R25384) | P.I.: J. Fortuny | Duration: 2020-2022.

**European funds.** A research funded by the French Direction Régionale des Affaires Culturelles from Montpellier was active from previous years:

- “Projet de fouille programmée dans le Grotte de la Carrière (Gorges de Villefranche, Pyrénées-Orientales, Occitanie)” (660570016) | P.I.: J. Madurell-Malapeira | Duration: 2018-2021.

Additionally, the following project grand was awarded to an ICP researcher in 2021 in the framework of program “Newton International Fellowships Alumni 2021” (UK):

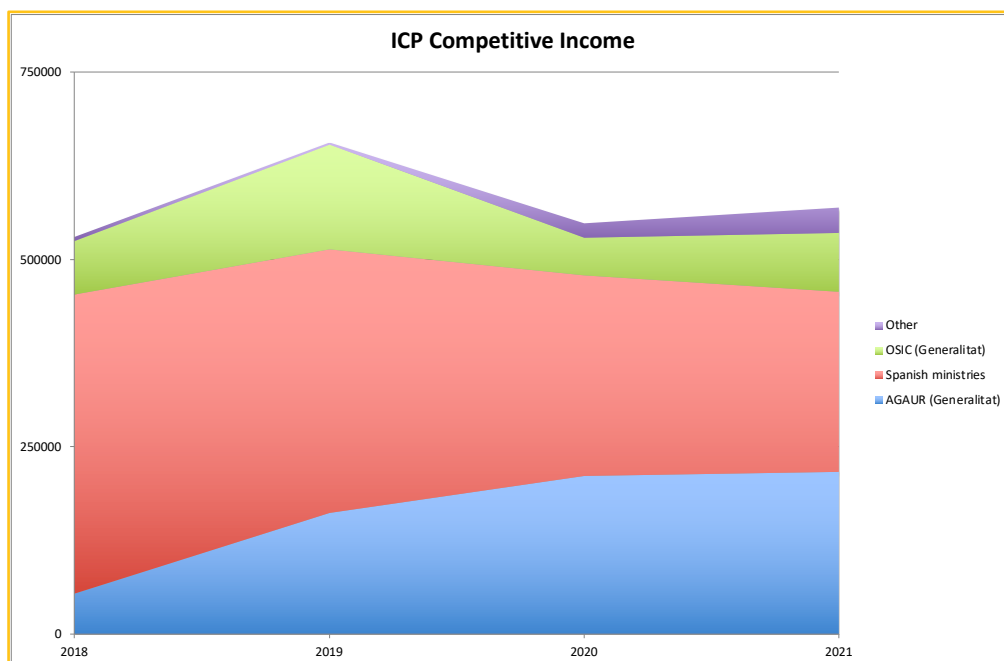
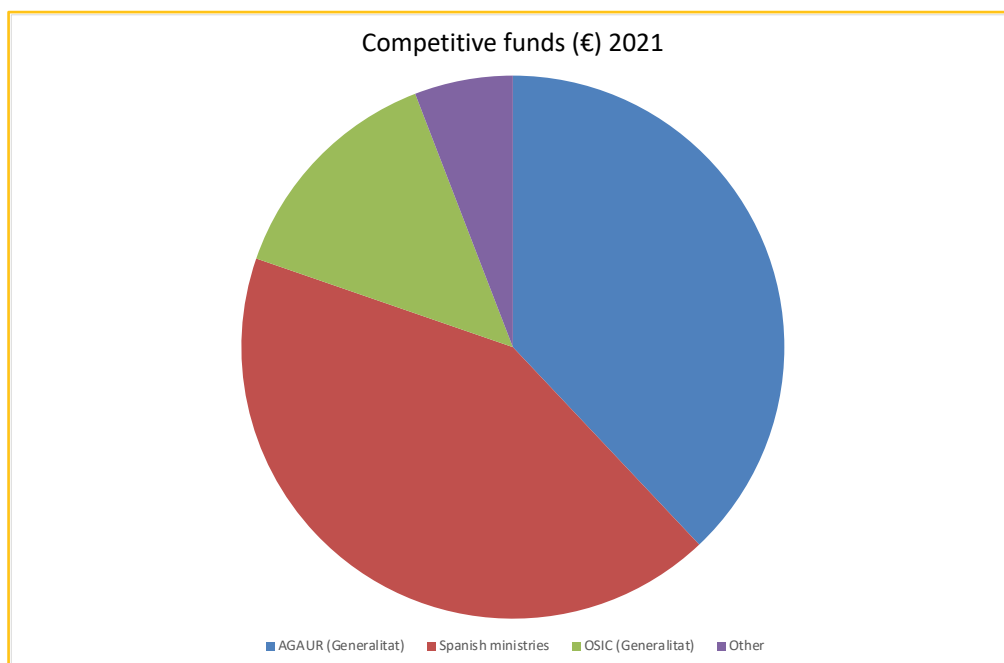
- “A comparison of new microvertebrate assemblages around the Jurassic-Cretaceous boundary in Spain and contemporaneous faunas from the UK” (AL\211017) | P.I.: A. Bolet | Duration: 2021-2022 (1.5 years).

Furthermore, although in 2021 the ICP received no European/transnational funds, it is noteworthy that an Innovative Training Network in which the ICP participates as partner organization was awarded started in 2020 (see <https://cordis.europa.eu/project/id/861389>):

- “Palaeoproteomics to Unleash Studies on Human History (PUSHH)” (H2020-MSCA-ITN-2019; grant agreement ID: 861389) | P.I.: Enrico Cappellini (Kobenhavns Universiteit) | Duration: 2020–2024.

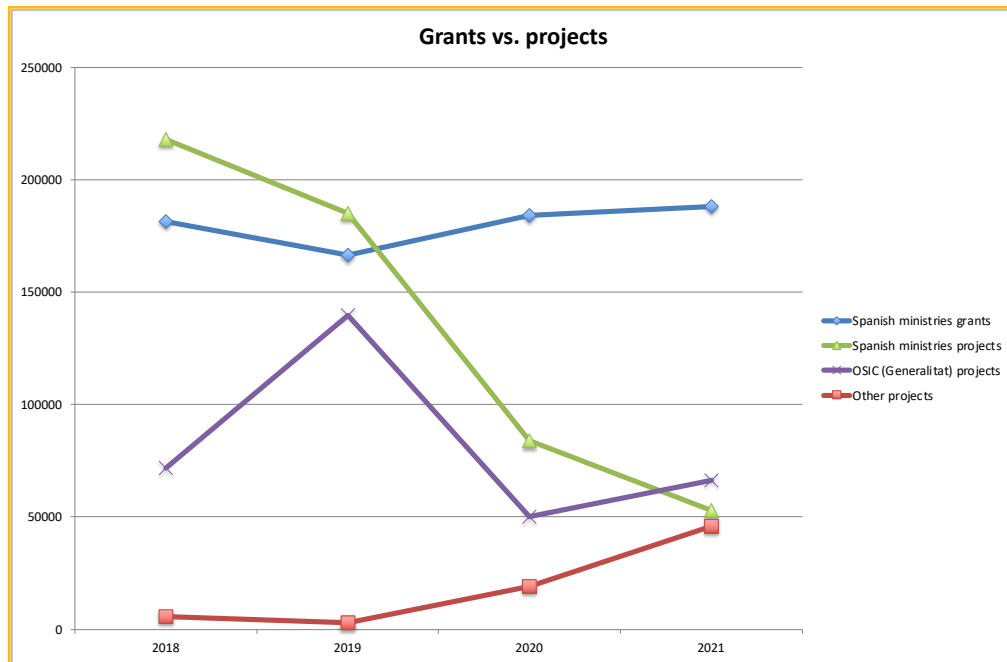
**Comparisons.** When all types of grants (research projects and contracts) are considered together, it can be seen that funding from the Spanish government in 2021 (241 k€) slightly decreased as compared with the two previous years, and represented about 42% of the ICP competitive funds. This is mostly attributable that some MICINN projects terminated in 2019, while others where in their last year in 2020, and that the four new projects granted in 2021 did not start until September. Therefore, it is expected that such an income will increase during the next two or three years (depending on the duration of each project). In contrast, the funds from the Generalitat de Catalunya in 2021 (295 k€ when AGAUR and OSIC are considered together) increased slightly relative to 2020, particularly thanks to an increase in income from the Culture Department (OSIC), despite the fact that since 2020 the funds for the Dinosaurs of the Pyrenees project and other outreach actions of the ICP (related to the design of a new exhibit for the ICP Museum) are now integrated in the basal funds.

COMPETITIVE FUNDS (2018-2021)					
FUNDING AGENCIES	2018 (€)	2019 (€)	2020 (€)	AVERAGE	2021 (€)
AGAUR (Generalitat)	53,292	161,442	210,600	<b>141,778</b>	<b>216,010</b>
Spanish ministries	399,307	351,642	268,061	<b>339,670</b>	<b>240,900</b>
OSIC (Generalitat)	71,720	139,697	50,285	<b>87,234</b>	<b>78,811</b>
Other	5586	3,000	19,200	<b>9,262</b>	<b>33,341</b>
<b>TOTAL</b>	<b>529,905</b>	<b>655,780</b>	<b>548,146</b>	<b>577,944</b>	<b>569,062</b>
AGAUR (Generalitat) %	10.1	24.6	38.4	<b>24.5</b>	<b>38.0</b>
Spanish ministries %	75.4	53.6	48.9	<b>58.8</b>	<b>42.3</b>
OSIC (Generalitat) %	13.5	21.3	9.2	<b>15.1</b>	<b>13.8</b>
Other %	1.1	0.5	3.5	<b>1.6</b>	<b>5.9</b>



GRANTS AND PROJECTS (2018-2021)					
FUNDING AGENCIES	2018 (€)	2019 (€)	2020 (€)	AVERAGE	2021 (€)
AGAUR (Generalitat) grants	53,292	161,442	210,600	<b>141,778</b>	<b>216,010</b>
Spanish ministries grants	181,388	166,584	184,178	<b>177,383</b>	<b>188,105</b>
Spanish ministries projects	217,919	185,058	83,883	<b>162,287</b>	<b>52,795</b>
OSIC (Generalitat) projects	71,720	139,697	50,285	<b>87,234</b>	<b>66,240</b>
Other projects	5,586	3,000	19,200	<b>9,262</b>	<b>45,912</b>
SUBTOTAL grants	234,680	328,025	394,778	<b>319,161</b>	<b>404,115</b>
SUBTOTAL projects	295,225	327,755	153,367	<b>258,783</b>	<b>164,947</b>
% grants	44.3%	50.0%	72.0%	<b>55.2</b>	<b>71.0%</b>
% projects	55.7%	50.0%	28.0%	<b>44.8</b>	<b>29.0%</b>
TOTAL	529,905	655,780	548,146	<b>577,944</b>	<b>569,062</b>

Most of the competitive income from AGAUR corresponded to research grants (Beatriu de Pinós postdoc and FI predoctoral contracts), except for a small proportion corresponding to support to consolidated research groups, while that from OSIC corresponded exclusively to projects. In contrast, the competitive income from the Spanish government was more devoted to both, i.e., FPI and FPU predoctoral grants, Juan de la Cierva and Ramón y Cajal contracts, together with MICIN projects.

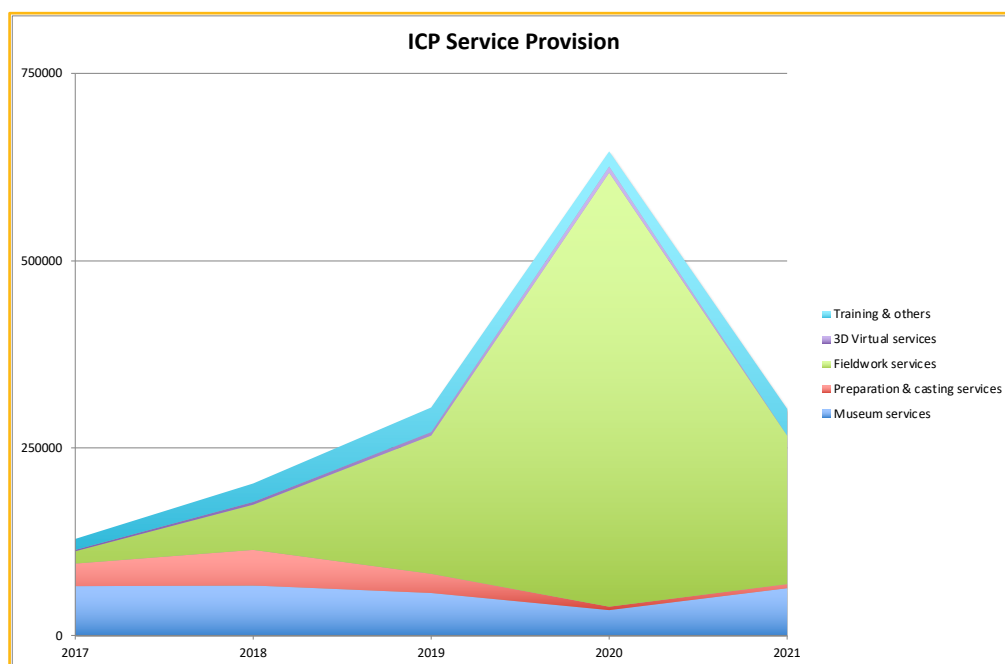
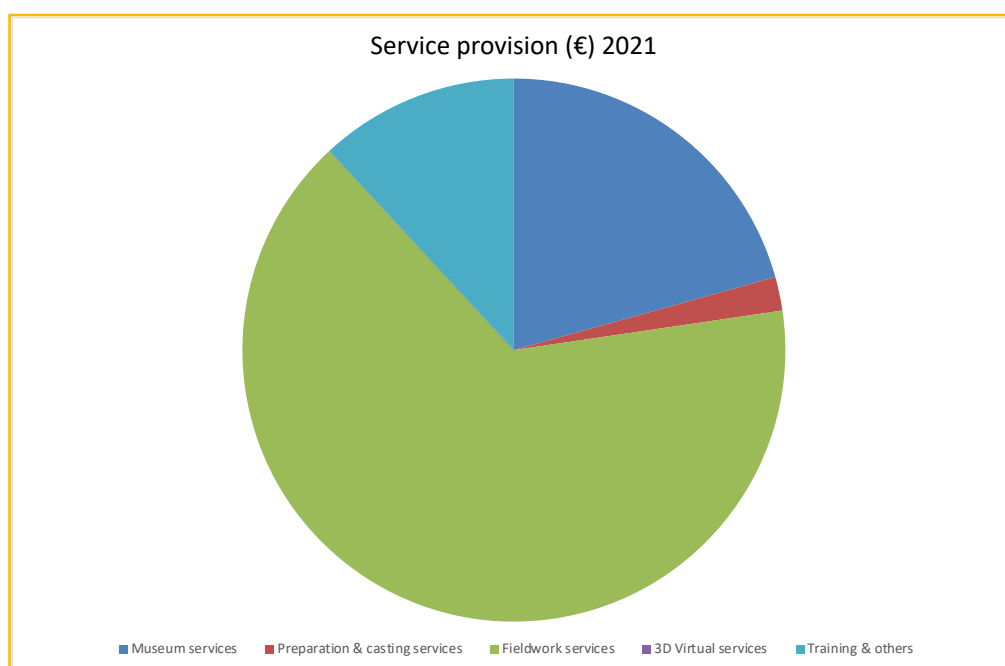


## Service provision

SERVICES	SERVICE PROVISION (2017-2021)				AVERAGE	2021 (€)
	2017 (€)	2018 (€)	2019 (€)	2020 (€)		
Museum services	65,665	66,209	56,614	33,163	<b>55,413</b>	<b>62,427</b>
Preparation & casting services	30,067	47,794	25,529	5,002	<b>27,098</b>	<b>6,061</b>
Fieldwork services	16,586	59,808	184,726	579,462	<b>210,145</b>	<b>197,681</b>
3D virtual services	1,240	4,000	4,037	7,837	<b>4,278</b>	<b>0</b>
Training and others	14,858	24,506	32,669	20,000	<b>23,008</b>	<b>35,917</b>
<b>TOTAL</b>	<b>128,416</b>	<b>202,317</b>	<b>303,574</b>	<b>645,464</b>	<b>319,943</b>	<b>302,086</b>
Museum services %	51.1	32.7	18.6	5.1	<b>17.3</b>	<b>20.7</b>
Preparation & casting services %	23.4	23.6	8.4	0.8	<b>8.5</b>	<b>2.0</b>
Fieldwork services %	12.9	29.6	60.9	89.8	<b>65.7</b>	<b>65.4</b>
3D virtual services %	1.0	2.0	1.3	1.2	<b>1.3</b>	<b>0.0</b>
Training and others %	11.6	12.1	10.8	3.1	<b>7.2</b>	<b>11.9</b>

Almost two-thirds of service provision in 2021 corresponded to fieldwork services, which experienced a marked decrease after the peak in 2020, reaching levels comparable to 2019. Among the rest, only museum services and, to a lesser extent, training services, are noteworthy,

representing 21% and 12%, respectively. In the case of museum services, which include activities related to both the ICP Museum in Sabadell (tickets, museum shop, guided visits/workshops, etc.) as well as the management of the Conca Dellà Museum in Isona and Diosfera in Coll de Nargó, the decrease in 2020 was mostly attributable to the lockdown and subsequent restrictions associated with the pandemic. However, the levels of income from museum services in 2021 completely recovered pre-pandemic levels.



## Donors and sponsors

**Patronage.** The ICP benefits from the patronage provided by the trustees, either in monetary form (the funds for the basal operating budget provided by the Generalitat de Catalunya) or the form of in-kind incomes received by public institutions (including the two patrons, the Generalitat de Catalunya and Universitat Autònoma de Barcelona, as well as other institutions and individuals; see below).

However, the ICP currently benefits from no philanthropical or relevant sponsorship monetary donations to perform its mission. Given the limited success of patronage and sponsorship initiatives of the ICP in previous years, the Strategic Plan emphasized the need to boost service provision as the most promising way increase the total operating budget of the ICP. Therefore, renewed efforts were devoted to fundraising from donors and sponsors in 2020, following the recruitment of a new project manager. The required actions have yet to be implemented, but would consist in seeking sponsors in relation to the following three aspects: (1) to support part of the fieldwork activities performed by ICP researchers; (2) to defray part of the costs of ICP temporary exhibits that could subsequently itinerate; and (3) to renew the permanent exhibit of the ICP Museum. In 2021, thanks to funding from the Culture Department of the Generalitat de Catalunya, it was possible to start the elaboration of a museological plan to remodel the ICP exhibits in the following years. In parallel, conversations took place with several companies that would potentially be interested in sponsoring the new exhibits. Once the museological plan is finished in 2022, it will be necessary to elaborate a museographical plan and, at the same time, contact with companies will be promoted further to secure the necessary funds to accomplish the remodeling.

**In-kind income.** The in-kind income received by the ICP during 2021 includes the following:

- Two ICREA research professors are seconded to the ICP: Prof. Salvador Moyà-Solà, Leader of the Paleoprimatology & Paleoanthropology Research Group; and Prof. Meike Köhler, Head of the Evolutionary Paleobiology Ara and Leader of the Life History Evolution Research Group.
- Four civil servants of the Generalitat de Catalunya are ascribed to the ICP: Dr. Àngel Galobart, Head of the Mesozoic Research Area and Leader of the Dinosaurs Ecosystems Research Group; Teresa Esquirol, Head of the Museum Area; Teresa Requena, archivist and documentalist; and Manel Llenas, maintenance and field technician.
- The Universitat Autònoma de Barcelona grants to the ICP personnel access to the UAB network and, hence, to the vast collection of digital documents subscribed by the university, including not only subscription journals and books, but also bibliometric databases such as the Web of Science/Journal Citation Reports and Scopus. The ICP researchers also have access to the Scientificotechnical Services of the UAB at reduced fees.

- The Universitat Autònoma de Barcelona, by means of its Library Services, allows the ICP to use its digital repository ('Dipòsit Digital de Documents de la UAB', DDD) to host its open access research outputs in a distinctive collection (<https://ddd.uab.cat/collection/icp>) that highlights the singularity of the ICP.
- The Universitat Autònoma de Barcelona defrays part of the direct costs generated by the ICTA-ICP building (maintenance, cleaning, surveillance, concierge service, electricity, water, conditioning, etc.) that are attributable to the ICP (30.44%), by virtue of a five-year agreement that regulates the use of premises and which was signed in December 2016 with retroactive effects back to June 2014. In particular, the ICP assumes up to 80,000 €/yr, and the UAB pays the rest, for a period of five years that can be extended by mutual agreement of the parties. At the end of 2021, an agreement was reached by the UAB to extend this agreement five additional years until the end of 2026, with the same conditions.
- The Generalitat de Catalunya lends to the ICP the use of the building in Sabadell where the ICP Museum and several premises for researchers and technicians are located, as well as of the Can Llobateres parcel (where the homonymous site and screen-washing facilities are located). This real estate was formerly owned by the Diputació de Barcelona and was transferred to the Generalitat de Catalunya in 2008, to be operated by the ICP indefinitely.
- The Ajuntament de Sabadell lends to the ICP the use of municipal premises to be used as a storehouse for unprepared fossil material.
- Multiple individual volunteers help the ICP personnel with several administrative, communication and technical tasks.



## RESEARCH SUPPORT AND KNOWLEDGE TRANSFER

*Multiple areas with vocation of service*

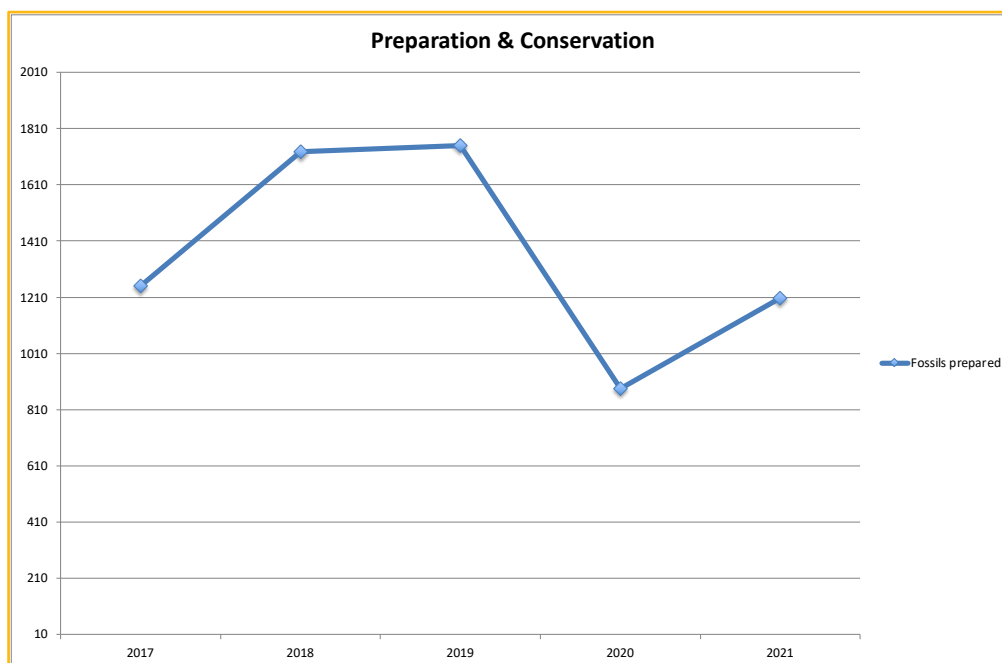
### Research support

The paleontological services provided by various areas of the Research Support & External Services Department are fundamental for accomplishment of the research aims of the research groups of the ICP. Furthermore, as evidenced in the previous section, the Preparation & Conservation Area and the Fieldwork & Collections Management Area are very important from the viewpoint of knowledge transfer as well, by means of the provision of external services. Knowledge transfer activities, however, are not restricted to external services that result in monetary revenues, since they further include a series of other activities that are mostly related to training as well as outreach activities performed at the ICP Museum and beyond. Below, the activities restricted to research support and reported first, and subsequently we focus on knowledge transfer activities divided into two main categories: training and paleontological services.

**Preparation and conservation.** During 2021, in the framework of the support provided to ICP researchers and service provision to companies and other entities, the preparator technicians of the Preparation & Conservation Area prepared 1,207 fossil remains (compared with an average of 1,403 during 2017-2020). The prepared fossils mostly (but not exclusively) come from the following sites:

- Els Casots.
- La Carrière.
- Torrent de Na Nadala (Mallorca).
- Móra d'Ebre.
- Vallparadís Estació.
- Abocador de Can Mata.
- Incarcal.
- La Mora (Tagamanent).
- Coll de Creus (Alt Urgell).
- Illeta de Can Gambús.
- Can Feu.
- Riera de la Guinovarda.

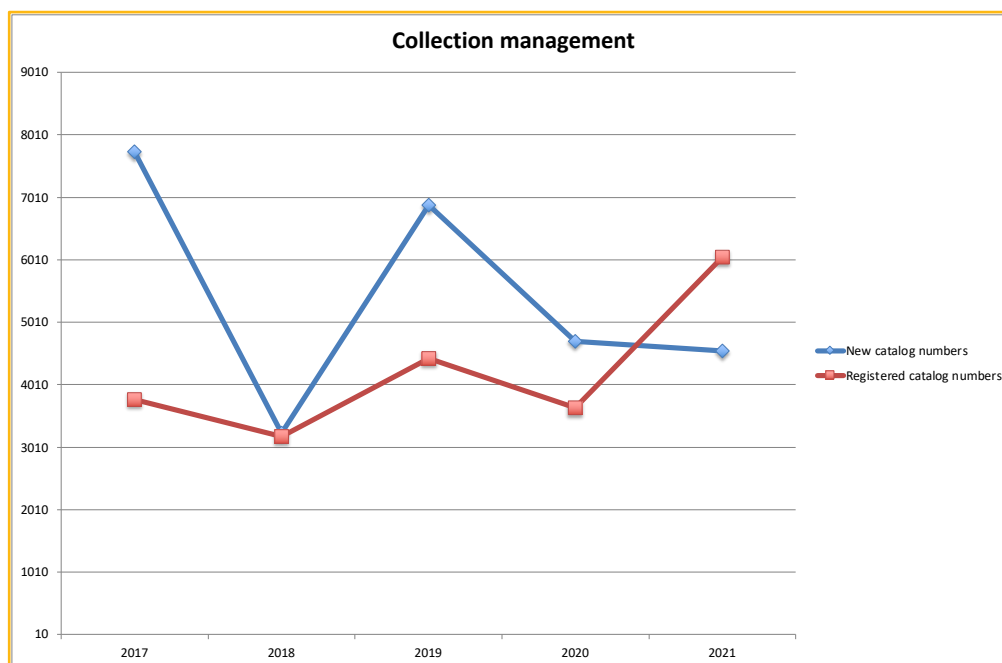
RESEARCH SUPPORT (2017-2021)						
PREPARATION & CONSERVATION	2017 (€)	2018 (€)	2019 (€)	2020 (€)	AVERAGE	2021 (€)
Prepared fossil remains	1,250	1,727	1,749	885	<b>1,403</b>	<b>1,207</b>



Other research support actions performed by our preparators include molding (24 molds in 2021), casting (54 casts in 2021), rigid packaging and special packaging for transport/shipping (128 packages in 2021), repair of didactic casts, preventive conservation of fossil remains, elaboration of conservation reports, and museological activities.

**Collection management.** During 2021, 4,550 new catalog numbers have been registered into the inventory of the ICP collections (a figure only slightly lower than the average of 5,642 for the four preceding years). In turn, 6050 records have been registered in the collection management software MuseumPlus during 2021 (compared with an average of 3,757 for the four preceding years), and 11,726 records have been modified during the same period (compared with an average of 1,175 for the three preceding years). In total, 70,934 records of the ICP were digitized in Museumplus at the end of 2021, out of a total of 126,403 records (IPS catalog numbers); this means that only 56% of the cataloged collection was digitized at the end of the year. Finally, a total of 76 petitions to study materials from the ICP collections have been attended to by the Fieldwork & Collections Management Area of the ICP (compared with an average of 62 for the four preceding years), of which 52 internal and 13 external. Finally, 11 loans of original material and/or casts have been done for exhibits or activities organized by other institutions.

COLLECTION MANAGEMENT	RESEARCH SUPPORT (2017-2021)					
	2017 (€)	2018 (€)	2019 (€)	2020 (€)	AVERAGE	2021 (€)
New catalog numbers	7,739	3,240	6,880	4,708	5,642	4,550
Registered catalog numbers	3,776	3,181	4,429	3,641	3,757	6,050
Petitions to study material	83	64	74	28	62	76



**Fieldwork.** The programmed paleontological excavations directed by ICP researchers in the framework of research projects have been already reported in a previous section and need not be repeated here. However, it is noteworthy that several of these interventions have been performed with the aid of the human resources of the Fieldwork and Collections Management Area.

**Virtual paleontology.** In 2021, ICP researchers from all the research areas of the ICP benefited from the assistance of a specialized technician from the 3D Virtual Lab of the Computational Paleobiology Research Group concerning digital imaging and processing of 3D virtual reconstructions based on CT, laser and photogrammetry data. Most of the time devoted by the 3D Virtual Lab to research support was related to the CT segmentation of craniodental remains of both extant and fossil vertebrates (amphibians, reptiles and mammals), although part of the time was also devoted to photogrammetry and laser scanning (e.g., for 3D modeling of fossil primate craniodental remains and large mammals or fossil tetrapod ichnites), and also to performing CT scans, repositioning 3D models for reconstructing fossil specimens, and preparing material for publications (e.g., videos of 3D reconstructions). Several scans were performed at the  $\mu$ CT scanner from Burgos (Spain), mostly consisting of craniodental remains of Miocene age, but overall ranging from the Permian to the Pleistocene. Last but not least, important efforts were devoted to data curation, including the organization of the database of the institution but also to the reorganization of the datasets stewarded by the ICP.

### Paleontological services

The paleontological services provided by the ICP are based on the know-how of both its technicians and researchers (including their knowledge, expertise and skills), which are offered

to external parties in exchange of monetary revenues that contribute to the total operating budget of the ICP. These 'customers' include individual persons or groups of people, public entities, and private companies alike. Even though these paleontological services appear quite varied, in general they resemble the internal research support services that are regularly provided to the ICP research groups by the various areas of the Research Support & External Services Department. In a broad sense, the museum exhibits and outreach activities organized by the ICP may also be considered paleontological services, as they also originate revenues for the institution.

**Museum services.** The ICP Museum in Sabadell is an indispensable requirement for the research performed at the ICP, which needs a museum officially recognized as such by the Generalitat de Catalunya to be the depositary of its fossil collections. Having a museum is also a very powerful tool from the viewpoint of scientific dissemination and outreach, to transmit paleontological knowledge to the general public. Although these activities are performed in compliance with one of the missions of the ICP (promoting the dissemination of the paleontological heritage from Catalonia), it is also noteworthy that these activities (including guided visits, workshops, and products sold at the museum shop) generate some revenues, which at least in part serve to alleviate the costs of the required personnel to maintain the museum open to the public. Unfortunately, these activities were repeatedly disrupted throughout 2020 due to the restrictions associated with the COVID-19 pandemic, and still below prepandemic figures in 2021.

Similarly, the ICP further manages the Conca Dellà Museum in Isona and the associated museographic space Dinosfera from Coll de Nargó, in the framework of the 'Dinosaurs from the Pyrenees' project and thanks to the funds provided by the Culture Department of the Generalitat de Catalunya. The leading role is performed by the Head of the Mesozoic Area of the ICP (Dr. Àngel Galobart), who by virtue of an agreement with the Conca Dellà city council in 2015 became the Director of the Conca Dellà Museum. The income received in exchange of these services is beneficial for the research performed by the above-mentioned research group and further enables hiring the required personnel.

The various outreach activities performed by the ICP at the Museum in Sabadell, at Isona i Conca Dellà and Coll de Nargó, and in other places will be detailed later in this document.

**Preparation and casting services.** These services are provided by the Preparation & Conservation Area of the ICP, where a team of well-trained and experienced preparation technicians with the required academic background regularly also perform these tasks for ICP researchers. Casting services are generally provided per request, either for individual amateurs or researchers, or for museums and research institutions; several qualities (and corresponding different prices) are available depending on the aim. Preparation services, in turn, are provided to both research institutions, local administrations and private companies, most often relating to fossils recovered from emergency excavations. Both casting and preparation activities are

performed at the well-equipped preparation labs of the Preparation & Conservation Area of the ICP at the ICTA-ICP building within the UAB campus and at the ICP Museum in Sabadell. These services are invoiced on the basis of closed quotes, and the revenues generated contribute to defray the personnel costs of the Conservation & Preparation Area of the ICP, which regularly assist ICP researchers in these tasks. Furthermore, the fossils prepared often remain at the ICP collections, thereby providing new research opportunities for the researchers of the center.

Almost all of the fossils prepared by the Preparation & Conservation Area of the ICP in 2021 were prepared in the framework of research support, so that service provision was focused on the cast of the Upper Cretaceous sauropod skin of Vallcebre and the restoration of 2 taxidermies of *Bos taurus*.

**Paleontological fieldwork services.** Fieldwork services provided by the ICP include all of the aspects related to the planning and execution of paleontological interventions, although most frequently they are restricted to rescue (emergency) paleontological interventions that must be defrayed by private companies or the local administration in the framework of construction works in fossiliferous areas, in order to comply with the requirements of current laws about the protection of paleontological heritage. These services include different types of interventions, such as paleontological prospections, samplings, surveillance and excavations, and even conditioning, consolidation and restoration. Some of these services (direction of the intervention, work by technicians, elaboration of the fieldwork memoir, etc.) are invoiced on the basis of hourly rates, whereas other activities (such as screen-washing sediment samples for microvertebrate remains) have associated prices per unit.

The following rescue paleontological interventions were performed in 2021 under the direction of the ICP in the framework of the specialized remunerated services provided by the ICP to both private companies and administrations:

- **Dipòsit Controlat de Can Mata** [Expedient Arq002-1121-2021 (R/N 747 K121 N-160 2021/1-32370)]: Prospection, surveillance, excavation, sampling, and documentation | Municipality: els Hostalets de Pierola | Age: Middle to Late Miocene | Directors: J.M. Robles, I. Llopart & V. Vinuesa | Company: Cespa Gestión de Residuos S.A.U. (Ferrovial).
- **Centre de Classificació i Triatge, i Dipòsit Controlat de Residus No Perillosos** [Expedient ARQ002PREV\_00001310 (R/N 494/K121-N773-2021-1-32465)]: Prospection | Municipality: Serós | Age: Oligocene | Directors: Á. García Pérez | Company: Dipòsits Controlats de Catalunya, S.L.
- **Zona Bretxa de Can Mata – Dipòsit Controlat de Residus Sòlids de Can Mata** [Expedient Arq002-1467-2021 (R/N 747 K121 N-160 2021/2-32633)]: Prospection, surveillance, excavation, sampling, and documentation | Municipality: els Hostalets de Pierola | Age: Middle to Late Miocene | Directors: Á. García Pérez & M. Grau | Company: Cespa Gestión de Residuos S.A.U. (Ferrovial).

- **Llensa 031, polígon 9 parcel·la 125** [Expedient ARQ002 PREV\_00002067 (518 K121 N246-2021/1-33376)]: Prospection, excavation, and sampling | Municipality: Corçà | Age: Middle to Late Miocene | Directors: E. Meseguer | Company: S.A. LLENSA.

**Virtual paleontology services.** Computed three-dimensional techniques have become a generalized tool for the study of fossil remains, being also used in the industry. The 3D Virtual Lab of the Computational Paleobiology Research Group of the ICP has the required 3D digitalization tools and facilities to provide 3D imaging and other virtual services, including an industrial computed tomography (CT) scan specifically devised for paleontological research, several laser surface-scanners for obtaining surface 3D models of the fossil specimens, and photogrammetry equipment. Coupled with competent ICP staff in all the required techniques and software, the above-mentioned equipment is positive for the provision of external services to other research institutions as well as the industry (e.g., as related to mechanical pieces). The CT scan is particularly promising in the latter regard, because it is a singular infrastructure that is useful for academic research and industrial applications alike. Unfortunately, the CT scan of the ICP is currently damaged and requires a considerable amount to be fixed, which in 2021 and preceding years significantly hindered the great potential of this area for the provision of external services. The pandemic also impacted negatively on the provision of digital services.

**Paleontological and geological consultation services.** The technicians from the Fieldwork Management Area of the ICP, in collaboration with ICP researchers, also offer services related to the knowledge on fossil sites and/or paleontological heritage, particularly from Catalonia, as well as to the geology of particular areas. These services generally imply writing some kind of report to convey the required information. Potential clients range from local administrations, to both public entities and private companies, being generally related to the elaboration of environmental impact assessments for the construction industry, the dating of sediments by means of fossils (biostratigraphy), or the elaboration of heritage management plans for city councils. Some of these studies require performing paleontological and/or geological fieldwork, whereas others are exclusively based on the review of the published literature and the archives of the ICP. The fees that apply are based on hourly rates (plus associated costs of maintenance and travel when necessary). No services of this kind were provided in 2021. In compliance with one of the missions of the ICP, related to the conservation of the paleontological heritage of Catalonia, minor consultation services are also regularly provided for free by the staff of the Fieldwork & Collections Management Area as well as ICP researchers to the Archeological and Paleontological Survey of the Generalitat de Catalunya (in relation to fossil sites from Catalonia).

## Training

Knowledge transfer activities at the ICP are also related to academic teaching and supervision, to a large extent (but not exclusively) within the framework of the university.

**Scientific courses.** From the viewpoint of training, it is noteworthy the ongoing collaboration agreement of the ICP with the private company Transmitting Science (TS), by which scientific courses in the framework of life sciences (with a largely international attendance) are performed at the ICP Museum or in other venues with additional partners. The ICP generally contributes with its facilities, and gets an in-kind return in the form of free courses for ICP researchers and research associates. The current agreement further enables to co-organize other types of courses with a higher involvement of ICP researchers as instructors (e.g., paleontological fieldwork courses in the framework of ICP excavations), and which might generate pecuniary revenues for the center. As in 2020, the number of co-organized courses was drastically reduced as a result of the pandemic. In total, in 2021 the ICP participated as coorganizer of two courses instructed by TS, with a total attendance of 34 alumni.

COURSES COORGANIZED WITH TRANSMITTING SCIENCE (2021)			
COURSE TITLE	VENUE	DATE	ORGANIZERS
Finite Element Analysis applied to life sciences, 6 <sup>th</sup> ed.	Online	9-21 June (48 h)	TS, ICP
Care and Management of Natural History Collections, 4 <sup>th</sup> ed.	Online	9-16 August (40 h)	TS, ICP

**University teaching.** The ICP is a university research institute of the UAB by virtue of an agreement signed in 2013 and subsequently ratified by the Generalitat de Catalunya in 2014. This agreement was renewed in 2018 and will be valid until 2021. It contemplates the possibility that ICP researchers that are involved in master teaching automatically become teaching collaborators. Punctual agreements have been also established with regard to master teaching with the UB.

In 2021, ICP researchers and technicians participated in the following three official master degrees:

- **Master in Paleobiology and Fossil Record (UAB/UB):** academic course 2020–2021.
- **Master in Biological Anthropology (UB/UAB):** academic courses 2020–2021 and 2021–2022.

It is noteworthy that the Master in Paleobiology and Fossil Record (coorganized by the ICP, the UAB and UB), resumed in 2017–2018 as a successor of the former Master in Paleontology in which the ICP participated annually between 2007–2015, was temporarily transformed into a biannual format in 2021. As a result, teaching of the master was performed during academic year 2020–2021 and will take place again in 2022–2023, but it did not take place in 2021–2022. It was also decided in 2021 that the master would be remodeled, and conversations between the UAB, the UAB and the ICP started to plan the new teaching program. The new master studies will be designed in early 2022, and presented to AQU for review and approval, with the aim to implement the new teaching program in academic course 2023–2024. The aim is to attract and higher proportion of international students to reach the required number of students each academic year to make the master sustainable on the long term from the UAB's perspective. In

academic year 2020-2021, the contribution of the ICP to the master represented 35% (21/60) of the total ECTS credits (equating 146 teaching hours, the supervision of master theses excluded), by virtue of an agreement signed with the UAB and the UB in 2016, according to which the ICP receives the proportional revenues of the fees paid by the students. The master had 6 students in 2020-2021, as compared 7 in 2017-2018, 5 in 2018-2019, and 13 in 2019-2020.

It is also noteworthy that the ICP participates in the “Campus d’Arqueologia i Paleontologia de la UAB” by means of the paleontology campus locations at Coll de Nargó and Isona, thanks to the collaboration between the ICP, the Geology Departament of the UAB, and the town councils of Isona i Conca Dellà and Coll de Nargó, respectively. Both locations, inaugurated in 2017, belong to the Geoparc Conca de Tremp-Monsec project and perform various research and teaching activities at the Dinosfera museographic space, the Conca Dellà Museum, and various fossil sites within the framework of the “Dinosaurs of the Pyrenees” project led by the ICP. On 2021 two students joined the “Campus d’Arqueologia i Paleontologia de la UAB”.

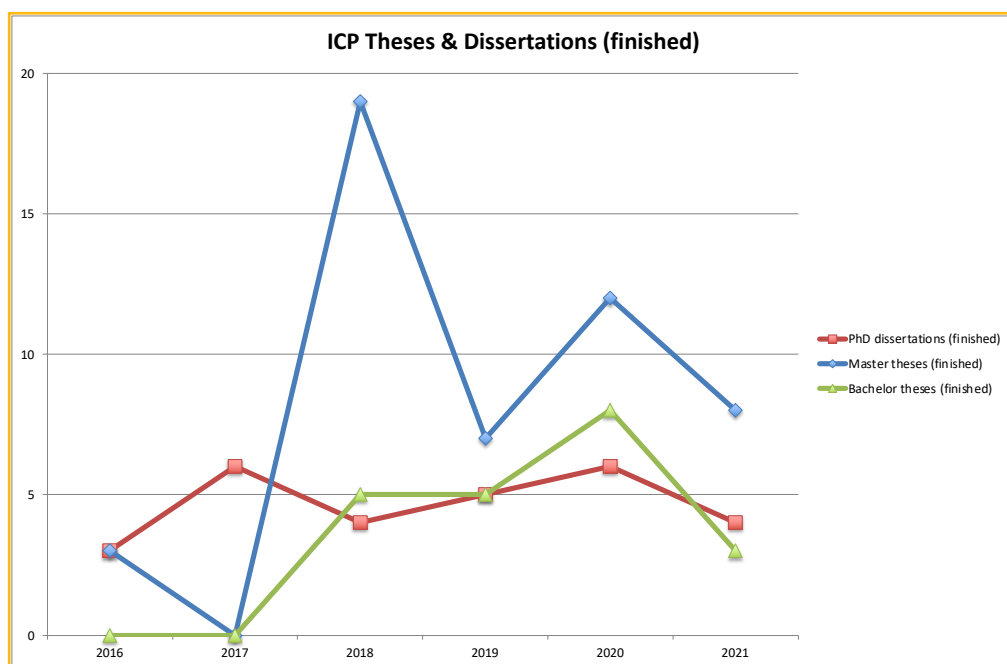
**Supervision.** As in previous years, in 2021 the experienced researchers from the ICP were regularly involved in the training of early career researchers and undergraduate students. In the case of young researchers, training takes the form of supervision of the research performed by either dependent postdoctoral students (e.g., ‘Juan de la Cierva’), PhD candidates, master students, and Erasmus interns or trainees. In turn, the training of undergraduate students is usually accomplished by means of practicums performed by the students at the ICP under the guidance of an ICP researcher/technicians, by through the supervision of bachelor theses. It is noteworthy that practicums are not restricted to research in a strict sense, but are also performed by research support technicians (especially preparators). During 2021, 12 practicum agreements were formalized with the UAB and another one with Universidad Autónoma de Madrid, implying a total of 2300 working hours. The Volunteering Program of the ICP is also relevant with regard to training, in the sense that it allows not only university students, but also people outside academia to collaborate not only in research, but also research support and outreach activities performed at the ICP. During 2021, 9 volunteers performed up to 960 hours in different areas of the ICP.

The supervisory efforts by ICP researchers and technicians can also be measured on the basis of the number of finished master theses and PhD dissertations that have been (co)supervised by them. In 2016 and 2017, the number of finished master theses supervised was drastically reduced because the paleontology master in which ICP researchers teach the most had stopped in 2015 and was not resumed until September 2017. As a result, the number of supervised master theses increased again in 2018-2020 (albeit with considerable fluctuations). In 2021, the number of PhD Dissertations, master’s theses and bachelor’s theses (co)supervised by ICP personnel (respectively, 4, 8 and 3) was slightly lower than the average of the five preceding years. However, it is noteworthy that, during 2021, up to 35 ongoing PhD dissertations were also (co)supervised by ICP researchers (S. Moyà-Solà, M. Köhler, À. Galobart, D.M. Alba, J. Fortuny, À.H. Luján, J. Madurell-Malapeira, I. Casanovas-Vilar, J. Marigó, A.G. Sellés, J. Arias-



Martorell) and research associates (E. Delson, M. Delfino, E. Muijal, A. Sánchez-Marco, T. Marquès-Bonet). Twelve of these dissertations were performed by current ICP predoctoral researchers/PhD students (T. Calderón, S. McKenzie, R. Matamalas-Andreu, F. Bouchet, L. Sorbelli, M. Prat-Vericat, M. Grau, G. Pons-Monjo, C. De Jaime-Soguero, O. Monclús-Gonzalo, Kelly A. Vega Pagán, and G. Raventós-Izard).

SUPERVISED MASTER THESES & PhD DISSERTATIONS (2016–2020 vs. 2021)							
CATEGORY	2016	2017	2018	2019	2020	AVERAGE	2021
PhD dissertations (finished)	3	6	4	5	6	<b>4.8</b>	<b>4</b>
Master's theses (finished)	3	0	19	7	12	<b>8.2</b>	<b>8</b>
Bachelor's theses (finished)	0	0	5	5	8	<b>3.6</b>	<b>3</b>





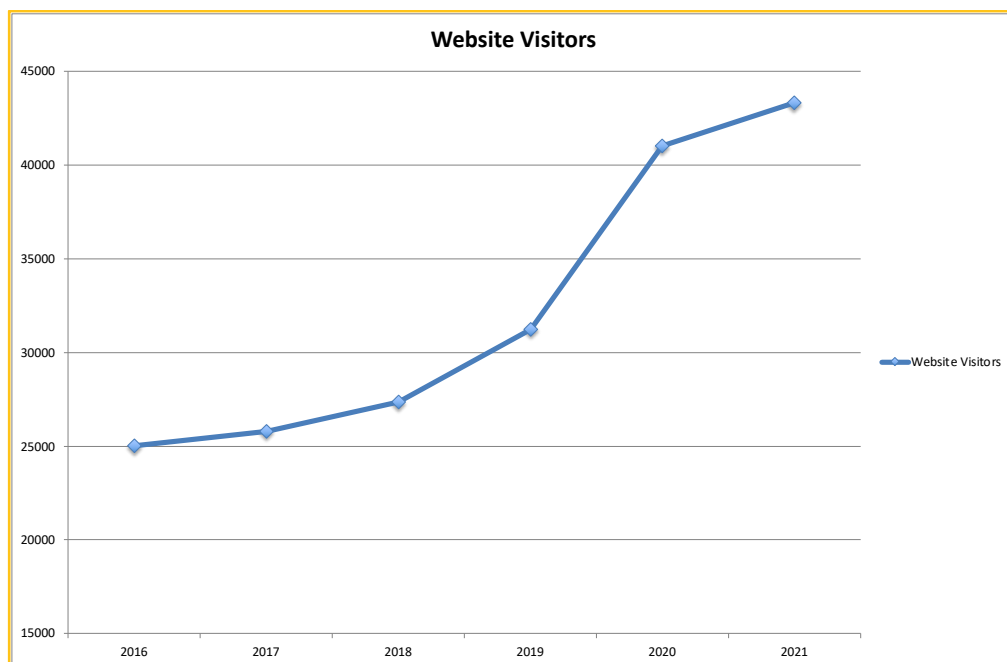
## OUTREACH AND COMMUNICATION

*Disseminating to the general public the knowledge hidden in fossils*

### Website

The ICP website (<http://www.icp.cat>) constitutes an essential tool to disseminate the work performed at the ICP to the general public, with particular emphasis on transmitting the knowledge that derives from the research performed by ICP researchers and research associates, but further including the most significant actions of knowledge transfer as well as scientific dissemination and outreach, among other relevant news.

**Website visitors.** The annual number of visitors of the ICP website are monitored based on the data recorded by Google Analytics (available since September 2015). These data indicate that the number of visitors to the ICP webpage in 2021 (43,340) shows a slight increase as compared with the previous year but is much higher than the average of the five previous years (30,092), thereby consolidating the significant increase that took place in 2020.



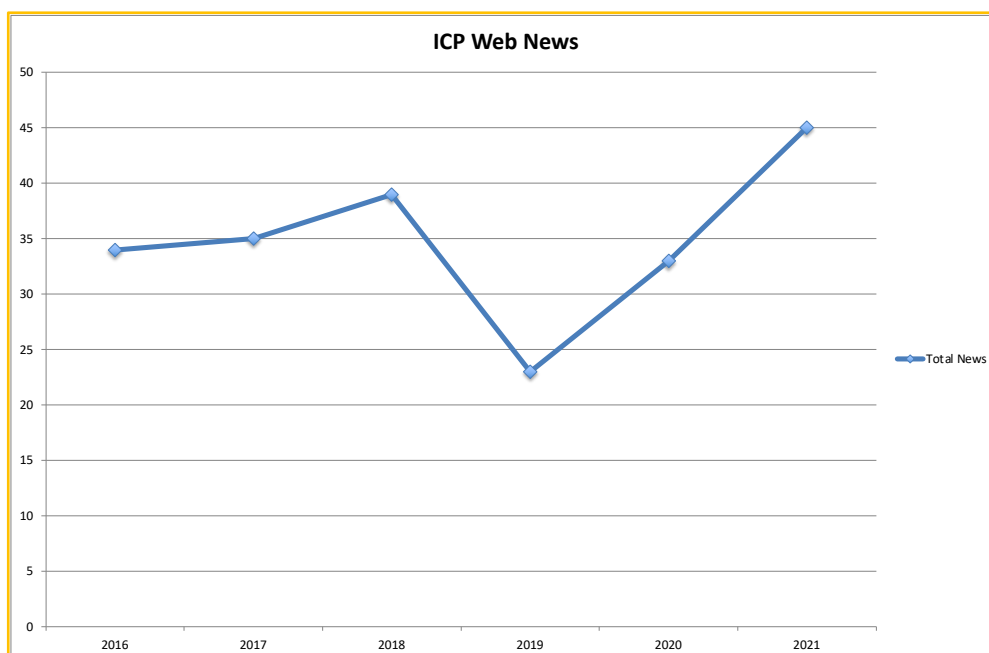
WEBSITE VISITORS (2016–2020 vs. 2021)							
DATA SOURCE	2016	2017	2018	2019	2020	AVERAGE	2021
Website Visitors (Google Analytics)	25,036	25,777	27,376	31,243	41,029	30,092	43,340

**Web news.** The ICP website has a section devoted to paleontological news, which are regularly posted and subsequently disseminated through the ICP social networks. The news posted by the ICP can be divided into four main categories depending on their content:

- **Research:** devoted to ICP publications, fieldwork, stays abroad and visiting researchers.
- **Dissemination and outreach:** related to scientific dissemination, outreach activities, museum exhibits, and other issues related to the ICP Museum.
- **Knowledge transfer:** mostly related to scientific courses and master teaching.
- **Others:** any other news related to the ICP (e.g., inauguration of the new building, appointment of the new director, etc.).

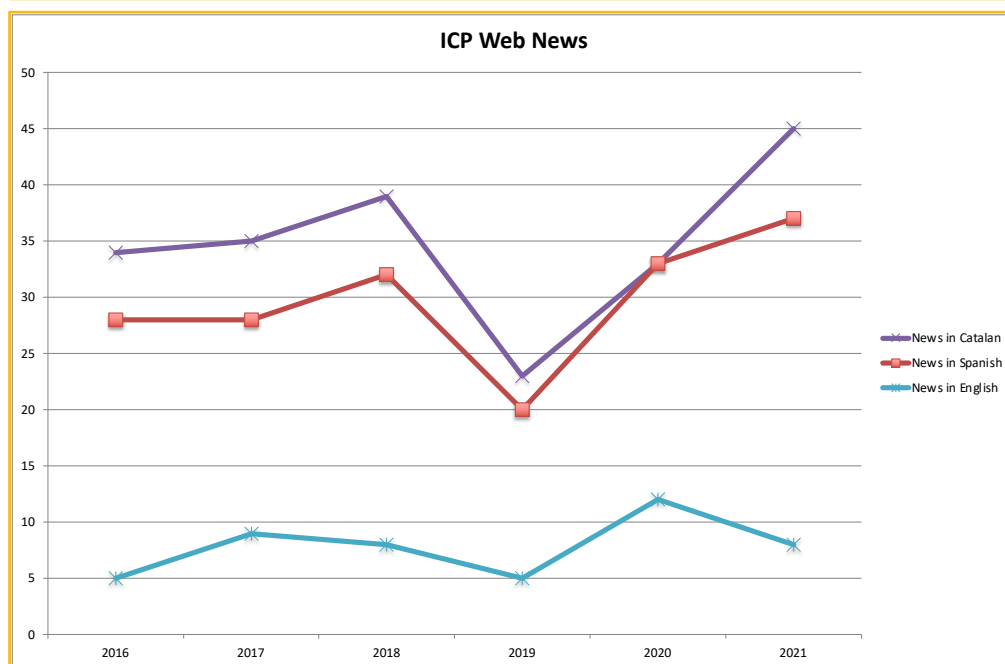
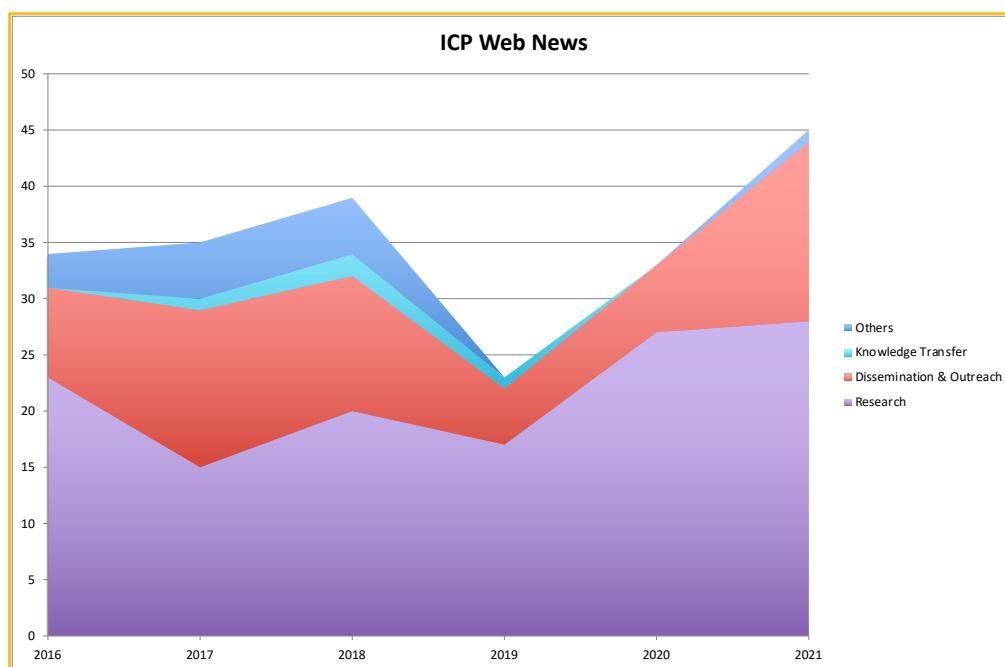
The total number of news posted in 2021 (45) is higher than in the previous year as well as the average for the five preceding years (33), thus confirming the recovery after the marked decrease in 2019. As in previous years, most news were about research and others about dissemination and outreach activities, with no news about knowledge transfer.

WEB NEWS (2016–2020 vs. 2021)							
CATEGORY	2016	2017	2018	2019	2020	AVERAGE	2021
Research	23	15	20	17	27	<b>20.4</b>	<b>28</b>
Dissemination & Outreach	8	14	12	5	6	<b>9.0</b>	<b>16</b>
Knowledge Transfer	0	1	2	1	0	<b>0.8</b>	<b>0</b>
Others	3	5	5	0	0	<b>2.6</b>	<b>1</b>
Total News	34	35	39	23	33	<b>32.8</b>	<b>45</b>



ICP WEB NEWS (2021)			
DATE	TITLE (CATALAN VERSION)	LANGUAGE	CATEGORY
4/1/21	Posant ordre a les col·leccions	CAT ES	Others
19/1/21	Digue'm què menges i et diré on vius	CAT ES EN	Research
25/1/21	Las claus de l'evolució humana que amaga l'orella interna	CAT ES EN	Research
3/2/21	El Museu s'inscriu al Cens d'Espais de Cultura Responsable	CAT	Diss. & Outreach
18/2/21	Trobat el rastre d'un gran rèptil de fa 250 milions d'anys als Alps occidentals	CAT ES EN	Research
22/2/21	Trobats nous fòssils de macaco al Marroc	CAT ES EN	Research
22/2/21	Tornen els Cafès Científics en format virtual	CAT ES	Diss. & Outreach
24/2/21	Descrites a Catalunya més de 200 petjades fòssils de les faunes que van precedir els dinosaures	CAT ES	Research
1/3/21	Tamarro, l'esquiva nova espècie de dinosaure carnívor dels Pirineus	CAT ES	Research
2/3/21	La llum de sincrotró il·lumina intricats detalls de la vida de Little Foot	CAT ES	Research
15/3/21	L'amençat linx ibèric va habitar França i Itàlia fa 600.000 anys	CAT ES	Research
16/3/21	Obre el Centre d'Interpretació del Montsec amb una exposició de fòssils de fa 125 milions d'anys	CAT ES	Diss. & Outreach
25/3/21	L'alumnat de l'Institut Bitàcola lliura els seus jocs de taula sobre dinosaures	CAT ES	Diss. & Outreach
26/3/21	Curs d'iniciació a la recerca paleontològica: Dinosaures i altres criatures del passat	CAT ES	Diss. & Outreach
12/4/21	Cafè Científic: Quan els dents de sabre i altres grans carnívors campaven pel Vallès	CAT ES	Diss. & Outreach
14/4/21	Descrita una nova espècie de tortuga d'aigua dolça de finals del Juràssic a Sòria	CAT ES	Research
16/4/21	Les claus de l'evolució que amaga l'orella interna, objecte de la tesi doctoral d'Alessandro Urciuoli	CAT ES EN	Research
28/4/21	Descrita una nova espècie de petit llop a Orce	CAT ES	Research
3/5/21	El Museu lliura els premis del concurs literari 'Històries fòssils'	CAT ES	Diss. & Outreach
6/5/21	Els primats del Miocè redibuixen les controvertides hipòtesis sobre l'evolució humana	CAT ES	Research
11/5/21	Sabadell celebra el Dia Internacional dels Museus i la Nit dels Museus	CAT ES	Diss. & Outreach
18/5/21	S'exposen fòssils dels Casots al Japó	CAT ES	Diss. & Outreach
2/6/21	Identificada una nova espècie de carnívor al Cerro de los Batallones	CAT ES	Research
8/6/21	Recuperada a Terol una columna vertebral de més de cinc metres d'un enorme dinosaure	CAT ES	Research
14/6/21	L'estrany llargardaix que un dia va ser ocell	CAT ES EN	Research
17/6/21	Un mes de juliol per gaudir de la paleontologia al Museu	CAT	Diss. & Outreach
29/6/21	Jornada de portes obertes al jaciment paleontològic dels Casots	CAT	Diss. & Outreach
30/6/21	Identificat un nou tipus de petit dents de sabre al Marroc de fa 2,5 milions d'anys	CAT ES	Research
12/7/21	Ossos fluorescents per estudiar el creixement dels cérvols	CAT ES	Research
16/7/21	Descrita una nova espècie de mustèlid de l'Abocador de Can Mata	CAT ES	Research
20/8/21	Descrita una nova petjada de dinosaure amb nom de futbolista a Burgos	CAT ES	Research
1/9/21	Gossos salvatges i humans a Dmanisi: camins oposats i comportaments compartits	CAT ES	Research
7/9/21	Un semestre ple d'activitats al Museu de l'ICP	CAT	Diss. & Outreach
16/9/21	Els neandertals capturaven ocells a les coves per al seu consum	CAT ES	Research
27/9/21	Les cavitats aèries a les vèrtebres dels grans pterosaures revelen adaptacions clau per al vol	CAT ES EN	Research
4/10/21	Un lleopard malalt a la Grotte de la Carrière	CAT	Research
2/11/21	L'ICP a la trobada d'unitats de comunicació de la FECYT	CAT	Diss. & Outreach
5/11/21	Els tigres de dents de sabre de Crimea	CAT ES	Research

8/11/21	S'inaugura una exposició al Museu de la Noguera per donar a conèixer la diversitat geològica i biològica de Ponent i el Pirineu	CAT	Diss. & Outreach
10/11/21	La fauna marina d'Odèn aflora a la superfície	CAT ES	Research
24/11/21	El ritme de vida tranquil de l'elefant nan de Sicília	CAT ES EN	Research
6/12/21	L'ICP col·labora en el projecte Ciència per Nadal a Sabadell	CAT	Diss. & Outreach
9/12/21	Es posa en funcionament la Xarxa de Museus de Ciències Naturals de Catalunya	CAT ES	Diss. & Outreach
13/12/21	Les roques de la Serra de Tramuntana de Mallorca revelen un divers ecosistema fa 250 milions d'anys	CAT ES	Research
23/12/21	L'ADN de la rata gegant de Tenerife revela la seva història evolutiva	CAT ES	Research

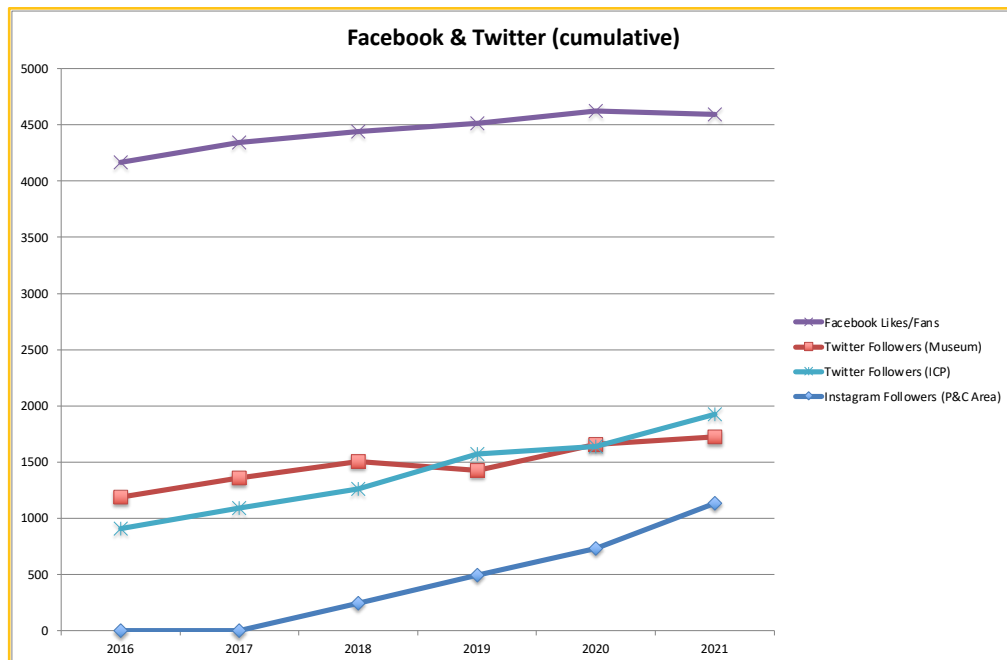


As for the language, all the news posted to the ICP webpage were published in Catalan and most also in Spanish, but English translations are still a much lower proportion, similar to preceding years.

WEB NEWS (2016–2020 vs. 2021)							
CATEGORY	2016	2017	2018	2019	2020	AVERAGE	2021
News in Catalan (CAT)	34	35	39	23	33	<b>32.8</b>	<b>45</b>
News in Spanish (ES)	28	28	32	20	33	<b>28.2</b>	<b>37</b>
News in English (EN)	5	9	8	5	12	<b>7.8</b>	<b>8</b>
News in Catalan (CAT) %	100.0	100.0	100.0	100.0	100.0	<b>100.0</b>	<b>100.0</b>
News in Spanish (ES) %	82.4	80.0	13.5	87.0	100.0	<b>86.0</b>	<b>82.2</b>
News in English (EN) %	14.7	25.7	2.7	21.7	36.4	<b>23.8</b>	<b>17.8</b>

### Social networks

The ICP has a Facebook fan page, two Twitter accounts (one for the ICP as a whole, and the other for the ICP Museum), and an Instagram account (for the Preparation & Conservation Area). These social networks can be monitored on the basis of ‘fans’ (formerly ‘likes’) in the case of Facebook, and based on the number of followers for Twitter and Instagram. Each social network displays a different trend, and it is unclear to what extent the 2021 results are in this regard simply reflect the popularity of each network. Thus, the number of Facebook fans decreases (unlike in previous years), whereas Twitter followers increase, and Instagram followers of Preparation & Conservation Area profile increases the most, not only as compared to the other social network profiles of the ICP but also compared to previous years.



SOCIAL NETWORKS (2016–2020 vs. 2021)							
LIKES OR FOLLOWERS	2016	2017	2018	2019	2020	AVERAGE	2021
Facebook Likes/Fans (new)	314	175	99	74	109	<b>154.2</b>	<b>-32</b>
Twitter Followers – Museum (new)	189	170	144	-78	233	<b>131.6</b>	<b>63</b>
Twitter Followers – ICP (new)	92	179	175	306	71	<b>164.6</b>	<b>286</b>
Instagram Followers – P&C Area (new)	—	—	248	244	238	<b>243.3</b>	<b>402</b>
Facebook Likes/Fans (cumulative)	4168	4343	4442	4516	4625	—	<b>4593</b>
Twitter Followers – Museum (cumulative)	1190	1360	1504	1426	1659	—	<b>1722</b>
Twitter Followers – ICP (cumulative)	910	1089	1264	1570	1641	—	<b>1927</b>
Instagram Followers – P&C Area (cumulative)	—	—	248	492	730	—	<b>1132</b>

## Press releases

The Scientific Dissemination and Communication Area of the ICP regularly issues press releases to highlight the most important news related to the ICP, with emphasis on new research outputs, but further including dissemination activities and other noticeable events. A total of 20 press releases were issued by the ICP in 2021 (see table below), as compared with 15 in 2018, 18 in 2019 and 15 in 2020. It is noteworthy the attention received from mass media worldwide by several publications, such as the description of a new theropod dinosaur species in Scientific Reports on March, a new specimen of the Cretaceous reptile published in Current Biology in June, and the paleohistological study on the Sicilian dwarf elephant *Palaeoloxodon falconeri* published in Scientific Reports on November.

PRESS RELEASES (2021)	
TITLE	DATE
Digue'm què menges i et diré on vius	19/1/21
Les claus de l'evolució humana que amaga l'orella interna	26/1/21
Trobats nous fòssils de macaco al Marroc	22/2/21
Descrites a Catalunya més de 200 petjades fòssils de les faunes que van precedir els dinosaures	24/2/21
Tamarro, l'esquiva nova espècie de dinosaure carnívor dels Pirineus	1/3/21
L'amençat linx ibèric va habitar França i Itàlia fa 600.000 anys	15/3/21
Obre el Centre d'Interpretació del Montsec amb una exposició de fòssils de fa 125 milions d'anys	16/3/21
Quan els dents de sabre i altres grans carnívors campaven pel Vallès	21/4/21
Els primats del Miocè redibuixen les controvertides hipòtesis sobre l'evolució humana	6/5/21
Identificada una nueva especie de carnívoro en el Cerro de los Batallones	2/6/21
Recuperada en Teruel una columna vertebral de más de cinco metros de un enorme dinosaurio	9/6/21
L'estrany llargardaix que un dia va ser ocell	14/6/21
Identificado un nuevo tipo de pequeño dientes de sable en Marruecos de 2,5 millones de años de antigüedad	30/6/21
Els neandertals capturaven ocells a les coves per al seu consum	16/9/21
Les cavitats aèries a les vèrtebres dels grans pterosaures revelen adaptacions clau per al vol	28/9/21
La fauna marina d'Odèn aflora a la superfície	9/11/21
El ritme de vida tranquil de l'elefant nan de Sicília	24/11/21
Les roques de la Serra de Tramuntana de Mallorca revelen un divers ecosistema fa 250 milions d'anys	14/12/21
El ritme de vida tranquil de l'elefant nan de Sicília	24/11/21
L'ADN de la rata gegant de Tenerife revela la seva història evolutiva	23/12/21

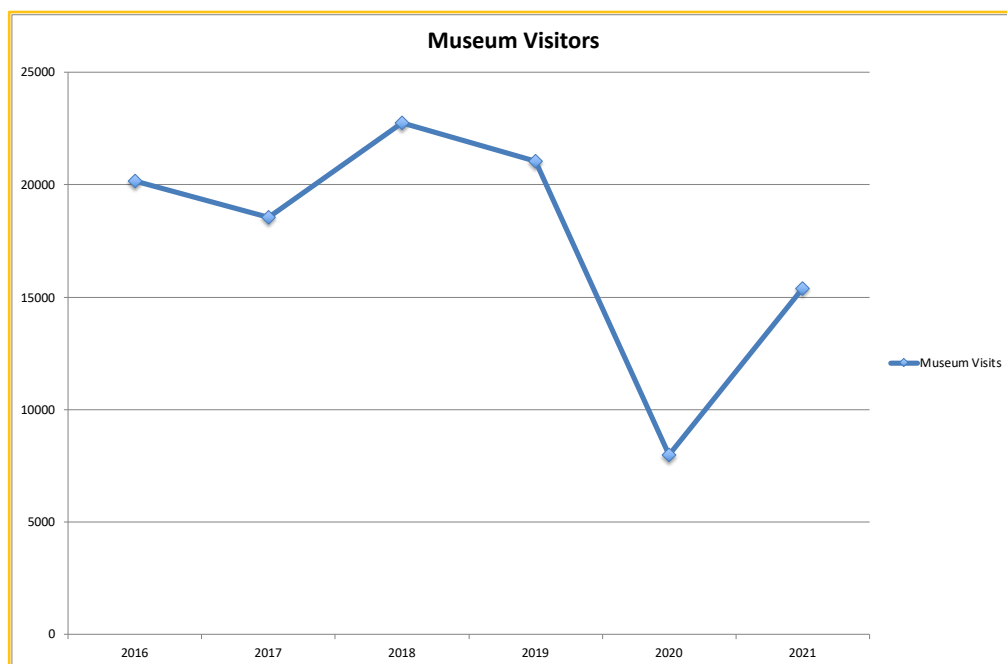


## Museum visits and activities

**Museum visits.** The ICP Museum in Sabadell, besides being an indispensable requirement for the research performed at the ICP, is also a very powerful tool from the viewpoint of scientific dissemination and outreach when transmitting paleontological knowledge to a general public. The activity of the ICP Museum can be monitored by means of the number of annual visitors, which include individual visitors and, to a greater extent, organized groups (including schools and families) that attend guided visits and/or various workshops that are organized regularly throughout the year with the aid of external monitors. The museum also offers a wide range of workshops related to paleontology for schoolchildren.

The number of visitors in 2021 almost doubled those in 2020 due to the easing of the harsh restrictions related with the COVID-19 pandemic of the preceding year. Despite this positive trend, the total number of visitors was lower than in prepandemic times.

MUSEUM (2016–2020 vs. 2021)							
MUSEUM VISITORS	2016	2017	2018	2019	2020	AVERAGE	2021
Visitors	20,160	18,560	22,739	21,042	7,988	18,097.8	15,391



The most significant outreach activities of the ICP Museum during 2021 are summarized below.

**Museum newsletter.** The ICP distributes (without a regular periodicity) an electronic newsletter with ICP Museum activities, which at the end of 2021 had 1,629 subscribers (as compared with 1,591 subscribers in 2020, 1,501 in 2019, and 1,223 in 2018).

**Permanent exhibit.** The permanent exhibit ('Today you investigate') explains to the general public how the ICP groups perform their research. The exhibit has not been remodeled since 2010, although during the last years it has been enriched with several additional elements and, periodically, also with temporary exhibits. In 2021, first conversations with the Culture Department of the Generalitat de Catalunya were made to devise a new museological plan for the ICP Museum that should culminate with the remodeling of current exhibits in years to come.

**Temporary exhibits.** Through 2021, the temporary exhibit "El Triceratops torna a Sabadell", inaugurated in 2015, has been maintained at the first floor of the exhibit at the ICP Museum. This exhibit pivots around the cast of a *Triceratops* skeleton that was exhibited at the former Institut de Paleontologia M. Crusafont since 1986 until 2009, when the permanent exhibit of the ICP was remodeled. The need to exhibit again this skeleton responded to the requests by many ICP visitors, for which the *Triceratops* had become an icon of paleontology in Sabadell.

**Guided visits and workshops.** Ten different activities (workshops and guided visits) were offered to the school community in 2021. A total of 274 sessions of these activities, with 6,659 participant schoolchildren, were performed in 2021. This represents a significant increase compared with 2020 (109 sessions with 2,564 attendees) due to a certain degree of return to normalcy of school trips but still below prepandemic figures (326 sessions with 7,761 attendees in 2018 and 354 sessions with 9,489 attendees in 2019). Furthermore, 56 family workshop sessions were performed, with a total of 626 participants, which also represents an increase as compared with the previous year (34 workshops with 505 attendees in 2020). Despite this notable increase in the sessions, the number of attendees did not raise accordingly due to the capacity restrictions in cultural activities in force in Catalonia during the whole year.





MUSEUM OUTREACH ACTIVITIES (2016–2020 vs. 2021)							
MUSEUM ACTIVITIES	2016	2017	2018	2019	2020	AVERAGE	2021
School sessions (workshops/guided visits)	324	245	326	354	109	271.6	274
Family workshops	12	25	37	46	34	30.8	56
Guided visits	12	11	11	13	7	10.8	12
TOTAL sessions	348	281	374	413	150	313.2	342
School attendees	7,689	5,863	7,761	9,489	2,564	6,673.2	6,659
Family attendees	355	633	786	909	505	637.6	626
Guided visit attendees	255	217	257	264	264	251.4	204
TOTAL attendees	8,299	6,713	8,804	10,662	3,174	7,530.4	7,489

**Free outreach activities.** Beyond the paid workshops and guided visits offered regularly to scholars and families, as in preceding years, several free outreach activities were planned at the ICP Museum in 2021.

- **Literary contest:** 10<sup>th</sup> edition of contest “Històries Fòssils” | 30/04/21 | 73 contestants.
- **Open days:** Sant Jordi, Dia Internacional dels Museus, Nit dels Museus, La Salut, etc. | 2,575 attendees.
- **Anniversary of the Museum:** Drawing contest “Quan jo sigui paleontòleg/loga” focused on “Tamarro, el petit dinosaure amb plomes dels Pirineus” | 03/10/21 | 46 contestants.
- **Science week:** Open days, literary contest “Històries fòssils”, visit to the ICTA-ICP building | 16/11/21 to 21/11/21 | 486 attendees.
- **Workshop of Christmas Paleocards:** 12/12/21 | 46 attendees.
- **Scholar workshop:** “I què en fem d’un fòssil?” within the Escolab project | November 2021 | 50 attendees.
- **Field trip:** “Itinerari geològic i paleontològic pel Riu Ripoll” | 13/06/21 | 10 attendees.

## Outreach activities outside the Museum

**Presence in the mass media.** The presence of ICP researchers and technicians in traditional mass media (radio, press and TV) during 2021 can be summarized as follows (the list is not exhaustive and does not include digital impacts):

- **Radio:** Radio Sabadell, 26/03/2021 | Interview of Xènia Aymerich and Isaac Casanovas-Vilar in the section “Ciència Km0” of the magazine “El Matí de Ràdio Sabadell”.
- **Press:** El País, 29/06/2021 | Contribution of Isaac Casanovas-Vilar to an article on an ancient lake in Europe.
- **Press:** National Geographic, July 2021 | Article “The priceless primate fossils found in a garbage dump” in the International edition and several regional editions.
- **Radio:** Radio Nacional de España, 09/09/21 | Interview of Àngel Galobart in the show “Españoles en la Mar”.
- **TV:** Barcelona Televisió, 6/11/21 | Coverage on a school visiting the ICP Museum.
- **Radio:** Radio Estel, 17/11/21 | Interview of Bernat Vila on dinosaur species of the Pyrenees.
- **TV:** Radio Televisión Española, 20/11/21 | Interview of Salvador Moyà-Solà in the chapter “Aislados” of the TV show “¡Que animal!”
- **TV:** Radio Televisión Española, 04/12/21 | Interview of Joan Madurell-Malapeira in the chapter “Felinos” of the TV show “¡Que animal!”

**International Day and Night of Museums.** As in previous years, the ICP planned, together with the city council of Sabadell and other museums from the city, the “International Day and Night of Museums in Sabadell”, respectively in May 18 and May 15. Due to the pandemic situation, special restrictions applied. The activities organized by the ICP Museum included the exhibit of a fossil cranium of an amphicyonid from els Casots, a family workshop “Posa-li cara a l’*Amphicyon*” (16/05/21), and a guided visit to the permanent and temporary exhibits (18/05/21).

**Science Cafés.** As in previous years, in 2021 the ICP coorganized with other entities from Sabadell the series of talks entitled “Cafès Científics”. These scientific dissemination talks are intended to promote the contact between the scientific community and the general public, with the ultimate aim to boost the debate about scientific topics among the society. Due to pandemic restrictions, the talks took place in a virtual format. The ICP participated with the talk “Quan els dents de sabre i altres grans carnívors campaven pel Vallès” by J. Madurell-Malapeira on April 27.

**FECYT’s Red UCC+i.** On 2015, the Outreach and Communication Department was included as an accredited member to the ‘Red de Unidades de Cultura Científica y de la Innovación (Red UCC+i)’ from FECYT (Fundación Española para la Ciencia y la Tecnología). Along 2021, the

department went through the renewal process of this membership satisfactorily. Additionally, the head of the Department joined ComCiRed, the annual meeting of communication units organized by FECYT, held in Cuenca on 28-29 October and presented the initiative “WeMissTheLab: divulgación en tiempos de confinamiento domiciliario”.

**Other outreach activities.** Other relevant outreach activities performed by the Communication & Outreach Department and/or by researchers/technicians of the ICP include the following:

- “Fòssils excepcionals que requereixen excavacions excepcionals”: Talk by Xavier Ros i Visús, moderator Àngel Galobart (ICP), within the framework of conference cycle “Tribuna d’Arqueologia 2020-2021” | 10/02/21, online.
- “XII Assemblea d’Estudis dels Amics de Besalú: El territori de Besalú abans de la història”: Dissemination talks for the general public: “El Pleistocè a Catalunya: glaciacions, mamuts i grans carnívors” by J. Madurell-Malapeira; “Quan els dents de sabre dominaven Besalú” by L. Sorbelli; and “La Grotte de la Carrière (Cornellà de Conflent) una finestra al Pleistocè Mitjà” by M. Prat-Vericat | 09/04/21.
- “Centenari del naixement de Joan Vicente Castells”: Dissemination talks on paleontology for the general public organized by the Centre d’Estudis de la Naturalesa del Barcelonès Nord: “Paleontologia i canvi climàtic” by Isaac Casanovas, “Les grans extincions i la paleontologia”, by associate researcher Marc Furió and “Eines actuals de la paleontologia”, by Àngel H. Luján | 12/05/21, 19/05/21 and 02/06/21.
- Open day at the fossil site of els Casots: Organized by the ICP and the Ajuntament de Subirats | 04/07/21.
- Introductory course to paleontological research for high school students: “Dinosaures i altres criatures del passat. Curs d’iniciació a la recerca paleontològica” | Organized by the UAB with participation of J. Marigó (ICP) | 05/07/21 to 09/07/21.
- Collaboration with Institut Bitàcola de Barberà del Vallès: Collaboration in the design of board games focused on Catalan dinosaurs.

### **Outreach activities throughout Catalonia**

Outreach activities of the ICP are considerably further extended in territorial scope by means of agreements with other museums and interpretation centers. The most significant ones during 2021 are summarized below.

**Dinosaurs from the Pyrenees.** Since 2015, there is a collaboration agreement between the ICP and the city councils of Isona i Conca Dellà and Coll de Nargó, by virtue of which the ICP assumed a leading role in the management of the Conca Dellà Museum and the associated exhibit Dinosfera in Coll de Nargó. This activity has been developed since then within the framework of ‘Dinosaurs of the Pyrenees’ project led by the ICP and thanks to the financial

support of the Culture Department of the Catalan Government. This project focuses on the research, conservation, study and dissemination of dinosaur fossil remains from the Catalan Pre-Pyrenees (el Berguedà, l'Alt Urgell, el Pallars Jussà and la Noguera), and is directed by Dr. Àngel Galobart, head of the Dinosaur Ecosystems Research Group of the ICP and also the Director of the Conca Dellà Museum. Other researchers of this research group are also involved in the project, and the head of the Outreach & Communication Department of ICP is the responsible to coordinate the communication of the 'Dinosaurs of the Pyrenees' project (including the website and social networks).

The results of the above-mentioned collaboration, in the framework of the 'Dinosaurs of the Pyrenees' project, are very satisfactory from the viewpoint of increasing the territorial scope of outreach activities performed by the ICP. Such activities are directed to a school and family public, and performed with the participation of local companies and monitors. The number of visitors at the Conca Dellà Museum (1,993) in 2021 (including normal tickets, guided visits, and school visits) decreased as compared with 2020 (2,882) and 2019 (5,937) due to the integral remodeling of the main building that limited visits to aside exhibitions from November 2020. The opening of the remodeled Museum is planned for the second quarter 2021. On the other hand, visitors at Dinosfera in 2021 (6,046) increased as compared with 2020 (4,975), getting closer to those in 2019 (7,974) and 2018 (7,846) when there were no restrictions due to COVID-19 pandemic. The number of participants in other activities organized by the Conca Dellà (801) or Dinosfera (343) decreased globally as compared with 2020 (2,066 and 539, respectively), 2019 (5,123 and 1,079, respectively) and 2018 (3,073 and 273, respectively).

The main paleontological outreach activities performed in 2021 in the framework of the aforementioned project are reported below:

- Guided visits to the Covet church and Castell de Lordà.
- Guided visits to the dinosaur neck from Orcau.
- Guided visits to excavation sites near Coll de Nargó.

It's noteworthy to mention that along 2021 ICP researchers have assessed the contents and design of a new exhibition to be inaugurated during first quarter 2022 at the Centre d'Interpretació de Vilanova de Meià, a center managed by the Vilanova de Meià city council included in the 'Dinosaurs of the Pyrenees' network.

In 2021, the websites of the Conca Dellà Museum, Dinosfera and Dinsaures dels Pirineus had 10,579, 8,380 and 17,530 visitors as compared with 9,243, 7,051, and 20,239 visitors in 2020, respectively. Their Facebook pages have 3,242 (Conca Dellà Museum), 2,138 (Dinosfera) and 1,021 (Dinsaures dels Pirineus) fans, as compared with 3,214, 2,108 and 1014 in 2020, respectively. Furthermore, the Conca Dellà Museum and Dinsaures dels Pirineus had 1,351 and 524 Twitter followers, respectively, at the end of 2021, as compared with 1,073 and 433 in 2020.

**CosmoCaixa (Barcelona).** CosmoCaixa from Obra Social "la Caixa" in Barcelona has a number of visitors several orders of magnitude higher than the ICP Museum in Sabadell. Therefore, collaborative agreements with CosmoCaixa not only extend the territorial scope of the ICP, but

further amplify to a great extent the outreach capacity that the ICP would have on its own. In 2019 the ICP collaborated with CosmoCaixa in organizing the exhibit of three partial skeletons of apes (*Pierolapithecus*, *Pliobates*, and *Hispanopithecus*), a partial skeleton of a deinother, and two shells of giant tortoises, in the framework of the “Univers” exhibit. These fossils have been on exhibit throughout 2020 and 2021.

**CRIP (els Hostalets de Pierola).** In October 2018, the ICP signed a collaboration agreement with the Culture Department of the Generalitat de Catalunya and the Centre d’Interpretació i Restauració Paleontològica (CRIP) in els Hostalets de Pierola, which aims to promote the recuperation, research and dissemination of the paleontological heritage from this area. On behalf of this agreement, along 2021 the ICP assessed the company Group Transversal in charge of the design and contents of the CRIP new exhibition and provided indications to ICRA Art for the artworks on fauna recreations.

### Internal communication

**Paleovermuts.** In 2021 the Communication & Outreach Department of the ICP organized eight ‘paleovermut’ internal talks (see the table below for further details). Most of them were given by ICP personnel, but in some cases with participation of external consultants. All the talks were online except the last one. The Director’s Paleovermut that did not take place in December 2020 was finally held online on May 2021. From now onward, it is expected that the Director’s Paleovermut will take place during the spring on an annual basis.

PALEOVERMUTS (2021)	
SPEAKER & TITLE	DATE
Chabier De Jaime (ICP Researcher) – “Rere les petjades del Triàsic i el Permià de la península ibèrica”	05/03/2021
Mònica Gelambí (External Consultant) and Xènia Aymerich and Judit Marigó (ICP Non-Discrimination Committee) – “Sí, tenim pla d’igualtat. I a mi què?”	24/03/2021
Xènia Aymerich (ICP Preparation & Conservation Area) – “Conservar des del minut zero”	30/04/2021
David M. Alba (ICP Director) – “Paleovermut del Director (Covid Edition)”	28/05/2021
Andrea Villa (ICP Researcher) – “And what about the herps?”	15/09/2021
Oriol Monclús (ICP Researcher) – “A foot story: studying the functional morphology of primate tarsal bones”	19/11/2021
Josep Robles (ICP Fieldwork & Collection Management Area) – “La gestió de col·leccions a l’ICP: com trobar l’agulla en el paller”	03/12/2021
Anna Galí (Cooperative Fil a l’Agulla) & Xènia Aymerich (ICP Non-Discrimination Committee) – “Deconstrucció o mort, tu tries. Perdoneu les molèsties, però ens estan matant”	15/12/2021

**Internal bulletin.** On 2021, the Communication & Outreach Department sent four internal bulletins to ICP personnel (March 19, May 14, July 22 and December 22).

**Non-discrimination.** The main actions undertaken by the Non-Discrimination Committee in terms of internal communication during 2021 are summarized below.

- Dissemination of video “Reflexions de dues investigadores joves (Maria Prat i Sílvia Jovells)”: Dissemination a video recorded by the NDC with the collaboration of the Outreach & Communication Department, owing to the International Day of Women and Girls in Science | 11/02/21.
- Dissemination of the ICP “Zero tolerance policy against sexual harassment”: Reminder of the zero tolerance policy against any kind of harassment coinciding with the start of most excavation campaigns in 2021 | 03/06/21.
- Dissemination of the “Protocol per a la prevenció i actuació davant de les violències masclistes a l’ICP”: Dissemination of the new ICP protocol for the prevention, detection and intervention in cases of violence against women among ICP personnel | 16/07/21.
- Dissemination of the “Decalogue of zero tolerance against sexual harassment”: Dissemination of the Decalogue of zero tolerance against sexual harassment and any form of discrimination and information on changes in the composition of the Non-Discrimination Committee | 28/09/21.
- Dissemination of course “Gender and Science: a comprehensive approach”: The CND offered two free places for the course “Gender and Science: a comprehensive approach” organized by Transmitting Science among research staff | 24/11/20.
- Dissemination of “Dia Internacional contra les violències masclistes”: The CND sent an email with recommendations of books on feminism and new masculinities owing to the International Day for the Elimination of Violence against Women | 25/11/20.
- Dissemination of video “L’assetjament sexual i per raó de sexe en l’àmbit laboral”: Dissemination of a video on sexual harassment within work recorded by Departament de Treball, Afers Socials i Famílies of the Generalitat de Catalunya | 22/12/21.

### Digital repositories and platforms for research outputs

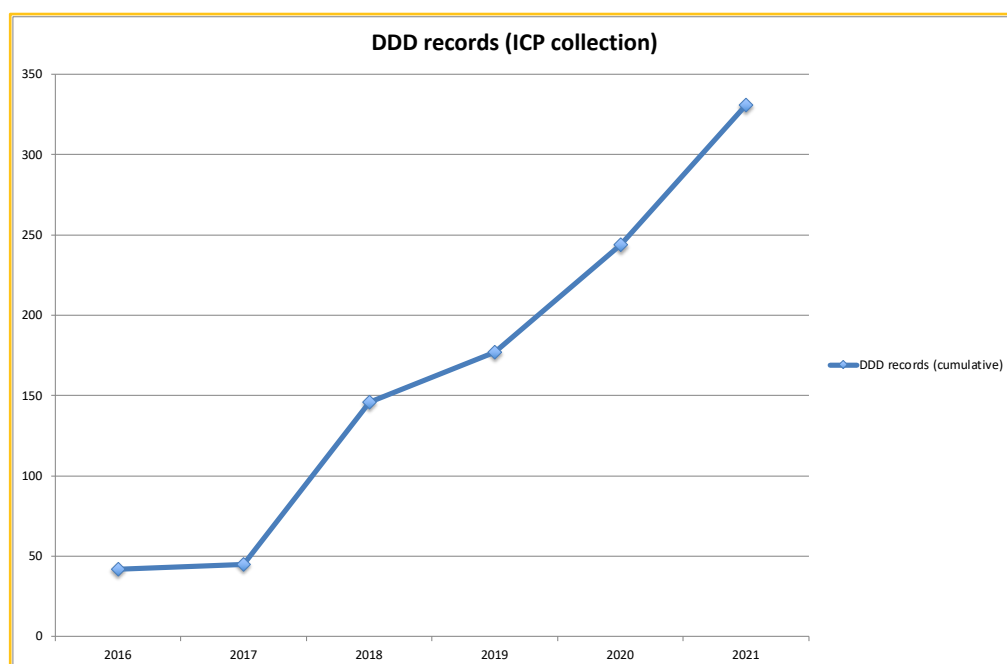
**ICP webpage.** The scientific production of the ICP is periodically updated at the ICP website. In particular, the references of SCI papers with the corresponding DOI (digital object identifier, which enables to access the paper on the journal’s website) are listed here: <http://www.icp.cat/index.php/ca/publicacions1/publicacions-sci>. In turn, the whole scientific production for the ICP can be downloaded in PDF format from the following link: [http://www.icp.cat/attachments/publicacions/ICP\\_Publications.pdf](http://www.icp.cat/attachments/publicacions/ICP_Publications.pdf).

**UAB DDD.** Accessing the full version of the papers depends on the subscription to the various journals from the network of origin, except for papers published in open access (OA). Publishing in OA is not a measure of research quality per se, but provides higher visibility to the research output and rapidly becoming a common requirement from funding agencies such as the ERC.



The ratio of gold/bronze open access SCI papers relative to total SCI papers of the ICP during the last five years has been above one-third, and surpassed 50% in 2020 and 2021. This represents an important budgetary effort because many open access journals (particularly the most prestigious ones) have expensive publication fees. The Strategic Plan of the ICP aims to increase the proportion of papers published in OA, but this is hindered by the lack of sufficient research funds that can be devoted to defraying publication fees. An alternative for papers published in subscription journals is to take advantage of the ‘green open access’ options allowed by the copyright transfer agreements of most journals—by virtue of which postprints of the articles can be made freely accessible in open access repositories, frequently after an embargo period of several months.

With the aim to make use of green OA possibilities in mind, the Steering Committee of the ICP decided in early 2018 to use the digital repository of the Universitat Autònoma de Barcelona (the Dipòsit Digital de Documents de la UAB, DDD: <https://ddd.uab.cat>) to post the open-access production of the institution, either the original papers (in the case of gold open access) or preprints/postprints (in the case of green open access). In particular, the ICP has a section of its own within the DDD repository (<https://ddd.uab.cat/collection/icp>, and the Outreach & Communication Department of the ICP is in charge of implementing the upload of additional documents. This process has already begun by focusing on papers published in SCI open-access journals since 2006, and it will continue based on preprints and postprints of SCI papers published in subscription journals. Finally, it will proceed on the basis of the rest of the ICP production. Following an initial peak in 2018, the implementation of this measure has proceeded at a steady pace during the last couple years.



UAB DDD RECORDS – ICP COLLECTION (2016–2020 vs. 2021)							
DDD RECORDS	2016	2017	2018	2019	2020	AVERAGE	2021
ICP collection records (new)	7	3	101	31	67	<b>41.8</b>	<b>87</b>
ICP collection records (cumulative)	42	45	146	177	244	—	<b>331</b>

**CSUC PRC.** The ICP also signed in 2018 an agreement with the Consorci de Serveis Universitaris de Catalunya (CSUC), which shares academic, scientific, library, knowledge transfer and management services, and is integrated by the Generalitat de Catalunya and ten Catalan universities, including the UAB. Such an agreement regulates the participation of the ICP in the Portal de la Recerca de Catalunya (PRC, <https://portalrecerca.csuc.cat/>), which currently hosts the data on the scientific production of Catalan universities, but only that from a few research centers. By virtue of this agreement, since September 2018 the ICP regularly provides the CSUC with data about its researchers, projects, and scientific outputs. In November 27, 2020 the ICP had updated 606 records to the PRC, whereas the last update in October 25, 2021 included 2,204 records (2,170 articles, books or book chapters and 34 PhD dissertations).

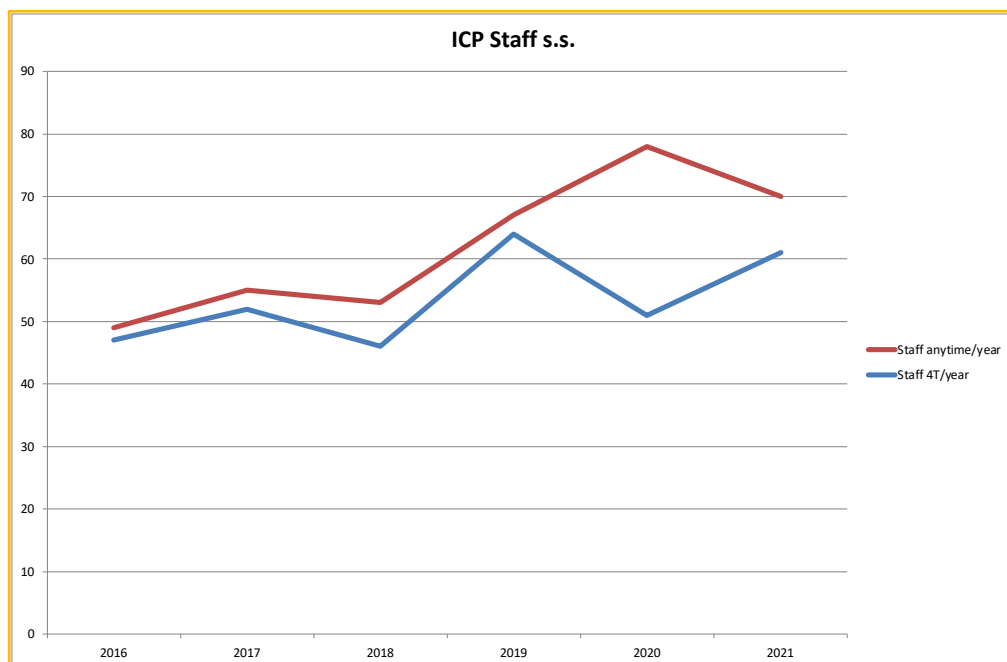
## HUMAN RESOURCES

*Aiming for excellence in the human resources policies for researchers*

### Staff personnel

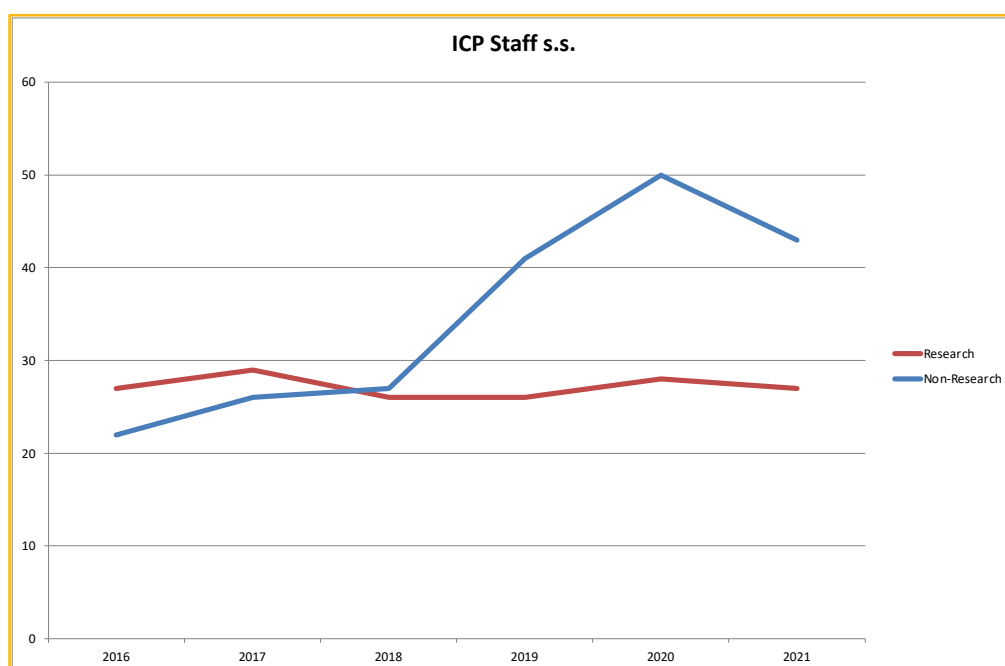
**Staff composition.** The composition of the staff personnel of the ICP (i.e., people with a contractual relationship with or formally ascribed to the ICP, thereby excluding research associates, collaborators, and people hired occasionally as freelance) is variable through time. In order to compare the ICP staff composition in 2021 with that of previous years, it is possible to rely on total counts per year (irrespective of whether a given person worked the whole year or only a fraction of it) or on a particular year period (such as the four quarter, 4T), which arguably provides a more realistic snapshot of the staff composition at any time. As a result of an increase in work and service personnel for the provision fieldwork services in late 2019 and especially early 2020, the staff counts for 2020 were higher than in the preceding five years. This trend was maintained in 2021, although the figures were lower than in 2020, due to a decrease in the amount of services provided. As in the previous years, the count at the end of 2021 was lower than when the whole year is considered.

STAFF (2016–2020 vs. 2021)							
STAFF COMPOSITION	2016	2017	2018	2019	2020	AVERAGE	2021
Total staff members (total year)	49	55	53	67	78	60.4	70
Total staff members (4T)	47	52	46	64	51	52.0	61



**Research staff.** With some fluctuations, the proportion between research and non-academic staff remained stable around 50% until 2018, but during the last years it decreased due to the increase in work and service personnel for the provision fieldwork services. However, the number of researchers in absolute terms has remained quite stable, the figure for 2021 being virtually identical to the average for the five preceding years.

RESEARCH STAFF (2016–2020 vs. 2021)							
STAFF COMPOSITION	2016	2017	2018	2019	2020	AVERAGE	2021
Research staff members	27	29	26	26	28	<b>27.2</b>	<b>27</b>
Non-Research staff members	22	26	27	41	50	<b>33.2</b>	<b>43</b>
% Research/Total	55.1	52.7	49.1	38.8	35.9	<b>46.3</b>	<b>38.6</b>

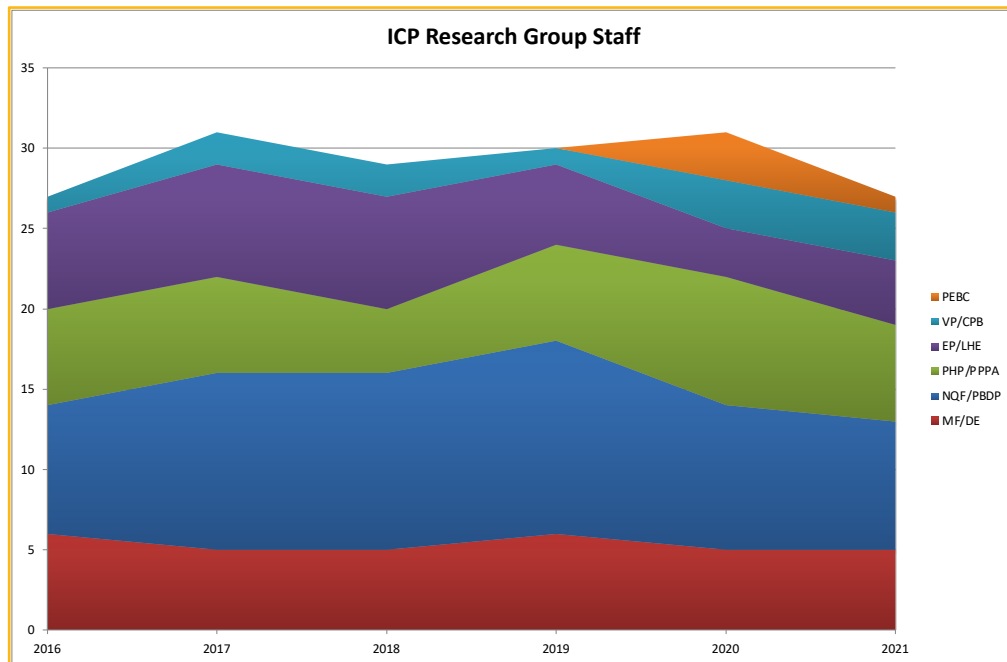


**Research groups.** When the composition of research staff is broken down into research groups (associate researchers not included), using the subdivision implemented in late 2019, it can be seen that the Dinosaur Ecosystems group (formerly Mesozoic Faunas) is the one that has remained more stable. Something similar applies to the Paleoprimateology and Paleoanthropology group, although with some fluctuations. In contrast, the Paleobiodiversity & Phylogeny group (formerly Neogene & Quaternary Faunas) has shrunk a bit during the last couple of years (due to the scission of the Paleoecology & Biochronology group), even though it still remains the largest of the ICP research groups. The recently created Computational Paleobiology (formerly Virtual Paleontology) group has expanded a bit during the last couple of years and is performing adequately. This does not apply to the Paleoecology & Biochronology group, although this is contingent upon very specific circumstances: first, a researcher that was going to join the group in 2021 with a competitive postdoctoral contract finally decided to accept an alternative job offer abroad; second, the PhD student of the group has yet to win a

predoctoral contract and hence does not compute as staff in a strict sense; and third, the former permanent of the group (other than the group leader) won a Serra Hunter lectureship at the UAB and despite an agreement to partially ascribe him to the ICP, the agreement with the university will not be formalized until 2022. Finally, the Life History Evolution (formerly Evolutionary Paleobiology) group, which had shrunk from 2018 to 2020, experienced some recovery in 2021 (although it should be expanded further in years to come).

RESEARCH GROUPS STAFF (2016–2020 vs. 2021)							
STAFF COMPOSITION	2016	2017	2018	2019	2020	AVERAGE	2021
DE	6	5	5	6	5	5.4	5
PBDP	8	11	11	12	9	10.2	8
PEBC	—	—	—	—	3	—	1
PPPA	6	6	4	6	8	6.0	6
LHE	6	7	7	5	3	5.6	4
CPB	1	2	2	1	3	1.8	3

Abbreviations: DE = Dinosaur Ecosystems (formerly Mesozoic Faunas); PBDP = Paleobiodiversity & Phylogeny (formerly Neogene & Quaternary Faunas); PEBC = Paleocology & Biochronology; PPPA = Paleoprimateology & Paleanthropology (formerly Paleoprimateology & Human Paleontology); LHE = Life History Evolution (formerly Evolutionary Paleobiology); CPB = Computational Paleobiology (formerly Virtual Paleontology).

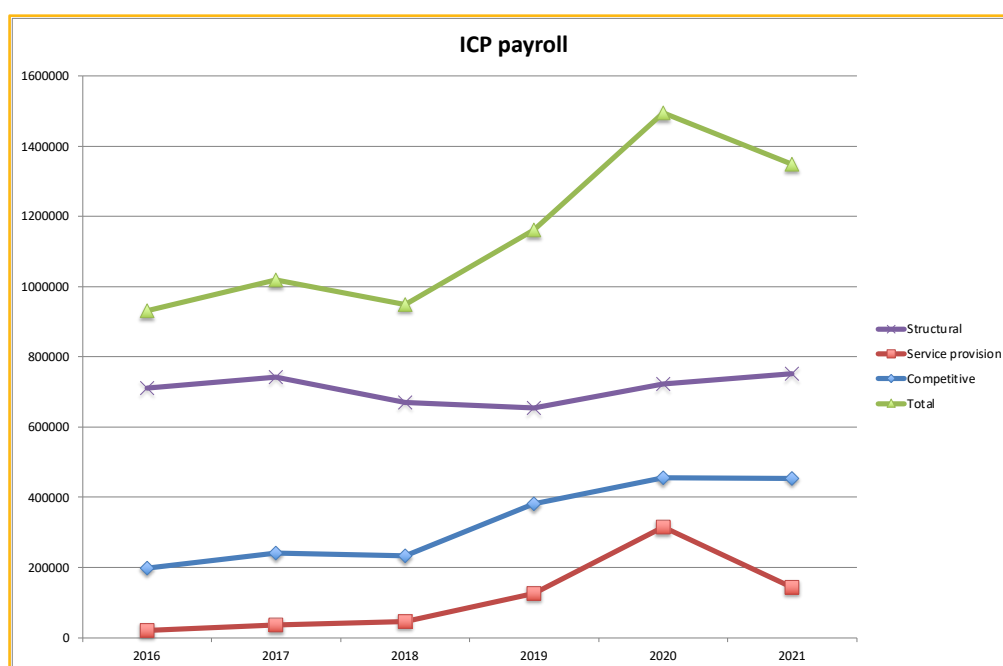


**Total payroll.** To better understand the evolution of ICP staff through time, the total payroll of the ICP can be divided into three distinct categories: structural, service provision and competitive. The structural portion of the payroll corresponds to the salaries and taxes associated to research and non-academic personnel that performs the regular (research, research support, and administrative) tasks of the ICP defrayed by basal funds, without prejudice that they might also perform some service provision tasks. The service provision payroll corresponds to work and service contracts that are defrayed with funds obtained from service

provision. Finally, the competitive payroll refers to researchers and technicians hired by means of competitive funds obtained from external funding agencies.

Until a few years ago, the service provision payroll was very small, and structural payroll represented almost three-quarters of the total payroll, with the rest being covered by competitive funds. This situation drastically changed in 2019 and, especially, 2020, when the service provision payroll represented more than 20% of the total and structural payroll decreased below 50%. The figures for 2021 are less extreme, and entirely comparable to those of 2019, due to a decrease in service provision as compared with the previous year. In absolute terms, it can be seen that the structural payroll has remained quite stable (the figure of 2021 being slightly higher than the average for the five preceding years), whereas the competitive and service provision payrolls have increased during the last three years. It may be foreseen that competitive payroll will progressively increase, even if slightly, during the next few years, whereas the evolution of service provision is more difficult to predict, although most likely it will fluctuate between the 2019 and 2020 (i.e., higher than before 2019).

ICP PAYROLL (2016–2020 vs. 2021)							
PAYROLL (k€)	2016	2017	2018	2019	2020	AVERAGE	2021
Structural	711.2	742.2	670.5	653.5	723.1	<b>700.1</b>	<b>752.3</b>
Service provision	21.0	35.5	45.6	125.3	315.9	<b>108.6</b>	<b>143.1</b>
Competitive	198.2	241.7	232.1	381.8	456.0	<b>302.0</b>	<b>453.0</b>
TOTAL	930.4	1,019.3	948.2	1,160.7	1,495.0	<b>1,110.7</b>	<b>1,348.4</b>
Structural (%)	76.4	72.8	70.7	56.3	48.4	<b>63.0</b>	<b>55.8</b>
Service provision (%)	2.3	3.5	4.8	10.8	21.1	<b>9.8</b>	<b>10.6</b>
Competitive (%)	21.3	23.7	24.5	32.9	30.5	<b>27.2</b>	<b>33.6</b>



## Continuous training

The ICP has an internal policy of continuous training for its personnel, including not only contracted staff but further including research associates and collaborators. Besides the scientific training provided to early stage researchers (R1 and R2) by their corresponding supervisors in the framework of the normal development of their research activities, the ICP provides all of its employees with the opportunity to perform free courses each year, in order to foster their continuous training and learning. Some of these courses are intended to all the ICP personnel, whereas other are specifically targeted to researchers (with emphasis on early stage researchers, but extensible to established and even more senior researchers as well).

As in previous years, two main opportunities of continuous training were offered for free to ICP personnel in 2021: courses for employees defrayed with funds available from the Spanish Social Security; and scientificotechnical courses for researchers and research associates, thanks to an agreement with the company Transmitting Science (TS).

**Courses defrayed with Social Security Funds.** As in 2019-2020, the funds from the Social Security were not devoted to courses on languages or computer programs, but used to two other types of courses, which were attended by 14 staff members (both researchers and technicians):

- “Gestor de referencias bibliográficas Zotero”: 15/11/21 to 22/11/21, instructed by Pitagora Advanced, S.L.U. and held online due to the pandemic | 5 attendees (this number was constrained by available funds).
- “Comunicació Científica i Impacte En La Societat” 09/12/21 to 16/12/21, instructed by Pitagora Advanced, S.L.U. and held online due to the pandemic | 9 attendees (this number was constrained by available funds).

**Scientificotechnical courses.** Regarding the courses instructed by TS, they consist of advanced courses in life sciences (including varied topics, such as statistics and geometric morphometrics, phylogenetic reconstruction, scientific drawing, etc.), being generally held at the ICP premises in Sabadell or else in other nearby locations within the province of Barcelona. Further details about the courses attended by ICP personnel are provided below. The researchers, research associates and technicians of the ICP have the opportunity to attend for free the scientific courses coorganized with TS. In 2021, a total of four ICP employees attended the following course:

- “Gender and Science: a comprehensive approach- 1st Edition”: 29/11/21 to 03/12/21, Online | 4 attendees.

**Courses offered by CERCA.** In 2021, the ICP personnel had the opportunity to perform the following course offered by I-CERCA:

- "The Collider Lean LaunchPad (LLP)": 20/10/2021 to 21/10/2021 (16 h), instructed by The Collider and organized by Fundació MWCcapital with the support of the Business and Labour Department of the Generalitat de Catalunya and the collaboration of Xarxa d'Emprenedoria Universitària and I-CERCA | 1 attendee.

**Non-discrimination training.** Multiple courses related to the prevention of gender discrimination and violence against women were performed by ICP staff, and particularly by members of the Non-Discrimination Committee (NDC) of the ICP:

- "Diversitat sexual i de gènere: estratègies d'intervenció per promoure la diversitat sexual, de gènere i lluitar contra la LGTBIfòbia": 8/04/21 to 15/04/21 (4.5 hours), organized online by the Universitat Autònoma de Barcelona | 1 attendee (President of the NDC).
- "Com afrontar la discriminació LGTBI+": 03/05/21 (3 hours), organized online by the Escola d'Administració Pública de Catalunya | 1 attendee (President of the NDC).
- "Adaptació dels plans de gènere dels centres CERCA als RD 901 i 902/2020": 10/06/21 to 15/07/21 (13,5 hours), organized online by I-CERCA and instructed by Atena Gender Consulting | 1 attendee (President of the NDC).
- "La facilitació aplicada a diferents contextos: reptes i aprenentatges des de l'experiència.": 23/09/21 (2 hours), organized online by Fil a l'Agulla | 2 attendees (President and Rapporteur of the NDC).
- "La igualtat i no-discriminació als centres CERCA": 26/10/21 (1.5 hours), organized online by Grup Pitàgora | 1 attendee (Rapporteur of the NDC).
- "La facilitació i nous lideratges": 16/11/21 (1.5 hours), organized online by Fil a l'Agulla | 1 attendee (President of the NDC).
- "Agressors i mites: factors psicosocials de les violències masclistes": 15/11/21 to 26/11/21, online through Snackson platform | 1 attendee (Vicepresident of the NDC).
- "Càpsula formativa (3ª edició). Feminisme per a homes: la violència i els homes": 2/12/21 (3 hours), organized online by Fil a l'Agulla | 1 attendee (Rapporteur of the NDC).
- Online minicourse "De les microagressions a l'assetjament. Les dones en la recerca científica": 01/12/20 to 31/03/21, online through Snackson platform | 8 attendees during 2021.
- "Paleovermut. Sí, tenim pla d'igualtat. I a mi què?": 24/03/21 (2 hours), organized online by the NDC of the ICP, instructed by Atena Gender Consulting and the NDC President | 28 attendees.
- "Paleovermut. Deconstrucció o mort, tu tries. Perdoneu les molèsties, però ens estan matant": 15/12/21 (2 hours), organized online by the NDC of the ICP, instructed by Fil a l'Agulla and the NDC President | 32 attendees.



**Training on occupational risk prevention.** Also noteworthy at the various courses on occupational risk prevention performed by several ICP staff members and defrayed entirely by the ICP:

- “Curso formación seguridad en el trabajo”: 01/12/2021 (2 h), instructed by Quirón Prevención, S.L.U. | 42 attendees.

### Salary scale

As a first step toward the implementation of transparent recruitment, a Salary Scale was developed by the Director and the General Manager of the ICP, being approved by the Steering Committee in May 2018 and subsequently by the Board of Trustees in June 2018. This salary scale is based on four professional categories for researchers (R1–R4, corresponding to the four researcher profiles recognized by the European Framework of Research Careers) and three different profiles (T1–T3) for technicians (*sensu lato*, i.e., further including personnel of administration and services). Each position corresponds to one of these professional categories, although certain positions can be occupied by multiple categories (e.g., senior vs. junior). In turn, each professional category entails a given range in the ICP Salary Scale, although certain positions of higher responsibility further imply a wage supplement (S1–S4). An update of the Salary Scale of the ICP was approved in December 2019, including a 2.5% pay increase in compliance with the Decree-Law 3/2019. A further update with a 2% increase took place in 2020, in accordance with the Decree-Law 3/2020 regarding the remuneration increase for public sector personnel of the Generalitat de Catalunya. In 2021, the increase in the salary scale was of 0.9%, in agreement with Decree-Law 18/2021. It should be noted that the salaries for R1 researchers with competitive contracts are updated yearly in agreement not only with the provisos of each call, but also those of the Research Personnel in Training Estatute (Decree Law 103/2019).

### HRS4R

**HR Excellence Award.** With the aim to implement the Human Resources Strategy for Researchers (HRS4R) of the European Union, the ICP endorsed the ‘European Charter for Researchers’ and the ‘Code of Conduct for the Recruitment of Researchers’ on December 2016. Soon thereafter, in February 2017, the HRS4R Implementation Committee and Working Group was formally established. This committee was further recognized in the new Organization Chart of the ICP devised by the new Director and approved by the Steering Committee in late 2017 (subsequently ratified by the Board of Patrons in June 2018). This committee has the aim to implement the Human Resources Strategy for Researchers (HRS4R) of the EU at the ICP, and it is mainly composed of non-research staff, since the Researchers Commission further provides advice to the committee from the researchers’ viewpoint. Since 2017, the Organization Chart further formally recognizes a Management & Human Resources Department, led by the General

Manager, with the aim to improve and give internal visibility to the ICP human resources policies within the context of the implementation of HRS4R.

Throughout 2017, the HRS4R Implementation Committee and Working Group, with the aid of the ICP Researchers Commission, performed an internal 'Gap Analysis' to evaluate the current degree of implementation of the forty principles included in the Charter and Code and, on this basis, elaborate an Action Plan to implement HRS4R at the ICP. These documents were submitted to the European Commission on November 2017, who formally granted the 'HR Excellence in Research' to the ICP on March 2018. In the meantime, the implementation of the Action Plan had already started, being supervised by the above-mentioned organs of the ICP. Throughout 2019 and 2020, multiple documents were elaborated in the framework of the HRS4R Action Plan implementation. On April 2020, an interim assessment report was submitted to EURAXESS to evaluate the level of ambition and the quality of progress in HRS4R implementation at the ICP. The document provided a detailed review of the whole implementation process of the various principles included in the Charter & Code, as well as the degree of compliance of the different actions stated in the Action Plan and the OTM-R policy.

The results of this evaluation were received on July 2020. The CE Consensus Report concluded that the ICP was performing well, that the HRS4R was embedded, and that no corrective actions were required. The report highlighted the success of the ICP in the aim of having formal documents on recruitment, professional development, and organizational structure. A detailed review of the whole process of the implementation of the several principles included in the Charter & Code and the degree of compliance of the different actions stated in the Action Plan as well as the OTM-R policy was provided on September 2020 and made available through the ICP website ([https://www.icp.cat/attachments/transparencia/HRS4R\\_Report\\_on\\_the\\_Interim\\_Assessment.pdf](https://www.icp.cat/attachments/transparencia/HRS4R_Report_on_the_Interim_Assessment.pdf)). To face the renewal phase of the HR Excellence in Research Award (scheduled for July 2023), the evaluators recommended to perform focus interviews or surveys among ICP staff to assess the perceived effects of the actions developed under the Action Plan. The EC Consensus report included an additional recommendation to publicize the degree of compliance of the Action Plan. With these recommendations in mind, in 2021 the ICP HRS4R Implementation Committee and Working Group devised 5 new actions that are detailed below, together with the actions that were implemented during that year and a summary of the degree of fulfillment of the HRS4R Action Plan as a whole at the end of 2021.

**HRS4R Action Plan.** The Action Plan devised by the HRS4R Implementation Committee & Working Group (available online from the following URL: [http://www.icp.cat/attachments/transparencia/HRS4R\\_ICP\\_Action\\_Plan.pdf](http://www.icp.cat/attachments/transparencia/HRS4R_ICP_Action_Plan.pdf)) originally included 25 specific actions intended to attain a complete implementation of the forty principles included in the Charter & Code. Six additional actions were subsequently devised, one in 2020 and five in 2021. Although the implementation of the HRS4R Action Plan already began in late 2017 with the approval of the

HRS4R ACTION PLAN IMPLEMENTATION			
ACTION NO.	DESCRIPTION	EXPECTED	IMPLEMENTATION
Action 1	Upload UAB & CERCA documents to the ICP website	1Q 2018	Fully implemented 2019
Action 2	Update the Strategic Plan	4Q 2018	Fully implemented 2018
Action 3	Manual of Best Practices in Research, Intellectual Property and Scientific Authorship	4Q 2019	Fully implemented 2020
Action 4	Protocol for Invasive and Destructive Analyses of Fossils	1Q 2019	Fully implemented 2020
Action 5	Welcome Handbook	2Q 2019	Delayed, under implementation
Action 6	Protocol for Funding Request	4Q 2018	Delayed, under implementation
Action 7	Transparency webpage and internal communication	1Q 2018	Fully implemented 2021
Action 8	Protocol for Fund Expenditure Accountability	2Q 2018	Delayed, under implementation
Action 9	Safety & prevention training	4Q 2019	Fully implemented 2021
Action 10	Update the internal Information Systems Security Document	3Q 2019	Delayed, under implementation
Action 11	Improve and translate the Plan of Equal Opportunities and Diversity Management	2Q 2020	Almost fully implemented 2020
Action 12	Establish a Non-discrimination Committee	1Q 2018	Fully implemented 2018
Action 13	Improve and translate the Guide of Prevention and Action in Case of Gender Violence	4Q 2020	Almost fully implemented 2021
Action 14	Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians	2Q 2018	Fully implemented 2019
Action 15	Definition of professional categories	3Q 2018	Fully implemented 2018
Action 16	Strategy for the Professional Development of Researchers	4Q 2019	Fully implemented 2020
Action 17	Publicize positions at an international level	4Q 2018	Fully implemented 2019
Action 18	Implementation of new organigram with Management & Human Resources Department	2Q 2018	Fully implemented 2018
Action 19	Basic instructions for traveling abroad	3Q 2018	Delayed, under implementation
Action 20	Complaints protocol	2Q 2018	Fully implemented 2020
Action 21	Steering Committee	2Q 2018	Fully implemented 2018
Action 22	Coordination Meetings	1Q 2018	Fully implemented 2018
Action 23	Researchers Commission	1Q 2018	Fully implemented 2018
Action 24	Organization of talks ('Paleovermut's initiative')	1Q 2018	Fully implemented 2018
Action 25	Free language courses and other types of training	1Q 2018	Fully implemented 2018
Action 26	Internal regulation of working time	4Q 2020	New and fully implemented 2020
Action 27	Assess the degree of knowledge of the HRS4R Action Plan	2Q 2021	New and fully implemented 2021
Action 28	Salary Register	3Q 2022	New 2021, pending
Action 29	Staff delegates	4Q 2021	New and fully implemented 2021
Action 30	RRI Commission	4Q 2021	New and fully implemented 2021
Action 31	Strategic Plan Working Group	2Q 2021	New and fully implemented 2021

new Organization Chart, most of the Action Plan original initiatives were planned for 2018–2019. The implementation process is overseen by the HRS4R Implementation Committee & Working Group, and further supervised by the Steering Committee, with the aid of other committees and commissions of the ICP (particularly, the Researchers Commission). The implementation of the HRS4R Action Plan at the end of 2021 is summarized in the table above.

Out of the 25 actions originally planned for 2018-2020, 18 are fully implemented and 2 almost fully implemented, while 6 are delayed but already under implementation. A new action regarding working conditions (Action 26) was included in 2020 and became fully implemented on 3Q 2020. In turn, 5 new actions (27 to 31) were included in 2021, of which 4 were already fully implemented at the end of the year.

The HRS4R actions that became fully implemented in 2021 (including the new ones devised during this year) are explained in greater detail below:

- **Action 7: Transparency webpage and internal communication.** Description: To officially designate the ICP employee in charge of regularly updating the documents available from the ICP Transparency webpage and automatically communicating such changes to all the personnel from the ICP. These documents should be made available also in the Spanish and English versions of the ICP website. Indicator(s)/Target(s): Relevant documents periodically updated on the webpage; quarterly electronic newsletter sent to personnel; email internal communiqués to personnel. Implementation: Originally planned for 1Q 2018, the fact is that this action requires continuous implementation. Throughout 2019, 2020 and 2021, the relevant documents were periodically uploaded to the transparency webpage of the ICP and the personnel was notified about the most relevant ones. Furthermore, in accordance with the recommendations provided by the EC Consensus report, on September 2020 the HRS4R Interim Assessment Report was uploaded to the ICP website ([https://www.icp.cat/attachments/transparencia/HRS4R\\_Report\\_on\\_the\\_Interim\\_Assessment.pdf](https://www.icp.cat/attachments/transparencia/HRS4R_Report_on_the_Interim_Assessment.pdf)). Finally, at the end of 2021, the internal electronic newsletter for the ICP was issued on a quarterly basis for the first time, so that the action is considered fully implemented.
- **Action 9: Safety & prevention training.** Description: To encourage the ICP personnel to attend training sessions in safety at work and prevention of occupational hazards. Indicator(s)/Target(s): Progressively increase the number of personnel attaining the training sessions. Implementation: This is a continuous action. However, an online general training session in safety at work and prevention of occupational hazards (including a specific training for lab staff) was organized for all staff members on 4Q 2021, and hence it is now considered fully implemented.
- **Action 27: Assess the degree of knowledge of the HRS4R Action Plan.** Description: According to the recommendations included in the CE Consensus Report, the ICP should assess the perceived effects of the actions developed under the Action Plan among staff by means of surveys or interviews with focus groups. Indicator(s)/Target(s): Email a survey to personnel, collect answers and analyze the results. Implementation: On April 2021, the HRS4R Implementation Committee designed a survey with 45 questions about the main Action Plan issues. Answers were collected on May 3, 2021, and the results were analyzed by the ICP Director and subsequently discussed among the HRS4R Implementation Committee members on June 30, 2021. Preliminary conclusions were made available to staff in the Director's Paleovermut talk on May 28, 2021.

- **Action 29: Staff delegates.** Description: Election of the ICP staff delegates according to Catalan laws. The ICP was lacking this figure, which is needed to guarantee the rights of staff members. Indicator(s)/Target(s): Official document (Model 2.8. Delegats de personal. Certificat de la mesa electoral sobre el resultat de les eleccions.) and acknowledgement of receipt from the Business and Labor Department of the Generalitat de Catalunya. Implementation: Elections were held on November 2, 2021 and 3 staff delegates were elected. One of them was formally designated occupational risk prevention delegate on December 2021.
- **Action 30: RRI Commission.** Description: The Responsible Research & Innovation (RRI) Commission is aimed to provide advice and coordinate various aspects (governance, project management, knowledge transfer, outreach and public engagement, research and publishing ethics, open access and open data...) to ensure that R+D is optimally aligned with societal values, needs, and expectations. In summary, the RRI Commission intends to take into account multiple stakeholders in the design and execution of research aims to help improve societal progress and welfare. The RRI committee will have advisory functions to the ICP personnel, with particular emphasis on researchers with regard to the integration of the various aspects of the RRI in the drafting of research projects. Indicator(s)/Target(s): Minute of the RRI committee in which periodicity of committee meetings is established; minutes of the RRI committee (at least annually). Implementation: On June 29, 2021 the Steering Committee approved the constitution of the ICP RRI Commission, which was formally established in a first meeting held on November 29, 2021.
- **Action 31: Strategic Plan Working Group.** Description: Establish the Strategic Plan Working Group with the aim to perform a SWOT analysis and subsequently elaborate the ICP Strategic Plan for 2022-2025. Indicator(s)/Target(s): Minute of the Steering Committee in which the Working Group is approved; minutes of Strategic Plan Working Group. Implementation: On May 26, 2021 the Steering Committee approved the constitution of the Strategic Plan Working Group, which was formally established in a first meeting held on June 4, 2021. This working group is temporary and will be dissolved once the new strategic plan is approved in 2022.

Other HRS4R actions that were almost fully implemented in 2021 are the following:

- **Action 11: Improve and translate the Plan of Equal Opportunities and Diversity Management.** Description: To improve, expand and translate into English the current ICP Plan of Equal Opportunities and Diversity Management, aiming to (a) promote equality in racial, ethnic or birth origin, gender, sexual orientation, religion or beliefs, political opinion, disability, age, or any other condition personal or social circumstances; and (b) promote equality and strengthen gender balance at selection and evaluation committees as well as supervisory, managerial and decision-making bodies of ICP. This includes initiatives to facilitate the combination of family and professional life. Indicator(s)/Target(s): Updated document approved by the Steering Committee, available from the ICP website and emailed

to personnel; minutes of the Non-Discrimination Committee meetings (at least quarterly).  
Implementation: The new Equality Plan was approved by the Steering Committee on September 22, 2020, to be translated into English during 2021. However, on 2Q 2021 CERCA informed all the centers that all equality plans should be adapted to fulfill the new Spanish legislation enacted on October 2020, even if centers with less than 50 workers were not legally bound to do so. Therefore, the plan is currently being improved and it will not be translated until its elaboration is finished.

- **Action 13: Improve and translate the Guide of Prevention and Action in Case of Gender Violence.** Description: To improve, expand and translate into English the current ICP Guide for the Prevention and Action in Case of Gender Violence, aiming to avoid these conflicts and facilitate their management if they exist. Indicator(s)/Target(s): Expanded and translated version of the document available from the ICP website and emailed to personnel. Implementation: The Protocol for the prevention, detection and intervention in cases of violence against women was approved by the Steering Committee on July 2021. However, it remains to be ratified by the Board of Trustees (expected for the spring of 2022) and its translation into English is also pending.

Finally, other HRS4R new actions that are pending are the following:

- **Action 28: Salary Register.** Description: Elaborate the 2021 salary register of ICP employees including hours worked, gross salary, complements, seniority, etc. Indicator(s)/Target(s): A table of data in Excel format and minute of the Steering Committee in which the definitive version of the Salary Register is approved. Implementation: This action is pending, to be finished in 3Q 2022.

## Internal evaluation of researchers

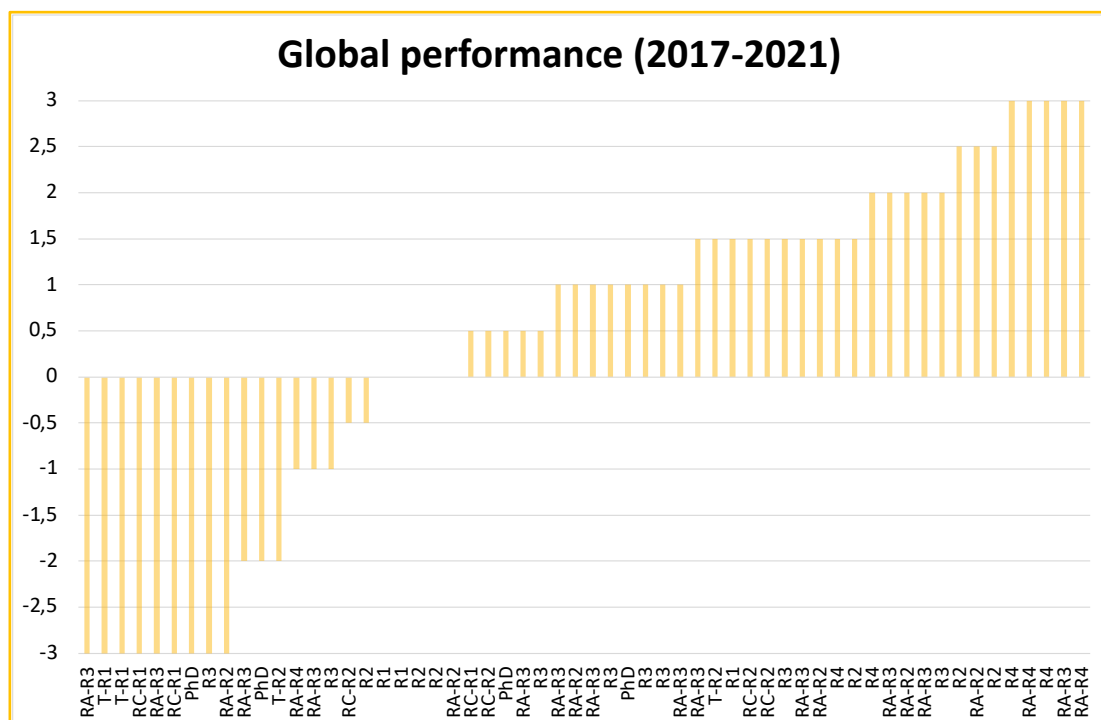
**Evaluation metrics.** The ICP “Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians” approved by the Steering Committee in February 2019 and approved by the Board of Trustees in May 2019 not only includes the rules for recruitment, but also the instructions for performing an internal evaluation of researchers. Three different ad hoc metrics are distinguished based on the SCI production of each ICP author (thereby including researchers, research associates, and some technicians that also coauthor papers):

- **Global impact:** it is based on the SCI production of a given researcher, by simultaneously reflecting quality, impact, visibility and leadership; although it is mostly based on JIF, other variables (quartile, category, open access, and number, position and role of authors) are considered.
- **Relative contribution:** also based on SCI production, it measures the relative contribution of each researcher to the overall ICP production in terms of publications (particularly from the first quartile, in open-access and multidisciplinary journals, and led by ICP authors).

- Relative impact: measures the relative quality/impact of a researcher's output as compared to that of the ICP irrespective of production volume.

Computations are restricted to the last five years (that of the evaluation and the four previous ones), and the two first variables are standardized by career duration (which also takes into account career breaks) as specified in the recruitment protocol. For each variable, a rating is assigned to each researcher depending on the relative ranking as compared to ICP authors as a whole, based on the median and interquartile range (worse than average = -1; slightly below average = 0; slightly above average = +0.5; and better than average = +1). The overall performance metric of an individual researcher is computed as the sum of the three ratings (from -3 to +3) and determines result of the evaluation: negative (lower than -1.5), neutral (between -1.5 and 0), positive (between +0.5 and +1.5), very good (between +2 and +2.5), and excellent (+3.0).

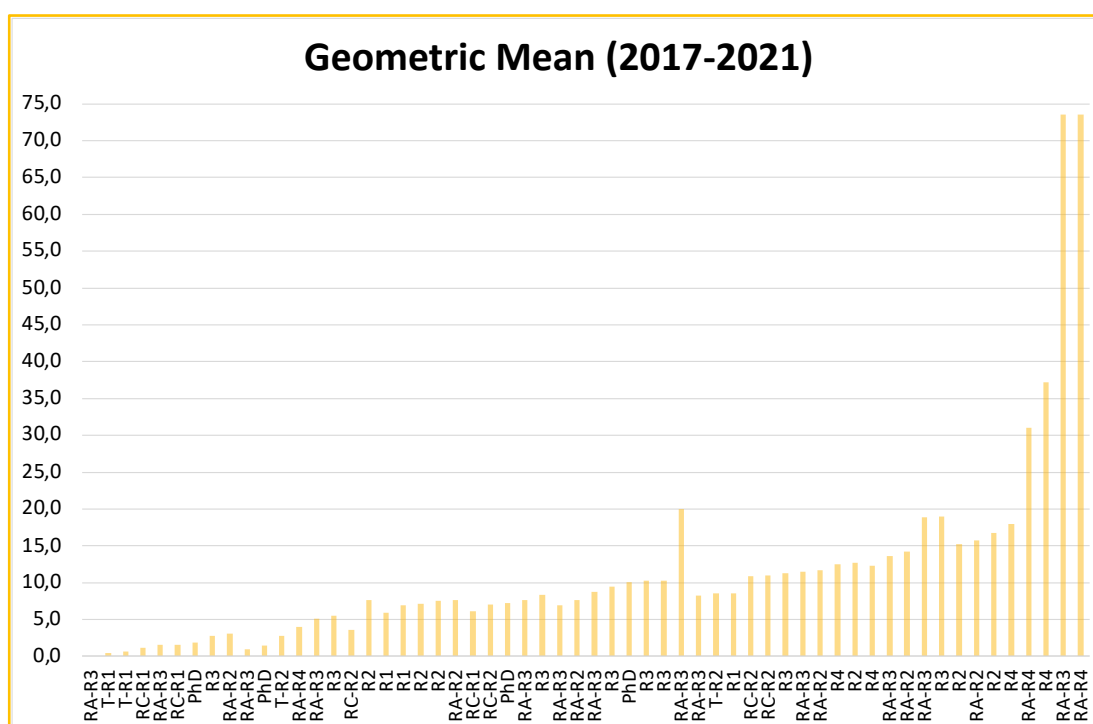
**Evaluation results.** The provisional results for the evaluation of ICP researchers and technicians with SCI publications during the 2017-2021 period (pending refinement when the JCR of 2021 is published) are summarized in the plots below, based on global performance (negative: -3 to -1.5; neutral -1 to 0; positive +0.5 to +1.5; very good +2 to +2.5; excellent +3) and the geometric mean of the three indicators (global impact, relative impact, and relative contribution) stipulated by the ICP recruitment protocol.



The definitive results for the previous evaluation (2016-2020; n=52) yielded 12 negative (23%), 8 neutral (15%), 15 positive (29%), 13 very good (25%), and 4 excellent (8%) evaluations. In turn, for 2017-2021 (n = 58) there are 12 negative (21%), 10 neutral (17%), 23 positive (40%), 8 very good (14%), and 5 excellent (9%) evaluations, plus 10 people not evaluated—the latter



correspond researchers and technicians with an ICP career duration <1 year (mostly PhD students and predoctoral researchers that had yet to publish their first SCI paper in 2021). The results are similar from one year to another for several reasons. First, they have four years in common; and second, the metrics compare the performance among researchers based on the median and interquartile range. In other words, the metrics are devised to compare ICP authors (including researchers, technicians, research associates and collaborators that have published with ICP affiliation during the selected period) among themselves, so the number of negative, neutral, positive, and very good plus excellent evaluations is expected to be roughly one-quarter each (with only small deviations depending on the rating of particular researchers for each of the three metrics employed).



In summary, the values of the metrics are not important in themselves, but only useful to compare among various categories within a given evaluation period, or to monitor particular ICP authors through time. For example, it is expected that, on the plots, R3 and especially R4 researchers are located toward the right (more positive values), whereas R2 and R1 are located toward the left (more negative values), although it can be seen that there are many exceptions. Nevertheless, it is noteworthy that in 2021 the percentage of positive evaluations significantly increased in detriment of very good evaluations. The five researchers with an excellent evaluation for 2017-2021 include two senior research group leaders of the ICP (the same that obtained excellent results in the previous evaluation period) as well as three research associates (of which two R4 and an R3). While the individual results are not publicized, they are most useful to monitor the performance of individual researchers and discuss with them possible routes for improvement.



GM three metrics	Global performance	Evaluation	Category
0.00	-3	Negative	RA-R3
0.43	-3	Negative	T-R1
0.69	-3	Negative	T-R1
1.13	-3	Negative	RC-R1
1.52	-3	Negative	RA-R3
1.54	-3	Negative	RC-R1
1.83	-3	Negative	PhD
2.76	-3	Negative	R3
3.08	-3	Negative	RA-R2
0.91	-2	Negative	RA-R3
1.51	-2	Negative	PhD
2.78	-2	Negative	T-R2
4.03	-1	Neutral	RA-R4
5.15	-1	Neutral	RA-R3
5.54	-1	Neutral	R3
3.59	-0.5	Neutral	RC-R2
7.59	-0.5	Neutral	R2
5.91	0	Neutral	R1
6.93	0	Neutral	R1
7.16	0	Neutral	R2
7.50	0	Neutral	R2
7.60	0	Neutral	RA-R2
6.11	0.5	Positive	RC-R1
7.08	0.5	Positive	RC-R2
7.19	0.5	Positive	PhD
7.66	0.5	Positive	RA-R3
8.36	0.5	Positive	R3
6.94	1	Positive	RA-R3
7.60	1	Positive	RA-R2
8.72	1	Positive	RA-R3
9.46	1	Positive	R3
10.12	1	Positive	PhD
10.29	1	Positive	R3*
10.29	1	Positive	R3
19.97	1	Positive	RA-R3
8.23	1.5	Positive	RA-R3
8.54	1.5	Positive	T-R2
8.56	1.5	Positive	R1
10.91	1.5	Positive	RC-R2
11.02	1.5	Positive	RC-R2
11.23	1.5	Positive	R3
11.53	1.5	Positive	RA-R3
11.69	1.5	Positive	RA-R2
12.45	1.5	Positive	R4*
12.73	1.5	Positive	R2
12.27	2	Very good	R4*
13.63	2	Very good	RA-R3
14.19	2	Very good	RA-R2
18.87	2	Very good	RA-R3
19.01	2	Very good	R3*
15.22	2.5	Very good	R2
15.70	2.5	Very good	RA-R2

16.74	2.5	Very good	R2
17.92	3	Excellent	R4*
31.03	3	Excellent	RA-R4
37.24	3	Excellent	R4*
73.52	3	Excellent	RA-R3
73.52	3	Excellent	RA-R4

R1 = Predoctoral Researcher; R2 = Postdoctoral Researcher; R3 = Researcher; R4 = Senior Researcher; RA = Research Associate; RC = Research Collaborator; T = Technician; PhD = PhD Student; \* Research Group Leader.

**Publication metrics.** To help retrieving the publications of current (2021) ICP researchers, research associates, and technicians with a publication record, the following table provides their Scopus and/or ORCID IDs, as well as the number of published items, citations and h-index in Scopus (updated as for December 12<sup>th</sup>, 2021).

NAME	SCOPUS ID	ORCID	PUBLICATIONS	CITATIONS	H-INDEX	CATEGORY
Abella, J.	16686180200	<a href="https://orcid.org/0000-0002-3433-6093">0000-0002-3433-6093</a>	39	478	14	RA-R2
Alba, D.M.	56248806600	<a href="https://orcid.org/0000-0002-8886-5580">0000-0002-8886-5580</a>	142	2890	30	R4*
Almécija, S.	24366054500	<a href="https://orcid.org/0000-0003-1373-1497">0000-0003-1373-1497</a>	59	1224	18	RA-R4
Angelone, C.	16633426200	<a href="https://orcid.org/0000-0002-7140-9431">0000-0002-7140-9431</a>	52	826	16	RA-R3
Arias-Martorell, J.	55249683600	<a href="https://orcid.org/0000-0001-8110-2946">0000-0001-8110-2946</a>	20	132	8	R2
Aurell-Garrido, J.	35279378500	<a href="https://orcid.org/0000-0001-6954-2033">0000-0001-6954-2033</a>	10	318	8	RC-R1
Balaguer, J.	55616355200	<a href="https://orcid.org/0000-0001-7316-7774">0000-0001-7316-7774</a>	3	23	3	RC-R1
Beaudet, A.	57002560700	<a href="https://orcid.org/0000-0002-9363-5966">0000-0002-9363-5966</a>	35	232	9	RA-R2
Bolet, A.	15046423500	<a href="https://orcid.org/0000-0003-4416-4560">0000-0003-4416-4560</a>	35	436	13	R2
Bouchet, F.	57220196999	<a href="https://orcid.org/0000-0003-1226-5201">0000-0003-1226-5201</a>	2	0	0	R1
Calderón, T.	57209098612	<a href="https://orcid.org/0000-0001-5446-3244">0000-0001-5446-3244</a>	2	15	1	PhD
Cartanyà, J.	42360910000	<a href="https://orcid.org/0000-0001-6785-8886">0000-0001-6785-8886</a>	6	76	3	RC-R1
Casanovas-Vilar, I.	24485251200	<a href="https://orcid.org/0000-0001-7092-9622">0000-0001-7092-9622</a>	57	1244	19	R3*
Castanera, D.	35344564400	<a href="https://orcid.org/0000-0003-3950-1630">0000-0003-3950-1630</a>	38	688	15	RC-R2
Dalla Vecchia, F.M.	55665437500	<a href="https://orcid.org/0000-0003-3914-3896">0000-0003-3914-3896</a>	75	1182	20	RA-R3
De Esteban-Trivigno, S.	25225282600	<a href="https://orcid.org/0000-0002-2049-0890">0000-0002-2049-0890</a>	16	370	12	RC-R2
De Jaime-Soguero, C.	57221459863	<a href="https://orcid.org/0000-0001-9665-6378">0000-0001-9665-6378</a>	2	2	1	R1
Delfino, M.	7103371480	<a href="https://orcid.org/0000-0001-7836-7265">0000-0001-7836-7265</a>	147	2421	29	RA-R3
Delson, E.	57201830259	<a href="https://orcid.org/0000-0002-4062-7567">0000-0002-4062-7567</a>	67	2204	25	RA-R4
DeMiguel, D.	16686393400	<a href="https://orcid.org/0000-0001-6138-7227">0000-0001-6138-7227</a>	47	688	16	RA-R3
Femenias-Gual, J.	56624424200	<a href="https://orcid.org/0000-0003-0574-9021">0000-0003-0574-9021</a>	7	36	4	RC-R2
Fondevilla, V.	55842651200	<a href="https://orcid.org/0000-0001-9355-2389">0000-0001-9355-2389</a>	16	265	11	RC-R2
Fortuny, J.	16177500700	<a href="https://orcid.org/0000-0003-4282-1619">0000-0003-4282-1619</a>	77	948	19	R3*
Furió, M.	16686168400	<a href="https://orcid.org/0000-0002-4582-3268">0000-0002-4582-3268</a>	47	820	17	R3
Galindo, J.	24485260200	<a href="https://orcid.org/0000-0002-8796-3584">0000-0002-8796-3584</a>	16	540	10	T-R1
Galobart, À.	55964223000	<a href="https://orcid.org/0000-0003-1508-4561">0000-0003-1508-4561</a>	71	1579	24	R4*
García-Paredes, I.	16686479900	<a href="https://orcid.org/0000-0003-4390-2349">0000-0003-4390-2349</a>	26	489	13	RA-R3
Grau-Camats, M.	—	—	—	—	—	PhD
Groenewald, D.P.	57208576559	<a href="https://orcid.org/0000-0001-6570-0436">0000-0001-6570-0436</a>	2	7	1	RC-R2
Holgado, B.	57201085235	<a href="https://orcid.org/0000-0001-8968-0775">0000-0001-8968-0775</a>	13	82	5	RA-R2
Jovells-Vaqué, S.	57194058140	<a href="https://orcid.org/0000-0003-0358-0840">0000-0003-0358-0840</a>	6	25	3	RA-R2
Kimura, Y.	36637561000	<a href="https://orcid.org/0000-0002-7621-9901">0000-0002-7621-9901</a>	18	209	8	RA-R3
Köhler, M.	35430989100	<a href="https://orcid.org/0000-0001-9228-3164">0000-0001-9228-3164</a>	76	2540	27	R4*
Lizano, E.	15834963000	<a href="https://orcid.org/0000-0003-3304-9807">0000-0003-3304-9807</a>	21	1486	12	T-R2
Llenas, M.	56721340800	<a href="https://orcid.org/0000-0002-0890-363X">0000-0002-0890-363X</a>	3	15	2	T-R1

Luján, À.H.	55017368500	<a href="#">0000-0003-1844-0453</a>	24	149	7	R2
Madurell-Malapeira, J.	35185260200	<a href="#">0000-0003-4639-9451</a>	53	774	17	R3
Malchus, N.	6602976736	<a href="#">0000-0002-7514-8670</a>	18	361	10	RA-R3
Marcé-Nogué, J.	35766845300	<a href="#">0000-0001-9852-7027</a>	41	385	13	RA-R3
Marigó, J.	35756539500	<a href="#">0000-0002-0547-3662</a>	25	288	12	R3
Marques-Bonet, T.	11140868400	<a href="#">0000-0002-5597-3075</a>	192	14044	54	RA-R4
Matamalas-Andreu, R.	57193729945	<a href="#">0000-0001-9914-0510</a>	11	15	3	PhD
McKenzie, S.	—	<a href="#">0000-0002-8259-3756</a>	—	—	0	R1
Méndez, J.M.	54930427700	<a href="#">0000-0003-0525-968X</a>	4	62	4	T-R1
Minwer-Barakat, R.	6504521390	<a href="#">0000-0001-9441-3612</a>	58	1070	21	RA-R3
Monclús-Gonzalo, O.	—	—	—	—	0	R1
Moyà-Solà, S.	6603807578	<a href="#">0000-0001-8506-1061</a>	146	3929	35	R4*
Mujal, E.	56898963700	<a href="#">0000-0002-6310-323X</a>	22	232	9	RA-R2
Nacarino-Meneses, C.	55214012300	<a href="#">0000-0003-2123-8758</a>	17	151	9	R2
Párraga, J.	—	—	—	—	0	PhD
Pina, M.	55080353300	<a href="#">0000-0001-9762-6402</a>	11	155	5	RA-R2
Pons-Monjo, G.	55240153000	<a href="#">0000-0002-5218-6877</a>	4	18	2	PhD
Prat-Vericat, M.	57216636012	<a href="#">0000-0002-0771-7122</a>	2	1	1	PhD
Prieto-Márquez, A.	12544776900	<a href="#">0000-0002-4836-4052</a>	47	1186	22	R3
Quintana Cardona, J.	22235800700	<a href="#">0000-0003-0146-2154</a>	28	317	11	R3
Raventós-Izard, G.	—	—	—	—	0	PhD
Ricetto, M.	—	—	1	—	0	PhD
Robles, J.M.	24485708000	<a href="#">0000-0002-5410-3529</a>	37	817	16	T-R2
Sánchez Marco, A.	6508189110	<a href="#">0000-0003-0654-1935</a>	42	1310	17	RA-R3
Sánchez, I.M.	7103004592	<a href="#">0000-0003-2151-7693</a>	29	465	13	RA-R3
Sellés, A.G.	36459128600	<a href="#">0000-0002-4637-6084</a>	28	445	13	R2
Serrano-Martínez, A.	56516908900	<a href="#">0000-0003-1178-6064</a>	8	69	6	T-R2
Sorbelli, L.	57202914897	<a href="#">0000-0002-3246-5887</a>	6	21	3	R1
Urciuoli, A.	57191286102	<a href="#">0000-0002-6265-8962</a>	8	26	3	RA-R2
Van Dam, J.A.	7101784403	<a href="#">0000-0002-2748-3722</a>	34	1762	18	RA-R3
Vega Pagán, K.A.	—	—	—	—	0	PhD
Vila, B.	22636101700	<a href="#">0000-0002-5935-1732</a>	47	1006	20	R3
Villa, A.	56927660800	<a href="#">0000-0001-6544-5201</a>	41	361	13	R2
Vinuesa, V.	57193483737	<a href="#">0000-0001-7334-9105</a>	8	68	5	T-R2

Abbreviations: R1 = Predoctoral Researcher; R2 = Postdoctoral Researcher; R3 = Researcher; R4 = Senior Researcher; RA = Research Associate; RC = Research Collaborator; T = Technician; PhD = PhD Student; \* Research Group Leader.



## STRATEGIC MANAGEMENT

### *Implementing the Strategic Plan for 2018–2021*

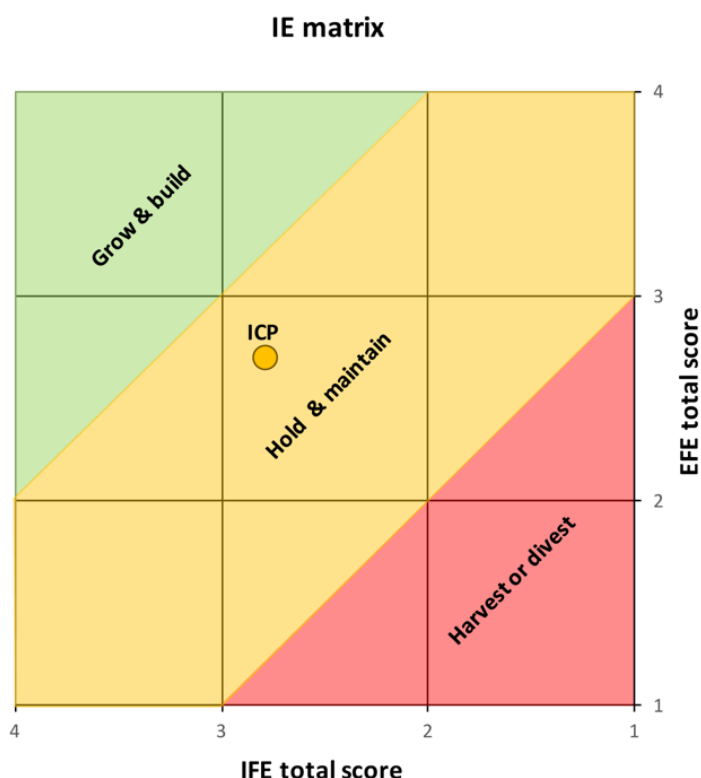
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#### Results of the financial year

Thanks to the levels of funding and especially service provision attained in 2020, the ICP was able to completely overcome the accumulated deficit, resulting in a surplus for the financial year of ca. 148 k€ and a cumulative surplus of ca. 125 k€. The Board of Trustees approved to allocate 30 k€ to investment (to buy a new van) and to keep the remaining 95 k€ as a carryover to face potential budgetary problems in 2021 (due to the expected decrease in service provision as well as other unexpected financial difficulties). Keeping such a carryover proved to be a wise decision, because the ICP had to return to MICIN a large amount of money (higher than expected) from an unfinished research project from many years ago. On the other hand, the ICP also had unexpected income as a result of an agreement with the UAB, by which both institutions agreed to split the debt pending from the justification of the FEDER funds defrayed in construction of the ICTA-ICP building. When everything is taken together, the financial year finished with a deficit of -52 k€, resulting in an accumulated surplus of 43 k€. It is expected that the results for 2022 will be positive again, although it is difficult to foresee the amount of service provision income.

#### Strategic Plan 2018-2021

**SWOT analysis.** A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the ICP was performed by the Director in late 2017 in the framework of the elaboration of a new Strategic Plan (2018-2021), which was publicized in February 2018 and subsequently ratified by the Board of Trustees in June 2018. ([http://www.icp.cat/attachments/transparencia/Strategic\\_plan\\_2018\\_2021.pdf](http://www.icp.cat/attachments/transparencia/Strategic_plan_2018_2021.pdf)). A summary of the SWOT analysis was already provided in the Annual Report 2017 and in the 2018 Annual Report, while the full version is included in the Strategic Plan. Essentially, the SWOT analysis enabled the identification of 70 factors (23 strengths, 12 weaknesses, 21 opportunities, and 14 threats), which were subjected to internal factor evaluation (IFE) and external factor evaluation (EFE) analyses, and combined in an internal-external (IE) matrix divided into three different regions with different strategical implications in terms of a research center's performance.



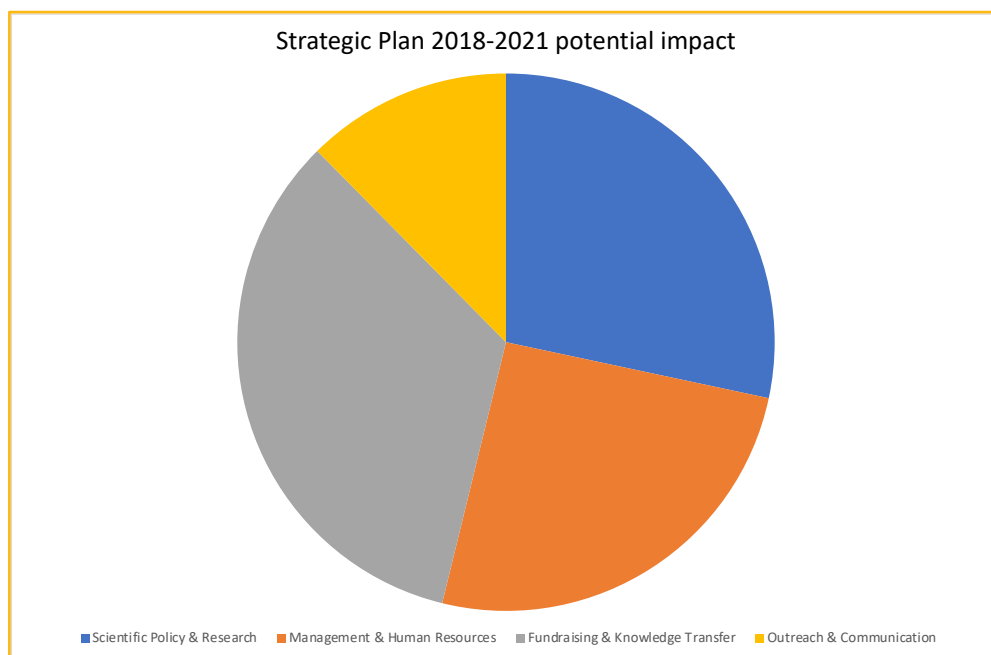
The IFE and EFE values calculated for the ICP (2.8 and 2.7, respectively) were higher than 2.5, indicating that the center is relatively strong relative to its competitors, as well as ready to take advantage of at least some opportunities and to defend against threats, respectively). These figures combined indicate that the suitable overall strategy was ‘hold and maintain’ (see figure above)—i.e., that the ICP was generally doing well and could take advantage of some opportunities, although there was room for improvement and the institution was not powerful enough to plan growing further on the midterm (so that some opportunities must be left unexplored due to excessive risk or lack of resources).

**Strategic goals, actions and indicators.** The Strategic Plan for 2018–2021, elaborated on the basis of the SWOT analysis summarized above, was conceived as a management tool that sought to identify the current situation of the institution, including its risks and opportunities, as well as to define its main strategic aims, in order to guarantee the successful accomplishment of its mission on the midterm with regard to paleontological research, knowledge transfer, and conservation of the paleontological heritage of Catalonia. With these aims in mind, the Strategic Plan defined 19 strategic goals within four strategic areas: Scientific Policy & Research (7 goals), Management & Human Resources (5 goals), Fundraising & Knowledge Transfer (5 goals), and Outreach & Communication (2 goals). Each strategic goal was based on one of the following four strategies: Strength-Opportunity (SO, 10 goals), Weakness-Opportunity (WO, 3 goals), Strength-Threat (ST, 2 goals), and Weakness-Threat (WT, 4 goals). The 19 strategic goals defined by the Strategic Plan are the following:

- **Scientific Policy & Research (SPR):**

- ✓ **SO1:** Consolidate the excellent scientific production and productivity of the ICP.
- ✓ **SO2:** Consolidate the high quality and impact of the ICP scientific production.
- ✓ **WO1:** Increase the excellent visibility of the scientific production of the ICP by promoting publication in open-access papers.
- ✓ **WO2:** Improve research support provided to ICP researchers by the Virtual Paleontology Area.
- ✓ **ST1:** Preserve the high competitiveness and foster the fidelity of ICP researchers by means of maintaining the excellent research support provided to them.
- ✓ **ST2:** Provide to researchers specific guidelines of ethics in publishing, with emphasis on intellectual property rights and authorship issues.
- ✓ **WT1:** Foster talent retention and attraction to secure the continuity of the successful ICP research lines.
- **Management & Human Resources (MHR):**
  - ✓ **SO3:** Increase the critical mass of ICP staff researchers by fostering talent attraction, with emphasis on the recruitment of foreign researchers.
  - ✓ **SO4:** Increase talent attraction at early career stages.
  - ✓ **SO5:** Improve the internal cohesion and coordination and promote staff involvement in decision-making at the ICP by implementing the new Organization Chart.
  - ✓ **WT2:** Improve the salaries and general working conditions of ICP staff (including HRS4R implementation) in spite of financial risks and budgetary constraints.
  - ✓ **WT3:** Improve the effectiveness and internationalization of researchers' recruitment by developing and implementing OTM-R policies.
- **Fundraising & Knowledge Transfer (FKT):**
  - ✓ **SO6:** Increase the ICP operating budget by means of the provision of external services.
  - ✓ **SO7:** Increase the ICP operating budget by means of competitive calls or research projects and grants, with emphasis on ERC grants and the application of modern techniques to paleontological research.
  - ✓ **SO8:** Foster knowledge transfer also in relation to training.
  - ✓ **WO3:** Increase the ICP operating budget by means of competitive calls for dissemination and outreach activities.
  - ✓ **WT4:** Avoid budgetary deficit at the ICP and increase the ratio of competitive + private income relative to the total budget.
- **Outreach & Communication (OC):**
  - ✓ **SO9:** Promote further the dissemination of the research performed by ICP researchers by means of digital media.
  - ✓ **SO10:** Promote further the outreach activities performed by the ICP.

The relative potential impact of the four strategic areas is summarized in the plot below.



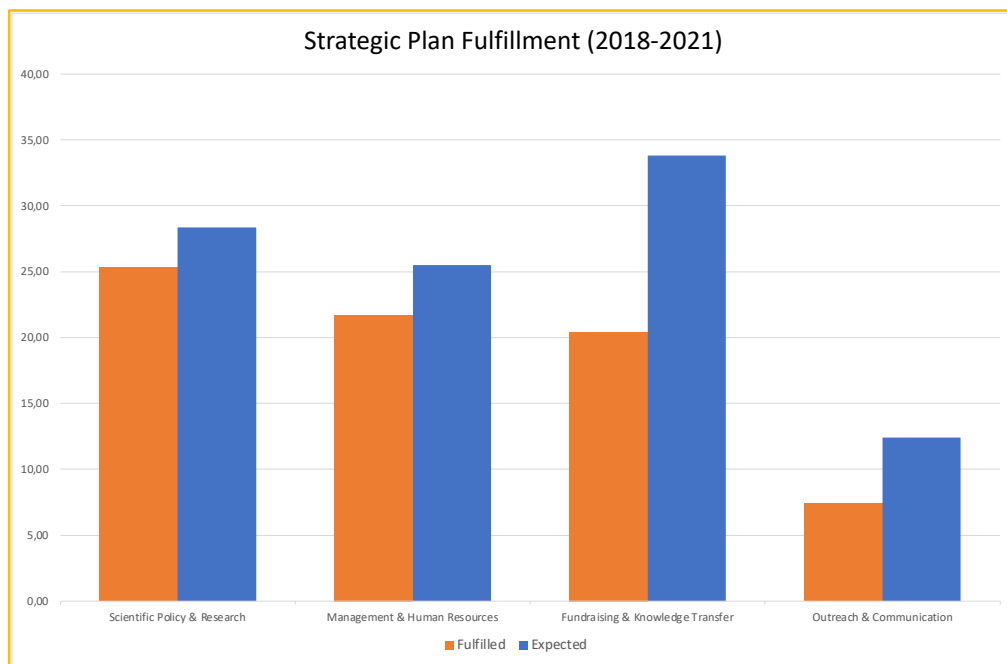
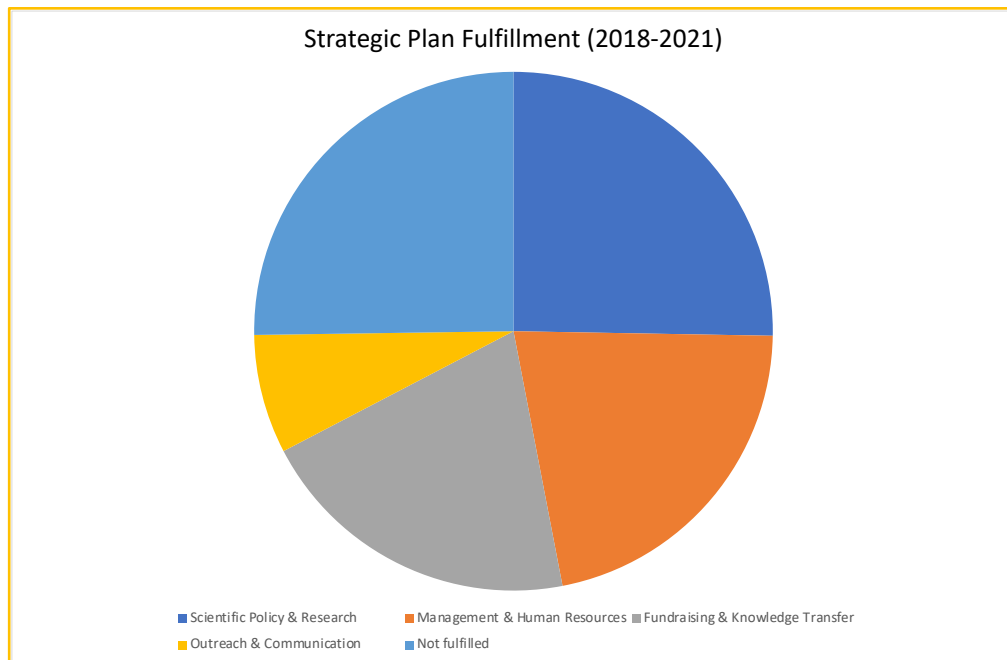
In the Strategic Plan, the aforementioned strategic goals were ranked based on the sum of the weighted scores of the internal and external factors included in each of them, and then these values are converted into percentages relative to the total summatory, to evaluate the potential impact of each goal. In turn, for each goal, several actions were defined, resulting in a total of 38 strategic actions. The potential impact of each goal was distributed among the contained actions based on a total of 84 indicators, which were rated (1 to 4) according to their perceived importance regarding the corresponding action. The average rating for each action within a goal was converted into a percentage of perceived importance, which served to distribute the goal's potential impact among the included actions. A similar procedure was followed to compute the potential impact of the various indicators, which has been used to evaluate the degree of accomplishment of the present Strategic Plan for 2018–2021 at the end of its term. All of the indicators are binary, in the sense that each one includes a criterion/condition) that may be fulfilled (1) or not (0). The summatory of these values multiplied by their respective potential impact percentages will yield the degree of achievement of the strategic plan (from 0% to 100%).

The results after the first two years (2018-2019) indicated a degree of fulfillment of 76.5%, the results after the first three years (2018-2020) were slightly lower (73.0%), and the results for the four years of the plan (2018-2021) at its completion were 74.8%. By strategic areas, the current fulfillment is as follows:

- Scientific Policy & Research (SPR): 25.3% (as compared with 25.4% in 2019 and 25.3 in 2020) out of a maximum 28.4%.
- Management & Human Resources (MHR): 21.7% (as compared with 21.1% in 2019 and 21.7% in 2020) out of a maximum 25.5%.
- Fundraising & Knowledge Transfer (FKT): 20.4% (as compared with 25.8% in 2019 and 20.4% in 2020) out of a maximum 33.8%.



- Outreach & Communication (OC): 7.4% (as compared with 4.3% in 2019 and 5.7% in 2020) out of a maximum 12.4%.



As it can be seen in the plot above, the strategic area with a greater degree of action fulfillment is SPR (89.2%), followed by MHR (85.1%), FKT (60.3%), and OC (59.8%). It is noteworthy that OC has improved as compared to the previous years, although it still shows the lesser degree of fulfillment. The pandemic surely had some impact in the results obtained after four years of application of the strategic plan, but overall the pattern is very similar from year

ICP STRATEGIC GOALS & ACTIONS (2018–2021)		POTENTIAL IMPACT %	FULFILLED? (Yes/No)
<b>SO1 [SPR] — Consolidate the excellent scientific production and productivity of the ICP:</b>			
<b>A1.</b> Encourage ICP researchers to publish more papers in SCI journals		3.31	
<b>I1.</b> Production SCI: 2018-2021 average $\geq$ 2013-2017 average (325/5=65 SCI papers/year)		1.65	Yes
<b>I2.</b> Productivity SCI: 2018-2021 average $\geq$ 2013-2017 average (1.56 SCI papers/SCI author/year)		1.65	Yes
<b>A2.</b> Recruit new research associates, with emphasis on R3 and R4 categories		2.07	
<b>I3.</b> Research associates: 2021 figure > February 2018 figure (18)		1.24	Yes
<b>I4.</b> R3-R4 research associates: 2021 figure > February 2018 figure (10)		0.83	Yes
<b>A3.</b> Promote further international collaborations		1.32	
<b>I5.</b> SCI papers with international collaboration: 2018-2021 % > 2013-2017 % (210/325=64.6% international SCI papers/total SCI papers)		0.33	Yes
<b>I6.</b> SCI international collaborations-1 (including repeated affiliations): 2018-2021 average > 2013-2017 average (515/5 = 103.0 international collaborations-1/year)		0.33	Yes
<b>I7.</b> SCI international collaborations-2 (excluding repeated affiliations): 2018-2021 average > 2013-2017 average (391/5 = 78,2 international collaborations-2/year)		0.33	Yes
<b>I8.</b> SCI international collaborations-1 % (including repeated affiliations): 2018-2021 % $\geq$ 2013-2017 % (515/859 = 60.0% of international/total collaborations-1)		0.17	Yes
<b>I9.</b> SCI international collaborations-2 % (excluding repeated affiliations): 2018-2021 % $\geq$ 2013-2017 % (391/552 = 70.8% international/total collaborations-2)		0.17	Yes
<b>SO2 [SPR] — Consolidate the high quality and impact of the ICP scientific production:</b>			
<b>A4.</b> Encourage ICP researchers to prioritize publication in SCI journals from the first quartile		2.41	
<b>I10.</b> Production Q1: 2018-2021 average > 2013-2017 average (170/5=34 Q1 SCI papers/year)		0.88	Yes
<b>I11.</b> Productivity Q1: 2018-2021 average > 2013-2017 average (0.82 SCI papers/SCI author)		0.88	Yes
<b>I12.</b> Q1 ratio %: 2018-2021 % $\geq$ 2013-2017 % (170/325=52.3% Q1/total SCI papers)		0.66	Yes
<b>A5.</b> Encourage ICP researchers to target more often SCI journals from the multidisciplinary category		1.84	
<b>I13.</b> Production multidisciplinary: 2018-2021 average > 2013-2017 average (51/5=10.2 multidisciplinary SCI papers/year)		0.53	Yes
<b>I14.</b> Multidisciplinary ratio %: 2018-2021 % $\geq$ 2013-2017 % (51/325=15.7% multidisciplinary/total SCI papers)		0.39	Yes
<b>I15.</b> Minimum multidisciplinary ratio %: 2021 figure > 20%		0.26	No
<b>I16.</b> h-index R3: 2021 average > February 2018 average (12.3)		0.26	Yes
<b>I17.</b> h-index R4: 2021 average > February 2018 average (22.4)		0.39	Yes
<b>A6.</b> Encourage ICP researchers to favor journals with high impact factors and/or impact factor percentiles		1.65	
<b>I18.</b> SCI IF GM: 2018-2021 average $\geq$ 2013-2017 average (2.1 IF GM/year)		0.66	Yes
<b>I19.</b> SCI median JIF percentile: 2018-2021 average $\geq$ 2013-2017 average (77.6 median JIF percentile/year)		0.99	No

<b>WO1 [SPR] — Increase the excellent visibility of the scientific production of the ICP by promoting publication in open-access papers:</b>		
A7. Encourage ICP researchers to publish in SCI open-access journals	1.89	
I20. OA SCI ratio %: 2018-2021 average > 2013-2017 average (85/325=26.2% OA/total SCI papers)	1.26	Yes
I21. OA SCI ratio % in 2021: 2018-2021 average >= 33%	0.63	Yes
<b>WO2 [SPR] — Improve research support provided to ICP researchers by the Virtual Paleontology Area:</b>		
A8. Elaboration of a viability plan for the CT and subsequent repair	1.82	
I22. CT viability plan: CT viability plan finished in 2018	1.04	No
I23. CT repair: CT repaired not later than 2021	0.78	No
<b>ST1 [SPR] — Preserve the high competitiveness and foster the fidelity of ICP researchers by means of maintaining the excellent research support provided to them:</b>		
A9. Maintain or increase the number of research support staff	6.54	
I24. Research support staff: 2021 non-research personnel >= February 2018 non-research personnel	6.54	Yes
<b>ST2 [SPR] — Provide to researchers specific guidelines of ethics in publishing, with emphasis on intellectual property rights and authorship issues:</b>		
A10. Elaborate a manual of best practices in research, in relation to intellectual property and authorship.	3.09	
I25. Manual of best practices: Manual available not later than 2020	0.66	Yes
I26. Lack of internal complaints: 0 external complaints about intellectual property during 2018-2021	0.44	Yes
I27. Lack of external complaints: 0 external complaints about intellectual property during 2018-2021	0.44	Yes
I28. Expressions of concerns: 0 expressions of concerns in 2018-2021	0.66	Yes
I29. Retractions: 0 retractions in 2018-2021	0.88	Yes
<b>WT1 [SPR] — Foster talent retention and attraction to secure the continuity of the successful ICP research lines:</b>		
A11. Encourage R3-R4 talented ICP researchers to stay at the ICP	1.60	
I30. R3-R4 researchers: 2021 R3+R4 researchers >= February 2018 R3+R4 researchers	1.60	Yes
A12. Correct the disequilibria between NQF and the remaining research groups.	0.80	
I31. NQF researchers %: 2021 NQF staff <= 33%	0.53	Yes
I32. SCI NQF production %: 2018-2021 % <= 2013-2017 % (164/325=50.5% SCI papers/year)	0.27	Yes
<b>SO3 [MHR] — Increase the critical mass of ICP staff researchers by fostering talent attraction, with emphasis on the recruitment of foreign researchers:</b>		
A13. Maintain or increase the critical mass of ICP researchers	3.97	
I33. Staff researchers: 2021 researchers >= February 2018 researchers (24)	3.97	Yes
A14. Increase the number of foreign ICP staff researchers, both in absolute and relative terms	2.48	
I34. Foreign researchers: 2021 foreign researchers > February 2018 foreign researchers (2)	1.49	Yes
I35. Foreign researchers ratio %: 2021 % > February 2018 % (2/24=8.3%)	0.99	Yes
A15. Encourage former R1 and R2 researchers to come back to the ICP after a postdoctoral phase abroad	1.99	
I36. R1-R2 returned %: 2021 former R1 or R2 researchers returned > 20%	1.99	Yes

<b>SO4 [MHR] — Increase talent attraction at early career stages:</b>		
<b>A16.</b> Increase the number of R1 and R2 researchers at the ICP	2.44	
<b>I37:</b> R1-R2 researchers: 2021 R1+R2 researchers >= February 2018 R1+R2 researchers (13)	2.44	No
<b>A17.</b> Increase the number of master students supervised by ICP researchers	2.44	
<b>I38:</b> Master theses: 2018-2021 average > 2013-2017 average (35/5=7.0 master theses/year), i.e., at least 28 supervised master theses in 2017-2021	2.44	Yes
<b>A18.</b> Increase the number of PhD candidates supervised by ICP researchers	3.05	
<b>I39:</b> PhD dissertations: 2018-2021 average > 2013-2017 average (16/5=3.2 PhD dissertations/year), i.e., at least 13 supervised finished PhD in 2017-2021	1.83	Yes
<b>I40.</b> Ongoing PhD: 2021 ongoing PhD > 2016 ongoing PhD (19)	1.22	Yes
<b>SO5 [MHR] — Improve the internal cohesion and coordination and promote staff involvement in decision-making at the ICP by implementing the new Organization Chart:</b>		
<b>A19.</b> Organize a meeting of the Steering Committee almost every month	2.03	
<b>I41.</b> Steering Committee meetings: 2018-2021 average >= of 10 meetings/year	2.03	Yes
<b>A20.</b> Regularly organize meetings of the various ICP advisory organs	1.01	
<b>I42.</b> Researchers Commission meetings: 2018-2021 average >= of 2 meetings/year	1.01	Yes
<b>A21.</b> Organize coordination meetings of quarterly periodicity	1.01	
<b>I43.</b> Coordination meetings: 2018-2021 average >= of 4 meetings/year	1.01	No
<b>WT2 [MHR] — Improve the salaries and general working conditions of ICP staff (including HRS4R implementation) in spite of financial risks and budgetary constraints:</b>		
<b>A22.</b> Improve the ICP salaries of non-competitive staff to the level before the budget cuts during the crisis	1.00	
<b>I44.</b> ICP salaries: 2020 salaries > 2018 salaries	1.00	Yes
<b>A23.</b> Implementation of excellence in human resources for researchers according to the ICP HRS4R Action Plan	1.00	
<b>I45.</b> HRS4R award: HRS4R award before 2021	0.44	Yes
<b>I46.</b> HRS4R Implementation Commission meetings: 2018-2021 average >= of 4 meetings/year	0.33	No
<b>I47.</b> Non-Discrimination Committee meetings: 2018-2021 average >= of 3 meetings/year	0.22	Yes
<b>A24.</b> Elaborate a strategy for the professional development of researchers.	0.67	
<b>I48.</b> Career development: Manual written not later than 2020	0.67	Yes
<b>WT3 [MHR] — Improve the effectiveness and internationalization of researchers' recruitment by developing and implementing OTM-R policies:</b>		
<b>A25.</b> Elaborate a protocol for the evaluation, internal promotion and recruitment of researchers	2.39	
<b>I49.</b> Recruitment protocol: Protocol written not later than 2019	1.06	Yes
<b>I50.</b> International publicization: No new research positions without international publicization	0.53	Yes
<b>I51.</b> Selection: No new research positions without a selection committee	0.80	Yes
<b>SO6 [FKT] — Increase the ICP operating budget by means of the provision of external services:</b>		
<b>A26.</b> Promote the provision of external services by the Research Support & External Services Department	7.57	
<b>I52.</b> External services: 2018-2021 average > 2012-2017 average (535,000/5=ca. 107,000 €/year)	4.32	Yes
<b>I53.</b> External services 50% increase: 2021 figure >= 2017 figure x 1.3 (ca. 128,500 € x 1.3=ca. 167,000 €/year)	3.24	Yes

<b>SO7 [FKT] — Increase the ICP operating budget by means of competitive calls or research projects and grants, with emphasis on ERC grants and the application of modern techniques to paleontological research:</b>		
<b>A27.</b> Promote fundraising by means of competitive projects and grants achieved by the research groups	2.91	
<b>I54.</b> Competitive funding for projects: 2018-2021 average > 2013-2017 average (0.29 M€/year)	2.91	No
<b>A28.</b> Increase the competitive income from Catalan and Spanish research projects	2.54	
<b>I55.</b> Catalan competitive funding for projects: 2018-2021 average > 2013-2017 average (0.10 M€/year)	1.09	No
<b>I56.</b> Spanish competitive funding for projects: 2018-2021 average > 2013-2017 average (0.18 M€/year)	1.45	No
<b>A29.</b> Obtain significant European funding (e.g., ERC grant)	2.91	
<b>I57.</b> Significant international funding: >= 1 ERC grant (or equivalent) in 2018-2021	2.91	No
<b>A30.</b> Consolidate competitive funding for predoctoral grants as well as postdoctoral and tenure-track contracts	2.54	
<b>I58.</b> Tenure-track competitive contracts (RyC): At least 1 new RyC in 2018-2021	0.92	No
<b>I59.</b> Postdoctoral competitive contracts (JdC+BP): At least 3 new postdoctoral contracts in 2018-2021	0.69	Yes
<b>I60.</b> Predoctoral competitive grants (FI+FPI+FPU): At least 4 new predoctoral grants in 2018-2021	0.46	Yes
<b>I61.</b> Technician cofunding (PTA): At least 2 new PTA in 2018-2021	0.46	No
<b>SO8 [FKT] — Foster knowledge transfer also in relation to training:</b>		
<b>A31.</b> Maintain and further promote university training by means of teaching in university masters and courses	7.14	
<b>I62.</b> Master: Still ongoing in 2021	3.57	Yes
<b>I63.</b> Transmitting Science: Still ongoing in 2021	3.57	Yes
<b>WO3 [FKT] — Increase the ICP operating budget by means of competitive calls for dissemination and outreach activities:</b>		
<b>A32.</b> Promote the achievement of competitive funding for scientific dissemination and outreach	5.13	
<b>I64.</b> Competitive funding for communication %: 2018-2021 average > 10% total competitive funds	2.20	No
<b>I65.</b> Competitive funds for exhibit remodeling: 2018-2021 funds >= 50,000 €	1.47	No
<b>I66.</b> Conca Dellà Museum and Dinosfera funding: 2018-2021 funds >= 50,000 €	1.47	Yes
<b>WT4 [FKT] — Avoid budgetary deficit at the ICP and increase the ratio of competitive + private income relative to the total budget:</b>		
<b>A33.</b> Increase the ratio between competitive funds s.l. (competitive + external services) and total operating budget above 50%	3.05	
<b>I67.</b> Competitive s.l. vs. total budget ratio %: 2018-2021 average > 2013-2017 average (3.26 M€ / 7.28 M€ = 45%)	1.74	Yes
<b>I68.</b> Competitive s.l. vs. total budget ratio 50%: 2021 competitive + external / total > 50%	1.31	Yes
<b>SO9 [OC] — Promote further the dissemination of the research performed by ICP researchers by means of digital media:</b>		
<b>A34.</b> Promote the visibility of the ICP website	5.63	
<b>I69.</b> Website visitors: 2018-2021 average >= 2016-2017 average (Google Analytics: ca. 25,500 website visitors/year)	1.30	Yes
<b>I70.</b> Web news: 2018-2021 average >= 35 news/year	1.30	Yes
<b>I71.</b> Web news in Spanish: 2018-2021 web news in Spanish >= 80% web news in Catalan	0.87	Yes
<b>I72.</b> Web news hits: 2018-2021 average >= 2015-2017 average (ca. 60,000 web news hits/year)	0.87	Yes

<b>I73.</b> Web news hits/post: 2017-2021 average $\geq$ 2015-2016 average (1664 web news hits/post)	0.87	Yes
<b>I74.</b> English web news hits/post: 2018-2021 average $>$ 2015-2017 average (656 web news hits/post)	0.43	<b>Yes</b>
<b>A35.</b> Promote the visibility of the ICP on social networks	3.47	
<b>I75.</b> Facebook 'likes': 2018-2021 average $>$ 2013-2017 average (311 FB 'likes'/year)	1.73	No
<b>I76.</b> Twitter followers (Museum): 2018-2021 average $\geq$ 2013-2017 average (198 new followers/year)	0.87	No
<b>I77.</b> Twitter followers (ICP): 2018-2021 average $\geq$ 2013-2017 average (157 new followers/year)	0.86	Yes
<b>SO10 [OC] — Promote further the outreach activities performed by the ICP:</b>		
<b>A36.</b> Attract a higher number of visitors to the ICP Museum in Sabadell	1.23	
<b>I78.</b> Museum visitors: 2018-2021 average $\geq$ 2013-2017 average (18,715 museum visits/year)	0.61	No
<b>I79.</b> Museum temporary exhibits: $\geq$ 4 temporary exhibits 2018-2021	0.61	No
<b>A37.</b> Elaborate a remodeling plan for the permanent exhibit of the ICP Museum in Sabadell	0.82	
<b>I80.</b> Museum remodeling plan: Plan available not later than 2021	0.82	No
<b>A38.</b> Increase the territorial scope of the ICP outreach activities	1.23	
<b>I81.</b> CosmoCaixa exhibits: $\geq$ 2 collaborations in 2018-2021	0.41	Yes
<b>I82.</b> Temporary exhibits organization: $\geq$ 1 organization in 2018-2021	0.31	No
<b>I83.</b> Conca Dellà Museum and Dinosfera: Relationship still ongoing in 2021	0.31	Yes
<b>I84.</b> Agreements with city councils: $\geq$ 2 collaborations active in 2021	0.20	Yes
<b>TOTAL</b> (Potential impact to the left as compared to accomplished impact to the left, in %; the impact of each indicator is summed when fulfilled)	100	<b>74.8</b>

to year, overall indicating that the performance of the ICP has improved since the Strategic Plan was issued in early 2018, and that the degree of fulfillment is rather satisfactory for SPR and MHR, while there is still much room for improvement regarding FKT and OC. Therefore, particular efforts should be devoted to the latter two strategic areas in years to come. The indicators that changed in 2021 as compared with 2020 (from 'yes' to 'no' or vice versa) are bolded in the table provided in the following pages.

### SWOT analysis 2021

**Internal and external factors.** The elaboration of the new Strategic Plan for 2022-2025 started in 2021 with a new SWOT analysis performed by the ICP Director with the help of ICP personnel from all areas, the advice provided by members of the Scientific Advisory Board, and the participation of all ICP staff. Therefore, this SWOT analysis was elaborated following the same guidelines as that elaborated four years ago but with a much higher participation of ICP personnel. It was undertaken to detect the opportunities and threats that the ICP currently faces or will face in the near future, as well as to identify the strengths upon which the ICP will have to rely and the weaknesses that must be overcome to successfully attain its strategic goals, so as to be subsequently incorporated in the new Strategic Plan.

	POSITIVE (HELPFUL)	NEGATIVE (HARMFUL)
INTERNAL	<b>Strengths:</b> INTERNAL ORGANIZATION: 10 (S1–S10) HUMAN RESOURCES: 13 (S11–S23) PHYSICAL RESOURCES: 10 (S24–S33) SCIENTIFIC OUTPUTS: 2 (S34–S35)	<b>Weaknesses:</b> INTERNAL ORGANIZATION: 5 (W1–W5) HUMAN RESOURCES: 12 (W6–W18) PHYSICAL RESOURCES: 11 (W19–W29) SCIENTIFIC OUTPUTS: 1 (W30)
	<b>Opportunities:</b> SCIENTIFIC AND SOCIETAL IMPACT: 5 (O1–O5) FUNDING SOURCES: 7 (O6–O12) REPUTATION: 2 (O13–O14) COLLABORATIONS: 10 (O15–O24) PHYSICAL ENVIRONMENT: 4 (O25–O28) ECONOMY: 3 (O29–O31) LEGISLATION: 1 (O32) POLITICS OF SCIENCE: 10 (O33–O47)	<b>Threats:</b> SCIENTIFIC AND SOCIETAL IMPACT: 5 (T1–T5) FUNDING SOURCES: 6 (T6–T11) REPUTATION: 2 (T12–T13) COLLABORATIONS: 3 (T14–T16) PHYSICAL ENVIRONMENT: 0 (—) ECONOMY: 3 (T17–T19) LEGISLATION: 3 (T20–T22) POLITICS OF SCIENCE: 10 (T23–T34)
EXTERNAL		

To begin with, an updated list of strengths, weaknesses, opportunities and threats was elaborated by the ICP Director with input provided by from various research group leaders, heads of department or area, and people in charge of several aspects in an extraordinary coordination meeting hold on February 2021. This list includes up to 146 factors, of which 65

are internal (35 strengths and 30 weaknesses) and 81 external (47 opportunities and 34 threats), leading to a total number of 82 positive vs. 64 negative factors. The identified internal and external factors are summarized in the table below (for a detailed list of factors, see the Strategic Plan 2022-2025 issued in the spring of 2022).

**Internal-external matrix.** Based on these factors, the best possible strategy for the ICP was determined with the aid of an IE (internal-external) matrix, by taking into account both internal and external factors simultaneously. The internal factors and external factors were subjected to internal factor evaluation (IFE) and external factor evaluation (EFE) analyses, respectively, to construct an internal-external (IE) matrix. This process was performed, with the help of the Scientific Advisory Board, by an ad hoc Strategic Plan Working Group that was designated by the Steering Committee on May, 2021 and formally constituted on June, 2021. This working group included 12 members of the ICP personnel that volunteered to participate in the process and it was intended to represent all the strategic aspects to be reflected in the new Strategic Plan. IFE and EFE analyses are based on the evaluation of internal and external factors both quantitatively (by assigning a 'weight') and qualitatively (by assigning a score or 'rating') to each factor. The multiplication of each weight by the corresponding rating provides the 'weighted score' of each factor.

Weights are intended to reflect the relative importance of each factor and can take any value between 0 and 1, as long as the sum of all the factor weights equals 1 for both internal (strengths + weaknesses) and external (opportunities and threats) factors separately. The higher the weight assigned, the higher the importance attributed to a particular factor. The weight assigned to a given factor indicates the relative importance of the factor for the success of the organization's activity, irrespective of whether the factor is positive or negative. It was decided to assign a value between 0 and 10 to each factor, calculate the sum for all of the factors (separately for internal and external ones), and then divide the value assigned to each factor by the sum of all the (internal or external) factors together. Calculated this way, the sum of the normalized weights assigned to the factors will equal unity for both internal and external factors. Weights were independently assigned by different groups of people involved in the elaboration of the new Strategic Plan, and a weighted average weight was computed for each factor by taking into account the familiarity with strategic planning and decision making at the ICP. For each factor, the value assigned by the Director counted 21% of the average weight ( $\times 0.21$  factor); the values assigned by the remaining three members of the Steering Committee also counted 24% of the average weight ( $\times 0.08$  factor each); the values assigned by the remaining nine members of the Strategic Plan Working Group counted 27% of the average weight ( $\times 0.03$  factor each); and, finally, the values assigned by the seven members of the Scientific Advisory Board counted 28% of the average weight ( $\times 0.04$  factor each).

In turn, ratings are qualitative scores that can only take four different values (from 1 to 4); the higher the rating, the more positive (or less negative) a particular factor is considered with regard to the organization. In IFE the scoring takes the following meaning: 1 = major weakness,



2 = minor weakness, 3 = minor strength, and 4 = major strength. In EFE, they measure the response of the organization to opportunities and threats as follows: 1 = poor response; 2 = average response; 3 = above average response; and 4 = superior response. The ratings were discussed by the 12 persons of the Strategic Plan Working Group in a meeting on June 2021, and when discrepancies persisted they were decided by means of plurality vote (i.e., relative majority).

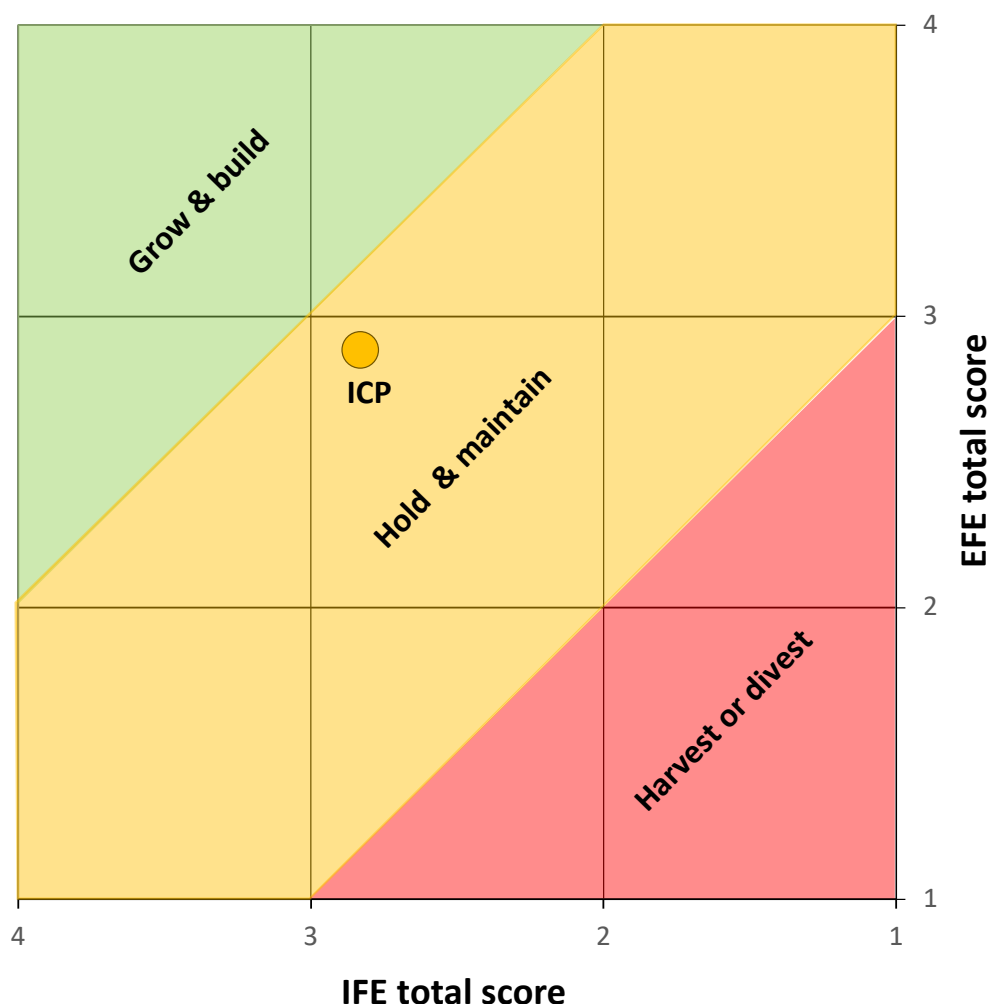
The weighted score of each factor was computed as the product between its weighted average weight and its voted score rating. This procedure enabled to standardize the internal strengths and weaknesses of the ICP (in IFE) as well as the way the ICP responds to external opportunities and threats (in EFE) by taking into account the perceived importance of each factor. Then, the total internal and external weighted score of the ICP was computed by summing all the individual weighted scores (separately for IFE and EFE). The theoretical average of total weighted scores if assigned randomly would be 2.5 (the arithmetic mean of 1, 2, 3 and 4). Therefore, in IFE a total weighted score <2.5 would indicate that the organization being analyzed is weak as compared to its competitors, whereas in EFE it would indicate that the organization is not well prepared to take advantage of opportunities and/or defend against threats.

The IFE and EFE results for each factor will be reported in the Strategic Plan 2022-2025, to be issued during the spring of 2022. These results were combined to elaborate an internal-external (IE) to analyze the current situation of the ICP and suggest strategies for the future. This matrix is composed of nine cells, with the IFE total weighted score on the x-axis (with higher to the left and lower to the right: 4.0–3.0 = strong, 2.99–2.0 = average, 1.99–1.0 = weak), and the EFE total weighted score on the y-axis (with higher on top and lower on the bottom: 4.0–3.0 = high, 2.99–2.0 = medium, 1.99–1.0 = low). The matrix is divided into three different areas of the matrix, by drawing two oblique lines based on the following criteria (see also the plot below): the line between total EFE score = 2 and total IFE score = 2 separates ‘grow and build’ on the left from ‘hold and maintain’ on the center; in turn, the line between scores = 3 separates the latter, on the center, from ‘harvest or divest’ to the right. A ‘grow and build’ strategy would indicate that a research center is excellent and very strong, and that it must take advantage of favorable opportunities to grow (e.g., diversifying by means of exploring all available favorable strategies); scores indicating a ‘hold and maintain’ would indicate that a research center is doing well, and can take advantage of some current opportunities to fight against threats in order maintain the status quo, or let some others pass by due to current lack of resources; finally, scores indicating a ‘harvest or divest’ would indicate that a research center is not performing well and that it must be reorganized (to make more efficient use of available resources), downsized (to reduce costs), and/or merged with another center to prevent its disappearance. The results for the IE matrix analysis of the ICP are reported in the plot below.

The ICP falls in a central position of the matrix (‘hold & maintain’ strategy), albeit both the IFE total score (2.832) and especially the EFE total score (2.887) are above average (2.500) and much closer to 3 than to 2.5, i.e., quite close to the ‘grow & build’ strategy. These results are

quite positive and indicate that the ICP is a solid institution that is performing well, albeit not exempt of some weaknesses and threats.

### IE matrix



It is noteworthy that there has been some improvement relative to the results computed for the ICP in the SWOT analysis performed in 2017 for the previous Strategic Plan 2018-2021: 2.783 and 2.693 for the IFE and EFE total scores, respectively. Interestingly, the current matrix delivered better results for EFE than for IFE, while in 2017 the situation was the reverse. This suggests that, while the ICP has improved overall, now it is responding (or expected to respond) better to both opportunities and threats than four years ago. In any case, based on the current results, there is still room for improvement, in the sense that the ICP has to become stronger in order to grow further by making use of all the opportunities that become available in the following years. In the meantime, most of the efforts should focus on maintaining the most important current 'assets' of the ICP, by trying to take advantage of some opportunities but leaving others unexplored when they represent too much risk or require an investment that we cannot yet afford. The weighted scores computed for each internal and external factor will also

be used to compute the weighted score percentages of the strategic actions based on them in the Strategic Plan 2022-2025.

### Comparison with other paleontological institutions

In the framework of the CERCA evaluation of the ICP in 2018, the Director elaborated a report for the Evaluation Committee based on the “Evaluation Questionnaire” provided by CERCA. This report included the comparison with three top worldwide paleontological institutions in terms of scientific production and productivity. The three institutions selected by the ICP Steering Committee were the following:

- Palaeobiology Research Group (PRG), School of Earth Sciences, University of Bristol (UK).
- University of California – Museum of Paleontology (UCMP), Berkeley, USA.
- Centre de Recherche sur la Paléobiodiversité et les Paléoenvironnements (CR2P), CNRS-MNHN-Sorbonne Université, France (currently named Centre de Recherche en Paléontologie).

In the CERCA Evaluation Questionnaire elaborated in 2018, the comparison of the ICP with the above-mentioned institutions was circumscribed for the five preceding years (2013–2017). However, in the 2018, 2019, and 2020 Annual Reports, updated versions of these results based on the scientific production and productivity for years 2014–2018, 2015–2019, and 2016–2020 were provided. Here we further update these comparisons based on the 2021 results for the period 2017–2021, by relying on a slightly simplified methodology that removes some indicators that were a bit redundant and others that were not stable through time (open access).

**Methods.** Most of the comparisons have been performed on the basis of production in SCI (Science Citation Index) journals (i.e., those indexed by the Journal Citation Reports), in part because they constitute the major bulk of peer-reviewed articles published by all these institutions (including the ICP), and also because bibliometric indicators of impact and quality are restricted to those journals indexed by the JCR.

ABSOLUTE INDICATORS	DEFINITION
SCI papers	Number of papers in SCI journals (co)authored by authors from each institution in a given year
SCI authors	Number of authors from each institution that have coauthored at least a paper in a SCI journal in a given year
SCI Q1	Number of papers in SCI journals from the first quartile (co)authored by authors from each institution in a given year
SCI leadership	Number of papers in SCI journals with a corresponding author from each institution in a given year
SCI Q1 leadership	Number of papers in SCI journals from the first quartile with a corresponding author from each institution in a given year
Paleontology	Number of papers in SCI journals from the JCR category ‘Paleontology’ (co)authored by authors from each institution in a given year
Multidisciplinary sciences	Number of papers in SCI journals from the JCR category ‘Multidisciplinary sciences’ (co)authored by authors from each institution in a given year
SCI papers int. coll.	Number of papers in SCI journals (co)authored by authors from each institution and authors from at least one institution from another country in a given year

RELATIVE INDICATORS	DEFINITION
SCI productivity	SCI papers / SCI authors
SCI Q1 productivity	SCI Q1 / SCI authors
SCI Q1 ratio %	SCI Q1 / SCI papers x 100
SCI leadership ratio %	SCI leadership / SCI papers x 100
SCI Q1 leadership ratio %	SCI Q1 leadership / SCI papers x 100
SCI median JIF percentile	Median of journal impact factor percentile for all the SCI papers (co)authored by authors from each institution in a given year
SCI IF GM	Geometric mean of impact factor for all the SCI papers (co)authored by authors from each institution in a given year
%Paleontology	Paleontology / SCI papers x 100
%Multidisciplinary sciences	Multidisciplinary sciences / SCI papers x 100
SCI papers int. coll. (%)	SCI papers int. coll. / SCI papers x 100

To compare the ICP with the three institutions mentioned above, we relied on several metrics based on SCI publications compiled for the last five years with the aid of the respective websites, Scopus and WOS. The various metrics employed are summarized in the tables below. They were intended to measure production, authors, productivity, quality and impact, leadership, field of research, multidisciplinaryity, and international collaborations. Some of these metrics are considered absolute indicators, in the sense that they are not scaled relative to the size of each institution; others, in contrast, are considered relative indicators (ratios, percentages, mean values, etc.), because they are independent from the size of each institution. The geometric means (GM) of the relative and absolute indicators were computed separately for each institution, and they were scaled to 100 to visually compare them more easily.

**Comparative sample of paleontological research institutions.** The three main research institutions selected for comparison with the ICP are briefly described below:

- Palaeobiology Research Group (PRG), School of Earth Sciences, University of Bristol (UK):**  
 As advertised in their own webpage (<https://www.bristol.ac.uk/earthsciences/research/palaeobiology/>), in 2017 it was considered the best paleontology research group in the world in the first discipline-specific annual review by the Center for World University Rankings. In this regard it must be stressed that this concept of 'research group' is different from that of the ICP, so that the eight different 'laboratories' of Bristol's PRG are comparable to the ICP 'research groups', being named after the group leader (the Benton laboratory, the Donoghue laboratory, etc.), although as a whole the PRG is clearly larger than the ICP. The members of the PRG are affiliated to the School of Earth Sciences of the University of Bristol, and therefore the scientific production of the group is difficult to retrieve on this basis, although it can be compiled based on the information provided on its website.
- University of California – Museum of Paleontology (UCMP), Berkeley, USA:** This institution is more similar to the ICP in the sense that it consists of a museum with research staff (although the ICP is rather a research center with a museum). They are tightly ingrained within the university structure, with most experienced researchers being both university professors and museum curators. The fact that its affiliation is not recognized as distinct from the University of California in Scopus (unlike in the case of the ICP) hinders retrieving

their SCI productivity, although this can be done with the help of the publication list reported on its website (<http://www.ucmp.berkeley.edu/>).

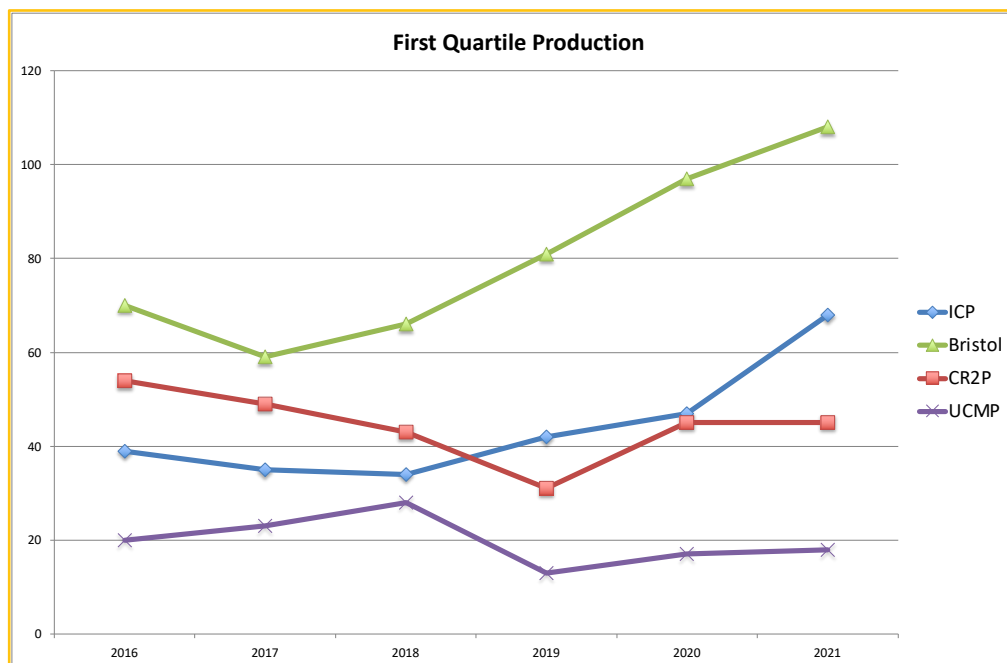
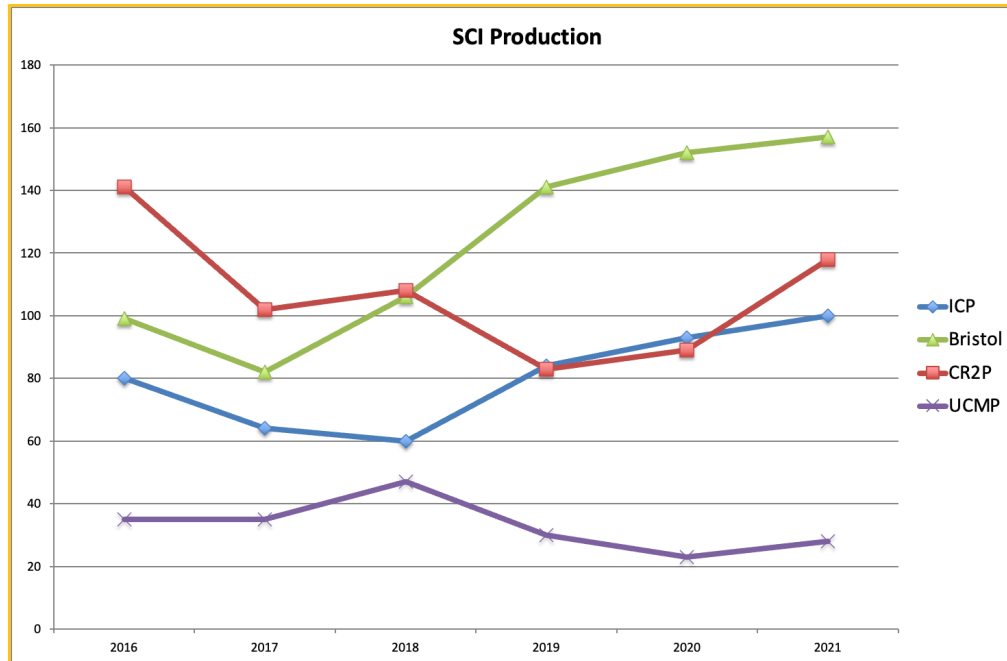
- Centre de Recherche en Paléontologie (CR2P), CNRS-MNHN-Sorbonne Université, France:**  
 This research center is exclusively devoted to paleontology (in a broad sense). It aims at elucidating the phylogenetic patterns and evolutionary history of living organisms through the fossil record and environments of the past. It is simultaneously supported by the Muséum National d'Histoire Naturelle (MNHN), Paris; the Centre National de la Recherche Scientifique (CNRS); and the Sorbonne Université. As indicated in its webpage (<http://paleo.mnhn.fr/en>), the CR2P equals to the Unité Mixte de Recherche (UMR) 7207. The CR2P resembles the ICP in involving the cooperation of a university, a museum, and a research national institution. It has three 'research teams', which are much larger than the ICP research groups: Team 1 (PALPAL: Palaeobiodiversities, palaeoenvironments); Team 2 (PDM: Metazoan phylogeny and diversification); and Team 3 (FOSFO: Forms, structures and functions).

**Absolute and relative indicators.** The annual values for the aforementioned indicators during 2021, the preceding five years (2016-2020), and the average for the latter period are reported in the following table. Relative indicators are denoted in italics.

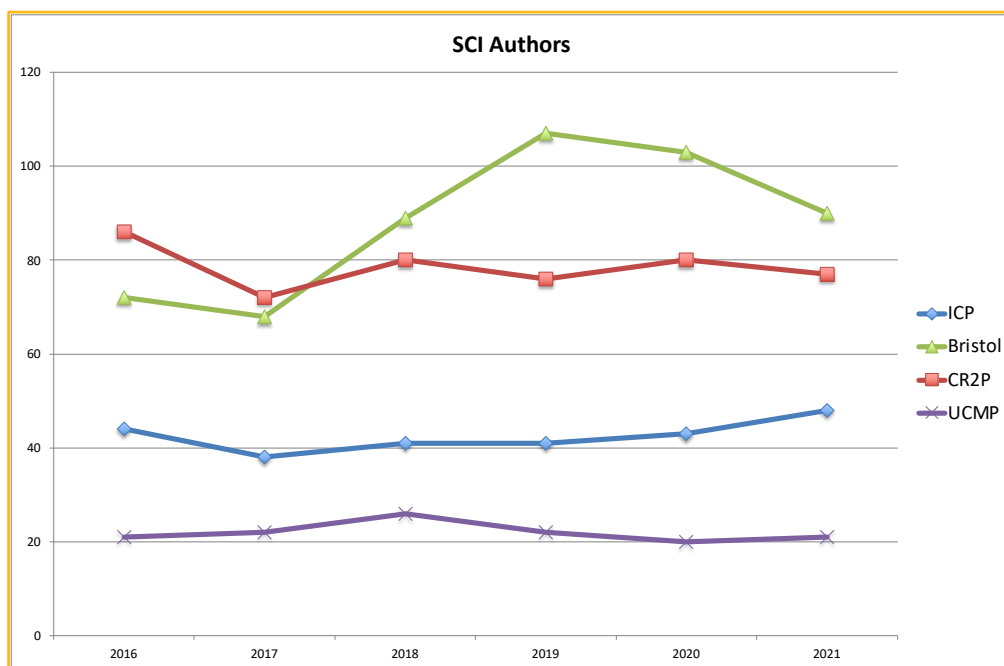
INSTITUTION	METRIC	2016	2017	2018	2019	2020	2016-2020	2021
ICP	SCI papers	80	64	60	84	93	<b>76.2</b>	<b>100</b>
PRG	SCI papers	99	82	106	141	152	<b>116.0</b>	<b>157</b>
CR2P	SCI papers	141	102	108	83	89	<b>104.6</b>	<b>118</b>
UCMP	SCI papers	35	35	47	30	23	<b>34.0</b>	<b>28</b>
ICP	SCI Q1	39	35	34	42	47	<b>39.4</b>	<b>68</b>
PRG	SCI Q1	70	59	66	81	97	<b>74.6</b>	<b>108</b>
CR2P	SCI Q1	54	49	43	31	45	<b>44.4</b>	<b>45</b>
UCMP	SCI Q1	20	23	28	13	17	<b>20.2</b>	<b>18</b>
ICP	SCI authors	44	38	41	41	43	<b>41.4</b>	<b>48</b>
PRG	SCI authors	72	68	89	107	103	<b>87.8</b>	<b>90</b>
CR2P	SCI authors	86	72	80	76	80	<b>78.8</b>	<b>77</b>
UCMP	SCI authors	22	22	26	22	20	<b>22.2</b>	<b>21</b>
ICP	<i>SCI productivity</i>	<i>1.82</i>	<i>1.68</i>	<i>1.46</i>	<i>2.05</i>	<i>2.16</i>	<b><i>1.84</i></b>	<b><i>2.08</i></b>
PRG	<i>SCI productivity</i>	<i>1.38</i>	<i>1.21</i>	<i>1.19</i>	<i>1.32</i>	<i>1.48</i>	<b><i>1.31</i></b>	<b><i>1.74</i></b>
CR2P	<i>SCI productivity</i>	<i>1.64</i>	<i>1.42</i>	<i>1.35</i>	<i>1.09</i>	<i>1.11</i>	<b><i>1.32</i></b>	<b><i>1.53</i></b>
UCMP	<i>SCI productivity</i>	<i>1.67</i>	<i>1.59</i>	<i>1.81</i>	<i>1.36</i>	<i>1.15</i>	<b><i>1.52</i></b>	<b><i>1.33</i></b>
ICP	<i>SCI Q1 productivity</i>	<i>0.89</i>	<i>0.92</i>	<i>0.83</i>	<i>1.02</i>	<i>1.09</i>	<b><i>0.95</i></b>	<b><i>1.42</i></b>
PRG	<i>SCI Q1 productivity</i>	<i>0.97</i>	<i>0.87</i>	<i>0.74</i>	<i>0.76</i>	<i>0.94</i>	<b><i>0.86</i></b>	<b><i>1.20</i></b>
CR2P	<i>SCI Q1 productivity</i>	<i>0.63</i>	<i>0.68</i>	<i>0.54</i>	<i>0.41</i>	<i>0.56</i>	<b><i>0.56</i></b>	<b><i>0.58</i></b>
UCMP	<i>SCI Q1 productivity</i>	<i>0.95</i>	<i>1.05</i>	<i>1.08</i>	<i>0.59</i>	<i>0.85</i>	<b><i>0.90</i></b>	<b><i>0.86</i></b>
ICP	<i>SCI Q1 ratio %</i>	<i>48.8</i>	<i>54.7</i>	<i>56.7</i>	<i>50.0</i>	<i>50.5</i>	<b><i>52.1</i></b>	<b><i>68.0</i></b>
PRG	<i>SCI Q1 ratio %</i>	<i>70.7</i>	<i>72.0</i>	<i>62.3</i>	<i>57.4</i>	<i>63.8</i>	<b><i>65.2</i></b>	<b><i>68.8</i></b>
CR2P	<i>SCI Q1 ratio %</i>	<i>38.3</i>	<i>48.0</i>	<i>39.8</i>	<i>37.3</i>	<i>50.6</i>	<b><i>42.8</i></b>	<b><i>38.1</i></b>
UCMP	<i>SCI Q1 ratio %</i>	<i>57.1</i>	<i>65.7</i>	<i>59.6</i>	<i>43.3</i>	<i>73.9</i>	<b><i>59.9</i></b>	<b><i>64.3</i></b>
ICP	SCI leadership	36	23	24	35	36	<b>30.8</b>	<b>51</b>

PRG	SCI leadership	56	50	58	75	74	<b>62.6</b>	<b>76</b>
CR2P	SCI leadership	57	38	36	48	46	<b>45.0</b>	<b>45</b>
UCMP	SCI leadership	18	25	29	17	7	<b>19.2</b>	<b>13</b>
ICP	Q1 leadership	20	14	13	17	17	<b>16.2</b>	<b>33</b>
PRG	Q1 leadership	40	35	34	45	46	<b>40.0</b>	<b>51</b>
CR2P	Q1 leadership	20	14	16	15	20	<b>17.0</b>	<b>22</b>
UCMP	Q1 leadership	9	18	17	8	3	<b>11.0</b>	<b>5</b>
ICP	SCI leadership ratio %	45.0	35.9	40.0	41.7	38.7	<b>40.3</b>	<b>51.0</b>
PRG	SCI leadership ratio %	56.6	61.0	54.7	53.2	48.7	<b>54.8</b>	<b>48.4</b>
CR2P	SCI leadership ratio %	40.4	37.3	33.3	57.8	51.7	<b>44.1</b>	<b>38.1</b>
UCMP	SCI leadership ratio %	51.4	71.4	61.7	56.7	30.4	<b>54.3</b>	<b>46.4</b>
ICP	Q1 leadership ratio %	51.3	40.0	38.2	40.5	41.2	<b>41.2</b>	<b>48.5</b>
PRG	Q1 leadership ratio %	57.1	59.3	51.5	55.6	50.0	<b>54.2</b>	<b>47.2</b>
CR2P	Q1 leadership ratio %	37.0	28.6	37.2	48.4	42.5	<b>39.1</b>	<b>48.9</b>
UCMP	Q1 leadership ratio %	45.0	78.3	60.7	61.5	27.3	<b>52.6</b>	<b>27.8</b>
ICP	SCI median JIF %ile	73.8	77.3	78.5	76.1	76.6	<b>76.5</b>	<b>77.4</b>
PRG	SCI median JIF %ile	87.6	89.4	87.9	83.5	82.8	<b>86.2</b>	<b>84.3</b>
CR2P	SCI median JIF %ile	67.6	78.2	71.1	68.3	76.9	<b>72.4</b>	<b>73.8</b>
UCMP	SCI median JIF %ile	80.6	84.5	86.5	71.5	77.4	<b>80.1</b>	<b>88.2</b>
ICP	SCI IF GM	1.99	2.17	2.58	3.05	3.75	<b>2.71</b>	<b>3.47</b>
PRG	SCI IF GM	3.61	3.56	3.45	3.25	4.47	<b>3.67</b>	<b>4.18</b>
CR2P	SCI IF GM	2.07	2.29	1.86	2.16	2.76	<b>2.23</b>	<b>2.47</b>
UCMP	SCI IF GM	3.26	3.45	3.18	2.83	4.02	<b>3.35</b>	<b>4.82</b>
ICP	Paleontology	38	27	22	30	29	<b>29.2</b>	<b>35</b>
PRG	Paleontology	21	26	22	49	34	<b>30.4</b>	<b>38</b>
CR2P	Paleontology	57	42	36	43	35	<b>42.6</b>	<b>54</b>
UCMP	Paleontology	8	11	3	7	6	<b>7.0</b>	<b>7</b>
ICP	Multidisciplinary sciences	8	14	13	11	21	<b>13.4</b>	<b>19</b>
PRG	Multidisciplinary sciences	18	15	20	19	25	<b>19.4</b>	<b>29</b>
CR2P	Multidisciplinary sciences	16	16	10	9	7	<b>11.6</b>	<b>12</b>
UCMP	Multidisciplinary sciences	10	8	7	6	5	<b>7.2</b>	<b>5</b>
ICP	%Paleontology	47.5	42.2	36.7	35.7	31.2	<b>38.7</b>	<b>35.0</b>
PRG	%Paleontology	21.2	31.7	20.8	34.8	22.4	<b>26.2</b>	<b>24.2</b>
CR2P	%Paleontology	40.4	41.2	33.3	51.8	39.3	<b>41.2</b>	<b>45.8</b>
UCMP	%Paleontology	22.9	31.4	6.4	23.3	26.1	<b>22.0</b>	<b>25.0</b>
ICP	%Multidisciplinary sci.	10.0	21.9	21.7	13.1	22.6	<b>17.8</b>	<b>19.0</b>
PRG	%Multidisciplinary sci.	18.2	18.3	18.9	13.5	16.4	<b>17.1</b>	<b>18.5</b>
CR2P	%Multidisciplinary sci.	11.3	15.7	9.3	10.8	7.9	<b>11.0</b>	<b>10.2</b>
UCMP	%Multidisciplinary sci.	28.6	22.9	14.9	20.0	21.7	<b>21.6</b>	<b>17.9</b>
ICP	SCI papers int. coll.	52	47	48	67	80	<b>58.8</b>	<b>76</b>
PRG	SCI papers int. coll.	67	50	75	108	113	<b>82.6</b>	<b>116</b>
CR2P	SCI papers int. coll.	100	72	74	55	67	<b>73.6</b>	<b>95</b>
UCMP	SCI papers int. coll.	23	17	18	6	15	<b>15.8</b>	<b>12</b>
ICP	SCI papers int. coll. (%)	65.0	73.0	80.0	79.8	86.0	<b>76.8</b>	<b>76.0</b>
PRG	SCI papers int. coll. (%)	67.7	61.0	70.8	76.6	74.3	<b>70.1</b>	<b>73.9</b>
CR2P	SCI papers int. coll. (%)	70.9	70.6	68.5	66.3	75.3	<b>70.3</b>	<b>80.5</b>
UCMP	SCI papers int. coll. (%)	65.7	48.6	38.3	20.0	65.2	<b>47.6</b>	<b>42.9</b>

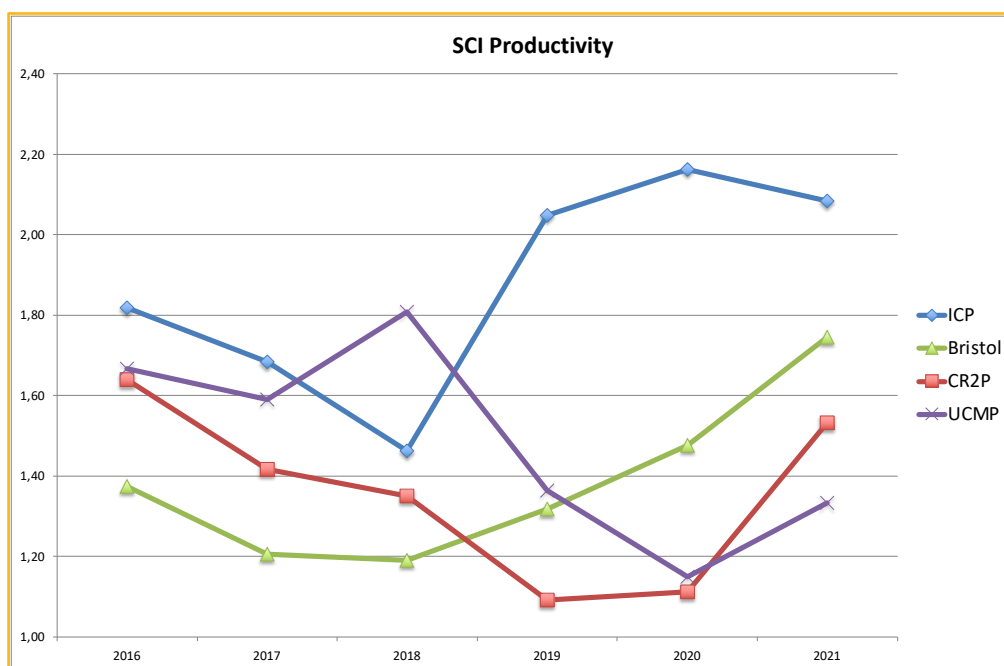
**Production.** In average SCI production and Q1 SCI production for the five previous years (2016-2020), the ICP is the third institution after Bristol and Paris, although in 2021 the ICP was the second institution in terms of Q1 SCI production.



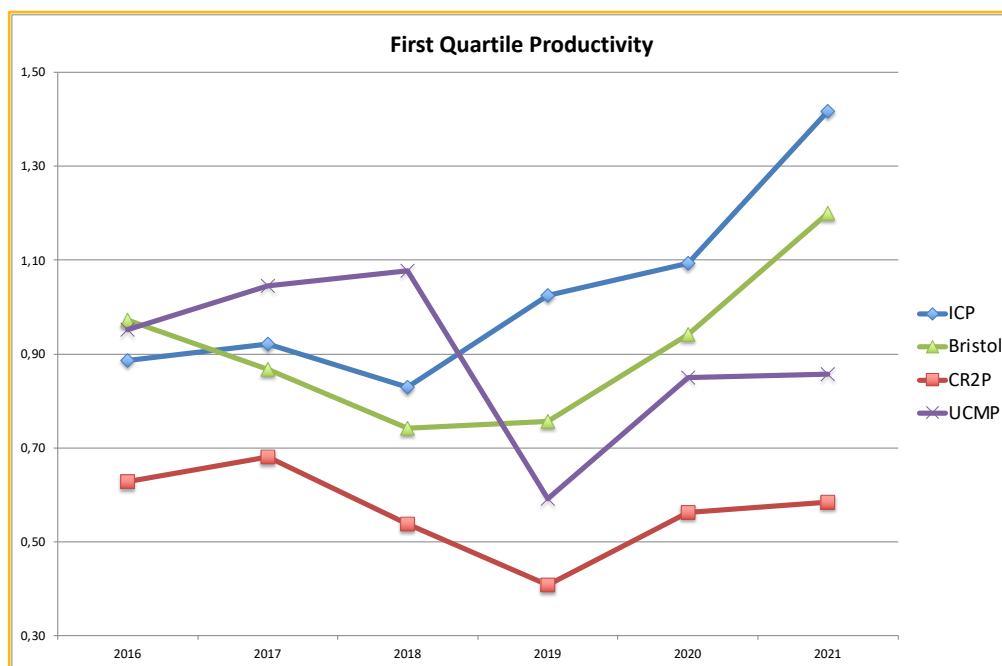
**Productivity.** The above-mentioned differences in total SCI and Q1 production are to a large extent attributable to differences in the number of authors of each institution—albeit not exclusively, as shown by the fact that the ICP the third institution in number of authors, not only or the five preceding years but also for 2021.



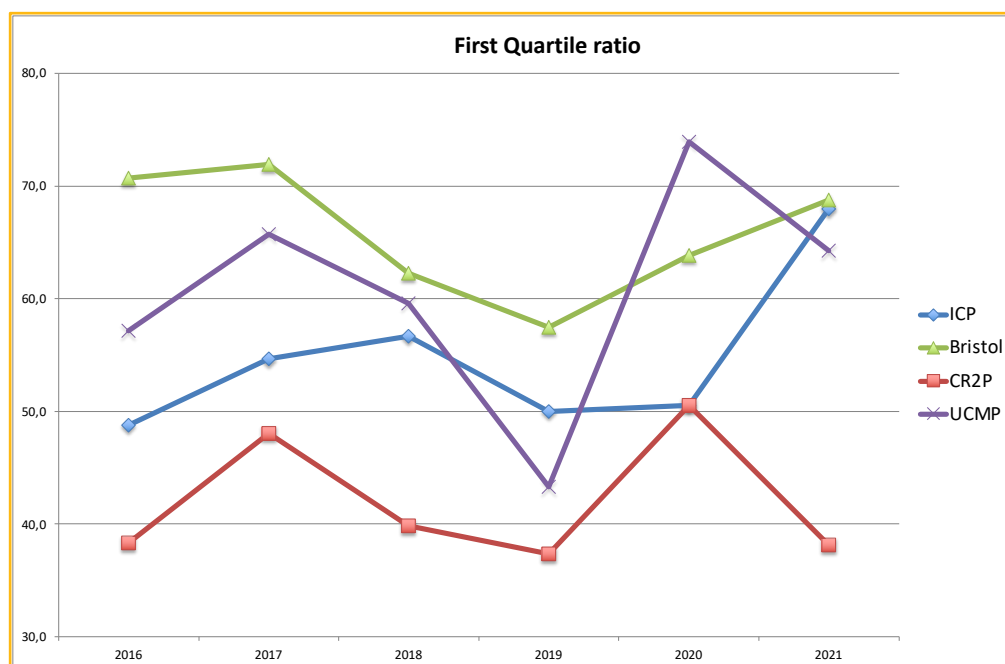
When productivity is computed by dividing production by authors, it emerges that the ICP is the first institution in total SCI productivity and Q1 productivity since 2019 (also when the average for the five preceding years is considered).

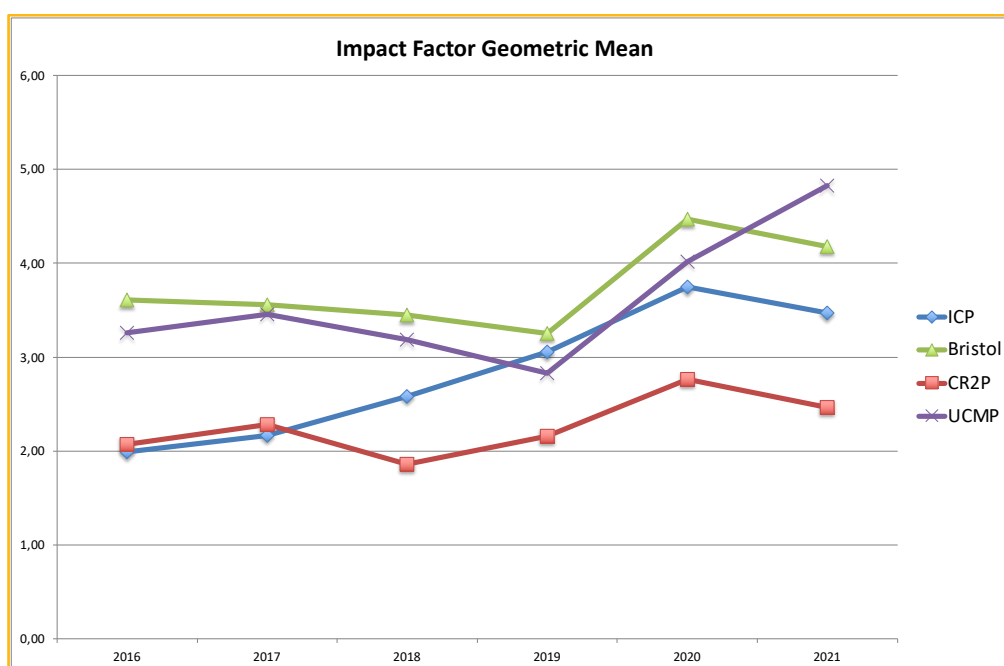
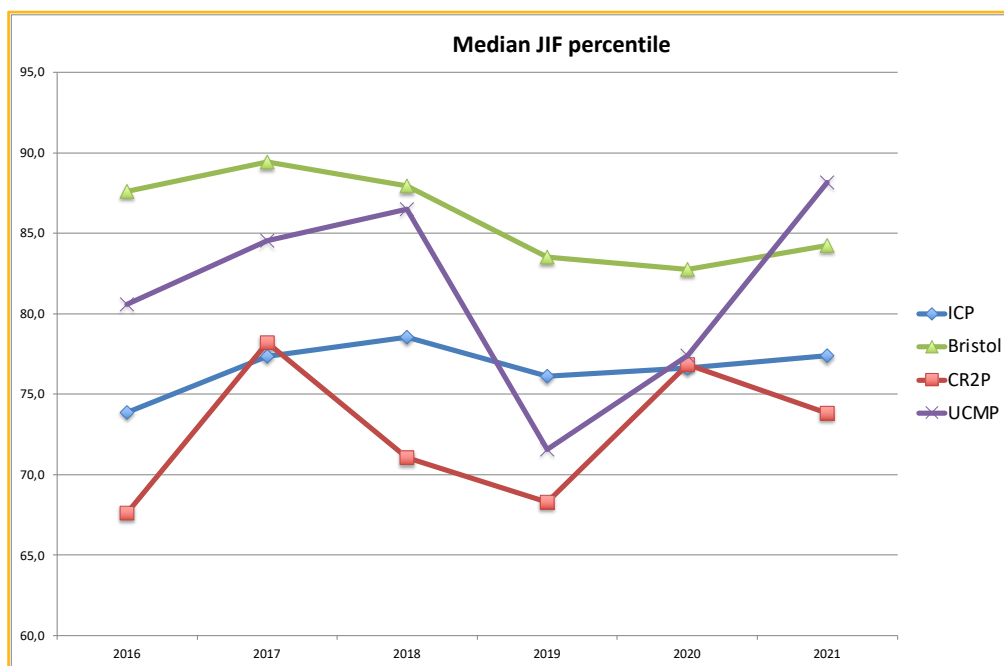




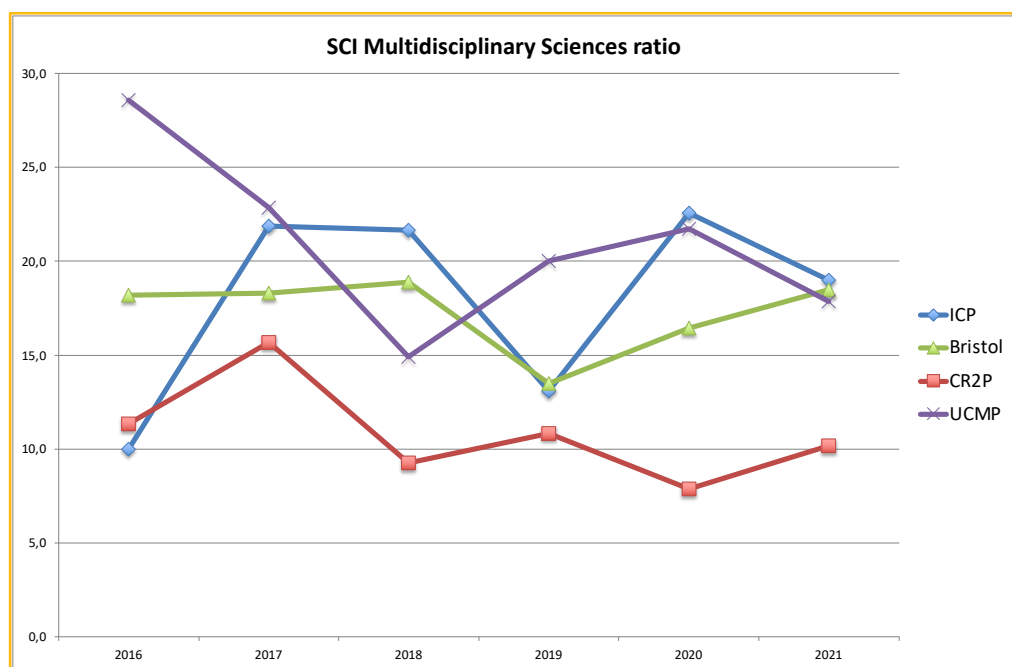
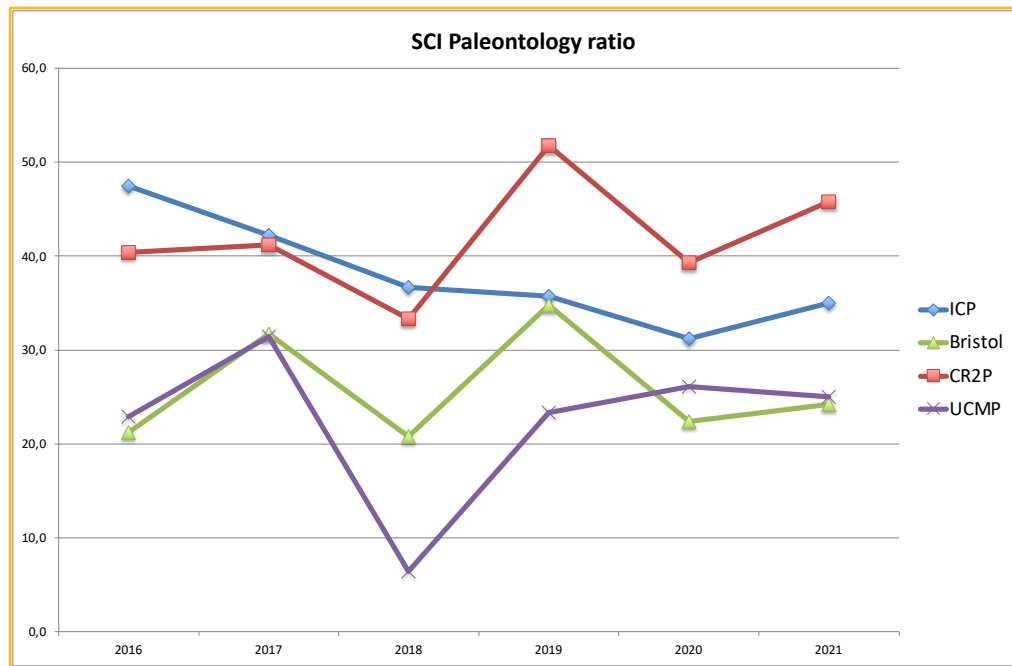


**Quality and impact.** With regard to the percentage of papers published in first quartile SCI journals, the ICP is the second institution in 2021 but only the third in terms of the average for the five preceding years. With regard to the median JIF percentile and the geometric mean of the impact factor, the ICP is the third institution in 2021 and the five preceding years. Overall, these data reflect that the increase of production and productivity of the ICP in 2021 has not been accompanied by a decrease in quality or impact, but rather the contrary.

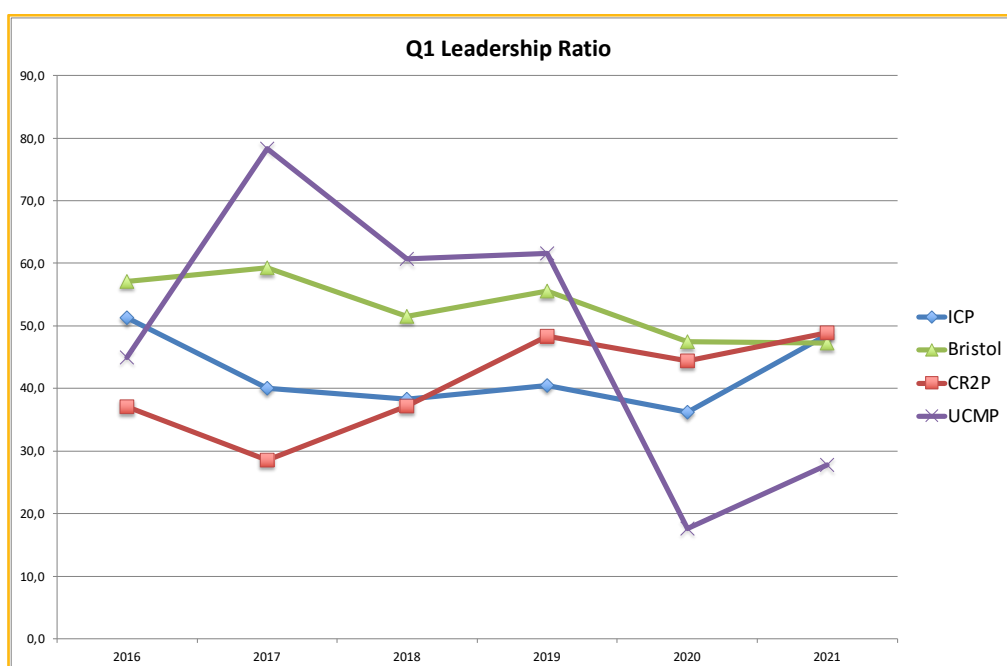
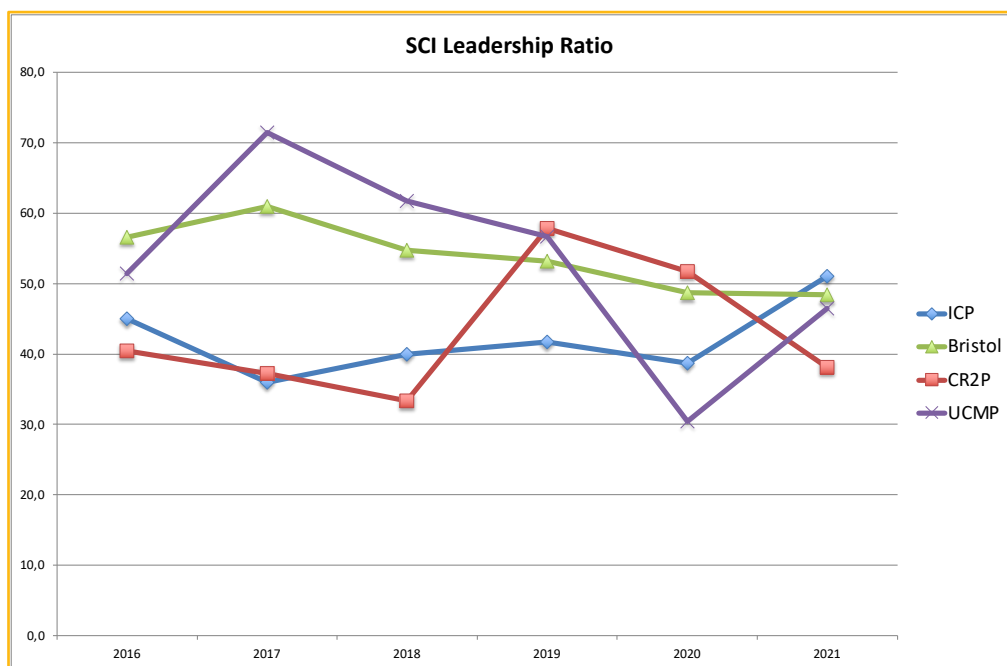




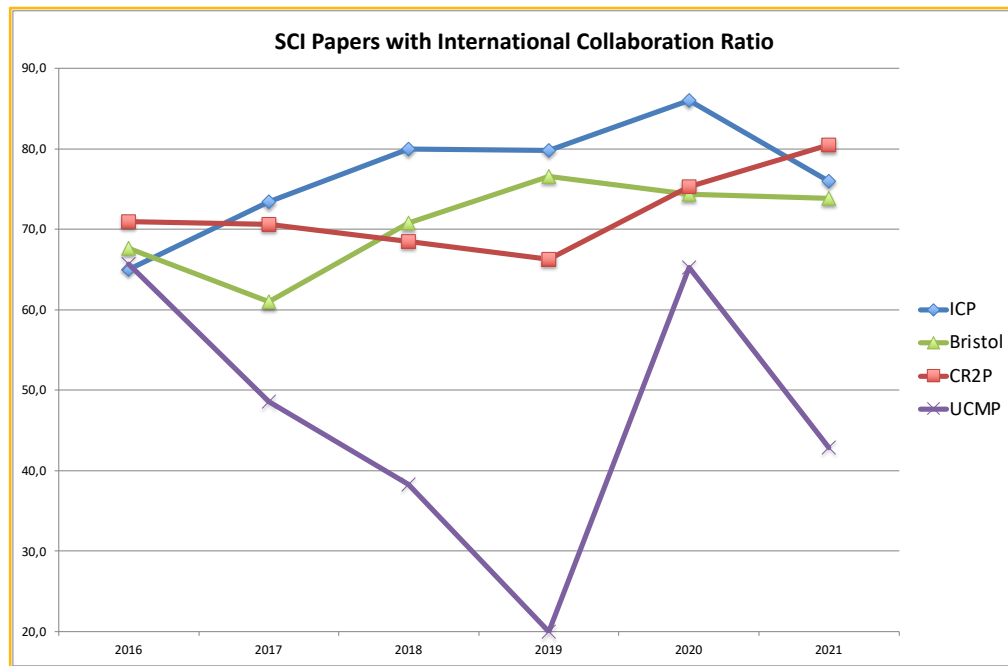
**Discipline specificity and multidisciplinary.** Based on the proportion of papers published in SCI journals from the category 'Paleontology', the ICP occupies the second position in 2021 and the five preceding years. The same situation is found for papers published in the category 'Multidisciplinary sciences', except that for 2021 the ICP is the first one.



**Leadership.** The ICP ranks as the first and second institution in terms of SCI and Q1 leadership (as measured by the corresponding author), respectively, for 2021, thereby improving its figures in this regard for the five preceding years.



**International collaborations.** For the ratio of papers with international collaboration(s), the ICP ranked as the first institution for both 2015-2020 but only as second in 2021.

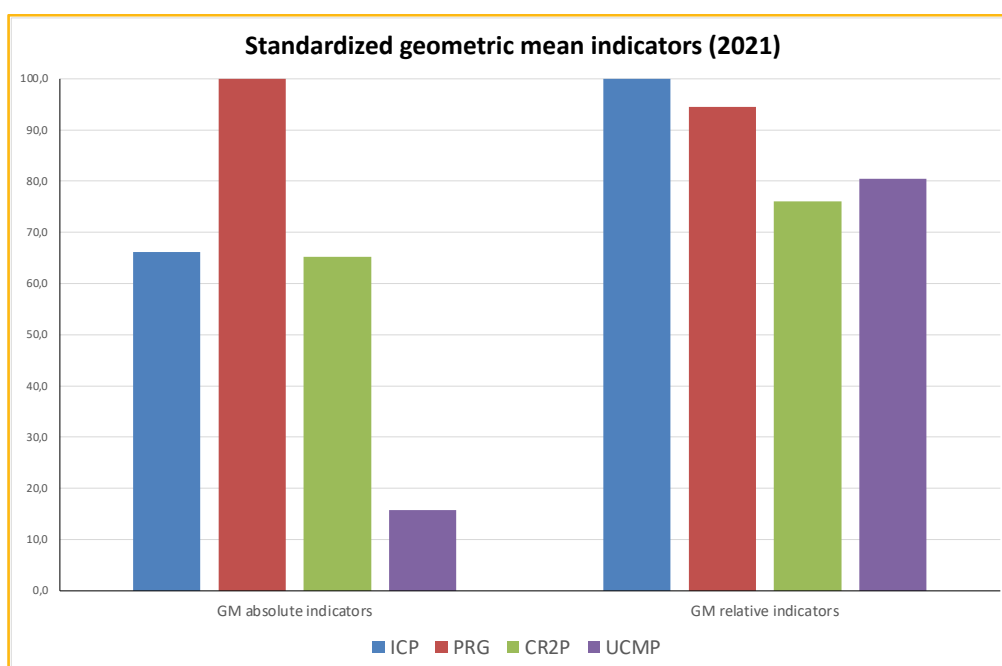
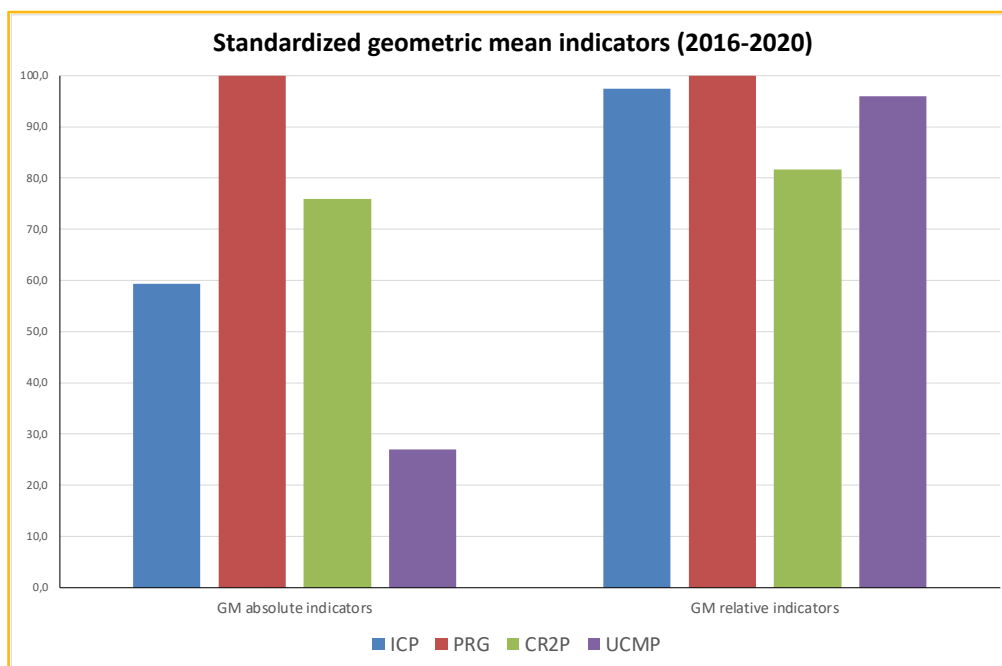


**Summary results and rankings.** The results for the 2016-2020 annual average values and the 2021 values can be compared by means of two synthetic metrics: the geometric mean (GM) of the indicators; and the GM of the indicators relative to that of the institution with the highest GM (in %). The results are reported below for absolute and relative indicators separately.

For the previous five years, the ICP is ranked third in absolute terms (after Bristol and Paris, with a performance of ca. 60% that of Bristol) and second in relative terms (with a performance of about 97% that of Bristol). The figure for 2021 indicates an improvement, given that the ICP is now listed first in absolute terms and based on relative indicators.

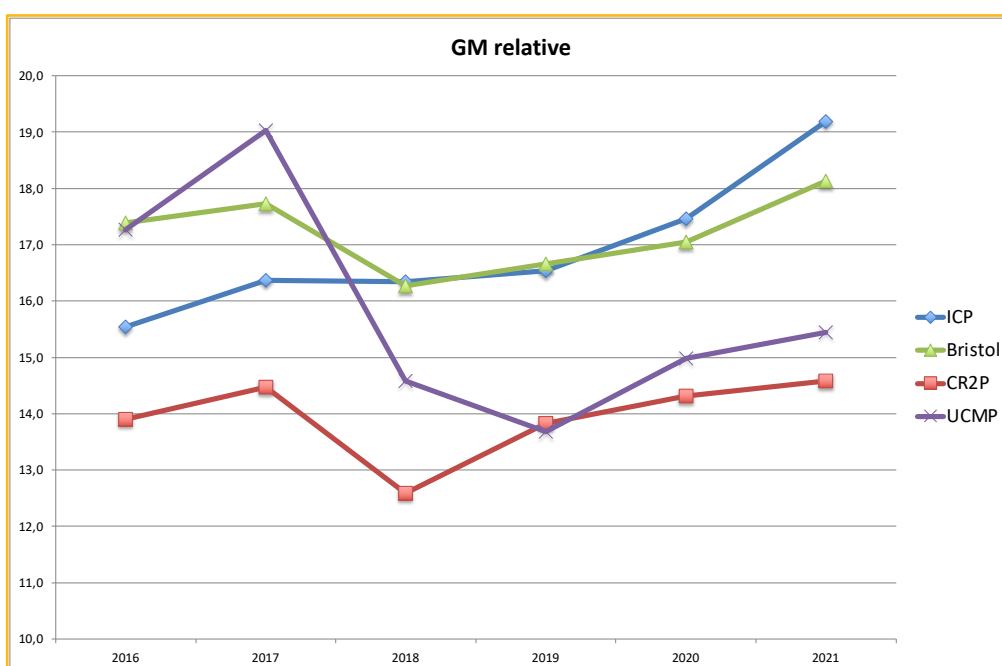
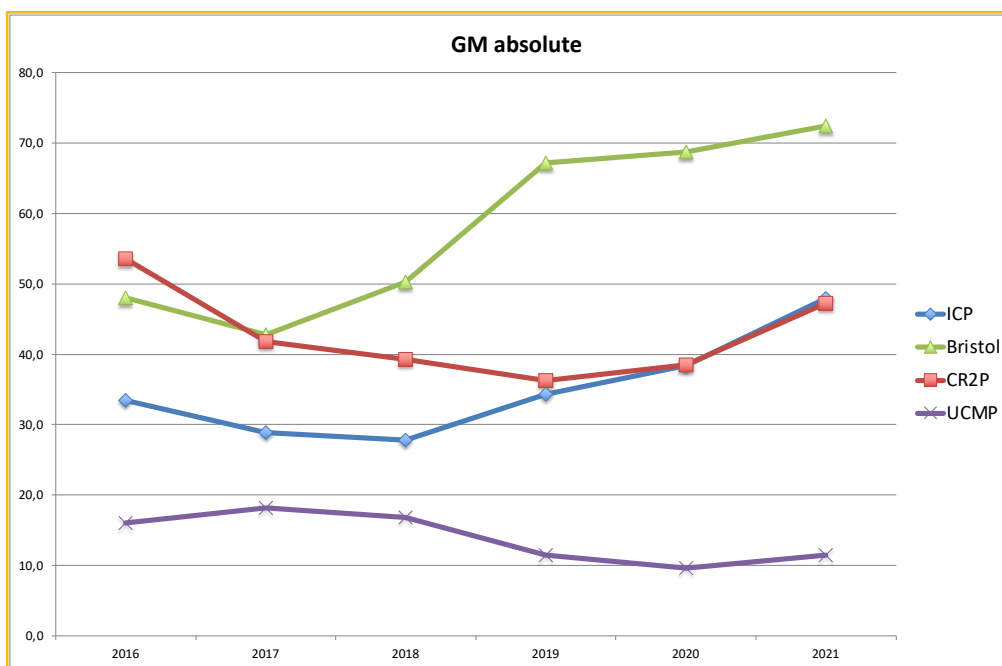
SUMMARY METRICS	2016-2020				2021			
	ICP	PRG	CR2P	UCMP	ICP	PRG	CR2P	UCMP
GM absolute indicators	33.1	55.7	42.3	15.0	47.9	72.4	47.3	11.4
GM absolute indicators (standardized)	59.4	100.0	75.9	26.9	66.2	100.0	65.3	15.8
GM relative indicators	16.7	17.1	14.0	16.4	19.2	18.1	14.6	15.4
GM relative indicators (standardized)	97.4	100.0	81.6	95.9	100.0	94.5	76.0	80.5

Absolute indicators better depict the global impact of a given institution among the international scientific community, but relative indicators are size-corrected and therefore are more reliable to evaluate the performance of a given institution irrespective of its size. The results for 2021 are very satisfactory, indicating that the ICP has improved its performance in absolute and relative terms.



If we track the changes in GM through time, it can be seen that all institutions have improved to some extent, with the ICP being most similar to Paris in absolute terms but to Bristol in relative terms. All in all, these data once again that the ICP is performing exceedingly well as far as research outputs are concerned, and suggests that the limitations in the global impact of the institution are almost entirely determined by its current size (i.e., by the number of payroll researchers as well as research associates).

INSTITUTION	METRIC	2016	2017	2018	2019	2020	AVERAGE	2021
ICP	GM absolute	33.4	28.9	27.8	34.3	38.4	<b>32.6</b>	<b>47.9</b>
PRG	GM absolute	48.0	42.8	50.2	67.2	68.7	<b>55.4</b>	<b>72.4</b>
CR2P	GM absolute	53.6	41.8	39.3	36.3	38.5	<b>41.9</b>	<b>47.3</b>
UCMP	GM absolute	16.0	18.2	16.8	11.4	9.6	<b>14.4</b>	<b>11.4</b>
ICP	GM relative	15.5	16.4	16.3	16.5	17.5	<b>16.5</b>	<b>19.2</b>
PRG	GM relative	17.4	17.7	16.3	16.7	17.0	<b>17.0</b>	<b>18.1</b>
CR2P	GM relative	13.9	14.5	12.6	13.8	14.3	<b>13.8</b>	<b>14.6</b>
UCMP	GM relative	17.3	19.0	14.6	13.7	15.0	<b>15.9</b>	<b>15.4</b>



## Equal opportunities & diversity management

**Equality Plan.** The ICP trusts in the implementation of a scientific culture with gender perspective, feminist and intersectional, sensible to diversity in every sense: individual and social, structural, institutional, and political. In order to achieve such scientific culture, transparency, responsibility and monitoring are required in decision-making, evaluation and recruitment. This is why it was considered imperative to improve the former Equal Opportunities and Diversity Management Plan as well as to implement new measures to create the necessary conditions and structures to attain actual and effective equal opportunities. A first draft of the Equality Plan was written by the Non-Discrimination Committee and reviewed by the ICP Director. A second draft was submitted for consideration to the ICP Steering Committee, which approved it with amendments on September 22, 2020. The final version was enforced immediately and made available to all ICP personnel on its Transparency website, pending the approval with eventual amendments by the ICP Board of Trustees when the next meeting takes place. The Plan includes the starting point diagnosis, the definition of principles and goals, the design and time schedule of the actions to put into effect, and the follow-up and evaluation mechanisms. Finally, it was considered necessary to include a glossary of terms related to non-discrimination and diversity management, not only with the aim of clarifying some concepts used in the plan, but also with an educational purpose. The actions included in the Plan are detailed in the table below, along with their degree of implementation at the end of 2021.

ACTION NO.	DESCRIPTION	EXPECTED	IMPLEMENTATION
Action 1.1	Translating the Equal Opportunities and Diversity Management Plan into English	1Q 2021	Almost fully implemented
Action 1.2	Internal dissemination of the Equal Opportunities and Diversity Management Plan	2Q 2021	Fully implemented 2021
Action 2.1	Review and update of the protocol for the prevention, detection and intervention in cases of violence against women	4Q 2021	Almost fully implemented
Action 2.2	Internal dissemination of the protocol for the prevention, detection and intervention in cases of violence against women	2Q 2022	Fully implemented 2021
Action 3.1	Establishing a good practices manual for a non-sexist use of language and images	4Q 2021	Delayed, under implementation
Action 3.2	Monitoring corporate documentation to ensure a non-sexist use of language and images	Continuous since 1Q 2022	Pending
Action 4.1	Promoting the implementation of new measures to guarantee the reconciliation of work, private and family life	Continuous since 1Q 2022	Pending
Action 5.1	Monitoring recruitment and internal promotion processes	Continuous since 3Q 2020	Fully implemented 2020
Action 6.1	Internal training in equal opportunities and diversity management from an intersectional perspective	Continuous since 3Q 2021	Fully implemented 2021
Action 6.2	Including a link to the new Equal Opportunities and Diversity Management Plan (and related documents) in the Welcome Handbook	Continuous since 4Q 2021	Delayed
Action 7.1	Incorporating a report on equal opportunities and diversity management in the annual reports	Continuous since 3Q 2020	Fully implemented 2021
Action 7.2	Improving the visibility of the scientific and technical tasks of ICP women	Continuous since 3Q 2020	Fully implemented 2021



To achieve equality recognition and the promotion of cross-cutting policies contributing to the creation of conditions and structures that enable actual and effective equal opportunities, the following seven specific aims are defined:

- **Objective 1:** To distribute the Equal Opportunities and Diversity Management Plan and the direction's commitment to equal opportunities among the personnel.
- **Objective 2:** To implement prevention, detection, and intervention measures in cases of sexual harassment.
- **Objective 3:** Encourage a non-sexist and non-discriminatory use of language and images.
- **Objective 4:** To boost the reconciliation of work, private and family life.
- **Objective 5:** To ensure that equal opportunities recruitment processes are implemented.
- **Objective 6:** To raise awareness of equality issues among the personnel and train them on this topic.
- **Objective 7:** To incorporate gender and intersectional perspective in the center's vision and values.

The following actions were fully implemented in 2021:

- **Action 1.2: Internal dissemination of the Equal Opportunities and Diversity Management Plan.** Description: Publicizing the Equal Opportunities and Diversity Management Plan among the center personnel. Tasks: To disseminate the document through the center regular digital channels (email and newsletters); to organize a talk (Paleovermut) to present the Plan; to survey the degree of knowledge about the new Plan among ICP personnel. Implementation: The Plan was publicized through the regular digital channels of the ICP and the talk (Paleovermut) was held on March 24, 2021. On April 21, four questions on the Plan were included in a HRS4R survey in order to evaluate the degree of knowledge on the Action Plan among staff.
- **Action 2.2: Internal dissemination of the protocol for the prevention, detection and intervention in cases of violence against women.** Description: Publicizing the Protocol for the prevention, detection and intervention in cases of violence against women among the center personnel. Tasks: To disseminate the document through the center regular digital channels (email and newsletters); to organize a talk (Paleovermut) to present the Protocol; Implementation: The Protocol was publicized through the regular digital channels of the ICP and the talk (Paleovermut) was held on December 15.
- **Action 6.1: Internal training in equal opportunities and diversity management from an intersectional perspective.** Description: To provide the center personnel with active training on various issues related to equal opportunities, the prevention of violence against women, and the use of non-sexist language. Tasks: Selection of the subject as well as the person or company that will act as training instructor; to ask for the explicit support of the Director to maximize the attendance to training; to set up the dates for the training session; to convene all the personnel; to carry out the session. Implementation: A virtual course organized by I-CERCA on sexual harassment and the situation of women in academia (in late 2020 and early

2021), as well as two talks on discrimination within the framework of the patriarchal system, instructed by specialized external staff (included in Paleovermuts) in 2021, were offered to the ICP personnel. In parallel, throughout 2020 and 2021, the NDC members attended multiple training sessions on non-discrimination issues and emailed the ICP personnel about various non-discrimination-related activities organized by other entities.

- **Action 7.1: Incorporating a report on equal opportunities and diversity management in the annual reports.** Description: Including a summary of the equal opportunities and diversity management report in the ICP annual reports. Tasks: Writing the annual summary and sending it to the Director, so that it can be included in the ICP annual report. Implementation: The first annual summary (corresponding to 2020) was elaborated in late 2020 but sent to the Director in January 2021, to be included in the 2020 annual report presented to the Board of Trustees later in 2021.
- **Action 7.2: Improving the visibility of the scientific and technical tasks of ICP women.** Description: To make it visible the scientific and technical tasks of ICP women and to take part in initiatives aimed to foster scientific and technical vocations in girls and young women. Tasks: To promote participation equal opportunities in working groups, activities, meetings, etc.; to review the guidelines of external representation to incorporate, whenever possible, a more balanced presence of women and men; to carry out actions in social media in occasions such as the International Day of Women and Girls in Science (February 11); to participate, whenever possible, in initiatives aimed to foster scientific and technical vocations in girls and young women. Implementation: Throughout 2020 and 2021, the NDC was vigilant about equal opportunities regarding the participation of women and men in working groups, activities, and meetings. Furthermore, several actions on the ICP social networks and website were undertaken in the occasion of the International Day of Women and Girls in Science in 2020 and 2021. Among others, in 2021 the NDC, with the collaboration of the Outreach & Communication Department, recorded the video "Reflexions de dues investigadores joves (Maria Prat and Sílvia Jovells)", which was sent to all personnel and posted on ICP social networks and website (<https://youtu.be/ldrNn1jMtVE>) in the occasion of the International Day of Women and Girls in Science (February 11).

In turn, an additional action became almost fully implemented in 2021:

- **Action 2.1: Review and update the protocol for the prevention, detection and intervention in cases of violence against women.** Description: Review and improve the protocol for prevention, detection, and intervention in cases of violence against women. Tasks: Write the new protocol; translate the new protocol into English. Implementation: The protocol was approved in July 2020, but English translation and ratification by the Board of Trustees (expected for the spring of 2021) are pending.

Another action that remained almost fully implemented since 2020 is the following:

- **Action 1.1: Translating the Equal Opportunities and Diversity Management Plan into English.** Description/tasks: To translate the Plan into English to facilitate its dissemination among staff. Implementation: A first draft of the English version of the Plan was made in late 2020, but it remained to be corrected and approved during 2021. However, this was postponed due to changes in Spanish legislation, which require the elaboration of a new Equality Plan. It is expected to be drafted and approved during 2022.

Finally, the following actions were only partly implemented in 2021:

- **Action 3.1: Establishing a good practices manual for a non-sexist use of language and images.** Description/tasks: To adopt and improve, if necessary, the UAB guide of good practices for the non-sexist use of language. To disseminate the document through the center regular digital channels (email and newsletters) so the ICP staff can apply its principles in their public documents. Implementation: This action has been delayed due to the prioritization of the management of cases of gender-based violence. It is expected to be implemented during 2022.
- **Action 6.2: Including a link to the new Equal Opportunities and Diversity Management Plan (and related documents) in the Welcome Handbook.** Description/tasks: To include in the Welcome Handbook links to the new “Equality Opportunities and Diversity Management Plan”, the “Protocol for the prevention, detection and intervention in cases of violence against women”, the “Manual for a Non-Sexist Use of Language” and the document “Internal Regulation of Working Time”. Implementation: This action has been delayed because the Welcome Handbook is pending.

**Management of cases of violence against women.** During 2021, 5 communications about sexual harassment and none about sex-based harassment have been recorded by the NDC. One of these communications gave rise to an internal formal allegation that, after an investigation performed by an ad hoc committee, resulted in a serious misconduct sanction further including remedial actions. However, the sanction was appealed to court in 2022 and the hearing is scheduled for 2024.

### **CERCA recommendations**

**CERCA Evaluation.** A formal evaluation of the ICP was performed by the CERCA institution on 29 October 2018, by means of an Evaluation Commission (EC) composed by members of the ICP Scientific Advisory Board as well as independent members from abroad. The evaluation of the ICP by the EC was based on the responses provided by the ICP Director to the Evaluation Questionnaire elaborated by CERCA (submitted in August 2018) as well as by a presentation performed on 29 October 2018 in front of the EC, based on the results for 2013-2017.

The conclusions of the EC were provided in a written report elaborated by the EC and sent to the ICP Director on 27 December 2018. The EC awarded the ICP with a 'B' qualification (very good, with excellent results at national level although some pending issues to be addressed at the international scenario), although according to the report some members of the EC considered that the ICP deserved the upmost qualification 'A' (outstanding performance, placing the center among the top international performing institutions on its field). The EC took into account the significant progress of the institution during the 2013-2017 period, the high degree of fulfilment of the recommendations stated in the previous evaluation report (2013), the scientific production and productivity, the excellent management of the center, and the performance in the knowledge transfer activities and the outreach and dissemination activities.

RECOMMENDATION NO.	DESCRIPTION	IMPLEMENTATION
Recommendation 1	ERC funding	Under implementation
Recommendation 2	SAB meetings	Almost fully implemented
Recommendation 3	SAB composition renewal	Almost fully implemented
Recommendation 4	Retirement of two Senior Group Leaders	Fully implemented
Recommendation 4'	CT scan	Pending implementation
Recommendation 5	Access to synchrotrons	Partly implemented
Recommendation 6	Articulating the network of research associates	Fully implemented
Recommendation 7	ICP-UAB common strategy	Partly implemented
Recommendation 8	Ascribe UAB professors to the ICP	Almost fully implemented
Recommendation 9	Recruitment	Fully implemented
Recommendation 10	Gender balance	Fully implemented
Recommendation 11	Engaging donors	Under implementation
Recommendation 12	Spin-offs	Fully implemented

**Action Plan for CERCA Recommendations.** An action plan summarizing the recommendations provided by the EC and their implementation during 2019-2022 was approved in February 2019 by the Steering Committee, and subsequently ratified by the Board of Trustees in May 2019. The 13 recommendations provided by CERCA and the current degree of implementation are summarized in the table above and further detailed below.

- **Recommendation 1: ERC funding.** CERCA recommendation: To try to obtain European funding by focusing on the research collaboration agreement with ICREA Prof. Marquès-Bonet on palaeogenetics and palaeoproteomics, as well as by applying to ERC Synergy Grants. Under implementation: The research agreement with Prof. Tomàs Marquès-Bonet in September 2018 included his commitment to explore the organization and leadership of a transnational project proposal on primate paleogenetics and/or paleoproteomics with the participation of the ICP. In January 2019, an MSCA ITN-ETN application on hominid paleoproteomics (PUSHH) was submitted, with Prof. Marquès-Bonet as the scientist-in-charge of the UPF and the ICP as partner organization. The MSCA ITN-ETN project was awarded in 2019, and it started in 2020. Although, as partner organization, the ICP has no overheads, Dr. Alba is currently cosupervising two PhD grantees for the PUSHH network

(one with Prof. Marquès-Bonet and another with Prof. Rook from Italy). This topic offers the prospect to apply for an ERC Synergy in years to come but not until current techniques have been able to retrieve Miocene proteomes. Furthermore, in early 2019 Prof. Marquès-Bonet was awarded an individual ERC grant to which he had previously applied, thereby limiting his possibilities to participate in other ERC projects. On the other hand, the new Project Manager recruited in 2019 joined the ICP January 2020. Since then, he has met with ICP group leaders and other researchers from various categories to discuss funding possibilities within the late H2020 Programme and, in particular, the possibility to apply to ERC grants (StG, CoG and AdG). Additional follow-up monthly meetings have been held with those researchers that plan to apply, to inform them about ERC training webinars as well as to monitor the progress of their project proposals, particularly since the new EU Research and Innovation framework program 'Horizon Europe' was issued in 2021. A 'Beatriu de Pinós' postdoctoral researcher from the Paleoprimateology & Paleoanthropology Research Group prepared throughout 2021 a Starting Grant application, to be submitted in early 2022.

- **Recommendation 2: SAB meetings.** CERCA recommendation: The EC recommended to schedule at least one meeting of the SAB every two years at ICP headquarters, with an agenda made available to SAB members beforehand. Almost fully implemented: The SAB meeting scheduled for November 2020, including three new SAB members (see below) had to take place at the ICP, but this was not possible due to travel restrictions associated with the COVID-19 pandemic. So, with the approval of the Board of Trustees, it finally took place by telematic means. It was agreed that the SAB would regularly meet once per year online, except every four years (when coinciding with the CERCA evaluation). The ICP Director provided an update of the center's current situation as well as a brief introduction for the new SAB members. However, it was agreed that in future meetings ICP researchers would make short presentations, to provide SAB members with first-hand knowledge about the center's research staff. Therefore, when the next telematic meeting took place in late 2021, two research group leaders, in addition to the director, made short presentations to the SAB members. In all instances, an agenda was provided to SAB members beforehand, while the minutes were provided to them a posteriori.
- **Recommendation 3: SAB composition renewal.** CERCA recommendation: To renew the composition of the SAB and define its duties and agenda to optimize its contribution, as well as to consider inviting some foreign ERC grantees to join it. Almost fully implemented: Following the action plan approved by the Board of Trustees in 2019, three SAB members were replaced in the spring of 2020. The new members were appointed by the Board of Trustees upon the Director's proposal. The new SAB members were selected by simultaneously taking into account their merits, reputation and expertise (in relation to ICP research lines), their experience in fundraising, and the need to keep a balanced gender ratio. The remaining members agreed to stay at least until 2022, when three additional replacements were expected to be proposed by the ICP Director to the Board of Trustees (to be appointed not later than 2023). Nevertheless, the retirement of two SAB members

(including the President) precipitated their replacement and designation of a new President in the Board of Trustees meeting that took place in May 2022. Another SAB member should still be replaced, not later than 2023, to complete the SAB renewal.

- **Recommendation 4: Retirement of two Senior Group Leaders.** CERCA recommendation: To define a strategy to replace the two Group Leaders that were expected to retire before the next evaluation. Fully implemented: The EC referred to the ICREA Profs. Moyà-Solà and Köhler, which indeed were granted permission by ICREA to continue working until they are 70-year-old—respectively until 2025 and 2023 (i.e., after the next evaluation). Nevertheless, the ICP devised a plan approved by the Board of Trustees to consolidate the ICP strategic research lines while allowing for further flexibility in the number of ICP research groups. In particular, ICP research was reorganized into three main research areas recognized in the Organization Chart approved by the Board of Trustees and two junior group leaders were appointed by the ICP Director in 2019 (elevating the number of research groups from four to six). Since then, two tenure-track researcher positions were offered in 2019 and 2021 to reinforce the Dinosaur Ecosystems and the Paleoprimateology & Paleoanthropology research groups, respectively, while a postdoctoral position opened in 2021 to strengthen the Life History Evolution research group.
- **Recommendation 4': CT scan.** CERCA recommendation: To balance the beneficial impact of having again fully operational the CT scan and the cost of fixing this equipment. Pending implementation: A viability plan for the CT was drafted in 2020 by the Computational Paleobiology research group leader, but is pending a decision from the Steering Committee of the ICP, which has been waiting for the budgetary situation of the center to improve. Given the deficit accumulated until 2019, it was not possible to consider investing in the repair of the CT, given the elevated cost (ca. 100 k€) of fixing it. The viability plan of the CT was originally planned for late 2020 or the spring of 2021, but finally delayed for these reasons. In the light of the positive economic results of 2020, it was expected that in 2021 it would be possible to decide (with the help of the SAB advice) how to proceed in this regard—particularly in the framework of the elaboration of the new Strategic Plan (2022-2025). Nevertheless, several unexpected financial difficulties in 2021 (which reduced the accumulated surplus from 2020) and other, more urgent strategic decisions made it recommendable to delay one year more the discussion with the SAB in this regard. Currently, it is expected that the CT viability plan will be discussed in the SAB meeting planned for late 2022, to be presented for review and approval by the Board of Trustees in 2023.
- **Recommendation 5: Access to synchrotrons.** CERCA recommendation: To explore the access to other scientific facilities, such as synchrotrons (not only ALBA, but also the European Synchrotron Radiation Facility-ESRF in Grenoble). Partly implemented: Indeed, in 2018 the ICP already applied twice to the European Synchrotron Radiation Facility (ESRF) in Grenoble to use its facilities, but unfortunately they were rejected, as there it a lot of competition and paleontology is not among their priority research lines. Subsequently,

during some time it was not possible to apply there because the facilities were closed. In the meantime, in 2019 the ICP explored other possibilities to collaborate with other synchrotrons (London and ALBA). In particular, the Computational Paleobiology research group leader (Dr. Fortuny) had a meeting with the person in charge of the future beamline FAXTOR from ALBA Synchrotron (expected to be fully operative in 2-3 years), and it was agreed that he will play a key role as coordinator of Spanish paleontologists interested in using this new beamline. It is thus expected that the ICP will actively collaborate in the ALBA Synchrotron sometime in the near future. The ICP also successfully applied to use, in 2020, the neutron-CT facilities of the Heinz Maier-Leinitz Zentrum in Munich (Germany; ref. 15923-2019) and the MinoTauro cluster at the Barcelona Supercomputing Center (Spain; BCV-2020-1-0008). Furthermore, throughout 2019-2021 the ICP regularly used the micro-CT scanning facilities of the Centro Nacional de Investigación Humana (CENIEH) in Burgos (Spain), which is also considered a unique scientific and technical infrastructure (ICTS), and more sporadically also in 2020 in the AST-RX micro- and nanotomography platform of the Muséum National d'Histoire Naturelle in Paris (France).

- **Recommendation 6: Articulating the network of research associates.** CERCA recommendation: To articulate the network of ICP research associates by creating some simple rules or strategies to deal with the criteria for membership within the network, making explicit their contributions to the ICP, and preparing the relevant documentation for each associate. Fully implemented: Since 2018, all research associates have written agreements with the ICP, where the terms of their collaboration with one or more ICP research groups are exposed. Some of these terms can be negotiated, but it is mandatory for ICP research associates to hold a PhD degree, to sign their research outputs with ICP affiliation, and follow the center's ethical guidelines, protocols and other regulations. The terms of the agreement further specify the commodities provided to them by the ICP (email address, access to fossil collections, working space, research funds, etc.). Research associate agreements must be approved by the Steering Committee upon the Director's proposal. Circumstances may vary, but normally they are motivated by the need to consolidate an ongoing collaboration with researchers from other institutions (normally from abroad), or else by the convenience of maintaining a tight collaboration with former ICP researchers that have moved to a new institution. These agreements are valid for a given number of years and automatically extended if none of the parties oppose. Since 2018, the performance of research associates is evaluated together with that of ICP researchers on a yearly basis. On this basis and the recommendations provided by the relevant research group leader, the Steering Committee decides about the suitability to extend the duration of the agreements in due time. Since 2017, an updated list of ICP research associates is provided each year in the Organization Chart submitted to the Board of Trustees for review and approval. Furthermore, since 2019 an updated list of research associates with their current primary institution (if any) is given in the annual report, where the results of their evaluation (anonymized) are compared with those of ICP researchers. In 2020, the Steering



Committee further clarified that it is mandatory for research associates to be actively involved in research, without prejudice that other kinds of stable collaborations may be established with non-staff members in relation to outreach activities.

- **Recommendation 7: ICP-UAB common strategy.** CERCA recommendation: To devise a common ICP-UAB strategy in the paleontology area, and to be more proactive in trying to establish a beneficial collaboration with the UAB. Partly implemented: Besides the obvious link between the UAB and the ICP (given by the fact that the former is one of the patrons of the ICP and that the latter is officially recognized as university research institute of the UAB), most of the collaborations formally established were mostly focused on teaching: on the one hand, most ICP researchers and several research associates participate in teaching of the Master in Paleobiology & Fossil Record; on the other, during 2020-2022 between three and four ICP researchers had dual affiliation with the UAB Paleontology Unit (Department of Geology) as associate professors. Nonetheless, it is noteworthy that several researchers from the Dinosaurs Ecosystems research group were members of a Consolidated Research Group recognized by the Generalitat de Catalunya led by an UAB professor. Other than that, expanding the collaboration between the ICP and the UAB Paleontology Unit in terms of research was hindered by the different research topics to which they are devoted (vertebrate vs. invertebrate paleontology). Nevertheless, following the incorporation of a former ICP researcher (Dr. Furió) as Serra-Hunter lecturer of the UAB in January 2021, the current conditions are more favorable to the establishment of a deeper collaboration between researchers of both institutions (see also below the implications for the next recommendation with regard to the need to ascribe UAB professors to the ICP). Finally, it is noteworthy that, during 2021, researchers of the ICP actively worked together with UAB and UB professors to devise a new plan for the master studies in Paleobiology (to be submitted for validation in 2022).
- **Recommendation 8: Ascribe UAB professors to the ICP.** CERCA recommendation: To try to affiliate professors from the University. A bottom-up approach of trying to convince individual researchers of the benefits being affiliated with ICP should be promoted. The Board of Trustees (BoT) of ICP should discuss this issue and, where possible, facilitate solutions. Almost fully implemented: During 2019, the ICP Director had an interview with the UAB Vice-Rector for Research and Transference (Dr. Armand Sánchez, also one of the UAB representatives in the ICP Board of Trustees) and another with the Head of the UAB Geology Dept. to discuss the possibility to ascribe UAB professors to the ICP. The former confirmed the feasibility of such possibility from the university viewpoint, but recommended to wait a few months until new internal regulations allowed a 50% ascription. This would allow the ascribed professor to ask for funding from both institutions and, hence, facilitate dissipating the reticences that the Head of Dept. (who must approve the deal) might have in this regard. Initially, the Head of the Geology Dept. was opposed such possibility, given the small number of UAB professors in the two relevant units (Paleontology and Stratigraphy) of the department. This evinced that the bottom-up approach



recommended by CERCA is necessary but not sufficient to reach the goal, as the approval by the Head of Dept. is mandatory to ascribe UAB professors to the ICP. Nevertheless, in late 2020, an ICP researchers hired by the university as associate professor (Dr. Furió) won a Serra Hunter lecturer position and joined the UAB Paleontology Unit in early 2021. This person wanted to remain officially ascribed to the ICP in order to preserve his working space, direct access to the ICP collections, and other commodities and facilities of the ICP. This situation represented a long-awaited opportunity window to explore again the possibility to ascribe a UAB professor to the ICP. With this aim in mind, in late 2020 the ICP Director had another interview with the aforementioned UAB Vice-Rector for Research and Transference to discuss the most suitable strategy. It was agreed that the ICP should request the Head of the Geology Dept. to approve the eventual 50% ascription to the ICP of its former researcher, and offer as well the possibility to ascribe to the UAB the current ICP researchers hired for teaching at the university as research collaborators (“investigador vinculat a la universitat”, IVU). This would enable to extend into research the current teaching collaboration by undertaking joint (ICP-UAB) research projects. Conversations were resumed in 2021 with the Head of Department, who finally was supportive of the proposal. The latter was finally approved by the Department conditioned to a few specific requirements that will have to be specified in the formal agreement between the UAB and the ICP. Therefore, the aforementioned UAB lecturer remained de facto informally affiliated as well to the ICP during 2021, pending the approval by the university and the signature of the agreement, which are expected for 2022.

- **Recommendation 9: Recruitment.** CERCA recommendation: To develop further the ICP recruitment strategy to implement an open and transparent procedure without automatically prioritizing associate researchers (i.e., by making calls always open and international), so as to facilitate external applicants—even when the required expertise may only be available among internal applicants. Fully implemented: The ICP endorsed the principles of the EU Charter & Code for researchers in late 2016, and one year later submitted to the European Commission a Gap Analysis and an Action Plan aimed to implement the EU Human Resources Strategy for Researchers (HRS4R) at the ICP. The latter includes an open, transparent and merit-based recruitment (OTM-R) policy that is fully aligned with the CERCA recommendation in this regard. The ICP was formally granted the EU ‘HR Excellence in Research’ on March 2018, and two years later the internal evaluation of the HRS4R implementation at the ICP was positively assessed by the EU. The 14<sup>th</sup> action of the HRS4R Action Plan of the ICP was elaboration of a Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians. The document was completed by the Steering Committee and subsequently ratified by the Board of Trustees in the spring of 2019. This recruitment protocol requires that all vacant researcher positions defrayed by ICP basal (non-competitive) funds must be filled by means of an open international call. Since then, a tenured researcher position (ICPJA001), two tenure-track researcher positions (ICPJA002 and ICPJA006), and a postdoctoral contract have been offered (as detailed on the

ICP webpage; <https://www.icp.cat/index.php/en/icp-2/work-with-us/open-positions>) and further publicized through the EURAXESS portal.

- Recommendation 10: Gender balance.** CERCA recommendation: To keep in mind the currently unbalanced gender balance of the ICP at the upper levels of management and consider solving it in all future positions. Fully implemented: Multiple initiatives have been undertaken to try to correct this situation. First, the HRS4R Action Plan included the elaboration of a new ICP Equal Opportunities & Diversity Management Plan as well as the establishment of a Non-Discrimination Committee (NDC). Since February 2018, the NDC has been working to improve the ICP equality plan, which was finally issued in 2020 and includes several measures aimed to promote equal opportunities for female researchers and technicians (in relation to the reconciliation of work and private life, monitoring recruitment processes, and improving the visibility of the tasks performed by ICP women, among others). As explained above, a new version of the equality plan is currently being elaborated, to comply with current legislation, and several actions (such as a remuneration audit) will be performed in 2022 to better assess the situation of female staff at the ICP. In turn, the recruitment protocol elaborated in the framework of the HRS4R Action Plan and approved in 2019 also enforces a series of proactive measures to guarantee equal opportunities when applying for a position at the ICP (for example, it standardizes merits based on career duration, and subtracts by default longer periods of parental leave in the case of women, so as to compensate for gender-unbalanced parenthood efforts in a patriarchal society). As specified in the ICP job announcements, the recruitment protocol further stipulates that the NDC must oversee the recruitment process (by reviewing and approving the job offers and the composition of Selection Committees, to prevent any kind of discrimination and ensure that the protocol provisos are fulfilled). Furthermore, the ICP job announcements explicitly state that the “ICP aims to guarantee equal opportunities to all candidates and intends to promote a balanced sex ratio”, so that applications by female candidates are “strongly encouraged”. This is not restricted to researcher positions, and indeed the recruitment of the new Project Manager (and Head of the Research Support & External Services Department), of various preparator technicians, and the administrative officer were made following the same procedures. Admittedly, the ICP gender ratio is still unbalanced (particularly at executive and managerial levels) but the multiple measures that have been enforced in this regard justify considering that the CERCA recommendation is fully implemented, even if the goal is still very far.
- Recommendation 11: Engaging donors.** CERCA recommendation: To start organizing events to engage donors and philanthropic Foundations (among other fundraising actions), as well as to develop a long-term plan in this regard with the help of the Board of Trustees, based on topics such as Catalan dinosaurs. Under implementation: In 2018, the ICP was invited to apply to participate as strategic partner in The Jurassic Project of The Children’s Museum (TCM) of Indianapolis, a large scale and long-term research and outreach project focused on dinosaurs. However, the ICP was finally excluded due to the lack of funds to cover the

participation of ICP researchers in fieldwork activities during 2019. Unfortunately, due to the lack of Project Manager at the time, it was not possible to secure the required funds to reapply in the following year. Nevertheless, it is noteworthy that in 2020 the ICP managed to increase the funds provided by the Culture Department of the Generalitat de Catalunya to the ICP for the Dinosaurs of the Pyrenees project, as well as to consolidate such kind of funds as a direct transfer from the Catalan government (instead of a discretionary, non-competitive grant, as it was before). It is also worth noting that, following a meeting held at the ICP Museum in late 2020 by the ICP Director and the Mayor of Sabadell, the latter formally asked to become part of the ICP Board of Trustees; this would imply some financial contribution, even if meager, to the institution, although unfortunately the City Council of Sabadell had yet to join the ICP Board of Trustees in 2021. In any case, the relative success of fundraising efforts with the public administration should be further complemented by private entities. Given the inability of the former ICP Project Manager to develop a successful strategy to attract private donors and sponsors (as recommended by CERCA), the ICP Director and General Manager agreed to dismiss her in January 2019. An open recruitment process to fill the vacant position was undertaken in 2019 and the new Project Manager joined the ICP in January 2020, further becoming the new Head of the Research Support & External Services Department later that year. Since then, the new Project Manager has had to devote most of his efforts to oversee and promote further service provision and competitive fundraising, while devising a long-term strategy to attract donors and sponsors. In 2020, it was agreed by the ICP Director and Project Manager to focus most of the efforts during the next few years in attracting sponsors (basically, private companies) for two types of ICP activities: fieldwork (paleontological excavations) and outreach (both temporary itinerant exhibits and the permanent exhibit of the ICP Museum). With the support from the Culture Department of the Generalitat de Catalunya to renew the exhibits of the ICP Museum, the design of a museological plan started in 2021. It should be completed in early 2022, leading not only to the elaboration of a museographical plan but also setting the necessary conditions to contact with companies to secure the required funds. A more specific strategy should be developed with the help of the Board of Trustees in 2022-2023.

- **Recommendation 12: Spin-offs.** CERCA recommendation: To try to keep a certain level of equity in those companies born from the Institute. That would allow ICP to maintain a certain degree of control of the company and eventually, if required, preserving the reputation of the Institute, as well as strengthening the visibility and impact of ICP. Fully implemented: In spite of the fact that no ICP spin-off has been created, this recommendation is considered to be fully implemented for the reasons explained below. The reason why no spin-offs have emerged is attributable to the fact that the ICP has no patents to transfer, but also to current ICP policies (detailed in the 2018-2021 Strategic Plan) that stress service provision directly by the ICP. The center belongs to the public sector but its legal structure is that of a private foundation, implying that in spite of being non-profit it

can provide services in a similar way to a private company. Therefore, since 2018 the ICP has focused on securing the provision of fieldwork services to the company that exploits the Can Mata landfill, once the construction of a new enlargement of the dump were resumed. Until 2014, such services were provided by private companies owned by some current ICP researchers and technicians, which facilitated the transition and generated remarkable revenues to the ICP in 2020. Nevertheless, in case that other entrepreneurial actions emerged that required to seek for additional partners, following the CERCA recommendation the ICP would aim to secure more than 50% of the spin-off equity.

## FINAL NOTE

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This Annual Report was written by the ICP Director in January and March 2022, with input from the other members of the Steering Committee, heads of Area, and various ICP committees and commissions. The final version is dated to March 28, 2022.

It will be presented by to the ICP Board of Trustees for their approval as soon as the next meeting takes place.

DAVID M. ALBA  
Director



## APPENDIX

### ICP publications 2021

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The following list includes the publications (co)authored by authors with ICP affiliation in 2021, distributed in the different categories recognized in this report. Only those papers published in final form are included; those published online in 2021 without volume and pagination, pending publication in 2022, or published toward the end of 2021 with date 2022, have been excluded (pending their inclusion in the 2022 Annual Report). An updated list of ICP publications since its refoundation in 2006 can be found at [http://www.icp.cat/attachments/publicacions/ICP\\_Publications.pdf](http://www.icp.cat/attachments/publicacions/ICP_Publications.pdf)

#### SCI papers (indexed in JCR)

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