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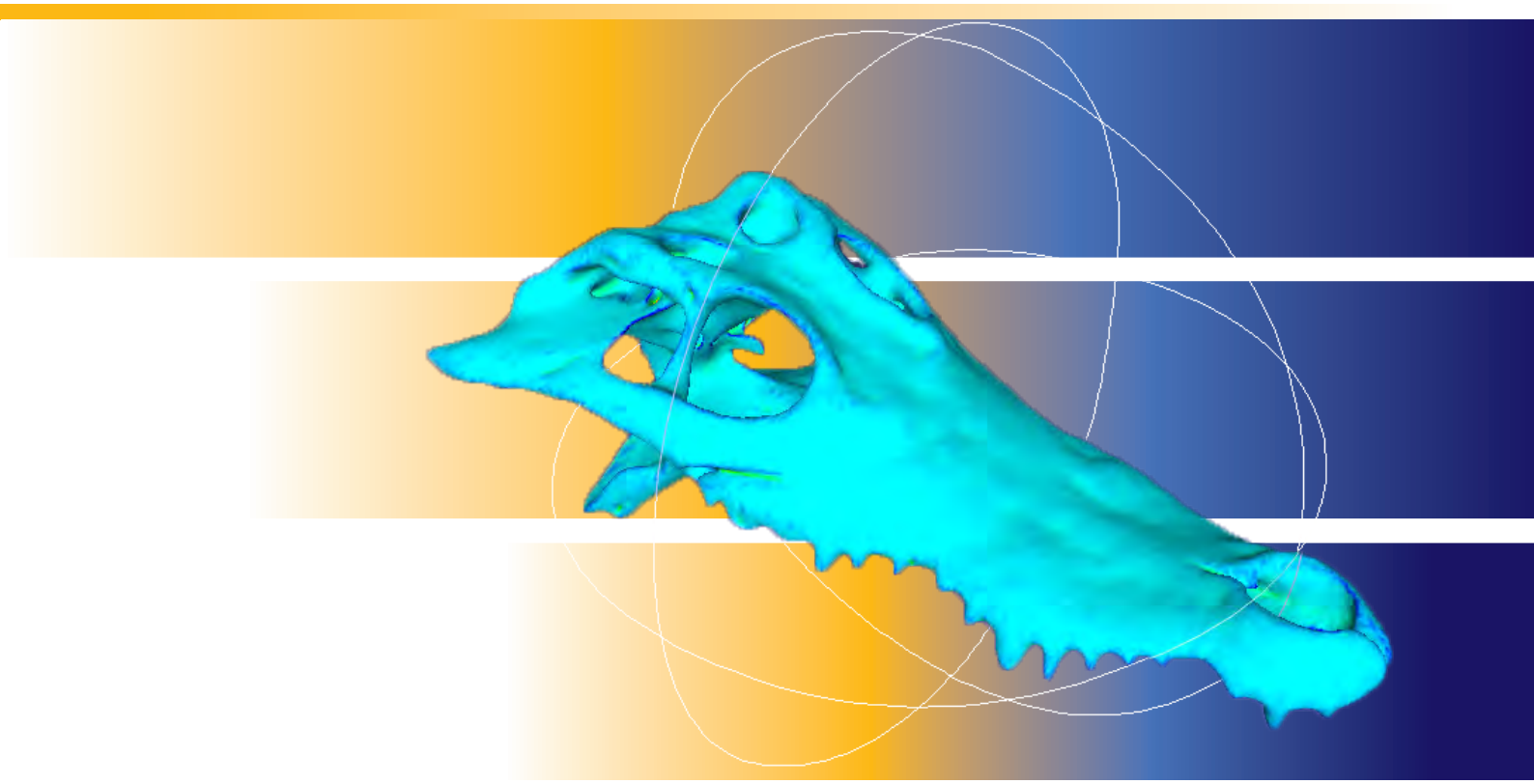

Annual Report 2012

Institut Català de Paleontologia Miquel Crusafont

Institut Català de Paleontologia
Miquel Crusafont

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Institut Català de Paleontologia Miquel Crusafont

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THE ICP: RESEARCH, INNOVATION, DISSEMINATION AND TRAINING: MUCH MORE THAN A RESEARCH CENTRE

The *Institut Català de Paleontologia Miquel Crusafont* (ICP) was founded in November 2006 with the aim of researching the rich paleontological heritage of Catalonia as well as national and international projects of particular significance and scientific interest. The ICP is a member of the network of centres in the CERCA programme of the Autonomous Government of Catalonia.

1. To become a centre of excellence in the research, conservation and diffusion of vertebrate and human paleontology in the international sphere.

2. To provide a biological approach towards paleontology, facilitating participation in current discussions about evolution patterns, rhythms and mechanisms, and contributing to areas that are seemingly unrelated to paleontology, such as evolutional medicine, theories on aging and climate change.

3. To contribute to innovative paleontological research through the use of new technologies and high resolution tomography.

4. To promote the conservation of the Catalan paleontological heritage and the expansion of the paleontological collections we currently conserve.

5. To promote teaching and training in the university sphere, the transfer of knowledge to the general public and scientific diffusion in the media.

Welcome to ICP

Salvador Moyà-Solà

Director

2012 was not an easy year for the ICP. The cuts introduced as a result of the economic crisis meant we had to reorganise our staff, reduce spending and cut salaries. This pressure forced us to seek other means of obtaining resources and establishing links and collaborations with research centres worldwide. Through these, we have maintained the same productivity levels as previous years. Making our centre more efficient is a way of turning the current situation of crisis into an opportunity.

It must be said that, despite the difficulties, the results of 2012 have been excellent. For a medium-sized centre, with a reduced number of researchers, 139 publications is a great result. Moreover, the productivity per capita has increased compared to previous years: the current productivity of an ICP researcher is 4,5 SCI articles; and 7 articles if all the categories of the year are considered. This is a truly great figure of which we are proud.

Our impact factor has also increased considerably: during 2012 the ICP researchers published in *Nature*, *Plos One* and *Paleobiology*, among other journals. These results were possible not only as a result of the work of the researchers, but also of the commitment and hard work of all the technical and administrative departments in the centre.

In terms of results, this year it is very important to highlight that the ICP Evolutionary Paleobiology Group managed to solve one of the mysteries that had been the subject of intense discussions for the last half century: the metabolism of dinosaurs. Using a combination of paleohistology and the theoretical body of "life-history theory", and studying an extensive sample of current artiodactyls distributed across all the present climatic zones, the discussion was brought to a close: the majority of dinosaurs were warm-blooded animals, like mammals (Köhler, M., Marín-Moratalla, N., Jordana, X. & Aanes, R. (2012). Seasonal bone growth and physiology in endotherms shed light on dinosaurphysiology. *Nature* doi:10.1038/nature11264).

2012 was also the year in which we implemented our computerised tomography laboratory, a unique piece of equipment in the country. The device was designed and built to measure with the collaboration of the University of Santiago de Compostela and the technological centre *AIMEN*. The construction of this scientific installation was made possible thanks to the operational programme FEDER Catalonia 2007-2013. This equipment places ICP among the leading paleontology research centres.

Therefore, despite the cuts, and bearing in mind these results, 2012 was an excellent year for the ICP. However, without the passion that all the members of the ICP feel for our work and our centre, these results would not have been possible. Our shared enthusiasm drives us to maintain a much greater level of effort than is usual, helping us to overcome the current crisis and the lack of resources. Nevertheless, this trend will not be able to maintain indefinitely.

Sooner rather than later, we should be able to obtain adequate funding to remain at the forefront of paleontological research in the international sphere, as we are at the moment.

Salvador Moyà-Solà
Director

KEY ICP NEWS 2012

The ICP and the Coll de Nargó Town Council sign an agreement to promote the paleontological heritage of the town

The ICP and the Coll de Nargó Town Council have signed a collaboration agreement as part of the framework to set up the Dinosfera Paleoenvironmental Centre in this town in Alt Urgell. This agreement joins the long history of work between the two organisations in the research, conservation and dissemination of the rich paleontological heritage of Coll de Nargó.

The ICP now has new Computerised Tomography equipment

The *Institut Català de Paleontologia Miquel Crusafont* has installed a Computerised Tomography device, unique in the country, in the Museu de l'ICP (ICP Museum). It enables researchers to see the interior and details of fossils that measure more than one metre in length and weigh up to 500 kg. The device was designed and built to measure with the collaboration of the University of Santiago de Compostela and the technology centre *Aimen*. The construction of this scientific installation was made possible thanks to the operational programme FEDER Catalonia 2007-2013.

Agreement between the ICP and ESCRBCC to train restorers in paleontology

The ICP and the *Escola Superior de Conservació i Restauració de Béns Culturals de Catalunya* have incorporated a programme of formative placements aimed at current conservators-restorers and students studying a degree in Conservation and Restoration, which will enable them to specialise in paleontology.

Discovery of a new dinosaur site at Basturs, in Pallars

Excavations began at Basturs (Isona and Conca Dellà) in 2012 at a new dinosaur site, discovered by two neighbours. The remains found were very large, and the first works confirmed that this was an exceptional site. The site, like all of those found in la Conca, conserves remains of the last dinosaurs that lived in Europe between 70 and 65 million years ago.

Inauguration of the temporary exhibition '*Gairebé humans: origen i evolució dels hominoïdeus*' ('Almost Humans: The Origin and Evolution of Hominoidea')

The ICP Museum has inaugurated the exhibition **'Almost Humans: The Origin and Evolution of Hominoidea',** sponsored by the *Unnim Caixa* social project. Most notable in this exhibition are the hominid fossils of the Vallès-Penedès basin: Pau, ***Pierolapithecus catalaunicus***; Jordi, ***Hipanopithecus laietanus***; and Lluc, ***Anoiapithecus brevirostris***.

According to a study published in *Nature,* dinosaurs were warm-blooded reptiles

A study conducted with current mammals rules out the hypothesis on which the ectothermy of dinosaurs was based. The methodology used allows us to observe in the bones of mammals, whether current environmental changes can endanger a population.

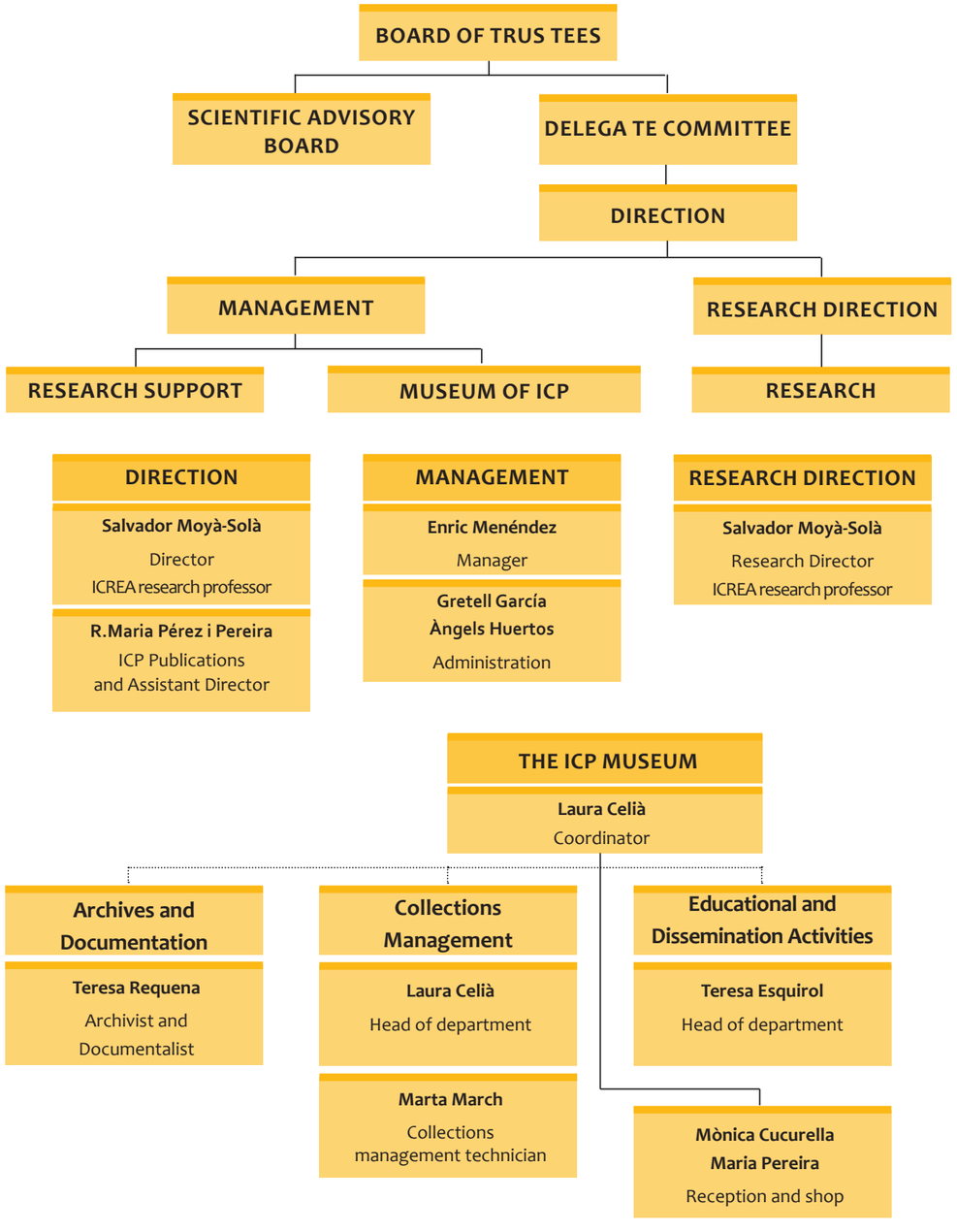
New *Hispanopithecus laietanus* hominid fossil remains in Sant Quirze del Vallès

The journal ***PLOS ONE*** has published the finding of ***Hispanopithecus laietanus*** hominid fossil remains in the Can Feu site (Sant Quirze del Vallès), in a research work signed by ICP researchers. The research confirms that this hominid that existed 10 million years ago had a different locomotion to the other known anthropomorphic simians, both in fossil and current form.

The future ICP building at the UAB is among the best architectural projects of 2011

The ICP will open its new premises in the UAB in 2014. However, before the paleontologists have even set foot in it, the building is already well-known. The Architecture Platform, a leading Spanish language digital forum, has recognised it as one of the best architectural projects of 2011.

Organizational chart



Trustees

TRUSTEES

Sr. Andreu Mas-Colell
Conseller del Departament d'Economia i Coneixement (President)

Sra. Anna Ripoll i Aracil
Rectora de la Universitat Autònoma de Barcelona

DELEGATE COMMITTEE

Sr. Antoni Castellà i Clavé
Secretari general d'Universitats i Recerca

Sr. Josep Maria Martorell i Rodon
Director general de Recerca

Sr. Carles Jaime Cardiel
Vicerector de Projectes Estratègics de la Universitat Autònoma de Barcelona

Scientific Advisory Board

The Scientific Board is the advisory panel of the Board as regards the scientific orientation of the ICP. It also assesses its activities. It is composed of the following members, highly-skilled people of great prestige who are recognised in the field of paleontology.

Prof. Jaume Truyols Santonja
Universidad de Oviedo
Espanya

Prof. Michel Brunet Directeur
Université de Poitiers
França

Prof. Brian McNab
Florida State University
Florida, USA

Prof. David Pilbeam
Harvard University
USA

Prof. Lorenzo Rook
Università di Firenze
Itàlia

Prof. José Luis Sanz
Universidad Autónoma de Madrid
Espanya

Prof. Elisabeth Vrba
Yale University
USA

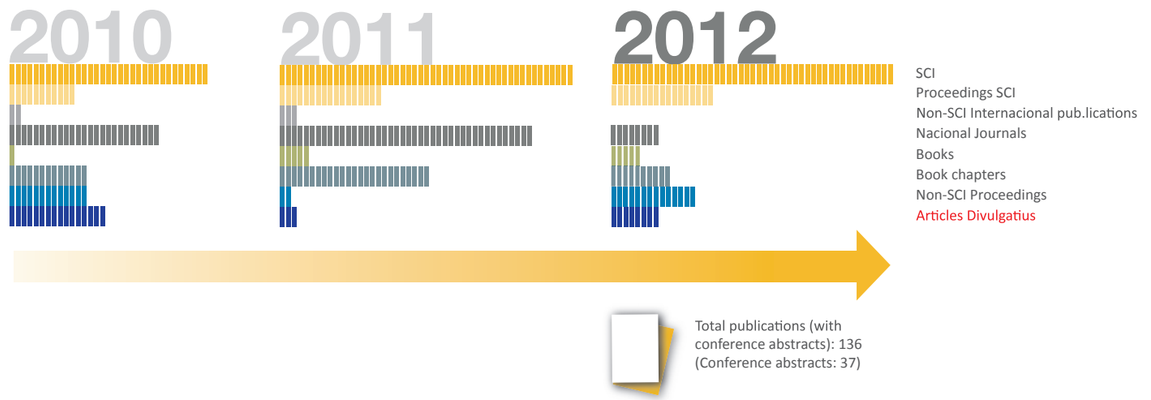
Prof. Jorge Morales Romero
Museo Nacional de Ciencias Naturales
Madrid, Espanya

Activity Summary

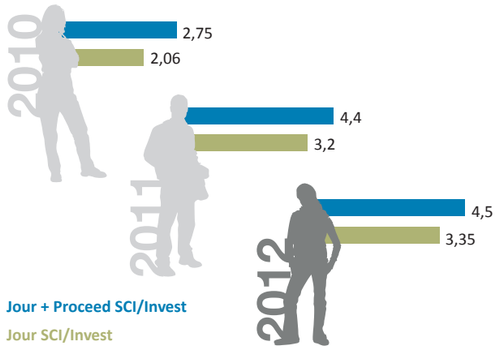
Research at the ICP: supported by the results

Average TOTAL production /Researcher

The results obtained in 2012 were excellent, with a total of **101 publications, 37 conference abstracts and 7 informative articles.**



Mitjana de Producció SCI per Investigador i any



Evolució de la mitjana de Producció científica TOTAL per Investigador i any

Research Area

Research at the ICP is organised in the Research Area. The **Research Area** reports directly to the research manager of the ICP and is organised into **five research groups** made up of researchers, interns and collaborators working together as a transdisciplinary team. Participation in projects and the joint publication of works are the main elements used to promote quality international scientific research.

Faunes del Mesozoic

Thanks to the prolific fossil register of Mesozoic faunas in Catalonia, this group holds a privileged position in current discussions in this field of study. The aim of this group is to try to determine life forms from fossil indications (paleobiology) and the ecosystems in which they lived (paleoecology), and to then raise questions about the extinction of dinosaurs, the evolution of some of the groups or the changes experienced by the cretaceous ecosystems.

The unique, rich and highly comprehensive fossil register of these periods in Catalonia make this area one of the best places in the world to study these phenomena which underwent massive extinction. It is a multidisciplinary project involving vertebrate paleontologists, paleobotanists, geologists and paleomagnetists and is aimed at obtaining a faithful reconstruction of the ecosystems and their evolution over time. One specific goal of the project is to find —in the stratigraphic series— the exact chronological point of the impact of the meteorite that brought an end to a large part of life on our planet at the end of the Cretaceous period.

Neogene and Quaternary Faunas

The essential goal of this research group is to study faunistic changes (crises), their dynamic, patterns of change, longevity of species and replacement patterns in the faunas of the Neogene and Quaternary of the Mediterranean, considering their relation with the climatic and astronomical phenomena (Milankovitch cycles) of the past 25 million years.

Paleoprimatology and Human Paleontology

The study of the origin, adaptations, and evolution of primates is a topic of great current interest. The different adaptations and the fact that humans' roots are to be found in primates, mean that the research conducted by this research group has great scientific appeal. This group works with the extraordinary Catalan register of hominid fossils, the richest in the world between 14-8 Ma, the critical period of time which molecular and paleontological data suggest as the origin of this group. Using new techniques such as computer axial tomography, reconstruction and analysis, morphometrics and phylogenetics, the group endeavours to prove the current paradigm which maintains that existing hominids comprise one monophyletic group with one shared ancestor, as well as the importance of homoplasy in their evolution. One of the other importantgoals of the group is to reconstruct the evolutionary history of Paleogene primates and the origin of the human hand.

Evolutionary Paleobiology

This group is conducting avant-garde research in the field of the application of paleontology to evolutionary biology. From this perspective, the research entails studying the evolution of life-history in fossil vertebrates, through paleohistology studies and isotopic analyses.

The group's objective is to unravel the causal relation between the ecological factors caused by climate change in the past, and their impact on the history of life and the demographic characteristics that determine extinction / survival patterns. On account of the material, the approach is wide and transdisciplinary, including evolutionary biology, physiological ecology, population demographics, conservation management and aspects of aging (gerontology), among others. The tools used for these studies are paleohistological techniques to analyse the hard tissue of living and extinct mammals, as well as to experimentally prove the correlation of certain key elements of the history of life, physiological data (metabolic rate or cardiac frequency, body temperature), and the endocrinological data (hormones) with characteristics of bone tissue (lines of arrested growth, vascularisation, osteocyte density). The demographic information obtained from the histology of bones from the Eocene to the mid-Holocene will be compared with data about the climate and faunistic evolution in a chronostratigraphic context.

Virtual Paleontology

The main focus of this transverse research team is non-invasive research (digital techniques) applied to the different research conducted by the other research groups. It came about as a result of the development of techniques that could be used in addition to the other methodologies traditionally used in paleontology.

These techniques include the formation of 3D images, medical and industrial computer tomography, exploration using laser, photogrammetry and engineering techniques such as the analysis of finite elements. The facilities at the ICP include an industrial computerised tomography scanner: with a 450kV X-ray tube, the most powerful CAT for research in Spain, it facilitates the high resolution analysis of large samples. Other facilities include laser scanners and state-of-the-art work stations with the main software to analyse and interpret the results. In addition, the group maintains a stable collaboration with the mechanical engineers from the *Universitat Politècnica de Catalunya* (UPC) in the development of new biomechanical methods for extinct animals.

Competitive national research resources in 2012

L'ICP té una sòlida plataforma d'investigadors que han obtingut recursos competitius, entre els quals trobem 2 investigadors ICREA, 1 Ramón y Cajal y 3 Juan de la Cierva

Organisation and operation at the ICP

The ICP is organised into the Administration and Management sections and 3 areas: the Research Area, the Research Support Area and the ICP Museum (*Museu de l'Institut Català de Paleontologia Miquel Crusafont*).

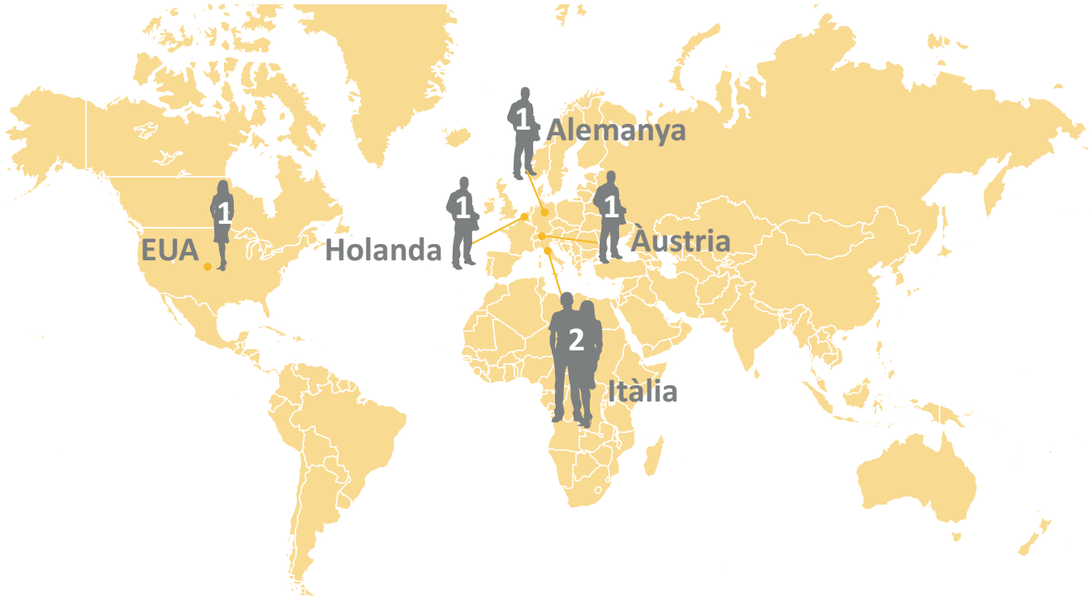
The **Administration** of the ICP is in charge of the essential criteria and operations of the centre with a view to organising the research activity in the best way possible. To this end, the director works in conjunction with the **Management**, which provides the most suitable staff and material composition for the research, based on the guidelines established by the Administration.

The **Research Area** reports directly to the research manager and is organised into five research groups composed of researchers, interns and collaborators who together conduct transdisciplinary work.

The technical staff of the ICP report directly to the manager and are organised into departments, which together form the **Research Support Area** and the **ICP Museum**. The latter constitutes the headquarters of the museum-informative space, the ICP Collection and Archives.

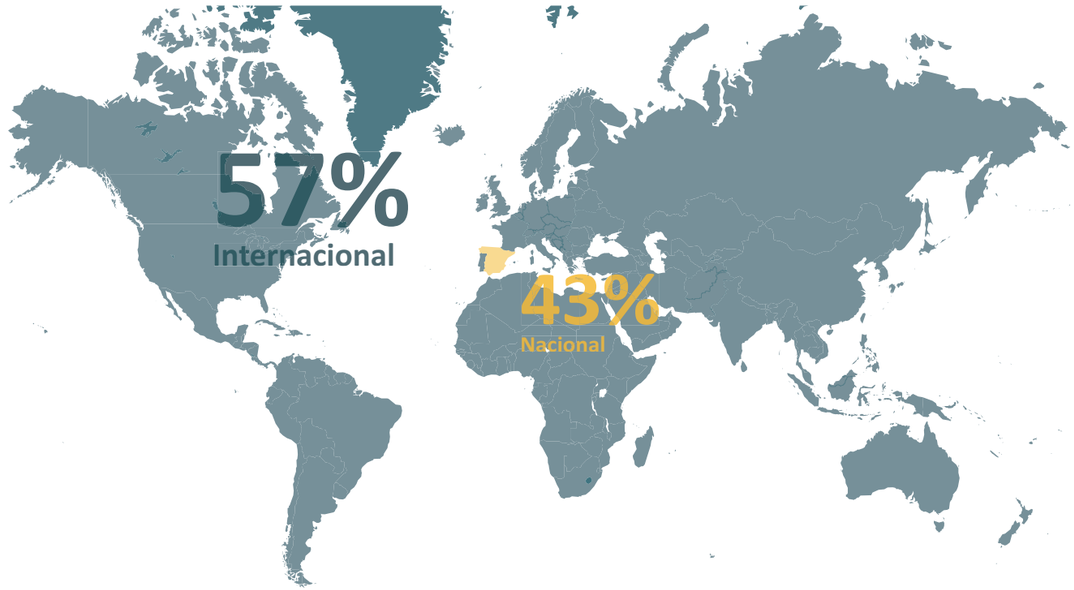
Around the world researchers

Researchers from institutions and universities worldwide work at the ICP



The ICP, active participant and organiser of conferences

Extensive participation in conferences strengthens the dissemination of ICP research throughout the world and provides links to other international scientific institutions of excellence



In 2012, we were present at the following conferences:

- **Digital Fossil Meeting** (2012, Museum für Naturkunde, Berlin).
- 10th Meeting of the **European Association of Vertebrate Paleontologists** (2012, Teruel, Spain).
- XXVIII **Jornadas de la Sociedad Española de Paleontología** y Simposios de los Proyectos nº 587 y 596 del PICG. (2012, Valencia i Sóller).
- **Encuentro de Jóvenes Investigadores en Paleontología** (EJIP) (2012, Sot de Chera, Valencia).
- 4th **International Geologica Belgica Meeting**. (2012, Brussel, Belgium).
- "Aquello que nos faltó decirte". **Congreso en homenaje a Nieves López.** (2012, Miraflores de la Sierra, Madrid).
- 72nd **Annual Meeting Society of Vertebrate Paleontology** - Raleigh Convention Center (2012, Raleigh, NC, USA).

The ICP Research

2

The ICP research is organised within the Research Area. The Research Area answers directly to the ICP research director and is divided into five research groups made up of researchers, interns and collaborators who work in a transdisciplinary team. Joint participation in projects and the publications of joint work is taken as the basis for producing high-quality international research.

Mesozoic Faunas

Àngel Galobart
Head of Group

Fabio Dalla Vecchia
Researcher

Joan Cartanyà
Nikolaus Malchus
Marco Petruzzelli
Bernat Vila
Research associate

Josep Fortuny
Josep Marmi
Postdoc

Arnau Bolet
Albert Garcia
Novella Razzolini
Predocs

The Mesozoic Faunas Research Group, recognised as an *Exceptional (en realitat és Singular, no sé fins a quin punt exceptional pot traduir-se com singular) Research Group* by the Agency for Management of University and Research Grants

At the ICP, two specific chronological events are studied in the evolution of Mesozoic faunas and its ecosystems: the ealy-middle Triassic and the Late Cretaceous. The Mesozoic Faunas group mainly focuses its research on **bones, eggs and ichnites of dinosaurs and other vertebrates** that inhabited part of **the Iberian Peninsula**. Thanks to the **digital techniques used by the ICP** and the richness of the Catalan fossil register, this group can deduce precisely how these animals lived and what the land they walked on was like.

Among other publications, in 2012 the group published **10 scientific articles** in the main ***Science Citation Index* (SCI)** journals, such as ***Cretaceous Research***, ***The Anatomical Record***, ***Paleontology***, ***Acta Palaeontologica Polonica, Palaeogeography, Palaeoclimatology, Palaeoecology*** and ***Review of Palaeobotany and Palynology***.

The scientific results obtained were presented at several **national and international conferences**, most notable of which were the ***34th International Geological Congress*** (Brisbane, Australia) and the ***10th Meeting of the European Association of Vertebrate Paleontologists***, held in Terol.

This research has led the Mesozoic Faunas Group to be recognised as an ***Exceptional Research Group*** by the Agency for Management of University and Research Grants (AGAUR).

A new competitive project forming part of the *"National R&D Plan: Fundamental Research Projects"*, of the Ministry of Economy and Competitiveness (MINECO) supports the study on the latest dinosaur faunas that existed on the planet

The MINECO **R&D project** entitled "*El fin de una era: la extinción de los dinosaurios, una perspectiva europea*" (The end of an era: the extinction of dinosaurs, a European perspective) was funded with €96,800, and **reinforces the line of work through the study of the latest dinosaur faunas that existed on the planet and that have been found in the Pyrenees**. Now the group is taking a step forward by proposing the succession model of faunas of the end of the Mesozoic in the **Catalan basin as a benchmark to study** and date the dispersed European sites of a similar age.

The *National Geographic Society* research project for the years 2012-2013 "Revealing Biodiversity for the Latest Dinosaurs in South-western Europe- new paleontological excavations at the late cretaceous sites of the Tremp basin (Catalonia, Spain)" will lead to new excavations in dinosaur sites

Researchers from the Geology Departments of the *Universitat Autònoma de Barcelona* (UAB) and the University of Zaragoza are also taking part in this project. The project will facilitate the carrying out of a series of excavations in different sites with dinosaur bones and footprints in the Pyrenees.

The group has also obtained **subventions from the Department of Culture** for the 2012-2013 two-year period, thereby **guaranteeing the continuity of the excavations in the Catalan Pre-Pyrenees sites**. These subventions fall under the framework of the projects of the Department of Culture of the Autonomous Government of Catalonia: "*Els afloraments triàsics amb fauna de vertebrats de Catalunya*" (Triassic outcrops with fauna of vertebrates of Catalonia) and "*Els jaciments paleontològics del trànsit Cretaci-Paleògen del Prepirineu Català: Sistemàtica, Paleoecologia i implicacions paleobiogeogràfiques*" (Paleontological sites of the Cretaceous-Paleogene boundary in the Catalan Pre-Pyrenees: Systematic, Paleoecological and paleobiogeographical implications).

The Mesozoic Faunas Group describes a new genus and species of carnivorous dinosaur, the *Sauroniops pachytholus*, a Carcharodontosaurid from Morocco.

The article "*A thick-skulled theropod (Dinosauria, Saurischia) from the Upper Cretaceous of Morocco with implications for carcharondosaurid cranial evolution*" published in ***Cretaceous Research*,** describes a new genus and species of giant predator that lived 95 million years ago. This new species is based on one sole cranial bone (frontal bone), which displays a prominence in the form of a dome above the eyes.

Two articles published in the journal ***Cretaceous Research*** have provided new data about the Maastrichtian faunas of the Pyrenees: one, based on the description of the latest species of turtle from the genus *Polysternon*, "*The youngest species of Polysternon: a new bothremydid turtle from the uppermost Maastrichtian of the Southern Pyrenees*", and a second article concerning the dinosaur egg shells of Coll de Nargó "*Dinosaur eggs in the Upper Cretaceous of Coll de Nargó area, Lleida Province, south-central Pyrenees, Spain: Oodiversity, biostratigraphy and their implications*".

A wide variety of types of sauropod dinosaurs has been established for the same geological period and described in the article "*The diversity of sauropod dinosaurs and their first taxonomic succession from the latest Cretaceous strata of Southwestern Europe: clues to demise and extinction*", published in ***Palaeogeography, Palaeoclimatology, Palaeoecology***. Part of the flora from the era of dinosaurs has also been depicted; both regarding plants in "*Peat-forming plants in the Maastrichtian coals of the Eastern Pyrenees*" published in ***Geologica Acta*,** and seeds and fruits in "*Bergacarpon viladricii gen. et sp. nov., angiosperm seeds and associated fruits from the early Maastrichtian of the eastern Pyrenees (Catalonia, Spain)*" published in ***Review of Palaeobotany and Palynology***.

Catalan dinosaurs and ICP researchers feature in an episode of the informative series '*Sota Terra*' on *Televisió de Catalunya*

The Mesozoic Faunas Group took part in the episode "***Sota Terra: dinosaures als Pirineus***" (Underground: dinosaurs in the Pyrenees), the only episode in this informative series about archaeological sites in Catalonia dedicated to paleontology. In 2012, TV3 broadcast the second season. The programme visits three sites with dinosaur remains: one with bones, one with ichnites and one with eggs, all representing the paleontological richness of the Pyrenees. The development of the programme reveals the differences between archaeology and paleontology, while also showing the research work carried out by palaeontologists on fossil remains.

The group works with international institutions on the study of Triassic faunas and dinosaur ichnites

Since 2005, the Mesozoic Faunas group has been collaborating with the University of Manchester on different projects, scanning ichnites from sites in Catalonia, as well as the rest of Spain and Portugal. In 2011, the fruit of this collaboration was broadcast in the episode ***"Walking like a Dinosaur"*** of the series ***"CSI Dinosaurs" (National Geographic)***.

Throughout 2012, the group continued its collaboration agreements, most notable of which was the "Recerca sobre Dinosaures del Cretaci" (Research about Dinosaurs from the Cretaceous) with the ***Dipartamento di Geologia e Geofisica de l'Università degli Studi di Bari "Aldo Moro"***, and the collaboration agreement with the ***Museo Friulano di Storia Naturale***, for the study of Triassic faunas from Friuli-Venezia-Julia (Italy).

Lastly, it is important to mention the collaborations with the *Universitat Autònoma de Barcelona* (UAB), the *Consorci Paleontologia i Entorn* (Paleontology and Environment Consortium) and the Archaeology and Paleontology Service of the Department of Culture of the Autonomous Government of Catalonia, institutions which have enabled the ICP to conduct better research into dinosaurs and their ichnites.

Neogene and Quaternary Faunas

David M. Alba
Head of Group

Daniel DeMiguel
Isaac Casanovas
Juan de la Cierva

Massimo Delfino
Antonio Sánchez
Jan Van-Dam
Research associate

Marc Furió
Joan Madurell
Postdocs

Josep Aurell
Àngel Luján
Guillem pons
Josep M.Robles
Cheyenn Rotgers
Collaborators

The Neogene and Quaternary Faunas Group studies fossil vertebrates from the past 23 million years

The last 23 million years of Earth history are divided into two periods, the Neogene and the Quaternary. **The study of the faunal changes occurred during this time interval**, in relation to global climate change, **provide us with most valuable information for understanding the role played by biotic and abiotic factors in organismal evolution**. For this reason, the Neogene and Quaternary Faunas Group of the ICP has a number of researchers specialising in the various groups of terrestrial vertebrates, including amphibians and reptiles, birds and, especially, large mammals (carnivorans, artiodactyls, perissodactyls…) and small mammals (rodents, insectivores…).

The research conducted by the different members of the group encompasses all the steps in paleontological research, beginning with field work (excavations and sampling) and traditional paleontological approaches (taxonomy and biostratigraphy), but also including **different paleobiological approaches that focus on the biology and evolution of extinct vertebrate species.** The aim is to contribute to a better knowledge of the history of life on Earth, and also to a **better understanding of the mechanisms and interactions that determine or condition the course of evolution over millions of years.**

In 2012, the group published one book and 40 scientific works, **26** of which are **articles in prestigious international journals of the *Science Citation Index* (SCI)**—of these, a total of 14 articles were led by this group—such as ***PLOS ONE*, *Journal of Human Evolution*, *Journal of Vertebrate Paleontology* and *Paleobiology*,** among others. Furthermore, about forty contributions were made in national and international meetings from various countries (USA, Belgium, Germany, Romania, Italy, Austria), among which most notable it the ***annual meeting of the Society of Vertebrate Paleontology*** (an annual meeting point of vertebrate paleontologists from around the world).

The Neogene and Quaternary Faunas Group also participated in various scientific dissemination and teaching activities, and directed numerous excavations that enabled the recovery of new vertebrate fossil remains in Catalonia and adjacent areas.

2 projects from the "*National R&D Plan: Fundamental Research Projects*", of the Ministry of Science and Innovation (MICINN, now known as MINECO) support research on the evolution and paleobiology of Miocene fossils in the Iberian Peninsula

The results of the research carried out by the investigators of the Neogene and Quaternary Faunas Group of the ICP during 2012 attained a very notorious visibility in the international sphere, due to both the publications and the contributions at international meetings. **The research during 2012 was essentially carried out in the framework of two projects funded by the current Ministry of Economy and Competitiveness: *"Retornant els fòssils a la vida: una aproximació multidisciplinar a la paleobiologia dels petits mamífers miocens de la península Ibèrica"*** (Bringing fossils back to life: a multidisciplinary approach to the paleobiology of Miocene small mammals from the Iberian peninsula) (principal investigator Isaac Casanovas-Vilar), **for the triennium 2011-2013;** and ***"Evolució dels ecosistemes terrestres en l'Europa occidental durant el Neogen i Quaternari a partir del registre de vertebrats fòssils de la conca del Vallès-Penedès"*** (Evolution of terrestrial ecosystems in Western Europe during the Neogene and Quaternary based on the fossil vertebrate record from the Vallès-Penedès Basin) (principal investigator David M. Alba), **for the triennium 2012-2014.** Members of the Neogene and Quaternary Faunas Group also collaborated with researchers from the ICP Primate Group in the framework of the consolidated research group of the Generalitat de Catalunya **"Paleoprimatology and Human Paleontology Group".**

Through the funding of these projects or other individual competitive projects (Synthesis programme and BE travel grants allocated by the Generalitat de Catalunya), the researchers from the Neogene and Quaternary Faunas Group during 2012 made short stays in various research centres abroad (US, The Netherlands, Hungary, Belgium, France, Italy), most notable of which is the American Museum of Natural History in New York and the Muséum National d'Histoire Naturelle de Paris. In spite of the current conjunctural scarcity of resources for scientific research, it is also important to highlight that, during this year, the group obtained funding from the Beatriu de Pinós programme of the Generalitat de Catalunya to incorporate a new researcher (Hanneke Meijer) into the group during next year.

As regards teaching, apart from giving classes in the **Module of Vertebrate and Human Paleobiology" of the Interuniversity (UAB/UB) Master's Degree in Paleontology and the subject of Primatology in the Interuniversity (UAB/UB) Master's Degree in Anthropology**, members of the group supervised **several master's theses** and continued to co-supervise ongoing **PhD dissertations**. Lastly, **it is important to highlight that the group directed various paleontological excavations of Neogene and Quaternary sites**. Particularly noteworthy are the programmed excavations in Can Llobateres (late Miocene), Incarcal (early Pleistocene), Vallparadís (early Pleistocene) and Lanzarote (late Miocene), as well as the emergency excavations in La Valencia (early Vallesian), together with the monitoring of heavy machinery excavations in Abocador de Can Mata (middle Miocene). This field work has enabled the **recovery of important new fossil remains, which will be reflected in publications of international impact over the coming years**.

A study published in the prestigious journal *PLOS ONE* describes a new ursid genus from the Iberian Peninsula, which is the oldest member of the giant panda lineage

Since David M. Alba joined the Neogene and Quaternary Faunas Group as head of the group, and following the beginning of the **new ministry project focusing on the terrestrial vertebrate faunas from the Vallès-Penedès Basin**, a new stage has staterted, which includes: the consolidation of the research lines focused on fossil mammals; and the expansion of pre-existing research lines based on other fossil vertebrates (amphibians, reptiles and birds). Also, in line with the work already under way, **the use of new technologies and techniques applied to the study of fossil vertebrates** was been encouraged, together with establishment of **international collaboration links with European and North American paleontologists.**

Among the numerous papers written by the group in 2012, it is noteworthy that that entitled "**Kretzoiarctos *gen. nov., the oldest member of the giant panda clade***" (Abella and collaborators), published in the journal ***PLOS ONE***, and in which **a new ursid genus** that is **the oldest member of the giant panda clade** is described**.** The phyletic relationships of the panda bear has been a source of controversy for a long time. Currently, it is recognised as a true bear, which would represent the sister-lineage of the remaining ursids. Until recently, the oldest fossil representatives of this lineage were known from the late Miocene of China (about 7-8 million years ago). New remains dating from the middle Miocene of the Abocador de Can Mata, among others, have enabled the description of an older new genus (dating back about 11-12 million years), which already belongs to this lineage. This fact has **very significant implications for understanding the evolution of bears from a paleobiogeographical perspective**.

Aside from this article, it is also important to mention the works on **paleodiet and evolution in fossil ruminants** (DeMiguel and collaborators), as well as the more **taxonomic and/or phylogenetic studies on Neogene and Quatenary vertebrates**, led by Massimo Delfino (**amphibians and reptiles**), Isaac Casanovas-Vilar (**rodents**), Marc Furió (**insectivores and marsupials**), Chiara Angelone (**lagomorphs**) and Daniel deMiguel (**artiodactyla**), published in journals such as *Quaternary International*, *Paleobiology*, *Journal of Vertebrate Paleontology*, *Geobios* and *Comptes Rendus Palevol*, among others. Also notable are the contributions from members of the group to studies on the evolution and paleoenvironment of fossil primates and humans, such as the **paleoenvironmental reconstruction of the site of Can Llobateres**, or the **interpretation of the site of Vallparadís dismissing its human occupation** based on taphonomic and geological criteria (Madurell-Malapeira and collaborators), in studies published in the *Journal of Human Evolution.*

Palaeoprimatology and Human Palaeontology

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Predocs

Marta Palmero
Scientific illustrator

Ivette Susanna
Collaborator

The origin and evolution of extant hominoids, group composed by lesser apes, orangutans, chimpanzees, gorillas and humans, is one of the most debated questions during the last century of palaeontological research worldwide. It is the main goal of the ICP PHP group to help resolving this problem. This group works on the extraordinary Catalan hominoid fossil record, the worldwide richest record between 14-8 Ma, the critical time span for which molecular and palaeontological data suggest the origin of this group. Other important goals of the group is the reconstruction of the evolutionary history of Paleogene primates and the origin of the human hand.

In 2012, the group continued its research under the R&D Project "***Historia Evolutiva de los Primates del Paleógeno y Neógeno de la Península Ibérica***" (Evolutionary History of Primates from the Paleogene and Neogene in the Iberian Peninsula), of the Ministry of Economy and Competitiveness (MINECO).

In total, **18 scientific articles** were published in relevant **SCI** journals, such as ***Plos One***, ***Proceedings of the Royal Society B***, ***Journal of Vertebrate Paleontology***, ***American Journal of Physical Anthropology*** and ***Journal of Human Evolution,*** among others. A considerable number of articles are dedicated to the description and study of important new fossil primate material found in the Neogene Vallès-Penedès basin, as well as different Eocene locations in Catalonia.

The results obtained were presented at different national and international conferences, most notable of which were the *34th* ***International Geological Congress*** (Brisbane, Australia), the ***10th Meeting of the European Association of Vertebrate Paleontologists***, held in Teruel, the ***72nd Annual Meeting of the Society of Vertebrate Paleontology***, held in North Carolina, and the ***4th International Geologica Belgica Meeting***, held in Brussels.

A study of the semi-circular canals of the inner ear in anthropoid primates has led to inferences about the evolution of locomotion in this group of primates

The paper *Evolution of locomotion in Anthropoidea: the semi-circular canal evidence* was published in ***Proceedings of the Royal Society B*** and is the result of the collaboration of researchers from a dozen centres, most notable of which were the Pennsylvania State University, the University of Toronto and the Max Planck Institute.

The aim of the study is to examine all the known anthropoid fossil specimens , which have conserved the petrous bone, in which the semi-circular canals, the organ of balance that enables us to find our way in three-dimensional space, can be found,.

16 fossil primate skulls from all over the world were analysed, recording the evolution of the group over the past 35 million years. Among these, the skull of Jordi, the *Hispanopithecus laietanus* fossil specimen discovered at Can Llobateres (Sabadell) was studied. Based on the analysis of computerised tomography scans of these canals, conclusions were drawn about the locomotor evolution of anthropoids. Primordial anthropoids, dating back 35 million years, were slow primates with cautious arboreal locomotion. The evolution of this type of locomotion deviated in New World primates, known as Platyrrhini, who were more agile and swift when moving between trees. On the contrary, African Catarrhines maintained the slower locomotion of their ancestors, and only some groups later became more agile. This was the case of gibbons or some fossil forms such as Proconsul heseloni, a primitive hominoid from the Lower Miocene in Africa.

A work presents the first fossil evidence of a homogeneous cortical distribution around the femoral neck, typical of forms that use climbing and suspension as habitual means of locomotion, such as current suspensory apes, orang-utans and chimpanzees.

The article *Paleobiological inferences on the locomotor repertoire of extinct hominoids based on femoral neck cortical thickness: the fossil great ape* Hispanopithecus laietanus *as a testcase study* and published in the ***American Journal of Physical Anthropology*** studies the thickness of the cortical bone in the femoral neck of the hominoid fossil *Hispanopithecus laietanus*, based on the remains discovered at the Can Llobateres site in Sabadell.

The thickness of the cortical bone is a very precise indicator of the locomotor adaptations of current forms and allows inferences to be made about locomotion in extinct forms. In fact, for several decades, it was one of the key characteristics to deduce bipedalism among extinct hominid species. The differences observed in the distribution of this thickness between current great apes (gorillas, chimpanzees and orang-utans) and humans, led some American researchers to propose this characteristic as an indicator of bipedalism.

Humans, a classic example of bipeds, presented a thicker cortical bone in the lower part of the femoral neck than in the upper part. On the contrary, great apes, climbers and hangers presented a more homogeneous distribution of the cortical bone. This work presents the first fossil evidence of a homogeneous cortical distribution around the entire body, which only current suspensory apes, orang-utans and chimpanzees have. This distribution clearly indicates that the femoral neck is supported in many different spatial directions, typical in forms that use climbing and suspension as habitual mode of locomotion.

The application of tomography to the pneumatic structures of the skull of *Pierolapithecus*, the paranasal cavities, and the other structures of the palate and the nasal zone have provided new information about the phylogenetic relations of this taxon that is crucial for the study of the origin and evolution of great apes.

The article published in the ***Journal of Human Evolution*** and entitled *The nasal and paranasal architecture of the Middle Miocene ape Pierolapithecus catalaunicus (Primates: Hominidae): Phylogenetic implications* has revealed that the maxillary sinus of *Pierolapithecus catalaunicus* presents important derived features with the members of the Pongo-

clade.

Like orang-utans, *Pierolapithecus* does not have a frontal sinus, and its tear ducts develop to the front, as occurs in Ponginae, and not vertically, as occurs in great African apes. As regards the base of the nasal cavity —including the palate— a more direct similarity was observed with Dryopithecus and *Hispanopithecus*, extinct European hominids that were similar to Ponginae. Lastly, the turbinals, the bony plates that develop in the nasal cavity to support the soft parts of the nose, develop in a very similar way to *Pongo*.

The description of the partial skeleton of a female *Hispanopithecus laietanus* from the site at Vallesià de Can Feu has provided valuable information about the body design and locomotion of these fossil great apes

The article *A partial skeleton of* Hispanopithecus laietanus *from Can Feu and the mosaic evolution of crown-hominoid positional behaviors*, published in ***PLoS ONE*** describes **the partial skeleton of a female *Hispanopithecus laietanu, estimated to date back*** 10.0 to 9.7 Ma, with an estimated body weight of 22 to 25 kg.

The post-cranial remains of the thorax and shoulder girdle reveal a mixture of features of long-tailed monkeys and current hominoids, while the proximal morphology of the ulna points to an elbow complex suitable for maintaining stability throughout the whole range of flexion/extension, facilitating a wide range of pronation/supination. These characteristics, typical of suspensory behaviour, are combined however with an olecranon morphology (apophysis located at the upper end of the ulna, creating the elbow prominence) that is functionally related to quadrupedalism.

Therefore, this combination of quadruped and suspensory adaptations in *Hispanopithecus laietanus* clearly shows the impossibility of reconstructing the ancestral locomotion repertoires for crown hominoid sub-clades on the basis of current taxa alone.

A study describes, for the first time, a group of primates unknown until now in the Iberian Peninsula

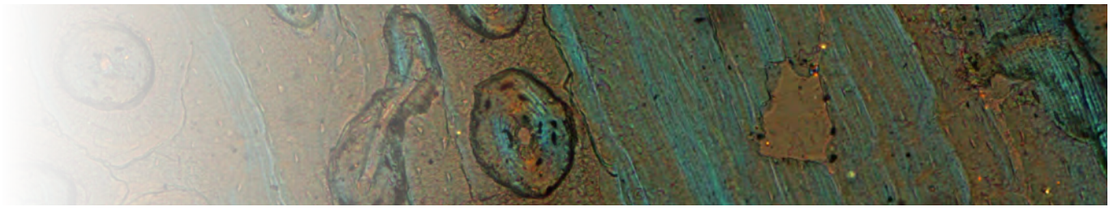
The work *First record of Plesiadapiformes (Primates, Mammalia) from Spain*, published in the ***Journal of Human Evolution***, describes, for the first time, a group of primates from the Eocene: plesiadapiforms. Four isolated teeth from the Lower Eocene site of Masia de l'Hereuet (Àger, Lleida) provides for the first time evidence of this peculiar primates in our fossil record.

Scientific Illustration

The ICP Illustration, included within Palaeoprimatology and Human Palaeontology, aims to produce scientific drawings to be included in the Institute's research work and publications.

The illustrations are very useful as they describe in precise and minute detail the anatomy of the fossils observed, putting emphasis on important diagnostic characteristics. At the same time they allow three-dimensional aspects of the specimens to be highlighted which a photograph could not show.

Evolutionary Paleobiology



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The Evolutionary Paleobiology Research Group at the ICP is one of the leading international paleohistology groups in the study of fossil and living mammals

Evolutionary paleobiology is a modern branch of paleobiology aimed at defining the selective pressures and evolutionary dynamics of populations, taking into consideration the physiological and corporal aspects of each animal, as well as their life history.

One of the main methodological tools used by the ICP Evolutionary Paleobiology group is the histological analysis of hard tissues (teeth and bones) to gain a better understanding of the **evolution of mammals**, according to aspects such as age at weaning and maturation, longevity and growth rate. **Results from paleohistology are very important since they facilitate the reconstruction of past ecosystems** (level of resources, species' positions on the food chain), and **predictions about the extinction risk of current species**. Another tool used by this research group consists of the creation of statistic models to **estimate the body weight of fossil mammals**, placing particular interest in insular species to explain processes such as dwarfing in large organisms and gigantism in small ones, a phenomenon coined the island rule.

In 2012, the group published internationally relevant works in high impact journals such as ***Nature*** and ***Proceedings of the Royal Society B-Biological Sciences***. The results of this research were presented at international conferences such as the ***86th Annual Conference of the German Society of Mammalogy: The past, present and future of mammalian diversity***, in Frankfurt, Germany, and the ***72nd Annual Meeting of the Society of Vertebrate Paleontology*** in Raleigh, USA.

Lastly, throughout 2012, the group received a number of invitations to hold conferences and seminars, due to the interest generated by its research in recent times. These included the Catalan Biology Society and the Blanes Centre of Advanced Studies (SCIC), *IX Jornades d'Avanços en Ecologia* (IX Conference of Advances in Ecology), round-table at the Ramón Margalef International Ecology Award 2012, Department of Integrative Biology and Evolution, University of Veterinary Medicine, Vienna Seminar, *Arbeitskreis Wirbeltierpaleontologie a Neudstadt,* Germany and the Ecology Department of the University of Barcelona.

The research funding of the Evolutionary Paleobiology group is guaranteed until 2016 thanks to the granting of a competitive project from the "National R&D Plan: Fundamental Research Projects", of the Ministry of Economy and Competitiveness (MINECO)

In 2012, the group obtained funds for the project ***"Evolution of mammalian life histories in energy-limited environments: a paleobiological approach"***, from MINECO. The aim of this project is to study the evolution of the life histories of mammals in conditions of isolation and limited food resources from a paleontological perspective. This topic is of particular interest for our understanding the effects of accelerated habitat fragmentation in current ecosystems.

In addition to the ICP, this project brings together the only research groups worldwide that are currently working on mammalian paleohistology with particular emphasis on the evolution of the life cycle, from New York University College of Dentistry and the *Université Pierre et Marie Curie* (UPMC), as well as researchers with a long history in insular and continental mammal fossils from the University of Rome and the University of Florence.

A study published in Nature provides new data on the physiology of dinosaurs and, based on an analysis of the seasonal nature of bone growth and physiology of endotherms, it rules out the hypothesis that these reptiles were ectotherms.

The article *Seasonal bone growth and physiology in endotherms shed light on dinosaur physiology* published in the prestigious journal *Nature* analyses the seasonal nature of the formation of lines of arrested growth (LAGs) in the bones of a hundred current ruminants, representing the biological and ecological diversity of this group of mammals.

Until now, the presence of LAGs in the bones was considered to be a clear evidence of ectothermy, since the seasonal cessation of growth was believed to be related to the animal's inability to maintain a more or less constant body temperature (endothermy) during seasons when resources were scarce.

The results show that the presence of these lines is not an indicator of an ectothermic physiology as hitherto believed, because these lines are present in ruminants, which are the most homeothermic endotherms. Thus, LAGs tell us how metabolism and body core temperature change over the year along with and dictated by seasonal endocrine changes, both in cold-blooded and warm-blooded animals. These changes are a heredity shared by all vertebrates; a type of internal clock that regulates the animal's needs according to the seasonal availability of resources. Although these physiological changes have a strong genetic element, they are also functional and their intensity responds to the ecological conditions the animal experiences, especially levels of food and water, and not so much external temperature.

This discovery opens up an important line of research in the conservation of the current biodiversity of our planet.

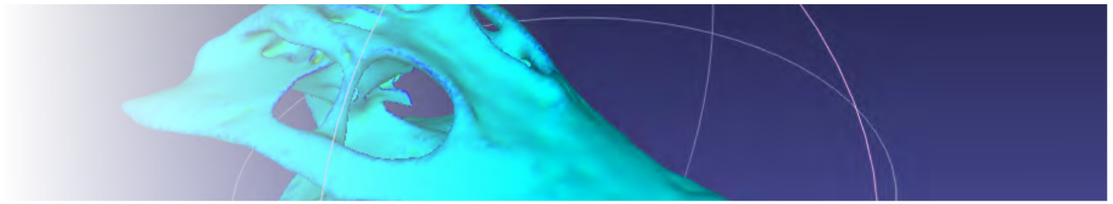
Determining the relation between tooth crown hight and longevity in insular faunas: Myotragus balearicus is once again a key species for the study of evolutionary trends on islands

The study *Evidence of correlated evolution of hypsodonty and exceptional longevity in endemic insular mammals*, published in ***Proceedings of the Royal Society B***, tested whether the parallel evolution of hypsodonty (high dental crown) in endemic island species is due to: 1) the expansion of the ecological food niche as a result of the limited resources of insular ecosystems (predominant hypothesis), or 2) to an increase in longevity due to lower extrinsic mortality in insular ecosystems.

Dental wear rates, mortality rates and longevity were examined in the fossil insular bovid *Myotragus balearicus*, a key species for the study of evolutionary trends on islands. The results suggest that the **extraordinary hypsodonty of Myotragus balearicus increases the durability of the permanent dentition in response to a longer reproductive life span.**

These results confirm the predictions of the "*Disposable Soma Theory*" (Kirkwood, 1985), and challenge the paleoenvironmental interpretations based on tooth height. This is the first study to relate hypsodonty with longevity in insular faunas and the first to support the evolutionary theory of aging that predicts delayed senescence in populations with a low extrinsic mortality rate. In environments in which only few external elements can cause the death of individuals, such as in predator-free islands, selection favours slower **aging and an increase in life span**. Because crown height determines the life span (when teeth are worn down the individual dies of hunger) in insular environments selection eliminates those individuals with lower crowned teeth favouring those with more durable teeth that prolong the individual's life span.

Virtual Paleontology



Josep Fortuny
Coordinator

Virtual Paleontology Research Group

Since the creation of the Virtual Paleontology Research Group, all the technological tools available have been incorporated, in order to obtain first-order scientific data from a digital perspective. The data to be analysed are increasingly three-dimensional and the models generated incorporate a greater amount of information where the different variables in the case study increase, obtaining more complex models that also have a higher resolution and definition.

One of the main research tools used by the Virtual Paleontology Research Group Lab is industrial computerized tomography (CT-Scan). This X-ray equipment was installed in the *Institut Català de Paleontologia* at the end of 2012. It is a unique tool in Spain and is used to obtain high resolution radiographic images and three-dimensional models in large-sized samples, even managing to scan samples that exceed one metre in length and 500 kg in weight. The construction of this scientific installation was made possible thanks to the operational programme FEDER Catalonia 2007-2013.

Among other equipment, the 3D Virtual Lab contains the equipment required to obtain 3D surface models using photogrammetric techniques, as well as a *NextEngine* laser system which enables high resolution 3D models to be obtained from medium-sized samples. The resulting model is a faithful reproduction of the original.

A multi-disciplinary Research Group by definition

The Virtual Paleontology Research Group runs parallel to the other ICP research lines. The scientific and technological questions that the Research Group seeks to answer go beyond the purely paleontological dimension of the ICP. For this reason, in addition to paleontologists, the Research Group includes a radio-physician who is in charge of the technical aspects of the X-ray equipment and who performs the treatment of digital imagery, especially its processing, quantification and analysis.

Furthermore, one of the main partners of the Research Group is in the world of industrial engineering. For two years it has maintained a constant line of work with the Laboratory for the Technological Innovation of Structures and Materials (LITEM), under the umbrella of the *UniversitatPolitècnica de Catalunya* (UPC). This line of work is focused on the generation of biomechanical models and their application in extinct animals, in order to draw inferences on the paleobiology of animals that are extinct today.

Research and continuous training: key aspects of the Research Group

9 scientific articles were produced in 2012, two of which appeared in SCI journals. Most notable is the article entitled "*Skull mechanics and the evolutionary patterns of the otich notch closure in Capitosaurs (Amphibia: Temnospondyli)*" published in the journal *The Anatomical Record*.This article reconstructs the feeding capabilities in the group of first tetrapods known as capitosaurs, and obtains data that explains ecology and evolutionary biology: the evolutionary mechanisms that took place in this group of extinct early amphibians. These results were possible thanks to the collaboration with engineers from the UPC, and the use of engineering techniques to perform biomechanical simulations.

The main results obtained by the Research Group were presented at the main international conferences, most notable of which were the annual meeting of the *Society of Vertebrate Palaeontology* held in Raleigh (USA) and the *10th European Association of Vertebrate Paleontologists* held in Teruel. Moreover, The University of California (Berkeley) granted the group a subvention to take part in a scientific placement to study the vertebrate collections held in this institution, as it is one of the most globally recognised on account of the valuable collection of vertebrate fossil remains that it contains.

The research group considers continuous training to be highly relevant and understands it as a two-way road, where its members give and receive training. Its members have given classes in the Master's Degree in Cultural Heritage Management in the University of Barcelona as well as in the Interuniversity Master's Degree in Paleontology. In the latter, the group co-directed a work entitled "*Feeding Ecology of Armadillos and their relatives: Insights into the biomechanics of the Mandible"*. In addition, the group gave and received classes in the courses *"3D Geometric Morphometrics"* and "*Introduction to Biomechanics and Finite Element Analysis*", co-organised by the company Transmitting Science and the *InstitutCatalà de Paleontologia*.

The ICP museum

3

The ICP museum

Laura Celià
Coordinator

Teresa Esquirol
Head of department

Teresa Requena
Archivist and Documentalist

Mònica Cucurella
Maria Pereira
Reception and shop

In 2012, the ICP Museum celebrated the 10th anniversary of the discovery of Pau with a number of new activities

Paleocarnestoltes: A prize for the best paleontological costume in the Sabadell children's parade.

Spring Festival with workshops and activities about fossils.

Titanosaur cake: a sweet introduction to paleontology.

Paleontological Sant Jordi: book stand, story competition and story workshop.

International Museum Day, with the participation of all the museums in Sabadell.

Welcoming the summer with a **paleontological walk** along the Ripoll River.

Summer activity club to learn how to become a paleontologist.

Paleo-Christmas wishes workshop.

New channel on **Twitter (@MuseuICP).**

Teacher training course.

...and continued to participate in established activities

Escolab Programme

Science Festival

Sabadell *Festa Major* festival

Guided tours for specialised groups (Catalan Association for Science Communication, Association of Museologists of Catalonia, Master's Degree in Cultural Heritage Management).

ICP Volunteer Programme

Cafès de Patrimoni

Internship programmes in companies

Didactic activities in the ICP Museum: combining learning and dissemination

Guided tours (schools and weekends).

***Com vivien els dinosaures del Pirineu?* (How did the dinosaurs of the Pyrenees live?)** Workshop for infant and primary education.

***Canines llargues: com estudiem els carnívors del passat?* (Long canines: how do we study carnivores from the past?)** Workshop for secondary education.

***Gairebé humans*. (Almost humans.)** Workshop for secondary education, final year of secondary education, and vocational training.

***La fauna del Vallès-Penedès fa 12 milions d'anys*. (The fauna of the Vallès-Penedès region 12 million years ago).** Workshop for secondary education.

***Arbre genealògic de ratolins i musaranyes*. (Genealogical tree of mice and shrews).** Workshop for infant and primary education, and their families. Adapted for visually impaired people.

***Cabres petites i conills gegants*. (Small goats and giant rabbits).** Workshop for final year of secondary education and vocational training.

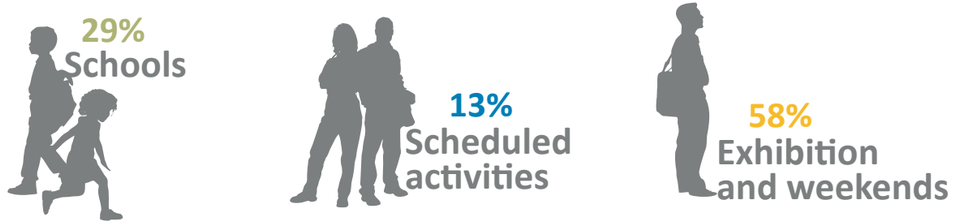
***L'evolució dels vertebrats*. (The evolution of vertebrates).** Workshop for primary education.

***Què podem esbrinar d'un fòssil?* (What can we determine from a fossil?)** Workshop for infant education.

***Per molts (milions) d'anys!* (For many (million) years to come!)** To celebrate the Museum's birthday.

Visites al Museu de l'ICP

14.963 people visited the ICP Museum in 2012



Pau turns ten!

To commemorate the tenth anniversary of the discovery of *Pierolapithecus catalaunicus*, several activities were organised in the ICP Museum up to December 2013. Most notable during this year was the inauguration of the first temporary exhibition in the ICP: *"Gairebé humans. Origen i evolució dels hominoïdeus"* (Almost humans. The origin and evolution of Hominoidea) and the display of original fossils of hominoidea in the Institute's collection (Pau, Lluc and Jordi).

"Punt Dino" brings dinosaurs closer to visitors of the ICP Museum

The ICP Museum is continuing in its effort to bring people closer to the world of dinosaurs. A "*Punt Dino*" (Dino Area) has been set up, consisting of an information point with a short video explaining the work of the different museums and institutions that work with these giants from the past. This project is funded by the complimentary scientific dissemination activities.

Part of the old exhibition *"Els fòssils, clau d'accés al passat"* (Fossils, a key to the past) was also loaned to the Interpretation Centre of Coll de Nargó.

Research Support

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The ICP is more than just a research centre: it works in various technical fields which, thanks to the high level of professional expertise, offer a set of services to other public and private organisations and **training to researchers, cultural heritage managers and specialist palaeontological restorers.**

THE ICP PREPARES PALAEONTOLOGICAL SPECIMENS AND UNDERTAKES OSTEOLOGICAL MATERIAL IN GENERAL

The ICP workshop specialised in the preparation and conservation of palaeontological specimens and osteological material in general is the most important in Spain and one of the most important in Europe. This service offers the possibility of restoring and preserving these materials, with the aim of collaborating in the preservation of the palaeontological heritage of this country.

THE ICP CONSERVES COLLECTIONS

The Conservation of Collections department is, within Spain, innovative and at the forefront of the conservation of natural and cultural heritage, as is evidenced by the "First Conservation Workshop: Finding global solutions for Natural History Collections", 2009.

This department has introduced techniques and procedures into Spain that were previously not used in this country, and currently offers evaluation in the field of the conservation of natural sciences collections.

THE ICP ORGANISES PALAEONTOLOGICAL ACTION

Our experience with palaeontological activities – prospecting, excavating and sampling of microfauna, geological mapping, *etc.*– allow us to offer our human team as a resource for carrying out any kind of palaeontological activity related to public or private work.

THE ICP WORKS WITH VIRTUAL PALAEONTOLOGY AND IMAGE ANALYSIS

The research of the Virtual Palaeontology department crosscuts that of the other ICP departments and at the same time offers services to external institutions and companies through its computerised tomography equipment.

There is currently no industrial computed tomography equipment Catalonia. The launch of two sets of tomography equipment (industrial CT and microtomography) at our centre will redress this shortcoming and enable other institutions and companies to have access to this equipment for their own use. Diverse industrial sectors (*e.g.,* construction, metallurgy, engineering and automotive) could potentially use these machines for the x-ray inspection of their products and quality verification without causing any damage. Industrial radiography for the evaluation of merchandise is becoming an increasingly important tool for industry.

Preparation and Conservation Department

Sandra Val
Head of department

Carolina Cancelo
Núria Guerrero
Marta Valls
Preparators / Curators

The Preparation and Conservation Department continue to position the ICP as a world leader in the preparation and conservation of fossils

During 2012, the Preparation and Conservation Department of the ICP carried out a range of work aimed at providing solutions and support about conservation and preparation to the different research groups in the Institute. The essential aim is to prepare the fossil heritage so that it can be subsequently studied by the centre's researchers.

During 2012 it prepared paleontological material from **more than ten sites around Catalonia** and from all the geological periods studied in the centre. It also continued to research new techniques and solutions for complex problems and preparations, ensuring the correct conservation of the fossil remains. Furthermore, and in accordance with the **centre's informative tradition**, the department performed different **activities** with a view to demonstrating the work of the ICP's Preparation and Conservation Department to the public.

In December 2012, a **comprehensive restoration programme** was presented to obtain the ***"Territoris solidaris"*** subvention from **UNNIM grup BBVA.** This grant is allocated for **cultural dissemination** activities**.** The result of this tender is expected at the beginning of 2013.

The ICP is the only centre in the State that continues to train professionals in the field of paleontological conservation and preparation

Currently, there is no regulated training in the State in the field of conservation and preparation in paleontology. Thus, the **ICP** continues to be the **only centre to offer this training option for professionals**.

During 2012, the department continued with **internships for Conservation and Restoration students** from the ***Escola Superior de Conservació Restauració de Béns Culturals de Catalunya*** **(School of Higher Education in the Conservation and Restoration of Catalan Cultural Property).**

Preparators and conservators of the ICP; at the forefront of new techniques and a leader for centres worldwide

The ICP's Preparation and Conservation Department is in **contact with other paleontological preparation laboratories from other countries** to **exchange and learn new work techniques.**

Most notable are the **new packaging systems**, designed for extremely delicate and large pieces, which have rendered the systems used until now obsolete, since they are much more respectful towards the conservation of the ICP collection.

The creation of moulds and casts, an essential exchange tool for researchers and paleontological dissemination

Paleontological copies avoid the constant handling of original fossils by the researchers. In this regard, casts **are a tool of exchange with other research centres and are also the base of the didactic exhibitions in the ICP Museum.**

Different **replication tasks** were performed with primates for the new exhibition ***"Gairebé Humans",*** inaugurated in September 2012 in the ICP Museum. The work consisted of creating copies that were **very careful pictorial imitations** of the originals.

The specimens for which **moulds and casts** were made were the following: **Proconsol** (distal tibia, distal femur, skull and pelvis); ***Dryopithecus fontani*** (femur, right and left jawbone, molar); ***Afropithecus Turkanensis*** (paint); ***Anoiapithecus brevirostris*** (skull and jaw) and ***Pierolapithecus catalaunicus*** (skull). Replicas were also made of more than **fifty teeth from primates** found in France and provided by the micro-paleontological collection of the ***Muséum National d'Histoire Naturelle de Paris.***

Lastly, moulds and casts of material from other institutions were created for research purposes and for didactic workshops held in the ICP Museum: **artiodactyl** material from **Turkey**, carnivore material from **Cueva Victoria** (and provided by the **Barcelona Geology Museum**), hadrosaur jaw from **Carlet** and **Tremp** and primate material from **Moncucco, Italy**.

Collection Management Department

Laura Celià
Head of department

Marta March
Collections Management technician

The ICP collection: the incorporation of new technologies facilitates better management and conservation of the cultural heritage

The Collection Management Department uses avant-garde technologies to conserve the cultural heritage. Thanks to the work of technicians, students on placements and volunteers in training, the department has continued to **manage the increasing number of pieces in the collection**.

The expertise of the professionals working there, combined with the **incorporation of innovative technologies,** positions **the ICP as a leading centre** in this area. Furthermore, it means the centre **can transfer knowledge to other centres and professionals.**

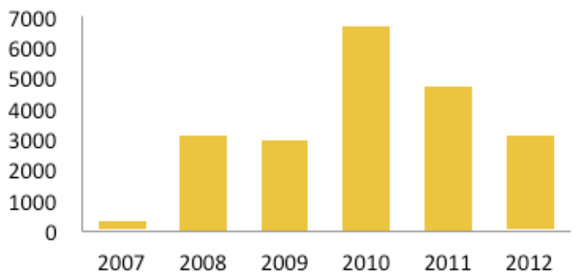
Members of the department have held sessions in the **subject "Paleontological Heritage"**, which forms part of the **Master's Degree in Cultural Heritage Management in the UB**. They also collaborated in the subjects "Project Design" and "Analysis of Patrimonial Institutions" of this same Master degree.

5,500 of the fossils in the ICP can be identified using radiofrequency

The pilot project of identification using radiofrequency, initiated by the ICP in 2011, is currently being implemented: more than 5,500 fossils now have a built-in label with radiofrequency, facilitating a more efficient management of the centre's paleontological collection.

The ICP collection has reached 63,439 entries

The entry and registration of fossils is the foundation of the management of our collection. Registration books serve as a tool to help to monitor each of the pieces. Of the total 63,439 entries made in the ICP collection, 42,966 are found in ***Museumplus*****,** and of these, a total of 18,000 have been fully documented, thanks to a grant allocated by the Department of Culture of the Autonomous Government of Catalonia.



The lending of fossil materials increases ten-fold

During 2012, **84 requests were met**, which involved the consultation of more than 5,000 fossils. Of these, a total of 53 were material loans, either for scientific study or for exhibitions and didactic activities. This means that **1,541 were selected, packaged and protected** for transportation to the place of exhibition or research.

ICP fossils, protagonists at exhibitions in other museums

Once again, fossils from the ICP collection appeared in some exhibitions organised by other institutions:

Exhibition **''Made in Sabadell'',** organised by the **Museums of Sabadell.** Extended**.**

Exhibition "***T. rex*****, the killing question**", organised by the **Isona i Conca Dellà Museum**.

Exhibition "**The Year of the Heritage of Castellbisbal**", organised by the **Castellbisbal Town Council**.

Exhibition "**Planet Life**", organised by the **Natural History Museum of Barcelona**.

Paleontological Deposits and Sites manages Department

Jordi Galindo
Head of department

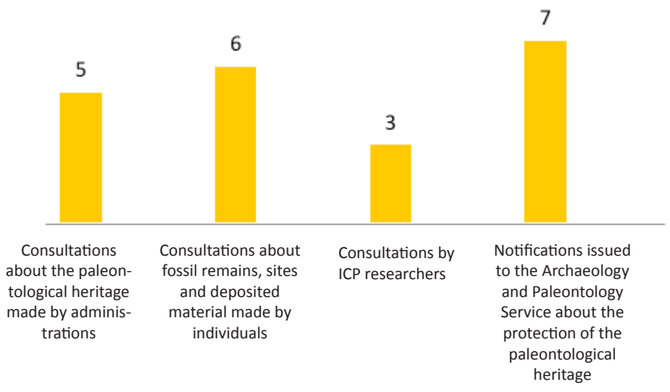
The Department of Paleontological Deposits and Sites contributes to ICP's involvement in the territory and to the defence and knowledge of vertebrate paleontological sites in Catalonia

The Department of Paleontological Deposits and Sites manages the entries of fossils for study. These fossils come from the paleontological interventions that the ICP has in provisional storage. At the same time, it collaborates in the management of the paleontological heritage of vertebrates in Catalonia in the informative sphere and ensures that the sites of the vertebrate fossils are not affected.

In 2012, the department **prioritised preparation and restoration laboratory works** with the aim of giving preference to those designed to provide fossil remains that are essential to produce research articles.

During 2012, and in relation to the remains from paleontological interventions, the ICP has included a total of **4,130** specimens, meaning the total number of elements comprising our collection now stands at **253,033 specimens**.

In 2012, a total of 12 consultations were dealt with and 7 notifications about the protection of the paleontological heritage were issued



The ICP disseminates paleontological heritage management in official Master's degree programmes.

In 2012 the ICP collaborated by **holding different sessions** as part of the subject of "Paleontological Heritage" and a class in the subject "Archaeological Heritage Management" addressed to students from the **Official Master's Degree in Cultural Heritage at the UB**. It also contributed knowledge on this topic to the subject **Vertebrate and Human Paleobiology of the Inter-University Master's Degree in Paleontology**.

The ICP has issued technical reports on paleontological heritage upon request by the OGAU to assess the scientific potential of the fossil remains that could be affected by the construction of an access road from the sector of Palanca de Noves (Ribera d'Urgellet, Alt Urgell).

It is also important to mention the **report** requested by the Archaeology and Paleontology Service (SAP) of the Department of Culture, aimed at calculating the **number of fossil remains recovered from the preventive paleontological interventions performed in Hostalets de Pierola since 2002,** the percentage of remains that would need to be processed and/or prepared according to their scientific importance, and the current situation of the mentioned works.

Paleorutes, Dinosfera, the Visitor Centre at Tremp and the Paleontological Centre of Hostalets de Pierola will promote the paleontological wealth of Catalonia

The ICP collaborates with town councils and regional boards with the aim of providing information about Catalan paleontological heritage. In 2012, the ICP formalised an agreement with the **Town Council of Hostalets de Pierola** to **ensure that the future Paleontological Centre of Hostalets de Pierola attracts tourism interested in paleontology and to spread knowledge about the history and evolution of this scientific collection of international interest.** In this regard, a first phase of works to document and create content for the **Paleorutes** was conducted.

The objective of the agreement with the **Town Council of Coll de Nargó** is to collaborate in the setting up of the **Paleoenvironmental Centre, Dinosfera**. Exploratory discussions were also held with the **Town Council of Subirats**, to install a permanent structure in the **Casots site**, which would facilitate continuous paleontological excavation and prevent deterioration and spoiling.

As regards the **Regional Board of Pallars Jussà**, the ICP, via the company STOA, participated in the creation of the paleontology section of the future **Visitor Centre in Tremp**. The ICP provided advice and scientific content to create the discussion, the texts and the audio-visual installations.

The Alt Pirineu Natural Park, the Council of Barcelona and the ICP have come together to promote the exceptional heritage of the remains of dinosaurs that lived in Europe before they became extinct

A collaboration agreement to promote paleontological research, heritage conservation and information about dinosaurs in the Pyrenees in each of the museums and collections that can be visited in the 3 regions of the Pyrenees (Alt Urgell and Pallars Jussà, Lleida) and (Berguedà, Barcelona), and Sabadell (ICP Museum).

The Department of Paleontological Deposits and Sites participated in the selection and documentation of the 17 most representative paleontological vertebrate sites in Catalonia for the "Bestiari Fòssil de Catalunya" ("Fossil bestiary of Catalonia").

The **Fossil bestiary of Catalonia** is an interactive digital creation aimed at promoting the main paleontological sites in Catalonia through the research results obtained during their excavation and study.

Communication and Scientific Dissemination Department

Sílvia Bravo
Head of department

The Department of Scientific Communication and Dissemination (DC2) **promotes the ICP** as Catalonia's leading centre in the research, conservation and dissemination of paleontology and performs scientific dissemination about the different scientific, informative and technical projects of the ICP.

To achieve these goals, the DC2 designs a communication and dissemination strategy based on the **diversification of formats, channels and audiences**.

The ICP on the front page

Communication to the media

ICP's research activity and technique continuously generates scientific and informative articles, important fossil discoveries and new techniques that make it a pioneer in paleontology worldwide.

Additionally, in the excavation jobs typical of this discipline, the ICP works on the most important sites in the country.

To promote this activity, DC2 **writes and publishes press releases and contacts journalists and other professionals involved in scientific dissemination** in order to ensure that the ICP's current activities appear in the different media, mainly Catalan and national.

In 2011, the ICP generated 66 news items, of which ten appeared in the media as press releases. In addition, for the majority of the remaining items, more local communication activities were performed so that this information would reach specialised and local media. **In total, the ICP and its research have appeared in the news and on the radio and television programmes of almost one hundred different media.** Included among these are State and national daily press, as well as local and international media. Dissemination via blogs and other digital channels has also been remarkable and has experienced constant growth.

Most notable was the international interest raised by the publication of an article according to which dinosaurs may have been warm-blooded reptiles, and the national interest raised by an article about excavations.

Every Monday from September 2011 to July 2012, some 11,000 listeners had the opportunity to follow the section "*El Viatger del Temps*" (The Time Traveller), on the "*A Bona Hora*" programme on Ràdio Sabadell.

In autumn 2011, the ICP began a **weekly collaboration with the *"A Bona Hora"* Programme of Ràdio Sabadell**, in the section entitled *El Viatger del Temps*. The section ended in July 2012, having broadcast a total of 38 programmes. For 20 minutes each Monday at 11.30am an ICP researcher discussed a topic of paleontology with the presenter of this morning programme. According to the Communication Barometer, Ràdio Sabadell had an average of 22,000 listeners, 11,000 of whom tuned in at the time slot during which this programme was broadcast.

The ICP open to all

The ICP portal and newsletter

The ICP's current news, as well as details about its work team and the different projects in which it is participating, appear on its digital channels: **the portal and the newsletter.**

The homepage introduces the centre and its current news, but each of the sections provides more in-depth information about the people involved and the projects.

In 2012 the ICP portal has become more consolidated and has had a slightly increased number of visitors than in 2011. The average number of monthly visits during 2012 was 4985, which is a 6% increase on the previous year.

Although this figure may appear low, it is important to bear in mind that the portal activity during 2012 reduced significantly compared to 2011. On the one hand, the help received from staff and the DC2 resources that were employed as a response to the ICP budget cut reduced the number of news items published on the portal (92 in 2011 and only 66 in 2012), and on the other hand, the number of newsletters published also reduced (8 in 2011 and 5 in 2012). In addition, during 2011, the ICP organised the second conservation workshop, the First International Symposium on Paleohistology (ISPH) (http://www.icp.cat/ISPH2011) and the conference of the Spanish Paleontology Society (SEP) (http://www.icp.cat/SEP2011), which led traffic to the portal via subscriptions, programme consultations, etc.

The ICP portal has consolidated approximately 5,000 monthly visits, despite the decrease in the new content published. This shows an increase in the impact of each of the news items published.

Visitors to the ICP portal connect from all over the world, but most notable are the visits from the **USA, Germany and Switzerland**.

Since 2012 the DC2 has been publishing the ICP newsletter every two months. It brings together the most notable news items of recent weeks and publishes them in Catalan and Spanish. The newsletter had 814 subscribers for the Catalan version and 119 for the Spanish one.

In 2012, the number of subscribers to the Catalan and Spanish editions grew by 40% and 32% respectively.

The ICP on everyone's lips

Dissemination on Web 2.0

In 2012, the ICP improved its presence on the web by increasing the impact of its Facebook page, opening a second Twitter account and increasing the content uploaded to Flickr and YouTube.

The communication on facebook is in Catalan. In December 2012 the ICP.Mcrusafont page had 2,786 followers, demonstrating an almost 20% increase compared to December 2011 (2,353).

The @ICP_ McrusafontTwitter account, set up in October 2011, is an English channel aimed at a specialised audience comprising both paleontologists from all around the world and specialised journalists of national and international media. In December 2012 it had 304 followers, among whom some 50% are paleontologists, museums with paleontology collections and specialised journalists. Of these, a considerable number are from all over the world. This expert and semi-expert audience is set to grow in the coming months.

In March 2012 a second Twitter account @MuseuICP was set up. It is in Catalan and is aimed at building a more local community around our museum. The community in mind includes people from Sabadell who are interested in science and culture, enthusiasts of paleontology and the heritage of Catalonia and the rest of the State, cultural ambassadors and national journalists. In December 2012 it had 370 followers, 90% of whom represented the local community.

In November 2011 the ICP YouTube channel was redesigned, to adapt it to the ICP framework and turn it into a multilingual support channel for the DC2 audience strategy. In December 2011, the number of viewings was 126, half of which came from Spain, but a considerable number of visits —more than 10%— were also from the United States, the United Kingdom and France.

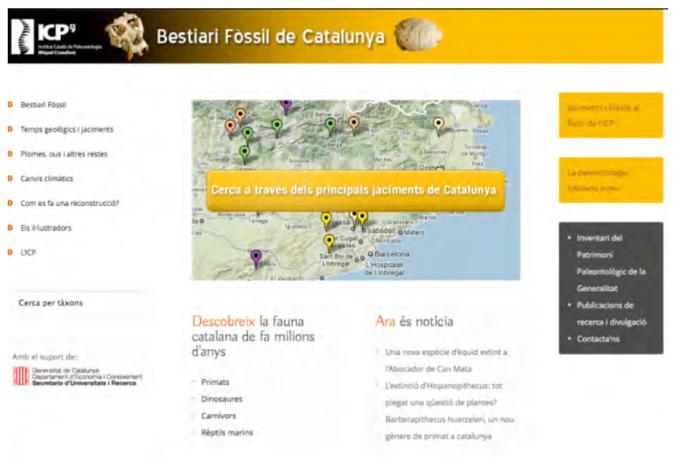
The ICP has increased its 2.0 strategy, diversifying audiences and formats, but always under an institutional umbrella and as a support tool for the centre's scientific communication and dissemination.

The ICP in other formats

"El Bestiari Fòssil de Catalunya" (The Catalan Fossil Bestiary)

In addition to direct communication, in order to promote research, a project or an activity in particular, the ICP heads projects to spread paleontology on the web, with a view to explaining the research results in an appealing manner, and using new formats.

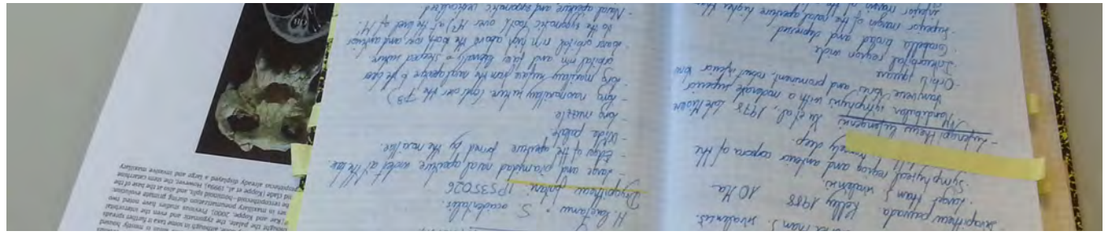
In the project **"Catalan Fossil Bestiary"**, the ICP proposes the creation of an interactive digital product, using a web platform and designed to promote the paleontological sites in Catalonia through research results obtained during the excavations and study: the vertebrate fossils found and the information we have learned from the climate and vegetation in Catalonia at different times during the geological history of our country. This project was allocated an ACDC 2011 grant from the Autonomous Government of Catalonia. At the end of 2012, the final content to be uploaded onto the web was being prepared. Its publication and dissemination is planned for the first half of 2013.



The Catalan Fossil Bestiary brings together detailed information of 17 sites and more than 100 taxons, representing the richness of the Catalan fossil register.

El Bestiari Fòssil de Catalunya recollirà informació detallada de 17 jaciments i més de 100 tàxons, que són representatius de la riquesa del registre fòssil català.

Financial Management projects Department



Laila Pilgren
Head of department

During such a financially difficult year as 2012, **the Project Department has continued to manage the allocation of grants and projects to the ICP researchers**, thereby helping to maintain excellent results in research and publications.

This year **a new project from the Ministry of Economy and Competitiveness (MINECO)** was added to those already under way: "*Evolución de life-histories de mamíferos en ambientes de energía limitada: un enfoque paleobiológico*" (Evolution of mammalian life histories in energy-limited environments: a paleobiological approach) for a total amount of €164,970. This project, led by the ICREA researcher Meike Köhler, will be three years long.

Furthermore, **the ICP has continued to commit to the training of new generations of researchers.** In total, two FPI grant holders have joined for a duration of four years and a total of €106,560, and one researcher with a FI grant, financed by the Agency for Management of University and Research Grants (AGAUR), for three years and a total amount of €57,465.

As regards post-doctorate grants, a **Dutch researcher who won the Beatriu de Pinós grant has joined the ICP for a duration of 2 years** and a sum of €77,136.35.

Mobility grants are also very important for the centre's researchers, since they enable them to work in other research centres or visit collections in museums in other countries. In 2012, **four grants from *Synthesys* (European Union)** were allocated to conduct research in the *Muséum National d'Histoire Naturelle* of Paris, the *Hungarian Natural History Museum* and the *Natural History Museum* of London.

As regards **subventions for excavations,** essential for field work, **the Department of Culture** of the Autonomous Government of Catalonia allocated the ICP **a total of eleven grants adding up to a total of €24,213.75, for projects limited essentially to Catalonia.**

Finally, **a grant of €10,000** was obtained at the *"Territoris Solidaris"* meeting set up by UNNIM Grup BBVA for the creation of cultural projects. **This project, entitled *"Cómo restauramos?"*** (How do we carry out restoration work?) **will help to disseminate the work of other important departments of our centre, such as that of the restoration of fossils**; an essential step that has to be taken before beginning the subsequent research of the materials.

PROJECTS

Projects from the Autonomous Government of Catalonia (Department of Culture). Granted in 2012

Cultura	Museum operation and activities	87630/2012 Activity scheduled to draw up inventory sheets for the ICPMC museum collection. CR: **Laura Celià.**	6.800€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93348 Paleontological activities concerning permo-triassic outcrops in Catalonia. Year 2012, research. CR: Josep Fortuny.	500€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93329 Research and sampling in outcrops of the Maastrichtian (Upper Cretaceous) of the Tremp formation in Berguedà. CR: Josep Marmi.	1.120€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93330 Paleontological intervention in Torrent de Vallparadís. CR: Joan Madurell.	2.825€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93325 Paleontological intervention in la Conca de Banyoles-Besalú. CR: Joan Madurell.	5.720€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93333 Paleontological intervention scheduled in Can Llobateres (Sabadell). CR: David M. Alba.	3.625€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93335 Research and sampling in the regions of Pallars Jussá, La Noguera, El Berguedà, El Priorat, La Conca de Barberà and El Bages. CR: Raef Minwer-Barakat.	942,5€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93334 Report of research and sampling in different paleogene outcrops in the regions of Pallars Jussà, La Noguera, El Berguedà, El Priorat, La Conca de Barberà and El Bages. CR: Raef Minwer-Barakat.	500€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93339 Paleontological site of l'Espinau (Avellanes Santa Linya/Àger, La Noguera). CR: Àngel Galobart.	850€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93338 Paleontological excavation at the cretaceous site of Orcau-1. CR: Àngel Galobart.	1.068,75€
Cultura	Subventions for paleontological interventions included in biennial research projects.	2012/93337 Paleontological excavation at la Llau de la Costa (Isona i Conca Dellà). CR: Àngel Galobart.	262,50€

Project from the Ministry of Economy and Competitiveness (MINECO) granted in 2012

MINECO	R&D projects Unguided fundamental research	CGL2012-34459 Evolution of mammalian life histories in energy-limited environments: a paleobiological approach. CR: **Meike Köhler.**	164,970€

Projects from the Ministry of Economy and Competitiveness (MINECO) currently under way in the ICP (prior to 2012)

National R&D Plan: Unguided Fundamental Research Projects, CGL2010-21672, obtained by **Isaac Casanovas and Daniel de Miguel**, for the project *"Devolviendo los fósiles a la vida: una aproximación multidisciplinar a la paleobiología de los pequeños mamíferos miocenos de la península Ibérica"* (Bringing fossils back to life: a multidisciplinary approach to the paleobiology of small Miocene mammals of the Iberian Peninsula). Amount granted: €121,000.

National R&D Plan: Unguided Fundamental Research Projects, CGL2010-20868, obtained by **Gabrielle Macho and Xavi Jordana**, for the project *"Estrategias de life-history en primates: efectos de la dieta y la estacionalidad en los cambios morfológicos ontogénicos y la eficiencia funcional en simios simpátricos y homínidos"* (Life-history strategies in primates: effects of diet and seasons on ontogenetic morphological changes and functional efficiency in sympatric apes and hominids). Amount granted: €193,600.

National R&D Plan: Unguided Fundamental Research Projects. CGL2011-27343, obtained by **Salvador Moyà-Solà**, for the project *"Historia evolutiva de los Primates del Paleógeno y Neógeno de la Península Ibérica"* (The evolutionary history of primates of the Paleogene and Neogene in the Iberian Peninsula). Amount granted: €205,700.

National R&D Plan: Unguided Fundamental Research Projects. CGL2011-24685, obtained by **Meike Köhler** for the project *"Evolution of mammalian life histories in energy-limited environments: a paleobiological approach*". Amount granted: €14,520.

National R&D Plan: Unguided Fundamental Research Projects. CGL2011-30069-C02-00 & 01, obtained by Àngel Galobart, for the project *"El fin de una Era: la extinción de los dinosaurios, una perspectiva europea"* (The end of an era: the extinction of dinosaurs, a European perspective). Amount granted: €96,800.

GRANTS

National R&D Plan: Unguided Fundamental Research Projects. CGL2011-28681, obtained by **David M. Alba** for the project *"Evolución de los ecosistemas terrestres en la Europa Occidental durante el Neógeno y Cuaternario en base al registro de vertebrados fósiles de la cuenca del Vallés-Penedés"* (Evolution of terrestrial eco-systems in Western Europe during the Neogene and Quaternary according to the register of fossil vertebrates from the Vallès-Penedès basin). Amount granted: €108,900.

I. Grants from the Ministry of Economy and Competitiveness (MINECO) allocated in 2012

FPI

MINECO	FPI Research grant sub-programme	**Novella Razzolini** 24 month grant 24 month contract	53.380 €
MINECO	FPI Research grant sub-programme	**J**oan Femenias 24 month grant 24 month contract	53.280 €

II. Grants from the Department of Economy and Knowledge (Autonomous Government of Catalonia) allocated in 2012

AGAUR - Agency for Management of University and Research Grants

AGAUR	BP: Beatriu de Pinós, modality B	"The Liang Bua fossil avifauna: diversity, paleo-ecology and extinction in Wallacea". Granted to **Hanneke Meijer**. 2 year post-doctorate contract.	77.136,35€
AGAUR	FI –New research grant -	Diversity of vertebrate microfossils in the Tremp formation (Maastrichtian): contributions to the evolution of Cretaceous terrestrial eco-systems of the north-east of the Iberian Peninsula. Granted to **Alejandro Blanco**. 3 year pre-doctorate contract.	57.465 €

III. European Union Grants

SYNTHESIS GRANT

Synthesys. Integrated Activities grant	"Comparative study of the Paleogene microchoerinae (primates) from the Iberian peninsula with the material housed in the *Muséum National d'Histoire Naturelle*, Paris" granted to **Raef Minwer-Barakat**.	1 month France
Synthesys. Integrated Activities grant	Body mass estimation of fossil soricids and talpids: the particular case of giant insular ones. Granted to **Blanca Moncunill Solé**.	22 days Hungary
Synthesys. Integrated Activities grant	The taxonomy of Plio-Pleistocene hedgehogs of the genus *Erinaceus*: a spiny question, a necessary Update. Granted to **Marc Furió Bruno**.	11 days Hungary
Synthesys. Integrated Activities grant	Rise, radiation and extinction of the European crocodilians: the *Diplocynodon hantoniensis* remains. Granted to **Massimo Delfino**	14 days England

IV. Other: private sponsorship, donations...

UNNIM Grup BBVA	**Territoris Solidaris**	How do we carry out restoration work? CR: **Carolina Cancelo**	**10.000 €**

Scientific Production

5

Publications 2012

Science Citation Index (SCI) 2012

Abella, J., Alba, D.M., Robles, J.M., Valenciano, A., Rotgers, C., Carmona, R., Montoya, P. & Morales, J. (2012). Kretzoiarctos gen. nov., the oldest member of the giant panda clade. PLoS ONE 7(11)e48985

Alba, D.M. (2012). Fossil apes from the Vallès-Penedès Basin. Evolutionary Anthropology 21: 254–269.

Alba, D.M., Almécija, S., Casanovas-Vilar, I., Méndez, J.M., Moyà-Solà, S.(2012). A partial skeleton of Hispanopithecus laietanus from Can Feu and the mosaic evolution of crown-hominoid positional behaviors. PLoS ONE 7(6): e39617. doi:10.1371/journal.pone.0039617.

Alba, D.M., Casanovas-Vilar, I., Almécija, S., Robles, J.M., Arias-Martorell, J., Moyà-Solà, S. (2012). New dental remains of Hispanopithecus laietanus (Primates: Hominidae) from Can Llobateres 1 and the taxonomy of Late Miocene hominoids from the Vallès-Penedès Basin (NE Iberian Peninsula). Journal of Human Evolution 231-246.

Alba, D.M. & Moyà-Solà, S. (2012). A new pliopithecid genus (Primates: Pliopithecoidea) from Castell de Barberà (Vallès-Penedès Basin, Catalonia, Spain). American Journal of Physical Anthropology 147: 88–112.

Alba, D. M. & Moyà-Solà, S. (2012). On the identity of a hominoid male upper canine from the Vallès-Penedès Basin figured by Pickford. Estudios Geológicos 68: 149-153.

Alba, D.M., Moyà-Solà, S., Robles, J. & Galindo, J. (2012). The oldest pliopithecid record in the Iberian Peninsula based on new material from the Vallès-Penedès Basin. American Journal of Physical Anthropology 147: 135–140.

Almécija, S., Alba, D.M. & Moyà-Solà, S. (2012). The Thumb of Miocene Apes: New Insights From Castell de Barbera' (Catalonia, Spain). American Journal of Physical Anthropology 148: 436–450.

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