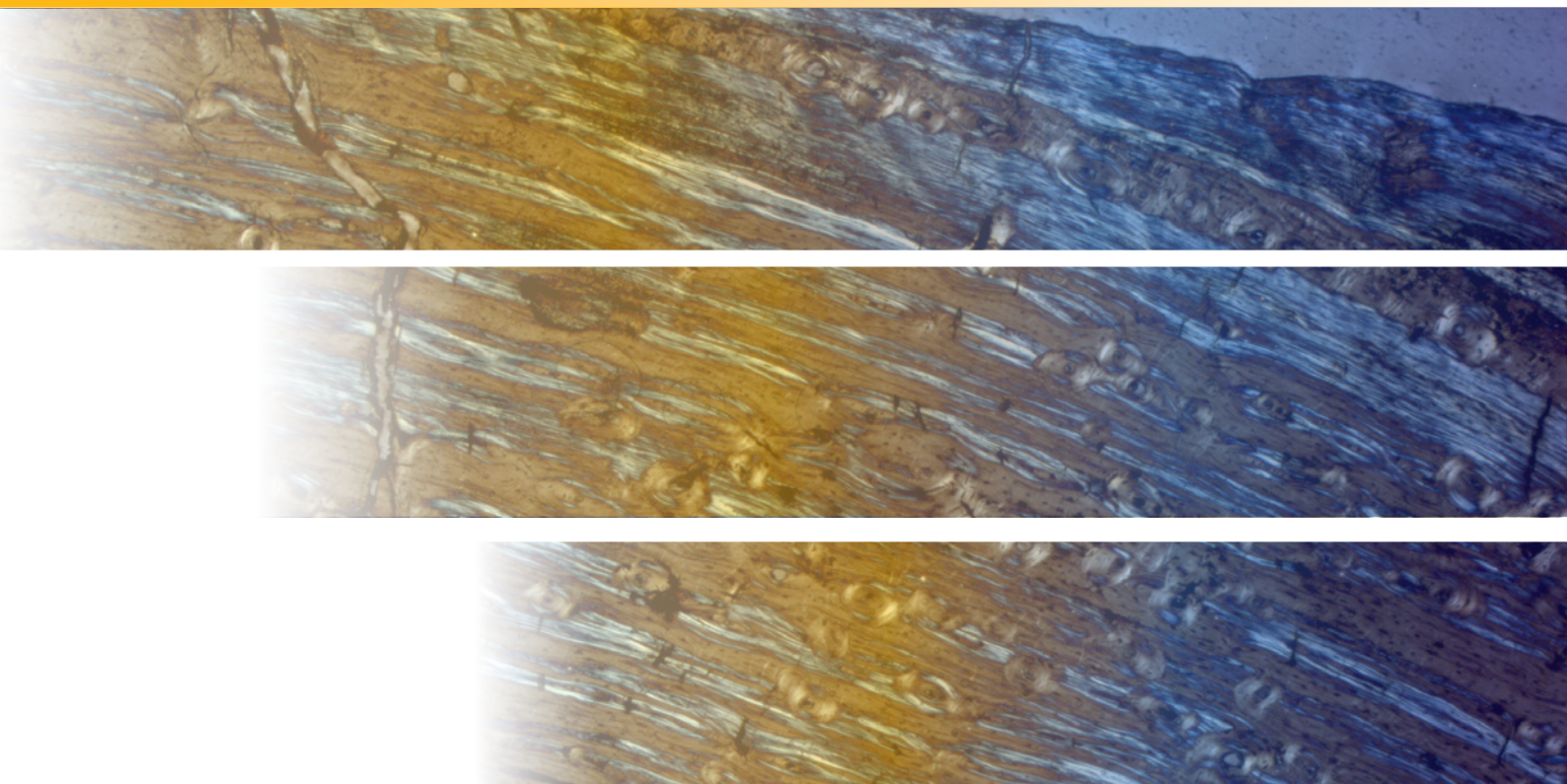


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Annual Report 2013

Institut Català de Paleontologia Miquel Crusafont



Institut Català de Paleontologia
Miquel Crusafont

Edited by:
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Marta Palmero

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Institut Català de Paleontologia Miquel Crusafont

1

Welcome to ICP



Salvador Moyà-Solà
Director

2013 was not an easy year for the ICP. The cutbacks caused by the economic crisis, the reduced availability of grants for public research bodies and the major reduction in contacts with private companies have obliged us restructure our team of workers, reduce expenses and cut salaries. This pressure has also compelled us to seek new sources of income and to establish links and collaborations with research centres around the world. Thanks to this, we have maintained the same levels of productivity as in previous years. By making our centre more efficient, we have been able to turn the crisis into an opportunity.

We have to say that, despite the difficulties, the results in 2013 have been very good. For a medium sized centre, but one that is relatively large when we consider the average size of palaeontology centres on an international level, with a research staff made up of 34 people and a total number of 56 workers, 137 publications is a wonderful result that maintains the high standards achieved by the centre in previous years.

Apart from these strictly research-based results, I would like to highlight three other aspects. The first is that in 2013, and also stimulated to a certain extent by the cutbacks, we have worked hard on finding sponsors, which we hope should start to produce results in 2014-15; second, we have focused intensely on the use of paleontological heritage as something to boost cultural tourism in our country and, finally, we have made a major effort to internationalise the teaching at the ICP.

However, we should also make it patently clear that the unstable economic situation, both in terms of our budget cuts and of the decrease in contracts with companies, grants and projects is a matter of concern. 2013 is a critical year when the effects of this situation have started to have an impact on the centre, and if we don't find solutions, we will start to slide down the international ranking and lose the high status that we have striven so hard to achieve.

The efforts of the last few years have led to a brilliant team of researchers together with a wonderful support structure, and these have obtained excellent results in the 2013 evaluation, but from here onwards, all of that is at risk. The training of researchers and the structuring of projects with clear objectives is a long-term matter and the results can take a long time in coming. What has been achieved can be destroyed much more quickly. The current unstable economic situation cannot continue for much longer, for the damage caused to this centre's results and the prestige it has achieved would be very hard to recover.

Salvador Moyà-Solà
Director

ICP Headlines 2013

Pau's pelvis under examination

An international team of researchers from the University of Missouri and the Institut Català de Paleontologia describe the pelvis of Pau (*Pierolapithecus catalaunicus*), found at the Can Mata landfill (Els Hostalets de Pierola) in 2003, in an article published in *the Journal of Human Evolution*. More than 8 years after the announcement of the discovery of Pau in *Science magazine*, his fossils are still being studied and leading to new scientific publications.

Four new species of dinosaur bone identified at Coll de Nargó

ICP researchers describe four new species of dinosaur bone from the Coll de Nargó site (Lleida) that show how different species of dinosaur shared this nesting area 70 million years ago. The finding has also made it possible to describe the presence of the oogenus *Cairanoolithus* for the first time in the Iberian Peninsula and has helped to more accurately determine the age of the site.

The Banyoles Mandible inaugurates the ICP's computed tomography system

The ICP inaugurated its new computed tomography (TC) system with an emblematic fossil: the Banyoles Mandible. It took four hours to obtain the high-resolution images used to generate a three dimensional model of the inside and outside of the jawbone, which will help to understand it better and to answer some of the questions that are still being asked about it, such as what species it belongs to.

Anoiapithecus brevirostris, the oldest hominoid in the Iberian Peninsula

Researchers from the Institut Català de Paleontologia (ICP) describe new dental remains from two females of the species *Anoiapithecus brevirostris* in an article published in the *Journal of Human Evolution*. One of the fossils is between 12.3 and 12.2 million years old, which is evidence of the Iberian Peninsula's oldest hominoid (the group of primates that includes gibbons, orangutans, chimpanzees, gorillas and humans).

The ICP joins the Magnet programme with Samuntada School, Sabadell

Samuntada School, Sabadell and the Institut Català de Paleontologia (ICP) have set up a collaboration project as part of the «Magnet. Alliances for educational success» programme. In the 2013-2014 academic year, an innovative palaeontology-based educational project will be developed for the next four years at this school.

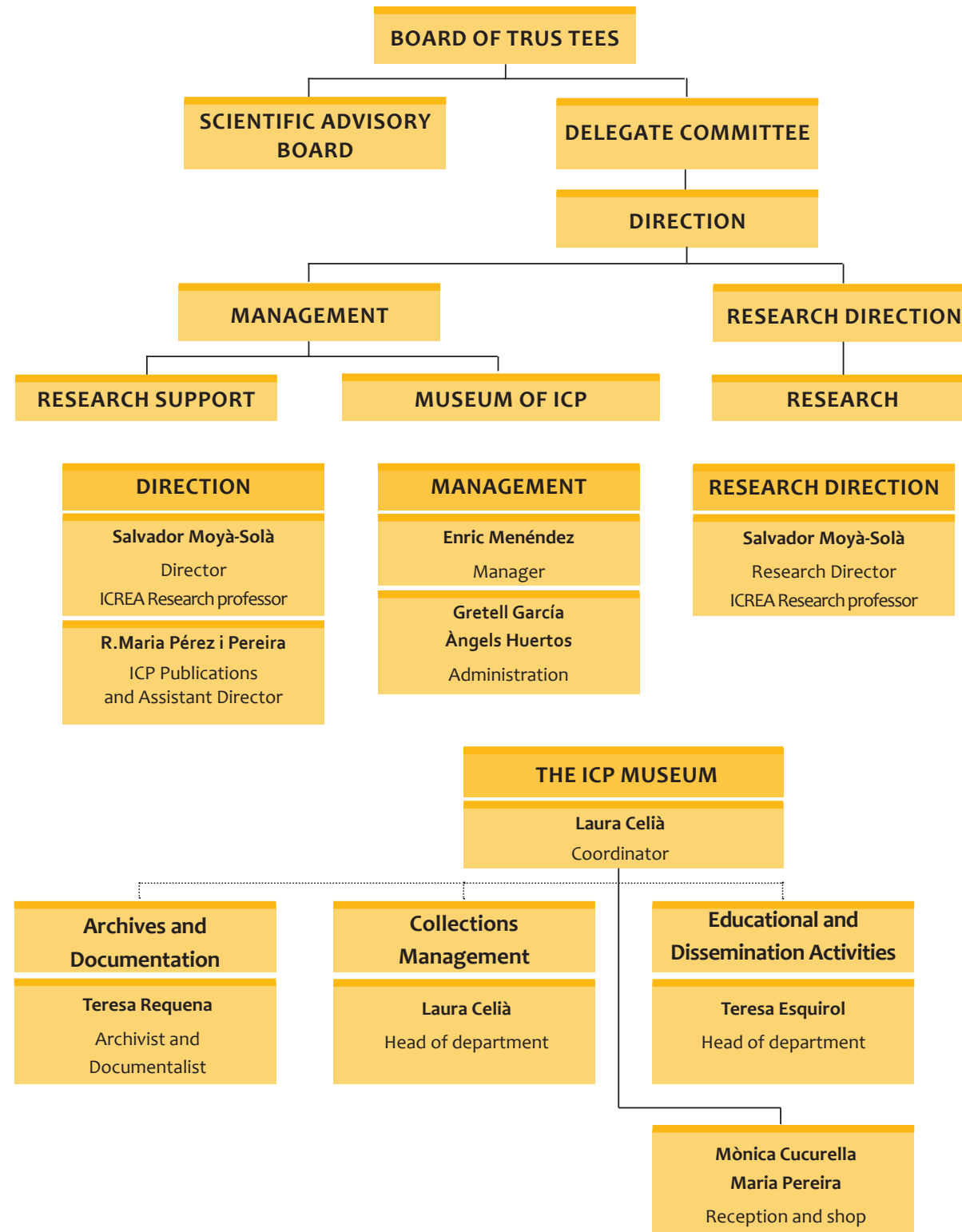
The ICP presents the book «*Un passeig per la història de la biosfera*», by Josep Marmi

«*Un passeig per la història de la biosfera*» ('a journey through the history of the biosphere') is a popular science book written by Josep Marmi, researcher from the ICP's Mesozoic group. The book was presented in the autumn and was published by the Institute thanks to a crowdfunding campaign.

Harvard University and the ICP join forces to compare the extraordinary Miocene fossil records of Catalonia and Pakistan

Researchers from the Department of Integrative Biology at Harvard University and the Institut Català de Paleontologia met in Cambridge to study the possibility of a scientific collaboration to research Miocene fauna. The sites at Siwaliks (between India and Pakistan), where the American researchers are working, and those of the Vallès-Penedès basin are the most complete and best dated known to the world, and represent a unique opportunity to understand the dynamics of Eurasian fauna over the last 20 million years and their relationship with climate change.

Organizational chart



RESEARCH SUPPORT				
Fieldwork and Maintenance	Preparation and Conservation	Management of Paleontological Deposits and Sites	Communication and Scientific Dissemination	Projects
Manel Llenas Manel Méndez Technicians	Carolina Cancelo Head of department	Jordi Galindo Head of department	Pere Figuerola Head of department	Laila Pilgren Head of department
	Xènia Aymerich Núria Guerrero Marta Valls Preparators / Curators			

RESEARCH				
Mesozoic Faunas	Neogene and Quaternary Faunas	Palaeoprimateology and Human Palaeontology	Evolutionary Paleobiology	Virtual Palaeontology
Àngel Galobart Head of group	David M. Alba Head of group	Salvador Moyà-Solà Head of group ICREA Research professor	Meike Köhler Head of group ICREA Research professor	Josep Fortuny Coordinator
Fabio Dalla Vecchia Joan Cartanyà Albert Garcia Bernat Vila Research associate	David M. Alba Ramón y Cajal Researcher	Sergio Almécija Research associate	Xavier Jordana Juan de la Cierva Researcher	Sergio Llàcer 3D Virtual Lab technician
Josep Fortuny Josep Marmi Postdocs	Isaac Casanovas Daniel DeMiguel Juan de la Cierva Researcher	Judit Marigó Raef Minwer-Barakat Postdoc	Josep Quintana Researcher	
Alejandro Blanco Arnau Bolet Novella Razzolini Predocs	Hanneke Meijer Beatriu de Pinós Researcher	Joan Femenias Míriam Pérez de los Ríos Marta Pina Predocs	Soledad de Esteban Research associate	
Mattia Baiano Collaborator	Juan Abella Chiara Angelone Massimo Delfino Anneke Madern Antonio Sánchez Jan Van Dam Research associate	Marta Palmero Scientific illustrator	Nekane Marín Blanca Moncunill Predocs	
	Marc Furió Joan Madurell Postdocs	Ivette Susanna Collaborator	Gemma Prats Laboratory technician	
	Guillem Pons Laboratory technician			
	Josep Aurell Josep M.Robles Víctor Vinuesa Collaborator			

Trustees

TRUSTEES

Sr. Andreu Mas-Colell

Minister for Economy and Knowledge
(President). Generalitat de Catalunya.

Sra. Anna Ripoll i Aracil

Rector of the Universitat Autònoma de
Barcelona.

DELEGATE COMMITTEE

Sr. Antoni Castellà i Clavé

Secretary General for Universities and
Research. Generalitat de Catalunya.

Sr. Josep Maria Martorell i Rodon

Director General for Research.
Generalitat de Catalunya.

Sr. Carles Jaime Cardiel

Deputy Rector for strategic Projects at the
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

University of Florida
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

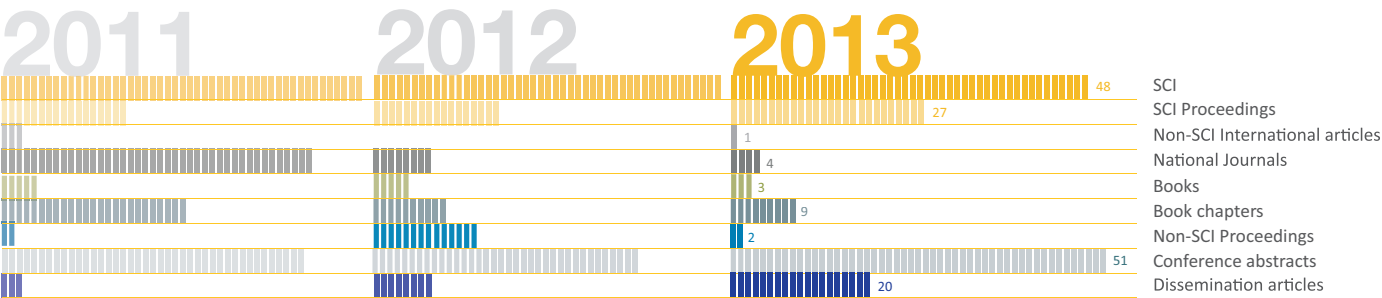
Research at the ICP: Supported by the results

In 2013, the ICP produced a total of **114 publications and 51 congress abstracts** (165). Of the production total, **48** are included in the **Science Citation Index (SCI)** in high impact factor and multidisciplinary journals such as Nature Communications and PlosOne, among others, and **27** are **SCI proceedings** in the area of highly renowned international congresses on palaeontology.

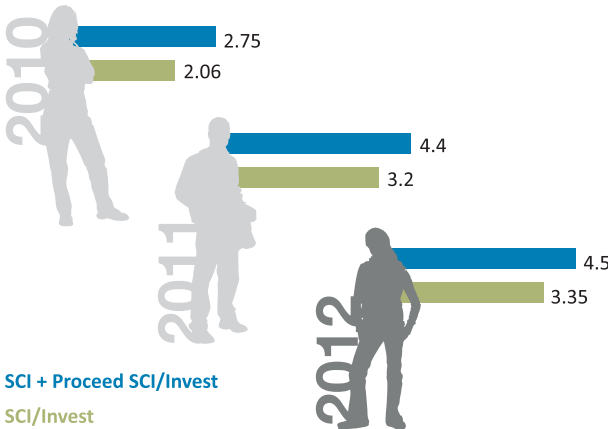
In total, research results have been presented at **18 international conferences and 3 Spanish ones**.

Average TOTAL production /Researcher

The results obtained in 2013 were excellent, with a total of **114 publications and 51 conference abstracts**.



Average SCI production per researcher and year



Evolution of the average of TOTAL scientific production per research and year.



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.

Mesozoic Faunas

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.

Palaeoprimateology and Human Palaeontology

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 important goals 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.

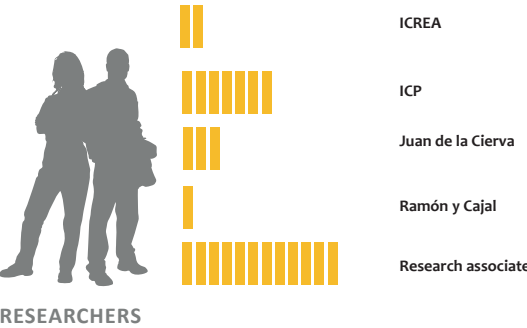
Virtual Palaeontology

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 computed tomography scanner: with a 450kV X-ray tube, the most powerful CT 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 2013

The ICP has a solid platform of researchers who have obtained competitive resources, among which there are 2 ICREA researchers, 1 Ramón y Cajal and 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.

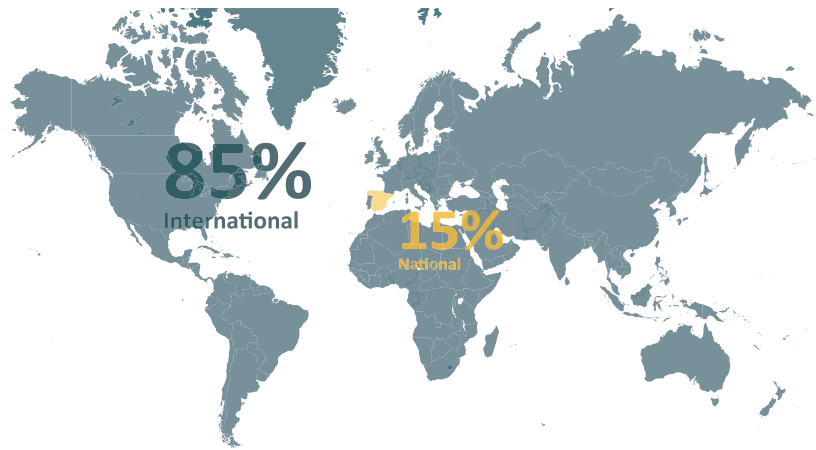
Around the world researchers

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



In 2013, we were present at the following conferences:

International conferences

1. 10th International Congress of Vertebrate Morphology, Barcelona, 2013.

2. 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013.

3. The Second International Symposium on Paleohistology ISPH 2013. (Bozeman, Montana, USA, 2013).

4. 82nd Annual Meeting of the American Association of Physical Anthropologists. Knoxville Convention Center, Knoxville, Tennessee, 2013.

5. Paleoanthropology Society Meetings Abstracts. Honolulu, Haway, USA, 2013.

6. Workshop “The role of the Southern Caucasus on early human evolution and expansion - Refuge, Hub or Source Area?” (Tbilisi, Georgia, 2013).

7. XIII Giornate di Paleontologia” della Società Paleontologica Italiana (Perugia, Italy, 2013).

8. RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013).

9. 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013).

10. 5th International Conference on Comparative Bioolgy of Monocotyledons (New York, USA, 2013).

11. V RCANS Congress (Huelva, Spain, 2013).

12. VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013).

13. International Symposium on pterosaurs (Rio de Janeiro, Brazil, 2013).

14. Evolution Day 2013. Isole: laboratorio dell’Evoluzione. Museo di Storia Naturale di Milano (Milan, Italy, 2013).

15. HerpeThon 2013. Herpetological Marathon. Problemi di conservazione della fauna erpetologica nel terzo millennio. Museo Regionale di Scienze Naturali e Societas Herpetologica Italica (Torino, Italy, 2013).

16. XIII Giornate di Paleontologia” della Società Paleontologica Italiana. Volume dei Riassunti. (Perugia, Italy, 2013).

17. 11th Annual Meeting of the European Association of Vertebrate palaeontologists, (Villers-sur-Mer, France, 2013).

18. V Congress Italian Society Evolutionary Biology (Trento, Italy, 2013).

National conferences

- XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013).

I Jornades d’Arqueologia de la Catalunya Central. Homenatge a Miquel Cura.

XXIX Jornadas de Paleontología y del Simposio del Proyecto PICG 596.

World institutions with which the ICP collaborates

Europe

Italy

- Università degli Studi di Firenze (Firenze)

Università di Torino (Torì)

ICTP - International Centre for Theoretical Physics (Trieste)

Università Roma Tre (Roma)

La Sapienza – Università de Roma (Roma)

Museo Nazionale Preistorico Etnografico

‘L. Pigorini’ (Roma)

Università degli Studi di Bologna (Bologna)

Museo Geologico ‘Giovanni Capellini’ (Bologna)

Istituto di Scienze Marine – Consiglio Nazionale delle Ricerche (Bologna)

Università degli Studi dell’Insubria (Varese)

ISMAR Istituto di Scienze Marine (Venècia)

Università degli Studi di Catania (Catània)

Università de Pavoda (Pàdua)

Museo di Storia Naturale di Pavia (Pavia)

Soprintendenza per i Beni Archeologici dell’Abruzzo (Chieti)

United Kingdom

- University of Manchester (Manchester)

University College London (UCL) (Londres)

Natural History Museum (Londres)

The Royal Veterinary College (RVC) - University of London (Londres)

University of Central Lancashire (Lancashire /Lancaster)

France

- Université Pierre et Marie Curie - Sorbonne Universités (París)

Centre de recherche sur la paléobiodiversité et les paléoenvironnements – UMR - CNRS (Centre National de la Recherche Scientifique) (París)

Muséum National d’Histoire Naturelle (París)

Germany

- Institute of Pharmacy and Molecular Biotechnology (Heidelberg)

Institut für Geowissenschaften, University of Tübingen (Tübingen)

Museum für Naturkunde (Berlín)

Austria

- Oberösterreichisches Landesmuseum (Linz)

Naturhistorisches Museum Wien (Viena)

Norway

- Natural History Museum (Oslo)

Centre for Ecological and Evolutionary Synthesis (CEES) – University of Oslo (Oslo)

Netherlands

- Naturalis Biodiversity Center (Leiden)

Hungary

- Eötvös Loránd University (Budapest)

Switzerland

- Paläontologisches Institut und Museum (Zuric)

Moldova

- Academy of Sciences of Moldova (Kishinau)

America

New York

- Stony Brook University - Medical Center (Nova York)

American Museum of Natural History (Nova York)

Washington, D.C.

National Museum of Natural History (Washington, D.C.)

Pennsylvania

- University of Pennsylvania (Filadèlfia)

Villanova University (Villanova)

Michigan

- Grand Valley State University (Allendale)

Rhode Island

- Brown University (Providence)

Missouri

- University of Missouri - School of Medicine (Columbia)

Kansas

- University of Kansas (Lawrence)

Canada

- University of Saskatchewan (Saskatoon)

Brazil

- Universidade Federal Fluminense (Rio de Janeiro)

Universidade Federal do Rio Grande do Sul (Porto Alegre)

Argentina

- Museo de La Plata (La Plata)

Veneçuela

- Alcaldía Bolivariana del Municipio Urumaco (Estado Falcón)

Republic of Panama

- Smithsonian Tropical Research Institute (Ancón)

Oceania

Australia

- University of Wollongong (New South Wales)

The University of Queensland (Brisbane)

James Cook University (Townsville)

Asia

Japan

- RIKEN Center for Developmental Biology (Kobe, Hyogo)

Iran

- University of Mashhad (Mashhad)

Indonesia

- The National Research and Development Centre for Archaeology (Jakarta)

Africa

Eritrea

- National Museum of Eritrea (Asmara)



The ICP Research

2

Mesozoic Faunas



- Àngel Galobart
Head of Group
- Fabio Dalla Vecchia
Joan Cartanyà
Albert Garcia
Bernat Vila
Research associate
- Josep Fortuny
Josep Marmi
Postdocs
- Alejandro Blanco
Arnau Bolet
Novella Razzolini
Predocs
- Mattia Baiano
Collaborator

The Mesozoic Fauna Research Group recognised as a *Grup de Recerca Singular (Unique Research group)* by the University and Research Grant Management Agency

At the ICP, two specific moments in the evolution of Mesozoic fauna and ecosystems are studied: the Triassic and the late Cretaceous. The Mesozoic Fauna Group mainly focuses its research on the **bones, egg and ichnite fossil sites of dinosaurs** that inhabited parts of the **Iberian Peninsula**. Thanks to the **digital techniques used at the ICP** and the richness of the Catalan fossil record, it can be inferred with considerable accuracy where these animals lived and what kind of land they trod.

In 2013, the group published 9 scientific articles in the main journals in the *Science Citation Index (SCI)*, such as *Cretaceous Research*, *PloS ONE*, *Acta Geologica Sinica*, *N. Jb. Geol Paläont. Abh* and *Paleontologia electronica*.

The scientific results that have been obtained have been presented at different **national and international congresses** including the **International Symposium on Pterosaurs** in Rio de Janeiro (Brazil), the **10th International Congress of Vertebrate Morphology** in Barcelona, the **61st Symposium on Vertebrate Palaeontology and Comparative Anatomy** and the **22nd Symposium on Palaeontological Preparation and Coservation** in Edinburgh (Scotland), the **VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno** at Salas de los Infantes (Burgos) and the **Jornades d'Arqueologia i Paleontologia de l'Alt Pirineu** at Coll de Nargó (Lleida).

The outcome of **this research** has earned the Mesozoic Fauna Group **recognition** as a *Grup de Recerca Singular (Unique Research group)* by the **University and Research Grant Management Agency (AGAUR)**.

A new competitive study in the *“National R+D Plan: Fundamental Research Studies”* implemented by the *Ministry of the Economy and Competitiveness (MINECO)* to investigate the last dinosaur specimens to exist on the planet

The **MINECO R+D Project** titled *“El fin de una era: la extinción de los dinosaurios, una prespectiva europea”* has received €96,800 in funding, which **reinforces the line of research into the study of the last dinosaur specimens** to exist on the planet and **that are represented in the Pyrenees**. The group can now progress by proposing a model for the succession of fauna at the end of the Mesozoic in the **Catalan basis as a reference for the study** and dating of disperse European sites of a similar age.

The *National Geographic Society* research study for 2012-2103 *“Revealing Biodiversity for the Latest dinosaurs in southwestern Europe- new paleontological excavations at the late cretaceous of the Tremp basin (Catalonia, Spain)”* has in its second year of activity enabled the excavation of a large section of a sauropod dinosaur at the Orcau-1 site (Lleida)

This project has also involved researchers from the Departments of Geology at the Universitat Autònoma de Barcelona and the University of Zaragoza and has enabled work to continue on the excavation of the Orcau-1 site, where different bones of the forelimbs and part of the neck of a Sauropod have been recovered. Two trace fossils sites have also been scanned as a conservational measure.

Subsidies have also been obtained from the **Departament de Cultura** for 2012 and 2013, which **guarantee that work can continue on excavations at the sites in the Catalan Pre-Pyrenees**. These subsidies form part of the Generalitat de Catalunya’s Departament de Cultura projects titled *“Els afloraments triàsics amb fauna de vertebrats de Catalunya”* and *“Els jaciments paleontològics del trànsit Cretaci-Paleògen del Prepirineu Català: Sistemàtica, Paleoecologia i implicacions paleobiogeogràfiques”*.

The Mesozoic Fauna Group has performed intense research work in the fields of iconology, paleobiogeography, and the study of a variety of vertebrates, including amphibians and pterosaurs and the description of a new species of hadrosaur called *“Canardia garonnensis”*

The article *“Diversity, Relationships, and Biogeography of the lambeosaurine Dinosaurs from the European Archipelago, with description of the New Aralosaurine Canardia garonnensis”* describes a new genre and species of dinosaur from the remains found at a site in the south of France, while also reviewing all of the material on hadrosaurs described right across the Pyrenees, thus outlining the palaeobiogeographic panorama of the dispersion of hadrosaurs during the late Cretaceous.

Pterosaurs have been especially relevant in the articles published by members of the group. One of these, *“First record of Langobardisaurus (Diapsida, Protorosauria) from the Norian (Late Triassic) of Austria, and revision of the genus”* presents the Langobardisaurus in the late Triassic in Austria for the first time, and the second *“The last pterosaurs: First record from the Uppermost Maastrichtian of the Tremp Syncline (Northern Spain)”* describes the material from the first Pterosaur remains to be found in Catalonia, and which were the last pterosaurs to live in the world.

Another focus of the group’s activity has been on the study of dinosaur ichnites, their formation and their implications for diversity and palaeobiology. Specifically, and in terms of palaeobiology, three studies should be highlighted: *“Manus Track Preservation Bias as a Key Factor for Assessing Trackmaker Identity and Quadrupedalism in Basal Ornithopods”*, *“Dynamic Similarity in Titanosaur Sauropods: Ichnological Evidence from*

the Fumanya Dinosaur Tracksite (Southern Pyrenees)” and *“Discriminating between medium-sized tridactyl trackmakers: Tracking ornithopod tracks in the base of the Cretaceous (Berriasian, Spain)”* which details the locomotion of Ornithopods and Sauropods on the basis of their ichnites. The diversity and habitat of hadrosaurs is understood thanks to the extensive ichnite record for this group of dinosaurs, and which tells us about their preferred environments: *“The Latest Succession of Dinosaur Tracksites in Europe: Hadrosaur Ichnology, Track Production and Palaeoenvironments”*.

ICP researchers explain the history of life in Earth in a popular book

Dr Josep Marmi, a researcher from the *Mesozoic Research Group*, has published a popular book titled *“Un passeig per la història de la biosfera”* (‘a journey through the history of the biosphere’) that offers a detailed but entertaining description of how life evolved on our planet from its origins to the present day. The book was published thanks to a highly successful crowdfunding campaign that managed to meet its financial targets.

Neogene and Quaternary Faunas



David M. Alba
Head of Group
Ramón y Cajal Researcher

Isaac Casanovas
Daniel DeMiguel
Juan de la Cierva
Researchers

Hanneke Meijer
Beatriu de Pinós
Researcher

Juan Abella
Chiara Angelone
Massimo Delfino
Anneke Madern
Antonio Sánchez
Jan Van Dam
Research associate

Marc Furió
Joan Madurell
Postdocs

Guillem Pons
Laboratory technician

Josep Aurell
Josep M. Robles
Víctor Vinuesa
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 2013, the group published **40** scientific articles, whereas 14 additional papers are already accepted for their publication next year. About half of these publications were led by researchers from this group, whereas the remaining ones consisted in collaborations with researchers from other ICP groups or other institutions. **Nearly 90% of these scientific contributions were published in renowned international journals indexed by the (Social) Science Citation Index (SCI/SSCI)**, such as *Nature Communications*, *PLOS ONE*, *Proceedings of the Royal Society B*, *Journal of Human Evolution*, *American Journal of Physical Anthropology*, *Quaternary Science Reviews*, *Quaternary International*, *Journal of Systematic Palaeontology*, *Journal of Vertebrate Paleontology*, *Palaeontologia Electronica*, *Acta Palaeontologica Polonica*, *Comptes Rendus Palevol*, and *Paleobiology*, among others. Furthermore, about forty contributions were made in fifteen scientific meetings (most international, being held in USA, Germany, France, Italy, Turkey, Georgia and Spain). Particularly noteworthy are the 10 contribution to the **73rd Annual Meeting of the Society of Vertebrate Paleontology (SVP)** and the 9 contributions to the **14th Congress of the Regional Committee on Mediterranean Neogene Stratigraphy (RCMNS)**.

Researchers from the Neogene and Quaternary Faunas Group also edited or reviewed manuscripts for more than twenty prestigious international journals, took part 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.

Two projects from the Ministry of Economy and Competitiveness as well as a consolidated research group of the Generalitat de Catalunya support research on the evolution and paleobiology of Neogene and Quaternary vertebrates from the Iberian Peninsula

The results of the research carried out by the investigators of the Neogene and Quaternary Faunas Group of the ICP during 2013 attained a very notorious visibility among the international community, due to both the numerous publications of high impact and the attendance to many international meetings. **The research during 2013 was essentially carried out in the framework of two projects funded by the 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 Group of Paleoprimatology and Human Paleontology of the ICP, in the framework of a **consolidated research group of the Generalitat de Catalunya**.

Through the funding of these projects or other individual competitive projects (especially from the Synthesis programme), the researchers from the Neogene and Quaternary Faunas Group during 2013 made **short stays in various research centres abroad** (US, UK, Italy and Indonesia). Particularly noteworthy are the stays at Page Museum at La Brea Tar Pits (Los Angeles, US) by Joan Madurell-Malapeira, the Smithsonian Institution National Museum of Natural History (Washington, USA) by Hanneke Meijer and the Natural History Museum (London, UK) by Massimo Delfino.

In spite of the current funding shortage, it is also important to highlight that, during this year, the group obtained new funds to carry out field work (**grants from the National Geographic Society and the Generalitat de Catalunya**) as well as other types of research (a **research project from the Italian Ministry**, “The 1.0 Ma climatic event in East Africa: defining trends and rhythms of environmental dynamics using biotic and abiotic proxies”, of which Massimo Delfino is local coordinator).

As regards **teaching**, most members of the group taught in various universities. This includes the **Degree of Natural Sciences** at the Università di Torino (subject of Paleontology), as well as in various master’s degrees: **Master in Paleontology** at the Universitat Autònoma de Barcelona/Universitat de Barcelona (modules of Vertebrate and Human Paleontology, and of Vertebrate Paleontology: Concepts and Methods); **Master in Anthropology** at the Universitat de Barcelona/Universitat Autònoma de Barcelona (subjects of Primatology as well as of Osteology and Forensic Anthropology); and **Master in Geology** at the Universidad de Zaragoza (subject of Systematic Tools in Paleontology). Moreover, various researchers of the group **supervised several master’s theses and ongoing PhD dissertations**.

Finally, it is important to highlight **the direction of and/or participation in various paleontological excavations of Neogene and Quaternary sites**. Particularly noteworthy are the programmed excavations in Can Llobateres (late Miocene),

Moncucco (late Miocene), Abocador de Can Mata (middle Miocene), Órzola-Famara (late Miocene), Incarcàl (early Pleistocene) and Vallparadís (early Pleistocene). 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 of Systematic Palaeontology* redescrives the false sabertooth genus *Albanosmilus* based on an exceptionally complete cranium from Abocador de Can Mata

For the Neogene and Quaternary Faunas Group, 2013 represented a year of **consolidation of the lines of research on paleoherpetofauna and paleornithology**, which together with those focused on micro- and macromammals (with a longer tradition in the institution) enable a more comprehensive understanding of faunal changes and paleobiodiversity throughout the Neogene and Quaternary. Furthermore, **the use of new technologies and techniques applied to the study of fossil vertebrates was further emphasized**, thanks to the establishment of the new industrial CT facilities at the Sabadell Museum of the ICP. As in previous years, **collaborative links were established or consolidated with other paleontologists from around the world**.

Among the numerous papers published by the group in 2013, we might highlight l’article **“New craniodental remains of the barbourfelid *Albanosmilus jourdani* (Filhol, 1883) from the Miocene of the Vallès-Penedès (NE Iberian Peninsula) and the phylogeny of the Barbourfelini”** (Robles and co-authors), published in the *Journal of Systematic Palaeontology*. In this work, the description of an excepcionally well-preserved cranium of a false sabertooth (family Barbourfelidae) allows to resurrect the genus *Albanosmilus*, as well as to further clarify the phylogenetic relationships of derived members of this group of extinct carnivorans. Also very noteworthy are the contributions on the **socio-sexual behavior of the extinct bear *Indarctos*** (Abella and co-authors) and the **geometric morphometrics approach to squirrel mandibular shape** (Casanovas-Vilar and co-authors), both published in the high-ranked multidisciplinary journal *PLOS ONE*.

Aside from these articles, it is also important to mention the paleobiological research on **paleodiet, diversity dynamics and evolution (with emphasis on ruminants, carnivorans and primates)** by researchers such as Daniel DeMiguel and David M. Alba, as well as the more **taxonomic and/or phylogenetic studies on Neogene and Quaternary vertebrates**, performed by Massimo Delfino and Àngel Luján (**amphibians and reptiles**), Hanneke Meijer and Antonio Sánchez Marco (**birds**), Isaac Casanovas-Vilar (**rodents**), Marc Furió (**insectivores**), Chiara Angelone (**lagomorphs and rodents**), Joan Madurell-Malapeira, Juan Abella and Josep M. Robles (**carnivorans**), Daniel DeMiguel (**artiodactyls**) and David M. Alba (**artiodactyls and primates**).

Palaeoprimatology and Human Palaeontology



Salvador Moyà-Solà
Head of Group

Sergio Almécija
Research associate

Judit Marigó
Raef Minwer-Barakat
Postdoc

Joan Femenias
Miriam Pérez de los Ríos
Marta Pina
Predocs

Marta Palmero
Scientific illustrator

Ivette Susanna
Collaborator

In 2013 the Palaeoprimatology and Human Palaeontology Group has continued to produce a large number of publications in journals listed in the Science Citation Index and has presented its research at fifteen congresses around Spain and the rest of the world.

2013 has been a prolific year in terms of results for the Palaeoprimatology and Human Palaeontology Group at the ICP. This year, the group has published 22 studies and ten abstracts at international congresses. Most of these contributions have appeared in renowned international journals listed in the *Science Citation Index* (SCI), such as *Nature Communications*, *PLOS ONE*, *American Journal of Physical Anthropology*, *Journal of Human Evolution*, *Journal of Systematic Palaeontology* and *Comptes Rendus Palevol*, among others. In addition, some forty contributions have been made to fifteen scientific congresses (in the USA, Germany, France, Italy, Turkey and Spain). Of particular note have been the *73rd Annual Meeting of the Society of Vertebrate Paleontology* (SVP), the *AAPA Conference* (2013, Knoxville, Tennessee), the *11th Annual Meeting of the European Association of Vertebrate Palaeontologists*, (Villers-sur-Mer, France, 2013) and the *14th Congress of the Regional Committee on Mediterranean Neogene Stratigraphy* (RCMNS).

A study published in Nature Communications suggests that bipedalism evolved from a type of locomotion practiced by the anthropomorphs of the Miocene that has no current equivalent. This study is a major advance in our understanding of human bipedalism.

Perhaps the most relevant study made this year referred to the oldest African hominid fossils that provide irrefutable evidence of bipedal locomotion. The study was based on an *Errorin tugenensis* femur found in the Tugen Hills (Kenya) dated to 6 million years ago. As opposed to what many researchers have assumed for many years, the great anthropomorphs of the present day (chimpanzees, gorillas and orang-utans) are not living ‘time machines’. They show that the morphology of the femur has evolved in many directions from a common ancestor to humans, probably due to climbing in trees. The use of latest generation 3D geometric morphometry techniques reveals a unique combination of characteristics that is not intermediate between chimpanzees and australopiths (as was assumed until now) but between the anthropomorph fossils of the Miocene (such as *Proconsul* and *Dryopithecus*) and australopiths. **The similarity between Errorin and fossil anthropomorphs, but not current species, suggests that bipedalism evolved from a type of locomotion practiced by the anthropomorphs of the Miocene that has no modern-day equivalent.** The research conducted by the ICP thus supposes a major advance in our understanding of the origins of human bipedalism, and indicates that the study of the evolution of the Miocene anthropomorphs (the period between 23 and 5.3 million years ago) is crucial in order to understand their evolution among the first members of the human lineage. The study published in *Nature Communications* was made by Sergio Almécija, a researcher at Stony Brook University (New York) and at the Institut Català de Paleontologia (ICP), together with William L. Jungers. Other ICP members (Salvador Moyà, David M. Alba and Marta Pina) and of Grand Valley State University, Michigan (Melissa Tallman), were also involved.

Different studies show the extraordinary palaeobiodiversity of the anthropomorphic great apes that inhabited the Vallès-Penedès basin in the Miocene

A set of studies made in 2013 have researched different hominoid materials from the Miocene, such as a **study describing the oldest hominoid remains to have been found in the Iberian Peninsula**, published in the *Journal of Human Evolution* and titled “*New dental remains of Anoiapithecus and the first appearance datum of hominoids in the Iberian Peninsula*”. These remains consist of two fragments of upper maxilla that still have several teeth. One of these, found during the process of washing the sediment extracted during excavations, comes from the same location as *Anoiapithecus brevirostris*; the other fragment was found in 2002 and **dates back 12.3 to 12.2 million years**, which makes it the oldest hominoid fossil (the group of primates that includes gibbons, orang-utans, chimpanzee, gorillas and humans) ever found in the Iberian Peninsula. Researchers have evaluated most of the enamel from the teeth using X-ray microtomography, a non-invasive technique that shows the internal structure of these fossils in huge detail, as well as the morphology of the maxillary sinus, a highly informative cranial cavity in phylogenetic terms. **The presence of as many as four different genera of hominid fossils in the Vallès-Penedès basin over a period of little more than 3 million years** (a very short time lapse in geologic terms) suggests an extraordinary palaeobiodiversity of great apes in the western Mediterranean basin during the Miocene.

A study published in the Journal of Human Evolution supports the hypothesis that Pierolapithecus catalaunicus moved in an orthograde (erect) posture and could climb vertically

A study titled “*Middle Miocene Pierolapithecus provides a first glimpse into early hominid pelvic morphology*” is dedicated to the study of the pelvis of the hominid *Pierolapithecus catalaunicus* discovered in the site at Can Vila 1 (Hostalets de Pierola, Barcelona). Until now, only two hominid pelvises from the Miocene had been described: that of *Proconsul nyanzae*, a primate from the proconsulidae family that lived in Africa some 18 million years ago, and that of *Oreopithecus bambolii*, a hominid from 8 million years ago. **The remains of the Pierolapithecus pelvis**, despite being fragmentary, provide key information for the reconstruction of the first hominid adaptations. Although our ischium fragment is very small, its form very much resembles that of the *Proconsul nyanzae*, which suggests an earlier and more primitive form. However, a part of the ilium (called the wing of ilium) is wider than in most monkeys and in *Proconsul nyanzae*. It is also es-

timated that the iliac tuberosity was of a width midway between that observed in extinct hominids and quadrupede primates, a circumstance that supports the hypothesis that *Pierolapithecus catalaunicus* could move in an orthograde posture (with the trunk erect) and climb vertically. This form of locomotion is that which identifies the members of the Hominidar family.

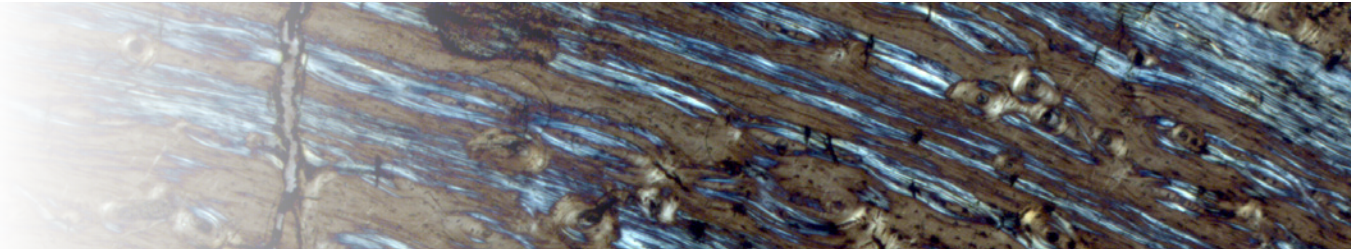
Finally, we should mention that the subgroup **studying Palaeogene primates** has published different studies in the journals *American Journal of Physical Anthropology* and *Journal of Human Evolution*. One of the studies is of the **new adapidae species called Nievesia sossisensis**, belonging to the anchomomyin tribe. The subgroup also **discovered the omomyidae Microchoerus in the Iberian Peninsula** and re-described a small prosimian omomyidae species *Pseudoloris reguanti*.

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



- Meike Köhler
Head of Group
- Xavier Jordana
Juan de la Cierva
Researcher
- Josep Quintana
Researcher
- Soledad de Esteban
Research associate
- Nekane Marín
Blanca Moncunill
Predocs
- Gemma Prats
Laboratory technician

The Evolutional Palaeobiology Research Group at the ICP is currently a world leader in the palaeohistological study of fossil and modern-day mammals

Evolutional palaeobiology is a modern branch of palaeontology that seeks to define the selective pressures and evolutionary dynamics of populations in consideration of physiological, corporal and life history aspects.

One of the main methodological tools used by the ICP’s evolutionary palaeobiology group is the histological analysis of hard tissue (teeth and bones) to understand **mammalian evolution. Histology is a methodology that enables the extraction of information about organisms’ life-histories, such as growth rates, weaning age, the age of sexual maturity, the interval between births and longevity.** It can also infer difficult periods during ontogenesis such as males being outcast from the family group during puberty and prolonged periods of drought or the lack of resources.

All of this information must be evaluated within the allometric framework of the organism’s body weight: the larger the animal, the slower its life history. Therefore, this research group is working with a complementary tool that consists of the creation of statistical models for the **estimation of the body weights of fossilised mammals.**

The results of **palaeohistology in the allometric context are very important as they enable the reconstruction of aspects of past ecosystems** (resource levels, predator levels, where species are situated in the food chain), **and make predictions about the risk of current species going extinct.** This research group places special emphasis on extreme terrestrial ecosystems with low levels of trophic resources, such as islands, deserts and high mountains because of their characteristically intrinsic simplicity (few species with simple interspecific relations and well-defined selective pressures).

In 2013, the group has published internationally relevant articles in such journals as *PLOS ONE*, *Mammalian Biology* and *Anatomical Record*. The research group’s results have been presented at international congresses such as the *International Congress of Vertebrate Morphology (ICVM10)* in Barcelona, and the *Second International Symposium on Paleohistology (ISPH)*, in Bozeman, Montana (USA).

Meike Köhler, the head of the group, was invited to be a plenary speaker at the *International Congress of Vertebrate Morphology (ICVM10)*, where he gave a talk on “*Abyssal monsters, troglobytes and insular chimaeras. Island like settings as natural labs*”. He also formed part of the scientific committee at the *Second International Symposium on Paleohistology (ISPH)*. Xavier Jordana, a postdoctoral researcher with the group, was invited to give a lecture on the “*Evolution of hominid life histories*” at the *XII Jornadas de Antropología Biológica: El enigma de los fósiles*, at the University of Alicante.

Myotragus balearicus, an excellent evolutionary model that is in vogue

Myotragus balearicus, the endemic dwarf-goat from the Balearic Islands, has in recent years continued to be an ideal species for validating theories that relate the life histories of species with morphological traits. Unlike other bovines, this is a species with a very slow life history, a common characteristic of many species that evolve in an insular context with scarce availability of food. The article published in *PlosONE* “First Fossil Evidence for the Advance of Replacement Teeth Coupled with Life History Evolution along an Anagenetic Mammalian Lineage” shows that this **extinct bovine fits with Schultz’s rule**, which has been confirmed in most primates and can be applied to fossil species. This rule **relates the life history rate of a species with the order in which the milk teeth are replaced and molars appear** to configure the definitive dentures.

Computed tomography studies of different *Myotragus balearicus* jawbones have enabled researchers to confirm that the sequence in which this species’ teeth appear is different from modern-day bovines.

Unlike most mammals, in which the milk or deciduous teeth appear around birth, and are then substituted by the definitive dentures when the molars appear, after which the milk teeth are replaced, **in mammals with slow life-histories the two processes tend to coincide in time, as the molars appear relatively later and the appearance of the definitive teeth comes earlier.** Therefore, **the relationship between growth rate and the sequence in which the teeth appear can be understood to be a functional adaptation to minimise the wear of milk teeth in species with a long growth period.** Humans are an extreme example of this slowness, as our second molar does not appear until all of the other milk teeth have been replaced with the definitive dentures.

Myotragus balearicus survived in total isolation in Majorca and Menorca for more than five million years, from the Pliocene to the Holocene and went extinct some 3,000 years ago. The group’s researchers have been able to compare the pattern for the appearance of teeth with *Myotragus kopperi*, a direct ancestor of *M. balearicus* from the Late Pleistocene, which presents the same model for tooth replacement as in modern-day bovines. This suggests that the advancement of the sequence for the emergence of the incisors happened during the evolution of the *Myotragus* lineage over a 2.5 million year period.

A study published in *Nature* uses bone histology to show annual growth markers in mammal bones, a (primitive) plesiomorphic characteristic in vertebrates

The internal microstructure of long bones provides information about the physiological aspects and life histories of current and extinct vertebrates. **As long bones develop, they leave growth markers that are not unlike growth rings in trees.** Thanks to this annual periodicity, growth rings in bones offer a fine method for determining aspects of vertebrate life histories, such as the ages of death and maturity.

This technique is known as **skeletochronology** and is very widespread in the study of current and fossilised reptiles and amphibians, but is less common in the analysis of mammals. The main reason for this is the general belief that mammals, because they are endotherms, do not leave annual growth markers because they grow continuously. Nevertheless, this assumption was refuted by the article “Seasonal bone growth and physiology in endotherms shed light on dinosaur physiology” published in *Nature*, and which revealed that **mammal bones analysed during the study contained annual growth markers, which is a pelismorphic characteristic in vertebrates.**

Likewise, the study “**Bone histology as an approach to providing data on certain key life history traits in mammals: Implications for conservation biology**” published in the journal *Mammalian Biology -Zeitschrift für Säugetierkunde*, examined the potential of bone histology for the reconstruction of the demographic characteristics of large mammals in danger of extinction. **Specifically, it determined the age of sexual maturity and longevity in the African bovine *Addax nasomaculatus*.** *Addax* females reach sexual maturity at 3 years, while males do not until 4 years. An ontogenetic series from Hannover Zoo was studied, along with 2 wild adult specimens (1 male and 1 female) from the Chad Desert.

The results obtained by bone histology (**skeletochronology**) agree with the ages determined from the appearance of teeth and the dental cement growth rings, **which reinforces the validity of this technique for determining life history characteristics. Our results support the use of bone histology in demographic studies**, which are so essential for developing effective strategies for the conservation of endangered species. Moreover, bone histology could be an alternative or complementary method to behavioural studies and monitoring programmes.

Virtual Palaeontology



Josep Fortuny
Coordinator

Sergio Llàcer
3D Virtual Lab
technician

The Virtual Palaeontology Group joins European project *Colour & Space in Cultural Heritage (COSCH)* project

In 2013 and for the first time, the group has joined the *Colour & Space in Cultural Heritage (COSCH)* project, financed by the European Union and whose **main objective is the conservation of cultural heritage through documentation, the expansion of applications and dissemination** and which involves researchers, scientists and professionals from a variety of disciplines around the world.

The Virtual Palaeontology Group contributed to the COSCH’s science meeting by **providing the first results in the field of photogrammetry applied to vertebrate palaeontology**.

The Virtual Palaeontology Group’s 3D Virtual Lab incorporates the most powerful computed tomography system in Spain and different laser digitalisation and photogrammetry systems

Ever since its beginnings, the Virtual Palaeontology Group has been fully multidisciplinary in its vocation. The **generation of new methodologies and non-destructive digital instruments** are essential for this group, which can be used to produce top quality scientific results. That is why **the team permanently includes a radio-physicist** who is responsible for industrial tomography and the digital treatment of images.

These technologies have generated more in-depth and vastly improved scientific results in such fields as taxonomy, biomechanics, paleoecology and evolutionary palaeobiology. They also offer the added value of enabling the **creation of virtual libraries where the different specimens can be conserved in digital format**.

In relation to **teaching**, members of the group have given lectures on the **Masters in Palaeontology** at the Universitat Autònoma de Barcelona/University of Barcelona and the **Masters in the Management of Cultural Heritage Museology** organised by the University of Barcelona. It also supervised an end-of-course Masters thesis on the use of digital instruments, such as photogrammetry, and played a prominent role on the obtainment of the results. In 2013 it has also served as a referee for different journals included in the *Science Citation Index (SCI)* such as *PlosOne* and the *Journal of Vertebrate Paleontology*.

Thanks to a collaboration agreement with the Universitat Politècnica de Catalunya (UPC), the ICP is publishing excellent biomechanics and palaeobiology research results

In 2013, the research group generated new collaboration agreements with other research groups outside of the centre. On the one hand, it has signed an **agreement with the Laboratory for Technological Innovation in Structures and Materials (LITEM) at the Universitat Politècnica de Catalunya (UPC)**, thanks to which it will achieve **major scientific achievements in the field of computational mechanics applied to biomechanics and palaeobiology**. These results have already been presented at **national and international congresses and in journals in the *Science Citation Index (SCI)***. Another collaboration agreement has been signed with the **“The Abdus Salam International Centre for Theoretical Physics”** in Trieste (Italy), for high resolution digitalisation on the basis of industrial microtomography and its digital treatment.

A study published in *Palaeontologia Electronica* proposes an innovative methodology for scaling two-dimensional models of finite elements for a variety of species of different sizes and forms

The article *“Quasi-homothetic transformation for comparing the mechanical performance of planar models in biological research”* presents a new methodology for improving the results obtained by Finite Element Analysis (FEA). This is a very useful analytical instrument in the field of biomechanics, which despite its potential, cannot always be used for comparing the mechanical behaviour of models of different measurements and forms. This study presents a simple methodology for scaling two-dimensional models of finite elements for a variety of species of different sizes and shapes. The study seems to indicate that this is a highly positive method for exploring the effect of form against resistance and rigidity in vertebrate bone structures.

The Virtual Palaeontology Group appears at major congresses in the international and national arenas

This group’s innovative research year after year has been presented at national and international congresses, and in 2013 the focus has been on new methodologies applied to the **palaeobiology of dinosaurs, and the biology and palaeobiology of salamanders and the first amphibians, of modern-day and fossilised primates, and of some armadillos**.

Of particular note have been the **10th International Congress of Vertebrate Morphology**, the **International Conference on Computational Mechanics**, the **61st Symposium on Vertebrate Palaeontology and Comparative Anatomy** and the **11th Annual Meeting of the European Association of Vertebrate Palaeontologists**, among others.

The ICP Museum

3



The ICP Museum



Laura Celià
Coordinator

Teresa Esquirol
Head of Educational
and Dissemination Activities

Teresa Requena
Archivist and
Documentalist

Mònica Cucurella
Maria Pereira
Reception and shop

Leisure and science hand in hand at the ICP Museum

In 2013, the ICP Museum has continued working to bring palaeontology closer to society, and has explored new ways of combining science with entertainment, such as the **Science Cafés** in Sabadell, **Paleoexcursions** and the **enGANXETS al fil de l'evolució** (knitting activity).

The ICP Museum granted Integrated Quality System for Tourist Destinations (SICTED) status

With the clear intention of **making palaeontology a tourist attraction**, the ICP Museum has been included this year in the network of the **SICTED system** (*Sistema Integral de Calidad Turística en Destinos*). In the first phase of the programme, the Museum has been awarded a **mention of quality, which means inclusion in a select group of Spanish companies** (in the county of El Vallès Occidental there are only two museums with such a distinction, and in Catalonia as a whole there are 50).

The system **oversees the maintenance of quality standards**, and enables companies to be **promoted as tourist attractions**, as part of a complementary offer of hotels, restaurants and cultural and leisure pursuits. This distinction is valid for two years and will be renewed on compliance with the Museum's improvement plan.

Consolidation of Museum visitor figures

Despite the current situation, the **Museum has managed to consolidate the number of visitors this year, by attracting more than 14,200 people**. Weekend activities have been temporarily suspended since May, but new initiatives have compensated for this setback.

Activities such as **Paleocarnestoltes** (at carnival time, with a prize for the best paleontologically themed fancy dress costume and an open house day), the **Spring Festival, Sant Jordi** (St George's Day, with a book-stall and presentation of prizes for a writing competition), the **International Museum Day and Night**, the **Festa Major** (city festival), the **Third Anniversary of the Museum, Science Week** and the **Christmas Workshop** have helped introduce both young and old to the world of fossils.

As for schools, **4,650 pupils and teachers** have taken part in educational activities at the ICP Museum as part of our agenda and the **"Escolab"** programme, of which we are a member. With a total of twelve projects, we have expanded the educational sector in 2013. Finally, we should also note the **adult training activities**, such as the **Teacher Training Course** aimed at primary school teachers and the courses at the **Catalan Institute of Natural History**.

Unveiling a new cycle of activities: Science Cafés in Sabadell

As part of the **European initiative for Science Cafés**, in February 2013 we started a new activity that is being co-organised with different scientific institutions and entities in Sabadell where people come to speak about science in a relaxed, cosy atmosphere, while having a coffee in a bar. **The cycle was inaugurated by the ICP with a discussion chaired by Salvador Moyà-Solà about our origins**, and continued with other monthly meetings to discuss astronomy, medicine, the environment and biodiversity. The institutions that have taken part in this year's edition have been the **Agrupació Astrònomic de Sabadell, Corporació Sanitària Parc Taulí, ADENC and Unió Excursionista de Sabadell**.



Urban art and science: enGANXETS al fil de l'evolució

The aim being to present palaeontology in new ways that can introduce it to new audiences, this year we set up an unprecedented activity at the ICP: the **union of science with urban art** through **street-knitting**. This new movement involves **decorating urban elements with yarn**, and reached our Museum through *Les Pirates del Ganxet*, a Sabadell based group that shares a passion for wool and needles.

In two sessions, the ICP Museum hosted **voluntary knitters who embellished our railings, gratings and even fossils**, covering them with different colours. An **intergenerational activity** that brought together two different passions.

Introducing young people to palaeontology: summer work camp

The ICP volunteer programme has been running for years, but the norm is only to host minors. For some time we had been thinking of a way to somehow channel the early vocations of pre-university students that want to get into the world of palaeontology, but we couldn't work out how to do it. So, in July we **programmed two weeks packed with activities for people aged 14 to 17 years**.

The events included **introductory theory sessions on the world of palaeontology, and practical work in different departments**. Thus the youngsters were able to get first-hand experience of the kind of work done by palaeontologists and the specialists at the ICP, and they were able to help in some of their tasks (such as washing sediment, documenting fossils and creating packaging).

The work camp was so positive that there are plans to repeat and expand it next year.

Paleoexcursions: discovering Catalan fossil sites

With the arrival of nice weather and in response to a common request from our visitors, we programmed a number of excursions to offer a first-hand look at Catalonia's paleontological heritage. Under **guidance of a palaeontologist from the ICP**, excursions were arranged to explore the fossil site at **Can Llobateres**, which is currently being excavated, the geological and paleontological past of the Ripoll River and the region of **Hostalets de Pierola**, which was studied in the times of Miquel Crusafont.

Research Support

4



Preparation and Conservation Department



Carolina Cancelo
Head of department

Xènia Aymerich
Núria Guerrero
Marta Valls
technicians

Preparation and Conservation Department continues to place the ICP at the forefront of the conservation, restoration and preparation of paleontological heritage

The work of the Preparation and Conservation Department with paleontological material is the result of years of experience, the aim being to leave this heritage in conditions to be investigated by ICP researchers. 2013 has been especially fruitful in terms of the research of new materials and techniques applied to complex preparations and reproduction work.

In terms of training, this department has offered the **chance for restoration students and professionals to be introduced to and to further their knowledge** of the subject through **voluntary internships** (note that in Spain there is no regulated educated programme in the field of paleontological preparation and conservation).

In 2013, an agreement was approved between the ICP and the **Higher School for the Restoration of the Cultural Assets of Catalonia** that will enable 3rd and 4th year degree students to take the subjects of **Complementary Training and External Work Experience** in the ICP laboratory. An agreement has also been approved with the **University of Barcelona** by which students taking the **Official Masters in the Management of Conservation and Restoration Projects**, offered at the Faculty of Fine Arts, to be able to take their *practicum* in this department. This department has also collaborated with the “Paleontological Patrimony” subject included in the **Official Masters on the Management of Cultural Heritage at the UB**.

Meanwhile, and in concordance with the **centre’s tradition for disclosing information**, the preparation laboratory has also organised a variety of **activities** designed to teach the general public about the work done by the conservators and preparators at this institution.

The ICP, setting standards for other centres with its trendsetting techniques

The inclusion of new materials and methods in problematic preparations guarantees **the best possible future conservation** of fossil remains. In this regard, it is primordial for there to be **contact with other international laboratories** to **exchange and incorporate new work techniques**.

This laboratory has treated paleontological material from **almost twenty fossil sites around Catalonia**. Of particular note is the preparation of the cranial remains of an individual of the *Macaca* genre from the north of Italy and which were especially sent for treatment at our centre. Services have also been offered to external companies, such as FOSSILIA SPG S.L.

Production of moulds and copies, an indispensable tool for researchers and the dissemination of paleontological knowledge

The main **purpose of copies of paleontological material is to avoid the constant handling of the originals** in order to **conserve them over time**. These replicas are items that can be exchanged with other research centres and are the basis for the didactic displays offered by the ICP.

Of note this year have been the reproductions that required **reliable pictorial imitation** with the adequate **patinas** for each piece.

- Moulds and replicas of all remains of the a new primate species skeleton.
- Two copies of all remains of the *Pierolapithecus catalaunicus* skeleton.
- Patinas and applications of reliable polychrome techniques on replicas for the course “Sabre toothed tigers and goats’ wisdom teeth: dental patterns and evolution in mammals” included in the 4th edition of the “Teachers and Science” programme run by the Fundació Catalunya-La Pedrera.
- 70 moulds and replicas of rodent microteeth.
- Moulds and replicas of fossils from sites in Catalonia, Italy and Sicily.

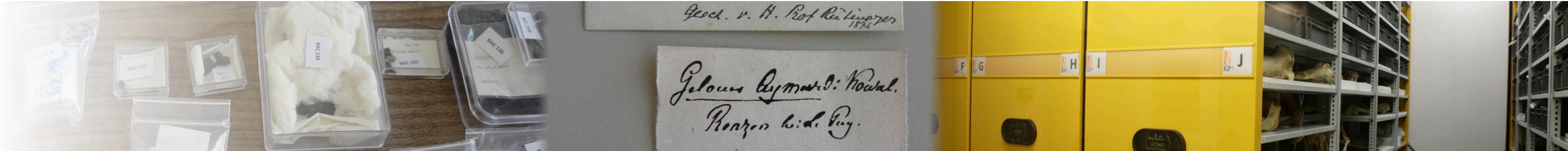
The “Territoris Solidaris” and “Magnet” programmes promote the work of the ICP laboratory

One of our objectives in 2013 has been to do the groundwork for **raising awareness of a little known profession but one that is very important for the research** and conservation of paleontological patrimony.

The **“Territoris Solidaris” (Caring Territories)** programme, run by the BBVA bank and the Fundació Antiques Caixes Catalanes de Manlleu, Sabadell and Terrassa, selected and **catalogued our project as one of major interest for cultural dissemination**. A real-time audiovisual presentation describes the preparation of a set of fossils from the moment they arrive in the laboratory until they are ready to be studied.

Meanwhile, the Preparation and Conservation Department will be showcasing its work to education centres forming part of the **“Magnet”** programme, as part of the partnership that the ICP has established with the scheme, whose objective is to offer a different learning focus by means of a pedagogic methodology based on direct contact with scientists and professionals, who offer guidance to schoolteachers for four years.

Collections Management Department



Laura Celià
Head of department

Marta March
Collections Management
Technician

The ICP collection: our diversity of fossils is fundamental for research

The Collection Management Department conserves cultural patrimony by using the country’s most ground-breaking technologies. Thanks to the work of specialists, intern students and trainee volunteers, the department has continued to **manage the increasing number of pieces in the collection.**

In the area of education, it has given sessions on the subject **“Paleontological Patrimony”** forming part of the **Masters in the Management of Cultural Heritage at the UB** and has taken part in the **“Almost Human”** Teacher Training Course aimed at secondary schoolteachers. It has also been invited to take part in the **I Meeting of Specialists from Natural Science Collections in Catalonia**, organised by the Barcelona Museum of Natural Sciences.

Since 2012, the ICP has formed part of the board of directors of the Association of Records of Spanish Museums and Cultural Institutions (**ARMICE**) through this department.

ICP collection reaches 82,316 entries

Of the total number of fossils in the ICP collection, in 2013, **18,877 specimens** were entered in our record books, the highest number since 2007. There were **82,316 fossils** on record at the end of 2013, which is an increase of **550% with respect to the usual average.**

Apart from new entries, work has continued on documentation and incorporation of radiofrequency. **More than 8,000 fossils** have been documented with their definitive locations in the new storerooms and the **incorporated RFID.**

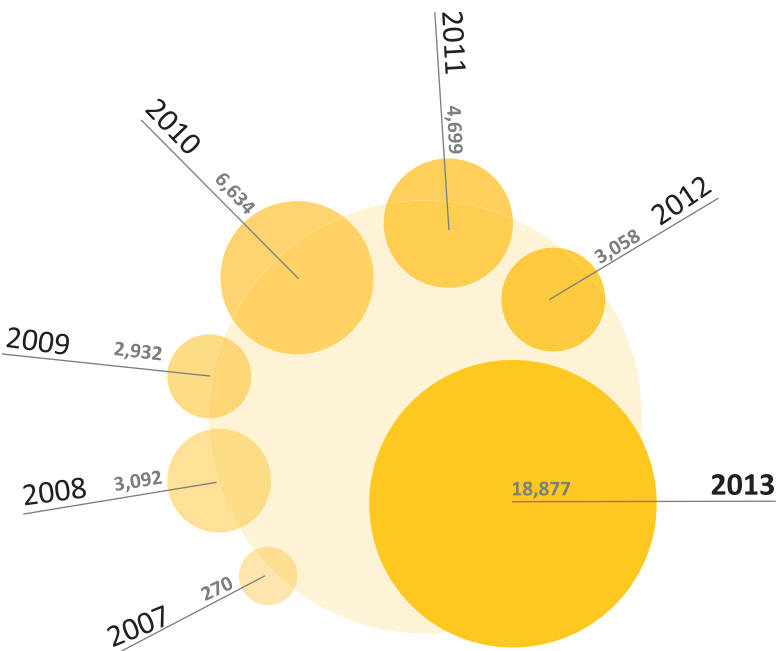
Lending of fossil materials multiplied by ten

In 2013 **87 requests** to view more than 8,000 fossils were attended to. Of these, 54 led to the loan of materials for scientific study, which implied the **preparation of 3,592 fossils for transfer.**

4 loan requests were received that led to the temporary loan of 57 specimens **for dissemination or exhibition purposes.**

Preventative conservation of the collection

With the help of intern students and volunteers, improvements have been made to the packaging of the collection. Packaging is made to measure for the most fragile fossils, in accordance with the principles of preventative conservation. A total of 76 fossils have been packaged in neutral materials to guarantee their long-term conservation.



Fossil record

Management of Paleontological Deposits and Sites Department



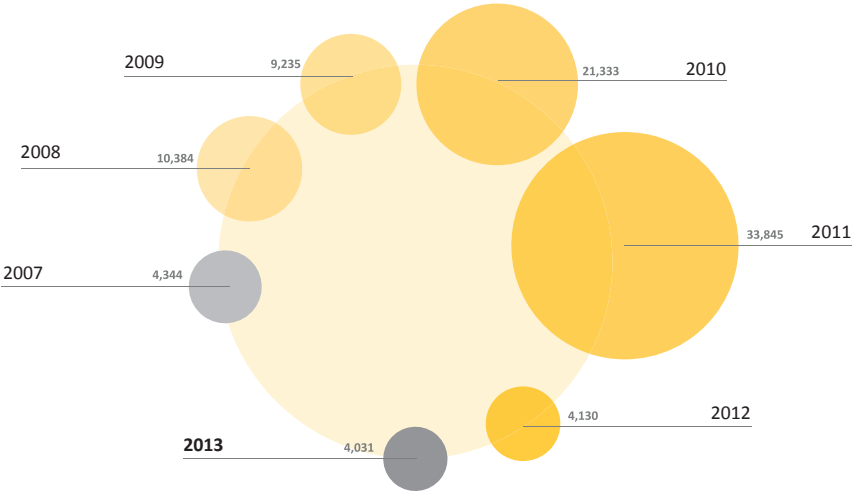
Jordi Galindo
Head of department

The ICP protects the territory and raises awareness of the paleontological heritage and vertebrate fossil sites in Catalonia

The **Department of Paleontological Deposits and Fossil Sites** manages the arrival of fossils from the ICP's paleontological interventions in provisional deposits and collaborates with the dissemination and safeguarding of this heritage. In terms of education, it has collaborated **with different sessions** in the subject of "Paleontological Patrimony" on the **Official Masters in the Management of Cultural Heritage** at the **UB** and has contributed its knowledge to the Module on Paleontological Patrimony forming part of the **Inter-University Masters in Palaeontology** (UAB-ICP-UB).

The ICP collection has around 260,000 specimens. In 2013, **4,031** fossil remains were included. In total, **87,302** specimens have arrived since 2007 from **29 paleontological interventions by the ICP in provisional deposits**. In this regard, the **Cultural Initiative Support Office (O.S.I.C.)** has granted **8,000 euros for the emplacement of the fossil remains** from the preventative interventions at the Can Mata Landfill and Ecopark, in order to guarantee their correct conservation.

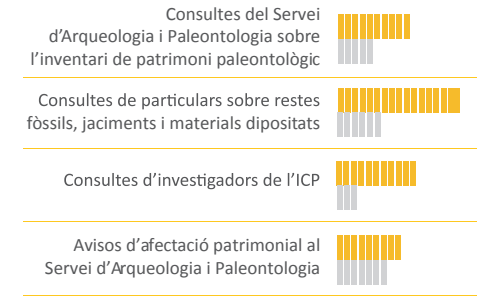
Meanwhile, the **195 items** of fossil remains **recovered from the preventative paleontological intervention on the Barcelona Orbital Motorway** (Olesa-Viladecavalls section), and which the *Pa-leoymas* company in Zaragoza has prepared, have been returned, and a request has been issued for the **definitive deposit of the 9,917 fossils that have been registered, inventoried and documented** from the interventions that have been going on since **2002 in Hostalets de Pierola**.



Registered entries per year

The ICP is committed to the defence of the paleontological heritage of Catalonia

In 2013, the ICP has made three preventative or emergency paleontological interventions: La Valleta, Seròs, Segrià; Tren-carroques 2, Castellet and la Gornal; prospection for the work on the Abrera-Cardedeu section of gas pipeline. The **progressively upwards trend in enquiries** may be explained by the **progressively greater awareness among society of such heritage** and recognition of the **excellence of the ICP**.



2013
2012

The ICP collaborates with town, city and county councils to promote and manage paleontological heritage

In 2013, the ICP has continued to work with the Isona and Conca Dellà Council on the **proposed joint management of the Conca Dellà Museum** and has advised on and intervened in the scientific content included in the discourse and audio-visuals at the **Tremp Epicentre - Pallars Jussà Visitors Centre**, which opened in late July 2013. It is also collaborating with the **Barberà del Vallès Council** to raise awareness of its paleontological patrimony. In this regard, the ICP will be involved in a **research project at the Castell de Barberà site** and will be assisted by the *Leakey foundation* and *National Geographic*.

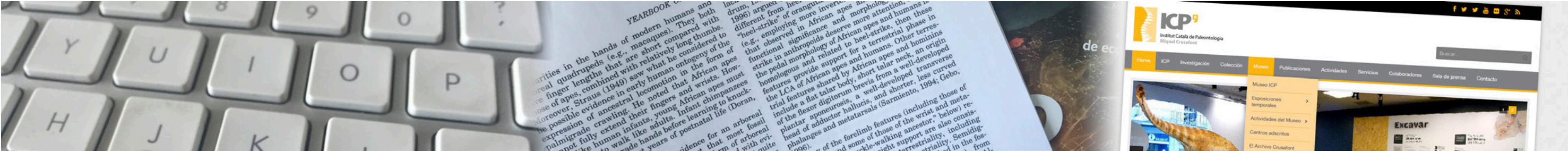
An article published in *Sàpiens* exposes the problems with the theft of paleontological heritage and shows the importance of preventative measures

In order to raise awareness of the importance of the paleontological heritage of vertebrate fossils in Catalonia, this department has devised a series of actions aimed at exposing the existing problems and how **heritage law** acts in cases of **fossil theft, in the wake of the robbery** in late May at the **Pinyes (Coll de Nargó) site**. The results of this included the article published in *Sàpiens* "Valuable fossil stolen at Coll de Nargó" (July issue) and several interviews on *Radio Sabadell*, and in *El Mundo* and *El Confidencial*.

Other promotional actions have been as follows:

- Collaboration with the stand promoting wine from the Penedès region at the Wine Fair.
- Participation in naturalist courses at the Catalan Institution of Natural History, on the course "Almost Human".
- Excursion to raise awareness of the paleontological sites at Hostalets de Pierola.
- Sending the manuscript on the paleontological heritage in public museums and collections in Catalonia to the Royal Spanish Society of Natural History *Newsletter*.
- Participation in interviews conducted by *ACTUARUM* with members of the ICP on the value and potential of the paleontological heritage of Catalonia.

Communication and Scientific Dissemination Department



Pere Figuerola
Head of department

The objectives of the ICP’s Department of Scientific Communication and Dissemination (DC2) are to:

- Raise awareness of the ICP** as one of Catalonia’s leading centres in the research, conservation and dissemination of palaeontology.
- To support the positioning of the ICP in the **international scientific community**.
- Provide communication and dissemination support to the various scientific, educational and technical ICP projects.

In order to achieve these objectives, the DC2 has designed a communication and dissemination strategy that is based on the **diversification of formats, channels and target audiences**.

ICP on the cover

Communication in the media

The ICP’s research and technical work continuously generates scientific and general interest articles, important discoveries of fossils and new techniques that have made it a pioneering force in world palaeontology. Also, in terms of excavations pertaining to this discipline, the ICP is working at some of the most important fossil sites in the country.

To raise awareness of all this activity, the DC2 **is in contact with reporters and other professionals involved in science publications**. The DC2 also **drafts and publishes press releases**, to ensure that news about the ICP appears in the different media, mainly in Catalonia and Spain.

In 2013, **the ICP generated 58 news stories, of which 15 reached the general interest and specialised media and news agencies in the form of press releases**. For the other stories, more specific actions were used to get this information across to specialised or local media.

Despite the difficult context of the journalism sector, impacts in the press and on television have been maintained and have led the ICP and its research to feature in **news bulletins and radio and television programmes in 70 different media**, which has also meant appearances in their digital versions. These media include daily state and national newspapers, as well as local and international media. There has also been a remarkably constant increase in appearances in blogs and other digital channels.

Press Impacts (non exhaustive count)	Date	Media
Caminant entre els titanosaures	26/2/2013	Regió 7
“Nuevos huevos de dinosaurio hallados en Lleida”	20/3/2013	El País
“El hominoideo más antiguo de la Península saca los dientes”	23/3/2013	La Razón
Els avantpassats catalans dels simis	24/03/2013	Diari Ara
“Descubren una nueva especie de primate que vivió hace 35 millones de años en Lleida”	11/4/2013	RTVE.es
“El terrorífico reino de las mandíbulas”	22/5/2013	ABC
Del Juràssic al Cretaci en 500 km	20/8/2013	El Temps
Un fèmur trobat a Lleida aporta llum sobre el bipedisme humà	7/12/2013	La Vanguardia

Television Impacts (non-exhaustive count)	Date	Media
La mandíbula de Banyoles, al descobert amb el nou aparell de tomografia computada	2/5/2013	Telenotícies - TV3
Ous al laboratori	15/10/2013	Quèquicom – Canal33
Visitem l’Institut Català de Paleontology	16/10/2013	Xarxa de Televisions Locals

The ICP website has been consolidated with some 6,200 visits a month. News about research and the Museum’s programme of activities are the most viewed contents

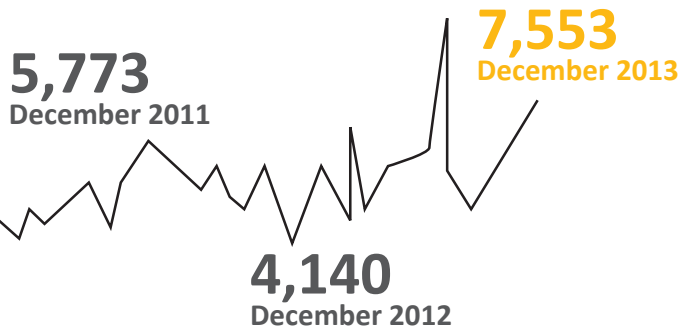
ICP website and newsletter

News about the ICP, as well as details of its team of workers and the different projects they are involved in, are contained in its digital channels: **the website and the newsletter**. The website’s homepage shows all of the latest news from the centre, while each of its sections looks in greater detail at the people and projects.

In 2013 **there was a major increase in the number of visits to the ICP website compared to 2012**. It received an **average of 6,170 single visits a month**, which was an **increase of almost 24% on the previous year**. Although a similar number of news stories were published (66 in 2012 and 58 in 2013), they reached far more people. The description of a new species of small primate in the Pyrenees and the theft and later recovery of a vertebrate fossil from a site at Coll de Nargó were two of the most viewed stories on the website.

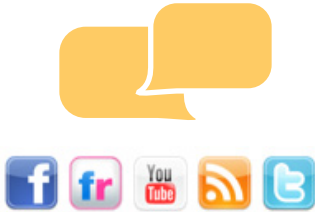
Apart from stories about the research conducted by the Institute, the programmes of activities to promote palaeontology organised by the Museum have also generated considerable traffic to the ICP website.

Readers of the ICP website are mainly from Catalonia, but there are also a large number of visitors from the rest of Spain, as well as the **United States, Germany and Russia.**



The number of subscribers increased in 2013 by 9% for the Catalan edition and 16% for the Spanish edition.

The DC2 publishes the **ICP Newsletter**, which in 2013 has started to come out every three months. It contains the most important news stories of the previous weeks and is published in Catalan and Spanish. In December 2013, it had 887 subscribers to the Catalan edition and 138 subscribers to the Spanish edition, showing a progressive rise since the newsletter was renewed in 2010.



The ICP has continued to increase its presence on the web, with greater impact of its Facebook account, increased activity on Twitter and the maintenance of its Flickr and YouTube channels.

Diffusion on 2.0 networks

In 2013, communication via **Facebook** was in Catalan. In December 2013, the ICP.Mcrusafont channel had 3,175 followers, which was an **increase of almost 14% with respect to December 2012** (2,781 followers).

The **twitter account @ICP_Mcrusafont** is in English and is designed to reach a specialised audience of both palaeontologists from all around the world and specialised national and international reporters. In December 2013, it had 437 followers, of which a good 50% are palaeontologists, museums with palaeontology collections and specialised reporters. In one year, **there has been an increase in followers of this account of almost 44%.**

In March 2012, a second **Twitter account was opened called @MuseuICP, which is in Catalan and designed to create a more local community around our museum.** The community we are building includes people from Sabadell with an interest in science and culture, enthusiasts of palaeontology and heritage from Catalonia and the rest of Spain, cultural managers and domestic reporters. In December 2013, it had 616 followers, which is an **increase of more than 65% on the number of followers in 2012.**



The DC2 has organised a crowdfunding campaign to publish a book explaining the origin of the Earth and its organisms

The ICP in other formats

Crowdfunding to promote science

In addition to direct communication to publicise research, a project or a specific activity, the DC2 has organised a **crowdfunding campaign to publish a book** on the origin of the Earth and its organisms, based on knowledge obtained from palaeontology and other related disciplines.

The publicity campaign included the organisation of conferences around the country to promote the crowdfunding project, as well as actions on social networks throughout the fundraising period.

Un passeig per la història de la biosfera

ACONSEGUITS DE **4.550€** DE **3.700€**

Un passeig per la història de la biosfera és una obra de divulgació científica en català que explica la història de la Terra i dels seus habitants. Un viatge de més de 4.600 milions d'anys per la biologia i la geologia, on el lector coneixerà des de les primeres formes de vida a la fauna actual.

Una idea de: Institut Català de Paleontologia Miquel Crusafont

0 preguntes 12 actualitzacions

The Fossil Bestiary of Catalonia contains detailed information on the 17 sites and more than 100 taxa that represent the richness of the Catalan fossil record

Through its “Fossil Bestiary of Catalonia” project the ICP is **proposing the creation of a web-based interactive product to promote knowledge of the paleontological sites in Catalonia** through the results of research conducted during their excavation and study: the vertebrate fossils that have been found there and what we have learned about the climate and vegetation of Catalonia in different periods of its geological history. This project has received a grant from the *Generalitat de Catalunya*, as part of its *ACDC* programme. Changes in the organisational structure of the DC2 have delayed definitive publication of the Bestiary. At the moment of writing this report, the website is in the beta phase and should be definitively published and promoted in the first half of 2014.

Bestiari Fòssil de Catalunya

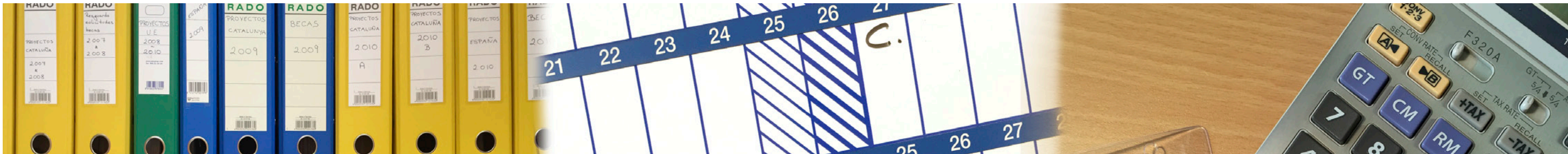
Cerca a través dels principals jaciments de Catalunya

Descobreix la fauna catalana de fa milions d'anys

Ara és notícia

Rebre les passes dels últims

Projects Department



Laila Pilgren
Head of department

Projects and subsidies: the financial engine of the ICP

In 2013, the Projects Department has maintained enough income to guarantee the scientific research and diffusion of palaeontology in society. From Spain, it has received funding for the excavation of the continental Neogene site at Órzola-Famara, UGA and Els Ajaches from the *Cabildo de Lanzarote*. In Catalonia it has received a subsidy for the “Biodiversity of the past: Life before the dinosaurs in the Alt Pirineu Natural Park” project from the Directorate General for the Environment and Biodiversity. It also received a grant from the Departament de Cultura for the transfer of paleontological material from respective landfill sites for study at the ICP facilities.

Meanwhile, the ICP has a long-standing tradition of transferring its discoveries and the results of its research to the general public. To do this, it is vitally important for the Institute to receive funding in order to hold congresses, seminars and courses. On a state level, funding has been received from the FECYT to organise an international congress on the cretaceous extinction titled “Paleoenvironmental changes in Maastrichtian Terrestrial Ecosystems of Europe”. In Catalonia, the *Fundació Catalunya - La Pedrera* obtained co-funding for a seminar aimed at secondary school teachers as part of the “Teachers and Science” programme.

In 2013, work was also done to strengthen contacts with international centres. A grant from AGAUR “AIRE – CTP” enabled us to conduct a comparative study of Eocene primates from different sites in the Catalan Pyrenees with the University of Montpellier in France. As for short visits to other centres, grants have been received from the *Ministerio de Economía y Competitividad* (MINECO) to visit the Royal Veterinary College in London and the *Museum National d’Histoire Naturelle* in Paris; from the *Ministerio de Educación, Cultura y Deporte* to visit the *Università degli Studi* in Florence and Harvard University in the United States; and finally, from the European Union’s Synthesis programme, we have received grants to visit institutions in Belgium, Holland, the Czech Republic and France.

Finally, a young researcher has arrived on an FPI grant from the *Ministerio de Economía y Competitividad* and who will be studying for her PhD thesis during the 4 years of funding that she has obtained.

PROJECTES

Projectes concedits per entitats a Catalunya al 2013

Fundació Catalunya - La Pedrera	“Professors i Ciència”	“Tigres, dents de sabre i queixals del seny de cabra: patrons i evolució dental en mamífers”. Marc Furió.	1,800€
Direcció General del Medi Natural i Biodiversitat	“Ajuts per al finançament d’actuacions en els espais naturals protegits”	“La biodiversitat del passat: La vida abans dels dinosaures al Parc Natural de l’alt Pirineu”. Josep Fortuny.	4,300€
Department of Culture	Subsidy	Transfer of paleontological material from Ecoparc 4 and the controlled landfill at Can Mata.	10,000€
Department of Culture	Subsidy	Production of resin molds.	2,985€

Projecte concedits per entitats a Espanya al 2012

FECYT	Promotion of Scientific Culture	International congress on the cretaceous extinction “Paleoenvironmental changes in Maastrichtian Terrestrial Ecosystems of Europe”. Àngel Galobart.	6,000€
<i>Cabildo de Lanzarote</i>	Excavació	Research project at the continental Neogene site at Órzola-Famara, UGA and Els Ajaches. Lanzarote. Canary Islands. Antonio Sánchez.	11,570€

Ministry of the Economy and Competitiveness (MINECO) projects that are currently active at the ICP (prior to 2013)

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada, CGL2012-34459 obtained by **Meike Köhler**, for the project “*Evolution of mammalian life histories in energy-limited environments: a paleobiological approach*”. Amount awarded: 164,970 euros.

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada, 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*”. Amount awarded: 121,000 euros.

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada, 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*”. Amount awarded: 193,600 euros.

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada. CGL2011-27343, obtained by **Salvador Moyà-Solà**, for the project “*Historia evolutiva de los Primates del Paleógeno y Neógeno de la Península Ibérica*”. Amount awarded: 205,700 euros.

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada. 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*”. Amount awarded: 96,800 euros.

Plan Nacional I+D: Proyectos de Investigación Fundamental no-orientada. 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*”. Amount awarded: 108,900 euros.

GRANTS

I. Grants from the *Ministerio de Economía y Competitividad* (MINECO) awarded in 2013

MINECO	FPI “Estancias Breves” 2 months at the Royal Veterinary College, London, England.	Novella Razzolini	3,540 €
MINECO	FPI “Estancias Breves” 3 months at the <i>Museum National d’Histoire Naturelle</i> , Paris, France.	Joan Femenias	4,240 €
MINECO	FPI – Research Staff Training Grant (4 years)	Carmen Nacarino	83,900 €

II. Grants from the *Departament d’Economia i Coneixement* (Generalitat de Catalunya) awarded in 2013

Agència de Gestió d’Ajuts Universitaris i de Recerca (AGAUR)

AIRE-CTP	Comparative study of Eocene primates from different sites in the Catalan Pyrenees with the collections at the University of Montpellier (France).	2,330€
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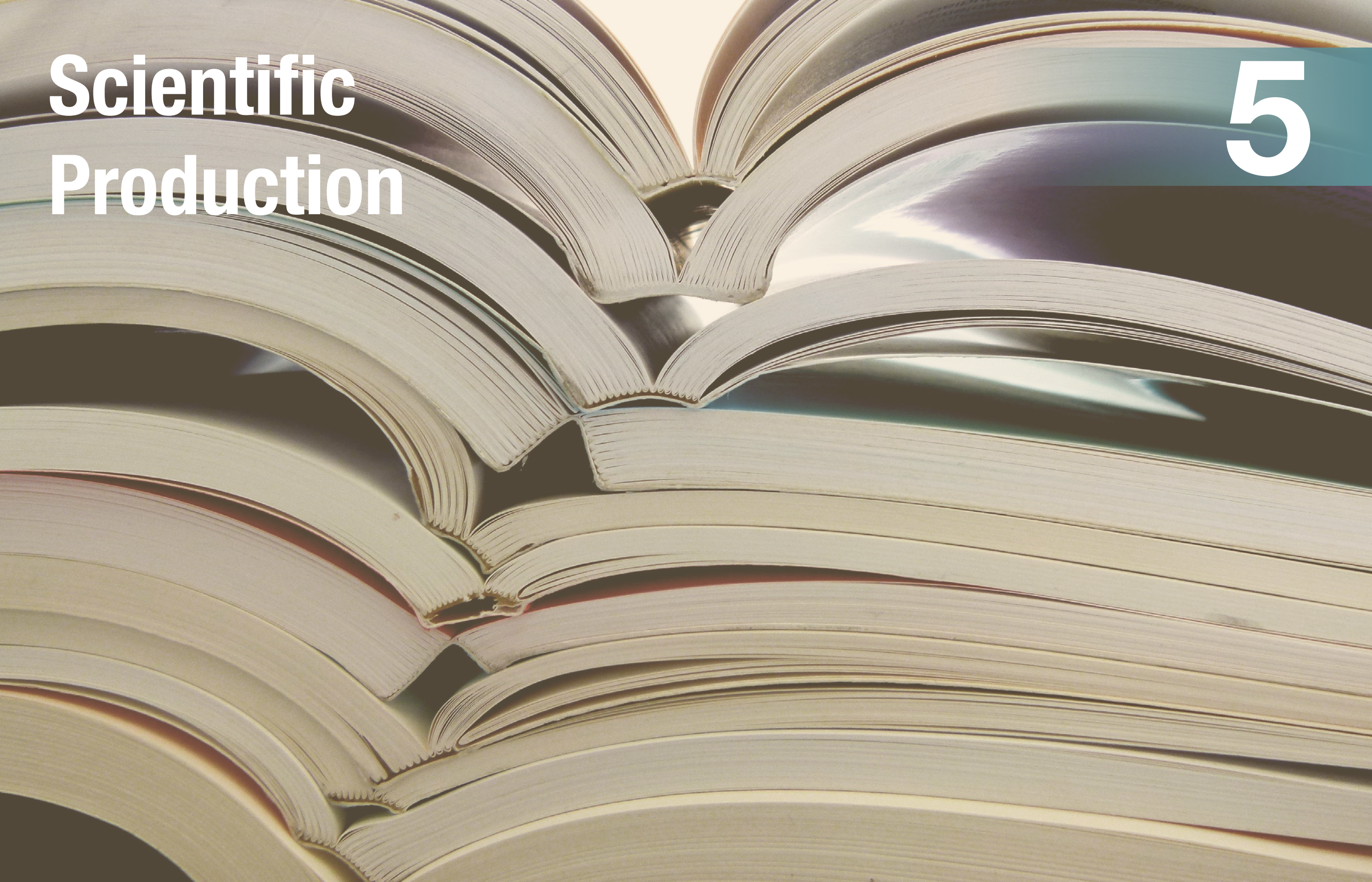
III. Grants from the *Ministerio de Educación, Cultura y Deporte* awarded in 2013

<i>Ministerio de Educación</i>	<i>Ayudas del Programa de Formación del Profesorado Universitario (FPU)</i>	<i>“Estancias Breves”</i> 2 months at the <i>Università degli Studi di Firenze</i> , Italy.	Blanca Moncunill
<i>Ministerio de Educación</i>	<i>Ayudas del Programa de Formación del Profesorado Universitario (FPU)</i>	<i>“Estancias Breves”</i> 3 months at Harvard University, USA	Marta Pina

IV. Grants from the European Union

Synthesis Grant

<i>Integrated Activities grant</i>	<i>“Hind limb biomechanics in primates through the internal structure of the bones: unraveling the positional behavior of Miocene apes from Western Europe”</i> awarded to Marta Pina .	15 days Belgium
<i>Integrated Activities grant</i>	<i>“The birds of Father Verhoeven and their implications for Holocene palaeoecology on Flores”</i> awarded to Hanneke Meijer .	10 days Netherlands
<i>Integrated Activities grant</i>	<i>“Study of the Early Miocene carnivoran fossil remains from the Czech Republic, with special focus on the primitive Ursidae and the origin of the giant panda”</i> awarded to Juan Abella .	10 days Czech Republic
<i>Integrated Activities grant</i>	<i>“New insights on Heylerosauridae (Amphibia: Temnospondyli)”</i> awarded to Josep Fortuny .	10 days France



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Publications 2012

SCIENCE CITATION INDEX (SCI)

Abella, J., Valenciano, A., Pérez-Ramos, A., Montoya, P. & Morales, J. (2013). On the socio-sexual behaviour of the extinct ursid *Indarctos arctoides*: an approach based on its baculum size and morphology. *PLOS ONE* 8(9): e73711. doi:10.1371/journal.pone.0073711.

Agustí, J., Blain, H.-A., Furió, M., De Marfà, R., Martínez-Navarro, B. & Oms, O. (2013). Early Pleistocene environments and vertebrate dispersals in Western Europe: The case of Barranco de los Conejos (Guadix-Baza Basin, SE Spain). *Quaternary International* 295: 59-68.

Alba, D.M. & Berning, B. (2013). On the holotype and original description of the pliopithecoid *Plesiopliopithecus lockeri* (Zapfe, 1960). *Journal of Human Evolution* 65: 338-340.

Alba, D.M., Fortuny, J., Pérez de los Ríos, M., Zanolli, C., Almécija, S., Casanovas-Vilar, I., Robles, J.M. & Moyà-Solà, S. (2013). New dental remains of *Anoiapithecus* and the first appearance datum of hominoids in the Iberian Peninsula. *Journal of Human Evolution* 65(5): 573–584.

Almécija, S., Tallman, M., Alba, D.M. Pina, M., Moyà-Solà, S. & Jungers, W. (2013). The femur of *Orrorin tugenensis* exhibits morphometric affinities with both Miocene apes and later hominins. *Nature Communications* 4: doi:10.1038/ncomms3888.

Bauer, A.M., Ceregato, A. & Delfino, M. (2013). The oldest herpetological collection in the world: the surviving amphibian and reptile specimens of the Museum of Ulisse Aldrovandi. *Amphibia-Reptilia* 34: 305-321.

Bolet, A. & Evans, S.E. (2013). Lizards and amphisbaenians (Reptilia, Squamata) from the late Eocene of Sossis (Catalonia, Spain), *Palaeontologia Electronica* 16(1): 8A 23p. Cau, A., Dalla Vecchia F. M. & Fabbri M. (2013).

A thick-skulled theropod (Dinosauria, Saurischia) from the Upper Cretaceous of Morocco with implications for carcharodontosaurid cranial evolution. *Cretaceous Research* 40: 251-260.

Casanovas-Vilar, I. & Van Dam, J. (2013). Conservatism and adaptability during squirrel radiation: what is mandible shape telling us? *PLOS ONE* 8(4): e61298. doi:10.1371/journal.pone.0061298.

Castanera, D., Vila, B., Razzolini, N.L., Falkingham, P.L., Canudo, J.I., Manning, P.L. & Galobart, À. (2013). Manus Track Preservation Bias as a Key Factor for Assessing Trackmaker Identity and Quadrupedalism in Basal Ornithopods. *PLOS ONE* 8(1): e54177. doi:10.1371/journal.pone.0054177.

Chiarenza, A.A., Dalla Vecchia, F.M., Rosso, A. & Sanfilippo, R. (2013). The Early Jurassic ichthyosaur *Stenopterygius* in the collections of the Museo di Scienze della Terra, Università di Catania (Italy). *Bollettino della Società Paleontologica Italiana* 52(1): 19-25.

Dalla Vecchia, F.M., Riera, V., Oms, O., Dinarès-Turell, J., Gaete, R. & Galobart, À. (2013). The last pterosaurs: first record from the Uppermost Maastrichtian of the Tremp Syncline (northern Spain). *Acta Gelologica Sinica* 87(5): 1198-1227.

Dalla Vecchia, F.M. & Selden, P.A. (2013). A Triassic spider from Italy. *Acta Palaeontologica Polonica* 58(2): 325-330

Daura, J., Sanz, M., García, N., Allué, E., Vaqueró, M., Fierro, E., Carrión, J.S., López-García, J.M., Blain, H.A., Sánchez-Marco, A., Valls, C., Albert, R.M. Fornós, J.J., Julià, R., Fullola, J.M. & Zilhão, J. (2013). Terrasses de la Riera dels Canyars (Gavà, Barcelona): the landscape of Heinrich Stadial 4 north of the “Ebro frontier” and implications for modern human dispersal into Iberia. *Quaternary Science Reviews* 60: 26-48.

Delfino, M. & Atzori, M. (2013). An update on the Early Pleistocene herpetofauna from Pirro Nord. *Palaeontographica Abteilung A Palaeozoology - Stratigraphy* 298: 19-29.

Delfino, M., Rage, J.-C., Bolet, A. & Alba, D.M. (2013). Early Miocene dispersal of the lizard *Varanus* into Europe: Reassessment of vertebral material from Spain. *Acta Palaeontologica Polonica* 58: 731-735.

Delfino, M. & Rossi, M.A. (2013). Fossil crocodylid remains from Scontrone (Tortonian, Southern Italy) and the Late Neogene Mediterranean biogeography of crocodylians. *Geobios* 46(1-2): 25-31.

Delfino, M., Scheyer, T.M., Chesi, F., Fletcher, T., Gemel, R., MacDonald, S., Rabi, M. & Salisbury, S.W. (2013). Gross morphology and microstructure of type locality ossicles of *Psephophorus*

polygonus Meyer, 1847 (Testudines, Dermochelyidae). *Geological Magazine* 150(5): 767-782.

DeMiguel, D., Alba, D.M. & Moyà-Solà, S. (2013). European Pliopithecoid Diets Revised in the light of Dental Microwear in *Pliopithecus canmatensis* and *Barberapithecus huerzeleri*. *American Journal of Physical Anthropology* 151: 573-582.

Fabbri, M., Dalla Vecchia, F.M. & Cau, A. (2013). New information on *Bobosaurus forojuliensis* (Reptilia: Sauropterygia): implications for plesiosaurian evolution. *Historical Biology*. doi:10.1080/08912963.2013.826657

Furió, M. & Pons-Monjo, G. (2013). The use of the species concept in paleontology. Comment on “*Nesiotites rafelinensis* sp. nov., the earliest shrew (Mammalia, Soricidae) from the Balearic Islands, Spain” by Rofes et al., 2012. *Palaeontologia electronica* 16(2): 1-7.

García-Alix, A., Minwer-Barakat, R., Martín Suárez, E., Freudenthal, M. & Delgado-Huertas, A. (2013). Cinnabar mineralization in fossil small mammal remains as a consequence of diagenetic processes. *Lethaia* 46: 1-6.

García-Sellés, A., Bravo, A.M., Delclòs, X., Colombo, F., Martí, X., Ortega-Blanco, J., Parellada, C. & Galobart, À. (2013). Dinosaur eggs in the Upper Cretaceous of the Coll de Nargo area, Lleida Province, south-central Pyrenees, Spain: zoodiversity, biostratigraphy and their implications. *Cretaceous Research* 40: 10-20.

Hammond, A.S., Alba, D.M., Almécija, S. & Moyà-Solà, S. (2013). Middle Miocene *Pierolapithecus* provides a first glimpse into early hominid pelvic morphology. *Journal of Human Evolution* 64: 658-666.

Ibáñez-Gimeno, P., De Esteban-Trivigno, S., Jordana, X., Manyosa, J., Malgosa, A. & Galtés, I. (2013). Functional plasticity of the human humerus: shape, rigidity, and muscular entheses. *American Journal of Physical Anthropology* 150(4): 609-617.

Ibáñez-Gimeno, P., Galtés, I., Jordana, X., Fiorin, E., Manyosa, J. & Malgosa, A. (2013). Enteseal Changes and Functional Implications of the Humeral Medial Epicondyle. *International Journal of Osteoarchaeology* 23(2): 211-220.

Jordana, X., Marín-Moratalla, N., Moncunill-Solé, B., Bover, P., Alcover, J.A. & Köhler, M. (2013).

First Fossil Evidence for the Advance of Replacement Teeth Coupled with Life History Evolution along an Anagenetic Mammalian Lineage. *PLoS ONE* 8(7), e70743.

Madurell-Malapeira, J., Rook, L., Martínez-Navarro, B., Alba, D.M., Aurell-Garrido, J. & Moyà-Solà, S. (2013). The latest European painted dog. *Journal of Vertebrate Paleontology* 33(5):1244-1249.

Marcé-Nogué, J., DeMiguel, D., Fortuny, J., de Esteban-Trivigno, S. & Gil, L. (2013). Quasi-homothetic transformation for comparing the mechanical performance of planar models in biological research. *Paleontologia Electronica* 16(3): 6-15.

Marigó, J., Minwer-Barakat, R. & Moyà-Solà, S. (2013). *Nievesia sossisensis*, a new anchomomyin (Adapiformes, primates) from the early late Eocene of the southern Pyrenees (Catalonia, Spain). *Journal of Human Evolution* 64: 473-485.

Marín-Moratalla, N., Jordana, X. & Köhler, M. (2013). Bone histology as an approach to providing data on certain key life history traits in mammals: Implications for conservation biology. *Mammalian Biology - Zeitschrift für Säugetierkunde* 78(6):422-429.

Meijer, H. J. M., Sutikna, T., Saptomo, E. W., Due Awe, R., Jatmiko, Sri Wasisto, S., James, H.F., Morwood, M.J. & Tocheri, M.W. (2013). Late Pleistocene-Holocene non-passerine avifauna of Liang Bua (Flores, Indonesia). *Journal of Vertebrate Paleontology* 33(4): 877-894.

Minwer-Barakat, R., Badiola, A., Marigó, J. & Moyà-Solà, S. (2013). First record of the genus *Microchoerus* (Omomyidae, Primates) in the western Iberian Peninsula and its palaeobiogeographic implications. *Journal of Human Evolution* 65: 313-321.

Minwer-Barakat, R., Marigó, J. & Moyà-Solà, S. (2013). Redescription and designation of a neotype for *Pseudoloris* reguanti Crusafont-Pairó, 1967, an Eocene primate from the Iberian Peninsula. *American Journal of Physical Anthropology* 151: 245–251.

Pérez de los Ríos, M., Alba, D.M. & Moyà-Solà, S. (2013). Taxonomic Attribution of the La Grive Hominoid Teeth. *American Journal of Physical Anthropology* 151: 558-565.

Prieto-Márquez, A., Dalla Vecchia, F.M., Gaete, R. & Galobart, À. (2013). Diversity, Relationships, and Biogeography of the Lambeosaurine Dinosaurs from the European Archipelago, with Description of the New Aralosaurin *Canardia garonnensis*. *PLOS ONE* 8(7): 1-44.

Riyahi, S., Hammer, Ø., Arbabi, T., Sánchez-Marco, A., Roselaar, C., Aliabadian, M. & Sætre, G.-P. (2013). Beak and skull shapes of human commensal and non-commensal house sparrows *Passer domesticus*. *BMC Evolutionary Biology* 2013 13: 200.

Robles, J. M., Alba, D.M., Fortuny, J., De Esteban-Trivigno, S., Rotgers, C., Balaguer, J., Carmona, R., Galindo, J., Almécija, S., Bertó, J.V. & Moyà-Solà, S. (2013). New craniodental remains of the barbouroufelid *Albanosmilus jourdani* (Filhol, 1883) from the Miocene of the Vallès-Penedès (NE Iberian Peninsula) and the phylogeny of the Barbouroufelini. *Journal of Systematic Palaeontology* 11, 993-1022.

Robles, J.M., Madurell-Malapeira, J., Abella, J., Rotgers, C., Carmona, R., Almécija, S., Balaguer, J. & Alba, D.M. (2013). New *Pseudaelurus* and *Styriofelis* remains (Carnivora: Felidae) from the middle Miocene of Abocador de Can Mata (Vallès-Penedès Basin). *Comptes Rendus Palevol* 12: 101-113.

Rook, L. & Angelone, C. (2013). Just a few: rodents and lagomorphs in the Plio-Pleistocene fossil record of the Upper Valdarno Basin. *Italian Journal of Geosciences* 132: 98-103.

Rook, L., Croitor, R., Delfino, M., Ferretti, M.P., Gallai, G. & Pavia, M. (2013). The Upper Valdarno Plio-Pleistocene vertebrate records: an historical overview, with notes on palaeobiology and stratigraphic significance of some significant taxa. *Italian Journal of Geosciences* 132: 104-125.

Rook, L., Ghinassi, M., Carnevale, G., Delfino, M., Pavia, M., Bondioli L., Candilio, F., Coppa, A., Martínez-Navarro, B., Medin, T., Papini, M., Zanolli, C. & Libsekal Y. (2013). Stratigraphic context and paleoenvironmental significance of minor taxa (Pisces, Reptilia, Aves, Rodentia) from the late Early Pleistocene palaeoanthropological site of Buia (Eritrea). *Journal of Human Evolution* 64(1): 83-92.

Ruiz-Sanchez, F.J., Murelaga, X., Freudenthal, M., Larrasoña, J.C., Furió, M., Garcés, M., González-Pardos, M. & Suárez-Hernando, O.

(2013). Micromammalian faunas from the Middle Miocene (Middle Aragonian) of the Tudela Formation (Ebro Basin, Spain). *Bulletin of Geosciences* 88(1): 131–152.

Saller, F., Renesto, S. & Dalla Vecchia, F.M. (2013). First record of *Langobardisaurus* (Diapsida, Protosauria) from the Norian (Late Triassic) of Austria, and a revision of the genus. *Neue Jahrbuch Geologische Paläontologische Abhandlungen* 268(1): 83-95.

Scheyer, T.M., Aguilera, O.A., Delfino, M., Fortier, D.C., Fortier, A.A., Sánchez, R., Carrillo-Briceño, J.D., Quiroz, L. & Sánchez-Villagra, M.R. (2013). Crocodylian diversity peak and extinction in the late Cenozoic of the northern Neotropics. *Nature Communications* 4: 1907, doi:10.1038/ncomms2940.

Tallman, M., Almécija, S., Reber, S.L., Alba, D.M. & Moyà-Solà, S. (2013). The distal tibia of *Hispanopithecus laietanus*: more evidence for mosaic evolution in Miocene apes. *Journal of Human Evolution* 64: 319-327.

Vila, B., Oms, O., Fondevilla, V., Gaete, R., Galobart, À., Riera, V. & Canudo, J.I. (2013). The Latest Succession of Dinosaur Tracksites in Europe: Hadrosaur Ichnology, Track Production and Palaeoenvironments. *PLOS ONE* 8(9): e72579.

Vila, B., Oms, O., Galobart, À., Bates, K.T., Egerton, V.M. & Manning, P.L. (2013). Dynamic similarity in titanosaur sauropods: ichnological evidence from the Fumanya dinosaur tracksite (southern Pyrenees). *PLOS ONE* 8(2): e57408.

NON-SCI INTERNATIONAL ARTICLES

Delfino M., Di Canzio E. & Rossi M.A. (2013). Scontrone (AQ). New informative Miocene remains of *Crocodylus*. *Quaderni di Archeologia d'Abruzzo. Notiziario della Soprintendenza per i Beni Archeologici dell'Abruzzo*, 2(2010): 542-543.

NON-SCI NATIONAL ARTICLES

NOALSAlba, D.M., Corbella, J., Prats, L., Guillén, G. & Tarruella, A. (2013). Conchological characterization of *Moitessieria foui* Boeters, 2003 (Gastropoda: Moitessieriidae). *Spira* 5(1–2): 91–98.

Mas-Gornals, G., Escalante-Díaz, F. & Quintana-Cardona, J. (2013). Primera cita de un Delphinidae en el Neógeno de las Islas Baleares. *Batalleria* 18: 45-51.

Morales, J., Peláez-Campomanes, P., Abella, J., Montoya, P., Ruiz, F.J., Gibert, L., Scott, G., Cantalapedra, J. L. & Sanisidro, O. (2013). The Ventian mammal age (Latest Miocene): Present state. *Spanish Journal of Palaeontology* 28(2): 151-162.

Tarruella, A., Corbella, J., Guillén, G., Prats, L. & Alba, D.M. (2013). *Moitessieria ripacurtiae* sp. nov. (Gastropoda: Moitessieriidae), una nova espècie de gastròpode estigobi del Pont de Suert (l'Alta Ribagorça, Catalunya, Espanya). *Spira* 5(1-2): 15-26.

SCI PROCEEDINGS

Abella, J., Valenciano, A., Pérez-Ramos, A., Montoya, P. & Morales, J. (2013). The radial sesamoid of indarcos arctoides, the first evidence of a feeding related false thumb. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 271-272.

Alba, D.M., Delson, E., Colombero, S., Delfino, M. & Pavia, M. (2013). Oldest joint record of Macaca and Mesopithecus (Primates, Cercopithecidae) based on material from the latest Miocene of Moncucco Torinese (Italy). Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 75.

Alba, D.M., Montoya, P., Pina, M., Rook, L., Abella, J., Morales, J. & Delson, E. (2013). First Miocene record of Mesopithecus from the Iberian Peninsula based on Turolian remains from Venta del Moro (Valencia, Spain) [Abstract]. American Journal of Physical Anthropology 150 S56: 65.

Almécija, S., Orr, C.M., Tocheri, M.W., Patel, B.A. & Jungers, W.L. (2013).Morpho-functional signals in the wrist of extant hominoids derived from 3D geometric morphometrics: the hamate as a test case. [Abstract]. American Journal of Physical Anthropology 150 S56: 67.

Bolet, A., Delfino, M., Fortuny, J., Almécija, S. & Alba, D.M. (2013). A partial skull of Ophisaurus (Squamata, Anguidae) from the Miocene of Catalonia (NE Iberian Peninsula). Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 90.

Bolet, A., Delfino, M., Fortuny, J., Almécija, S., Robles, J.M., Carmona, R., Rotgers, C. & Alba, D.M. (2013). First amphisbaenian skull from the european fossil record: a milestone in the evolution of Blanidae. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 286-287.

Casanovas-Vilar, I. García-Paredes & Van Dam, J. (2013). Changes in diversity and structure of the Vallesian (Late Miocene) rodent record from the Vallès-Penedès Basin (Catalonia, Spain). Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 102.

Delfino, M., Bolet, A., Fortuny, J., Robles, J.M. & Alba, D.M. (2013). A new extinct species of Blanus (Amphisbaenia, Blanidae) from the iberian Miocene based on the first known european amphisbaenian fossil skull. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 113.

Fortuny, J. & Marcé-Nogué, J. (2013). Modeling stress in the skull of salamanders (Amphibia: Caudata). The Anatomical Record, In: 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 287.

Ibáñez-Gimeno, P., Galtés, I., Malgosa, A., Manyosa, J. & Jordana, X. (2013). Forearm rotational efficiency in hominoids. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 203.

Jordana, X., Marín-Moratalla, N., Moncunill-Solé, B. & Köhler, M. (2013). Can the enamel incremental lines provide clues about mammalian life histories? [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 254.

Köhler, M. & Pretus, J.L. (2013). Abyssal monsters, troglobites and insular chimeras: island-like settings as natural labs. [Abstract]. The Anatomical Record, In: 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 122.

Köhler, M., Pretus, J.L., Jordana, X., Marín-Moratalla, N. & Moncunill-Solé, B. (2013). Reconstructing mammalian life histories from hard tissues. [Abstract]. The Anatomical Record, In: 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 155.

Luján, Á.H., Delfino, M., Casanovas-Vilar, I. & Alba, D.M. (2013). Ptychogasterinae (Testudines: Geoemydidae) In the Vallès Penedès basin (NE Iberian Peninsula): new remains and taxonomic revision. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 165.

Madern, A., Casanovas-Vilar, I., Alba, D.M., DeMiguel, D. & van den Hoek Ostende, L.

(2013). The abrupt collapse of a diversity hotspot) Reconsidering Vallesian (Late Miocene) diversity in its type area. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 168.

Madurell-Malapeira, J., Alba, D.M., Aurell-Garrido, J. & Moyà-Solà, S. (2013). New iberian remains of the eurasian jaguar Panthera Gombaszoegensis (Carnivora, Felidae) and a taxonomic revision of eurasian fossil jaguar-like cats. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 168.

Marcé-Nogué, J. & Fortuny, J. (2013). 3D finite element and parametrical analysis of a Stereospondyl amphibian (temnospondyli). The Anatomical Record, In: 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 252.

Marín-Moratalla, N., Cubo, J., Jordana, X., Moncunill-Solé, B. & Köhler, M. (2013). Correlates of bone histology quantitative data with life history traits and ecological parameters in bovids. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 253.

Minwer-Barakat, R., Marigó, J., Badiola & Moyà-Solà, S. (2013). The westernmost record of the genus Microchoerus (Omomyidae, Primates) in the Iberian Peninsula and its palaeobiogeographic implications. [Abstract]. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 177.

Marigo, J., Minwer-Barakat, R. & Moyà-Solà, S. (2013). New anchomomyin primate from the Late Eocene locality of Sossís (Catalonia, Spain). [Abstract]. American Journal of Physical Anthropology 150 S56: 189.

Moyà-Solà, S., Alba, D.M. & Almécija, S. (2013). A proximal radius of Barberapithecus huerzele-ri (Primates, Pliopithecudae) from the Miocene site of Castell de Barberà (NE Iberian Peninsula). Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 182.

Pina, M., DeMiguel, D., Puigvert, F., Marcé-Nogué, J. & Moyà-Solà, S. (2013). Guenons vs Great Apes: three-dimensional kinematics analysis of the patella during motion. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013.296: 261-262.

Prieto-Márquez, A., Dalla Vecchia, F.M., Galobart, À. & Gaete, R. (2013). Skeletal morphology and evolutionary history of european lambeosaurine ‘duckbilled’ dinosaurs. The Anatomical Record, In: 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 240-241.

Razzolini, N., Castanera, D., Vila, B., Canudo, J.I., Barco, J. L. & Galobart, À. (2013). Morphology and substrate: 3-Dquantification and rheology of tridactyl dinosaur footprints from Spain. [Abstract]. The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 242.

Robles, J.M., Madurell-Malapeira, J., Casanovas-Vilar, I., Abella, J. & Alba, D.M. (2013). The Scimitar toothed cat Machairodus Aphanistus (Carnivora, Felidae) in the Vallès-Penedès basin (NE Iberian Peninsula): new remains and taxonomic revision. Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 200.

Valenciano, A., Abella, J., Sanisidro, O., Álvarez-Sierra, M.A. & Morales, J. (2013). Functional morphology of skull and mandibles of the Late Miocene giant mustelid Eomellivora piveteaui from Cerro de los Batallones (Madrid, Spain). The Anatomical Record, 10th International Congress of Vertebrate Morphology, Barcelona, 2013. 296: 283-284.

Vinuesa, V., Madurell-Malapeira, J., Fortuny, J. & Alba, D.M. (2013). The internal cranial morphology of the extinct bonecracking hyena Pliocrocuta perrieri (Carnivora, Hyaenidae). Journal of Vertebrate Paleontology, 73rd Annual Meeting of the Society of Vertebrate Paleontology. Los Angeles, California, USA, 2013: 232.

NON-SCI PROCEEDINGS

Almécija, S., Tallman, M., Alba, D.M., Pina, M., Moyà-Solà, S. & Jungers, W.L.(2013). “Latest Miocene hominin from Kenya Orrorin tugenensis exhibits intermediate femoral morphology between earlier Miocene apes and later bipedal hominins PaleoAnthropology. In: Paleoanthropology Society Meetings Abstracts-Honolulu, Haway, USA, 2013: A1.

Hammond, A. S., Alba, D.M., Almécija, S. & Moyà-Solà, S.(2013). Middle Miocene Pierolapithecus provides insight into early hominid pelvic morphology. PaleoAnthropology. In: Paleoanthropology Society Meetings Abstracts. Honolulu, Haway, USA, 2013: A16.

CONGRESSES ABSTRACTS

Agustí, J., Blain, H.-A., Delfino, M., Mousk-helishvili, A., Furió, M. & Lordkipanidze, D. (2013). Paleoenvironmental and climatic context of Dmanisi based on small vertebrates. In: Workshop “The role of the Southern Caucasus on early human evolution and expansion - Refuge, Hub or Source Area?” (Tbilisi, Georgia, 2013): 19.

Bartolini, S., Delfino, M., Cioppi, E. & Rook, L. (2013). Registro paleontologico e distribuzione attuale di Rana temporaria: il significato dei resti della Grotta di Equi (Lunigiana, Fivizzano, MS). In: “XIII Giornate di Paleontologia” della Società Paleontologica Italiana. Volume dei Riassunti. (Perugia, Italy, 2013). Baldanza, A. & Monaco, P. (eds.): 13.

Blanco, A. & Galobart, À. (2013). Diversidad y variabilidad específica de Hadrosaurios: una perspectiva estadística. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EIJP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 31-33.t, À. (2013). Diversidad y variabilidad específica de Hadrosaurios: una perspectiva estadística. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EIJP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 31-33.

Blanco, A., Méndez, J.M. & Marmi, J. (2013). New data on the latest Maastrichtian continental vertebrates from northeastern Iberia. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EIJP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 34-36.

Blanco, A., Puértolas-Pascual, E., Vila, B. & Marmi, J. (2013). An eusuchian skeleton from the lower Maastrichtian palustrine deposits of Fumanya (south-eastern Pyrenees, Iberian Peninsula). In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 43.

Carnevale, G., Colombero, S., Delfino, M., Masini, F., Mazza, P., Patacca, E., Pavia, G., Pavia, M., Repetto, G., Savorelli, A. & Scandone, P. (2013). The Italian Miocene continental vertebrates, a bridge between Western and Eastern Europe. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 137.

Casanovas-Vilar, I., Alba, D.M., Marmi, J.M. & Moyà-Solà, S. (2013). The End of the Miocene Hominoid Experiment in Europe. Still a lot to be explained. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 145.

Casanovas-Vilar, I., García-Paredes, I. & Van Dam, J. (2013). The Vallesian Rodent Record from the Vallès-Penedès Basin (Catalonia, Spain): Biostratigraphy, Diversity and Structure. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 123.

Castanera, D., Razzolini, N.L., Vila, B., Pascual, C., Barco, J.L. & Canudo, J.I. Tracking ornithopod tracks in the Jurassic-Cretaceous interval from the Iberian Range (Spain). In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 51.

Colombero, S., Alba, D.M., Carnevale, G., Delfino, M., Mazza, P., Pavia, G., Pavia, M. & Repetto, G. (2013). Paleobiogeographical Implications of Fossil Mammals from Piedmont (NW Italy) during the Latest Messinian.In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 136.

Costa Rodrigues, F., Alifanov, V., Dalla Vecchia, F.M. & Kellner,A.W.A. (2013). On the presence of an elongated tail in an undescribed specimen of *Batrachognathus volans* (Pterosauria: Anurognathidae: Batrachognathinae). In: Short Communications, Rio Ptero 2013 - International Symposium on pterosaurs (Rio de Janeiro, Brazil, 2013). (Book of Abstracts). Sayão-Manso, J., Costa-Rodrigues, F., Bantim, R.A.M. & Kellner, A.W.A. (eds): 54-56.

Crespo, V.D., Ruiz-Sanchez, F.J., Mansinot, S., Freudenthal, M., Montoya, P., Furió, M., Suarez-Hernando, O., Murelaga, X., Larrasoaña, J.C. & Garcés, M. (2013). New Small Mammal Faunas of Early Miocene Age (mn4-mn4/S) from the Magro and Ribesalbes-Alcora Basins (E. Spain). In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 252.

Cruzado-Caballero, P., Fortuny, J., Llàcer, S. & Canudo, J.I. (2013). 3D digital endocast of the

European lambeosaurine *Arenysaurus ardevoli*. In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 52-53.

Dalla Vecchia, F. M. (2013). The Eudimorphodonmess and the *Preondactylus-Austria-dactylus* relationship. In: Round Table “Pterosaur Systematics and Phylogeny”, Rio Ptero 2013 - International Symposium on pterosaurs (Rio de Janeiro, Brazil, 2013) (Oral Communication).

Dalla Vecchia, F.M., Bosch, R., Fortuny, J. & Galobart, À. (2013). The pterodactylod pterosaur from the Lower Cretaceous of Brazil exhibited at the CosmoCaixa Science Museum (Barcelona, Spain). In: Short Communications, Rio Ptero 2013 - International Symposium on pterosaurs (Rio de Janeiro, Brazil, 2013). (Book of Abstracts). Sayão-Manso, J., Costa-Rodrigues, F., Bantim, R.A.M. & Kellner, A.W.A. (eds): 60-61.

Delfino, M. (2013). Anfibi, rettili, fossili e isole / Amphibians, reptiles, fossils and islands. In: Evolution Day 2013. Isole: laboratorio dell’Evoluzione. Museo di Storia Naturale di Milano (Milan, Italy, 2013): 1.

Delfino, M. (2013). Palaeoherpetology and conservation. In: HerpeThon 2013. Herpetological Marathon. Problemi di conservazione della fauna erpetologica nel terzo millennio. Museo Regionale di Scienze Naturali e Societàs Herpetologica Italica (Torino, Italy, 2013). Andreone, F., Capula, M., Dall’Asta, A., Lo Valvo, M., Pala, R. & Scillitani, G. (eds.): 14.

Delfino, M., Abella, J., Alba, D.M. & Rook, L. (2013). The Italian fossil record of monitor lizards (Squamata, Varanidae). In: “XIII Giornate di Paleontologia” della Società Paleontologica Italiana. Volume dei Riassunti. (Perugia, Italy, 2013). Baldanza, A. & Monaco, P. (eds.): 31.

Delfino, M., Abella, J., Sánchez, I.M. & Alba, D.M. (2013). A nearly complete *Varanus* skeleton from the late Miocene of Cerro de los Batallones (Madrid Basin). In: EAVP meeting (2013, Villers sur Mer, France).

Delfino, M. & Sánchez, M. (2013). Developmental palaeontology from an Italian perspective. In: EVOLUZIONE 2013, V Congress Italian Society Evolutionary Biology, Program, book of abstracts and author index (Trento, Italy, 2013). Ometto, L. & Rota-Stabelli, O. (eds): 51.

Fondevilla, V., Razzolini, NL., Gaete, R., Pellicer Mir, X., Galobart, À. 2013. XL Hadrosaurids

of Tremp basin: the Costa de Les Solanes site (Late Maastrichtian, Tremp basin, Lleida). In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 67.

Fortuny, J. Llàcer, S., Marcé-Nogué, J., Muijal, E. & Razzolini, N.L. (2013). Virtual Paleontology: Challenges of non-invasive and computational techniques. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 50-51.

Furió, M., van Dam, J. & Kaya, F. (2013). The Insectivores (Lipotyphla, Mammalia) from Hayranh and Diizayla (Sivas Basin, Central Anatolia): A Contribution to the Miocene Biostratigraphy from Turkey. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 132.

Galobart, À., Garcia-Sellés, A. & Vila, B. (2013). The use of expansive demolition agents for the extraction of large and delicate dinosaur fossils from the Upper Cretaceous of South-Central Pyrenees (Catalonia, Europe). In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 9-10.

García-Paredes, I. & Casanovas-Vilar, I. (2013). Vallesian Gliridae from the Vallès-Penedès Basin (Catalonia, Spain) and how were they affected by the ‘Vallesian Crisis’. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 127.

Garcia-Sellés, A. & Vila, B. (2013). Laying under stressful conditions: temporal occurrence of pathologic sauropod eggshells in the Late Cretaceous of northeastern Iberian Peninsula. In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 123.

Jordana, X., Marín-Moratalla, N., Moncunill-Solé, B. & Köhler, M. (2013). Can the enamel incremental lines provide clues about mammalian life histories? (Poster). In: *The Second International Symposium on Paleohistology ISPH 2013*. (Bozeman, Montana, USA, 2013) (Book of abstracts). Volume 2, 48 pp. Lamm, E.T., Bailleul, A. & Flynn, K. (Eds.).

Köhler, M., Palombo, M.R., Pretus, J. Ll., Jordana, X., Moncunill-Solé, B., Madurell-Malapeira,

J., Marín-Moratalla, N. & Bromage, Th.G. (2013). Bone histology of the dwarf elephant *Palaeoxodon falconeri* from Sicily. (Oral Communication). In: *The Second International Symposium on Paleohistology ISPH 2013*. (Bozeman, Montana, USA, 2013) (Book of abstracts). Volume 2, 48 pp. Lamm, E.T., Bailleul, A. & Flynn, K. (Eds.):

Köhler, M., Pretus, J.Ll., Jordana, X., Marín-Moratalla, N. & Moncunill-Solé, B. (2013), Reconstructing mammalian life histories from hard tissues. In: *The Second International Symposium on Paleohistology ISPH 2013*. (Bozeman, Montana, USA, 2013) (Book of abstracts). Volume 2, 48 pp. Lamm, E.T., Bailleul, A. & Flynn, K. (Eds.):

Kvacek, J., Gomez, B., Marmi, J. & Popa, M. (2013). Cretaceous monocotyledons megafossils from Europe. In: 5th International Conference on Comparative Bioolgy of Monocotyledons (New York, USA, 2013) (Book of abstracts): 67.

Luján, Á.H., Delfino, M., Casanovas-Vilar, I. & Alba, D.M. (2013). New remains and taxonomic revision of the genus *Ptychogaster* in the Valles-Penedès Basin (NE Iberian Peninsula). In: XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 64-66.

Madern, P. A., Casanovas-Vilar, I., Alba, D.M., DeMiguel, D., Robles, J.M., van den Hoek Ostende, L.W. & Moyà-Solà, S. (2013). The abrupt collapse of a diversity hotspot? Reconsidering vallesian (Late Miocene). Diversity in its type area. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds.): 125.

Mancheño, M.A., Romero, G., Pérez-García, A., Murelaga, X., Alba, D., Montoya, P., Ruiz, F.J., Martínez, A., Mansino, S., Morales, J., Alberdi, M.T., van der Made, J., Mazo, A.V., Fierro, I., Aberasturi, A., Marín, J.M., Jiménez, E., Blain, H.A., Agustí, J., Laplana, C., Sevilla, P., Oms, O., Barrón, E., Rodríguez-Estrella, T., Pérez-Valera, F., Pérez-Valera, J.A., Soria, J., Gibert, L., Suárez-Bilbao, A. (2013). Nuevos datos sobre la fauna del tránsito Mioceno-Plioceno del Puerto de la Cadena (Murcia, SE de España) [Abstract], In: V RCANS Congress (Huelva, Spain, 2013). Two decades of Atlantic Neogene study (Book of abstracts): 58-59.

Marcé-Nogué, J., Fortuny, J., Gil, L. & Sánchez, M. (2013). Improving Mesh Generation in

Finite Element Analysis for functional morphology approaches. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 67-68.

Marigó, J., Minwer-Barakat, R. & Moyà-Solà, S. (2013). New anchomomyin primate from the Late Eocene locality of Sossís (Catalonia, Spain). (Poster). In: AAPA conference (2013, Knoxville, Tennessee).

Marmi, J., Villalba-Breva, S., Gomez, B., Martín-Closas, C. & Daviero-Gomez, V. (2013). Megafossil plant assemblages from the early Maastrichtian of northeastern Iberia challenge the paradigm of the rise to dominance of angiosperms at local scales. In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 86.

Minwer-Barakat, R., García-Alix, A., Martín Suárez, E., Freudenthal, M. & Viseras, C. (2013). Biostratigraphy of the Upper Miocene to lowest Pleistocene deposits of the Guadix Basin (Spain) based on small mammals. In: RCMNS 14th Congress. Neogene to Quaternary Geological Evolution of Mediterranean, Paratethys and Black Sea. (Istanbul, Turkey, 2013) (Book of Abstracts). Çagatay, N. & Zabcı, C. (eds): 243.

Minwer-Barakat, R., Marigó, J. & Moyà-Solà, S. (2013). New material of *Pseudoloris* (Omomyidae, Primates) from Sant Cugat de Gavadons (Late Eocene, Iberian Peninsula). In: 11th Annual Meeting of the European Association of Vertebrate Palaeontologists, (Villers-sur-Mer, France, 2013) (Book of abstracts): 53.

Moncunill-Solé, B., Marín-Moratalla, N., Jordana, X., Casanovas-Vilar, I., Rook, L. & Köhler, M. (2013). Preliminary results on life history traits of the insular fossil rodent *Mikrotia* (Muridae, Rodentia) from Gargano archipelago (Apulia, Italy). (Poster). In: *The Second International Symposium on Paleohistology ISPH 2013*. (Bozeman, Montana, USA, 2013) (Book of abstracts). Volume 2, 48 pp. Lamm, E.T., Bailleul, A. & Flynn, K. (Eds.).

Muijal, E., Fortuny, J., Rodríguez-Salgado, P., Diviu, M., Oms, O. & Galobart, À. (2013). Middle Muschelkalk footprints from the Catalanian Basin: 3D analyses and paleoichnological implications. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 76-77.

Puértolas-Pascual, E., Canudo, J.I., Vila, B., Blanco, A. & Marmi, J. (2013). *Allodaposuchus* remains from the Upper Cretaceous of Europe: new crocodylomorph discoveries. In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 61.

Razzolini, NL., dos Santos, VF., Vila, B., Falkingham, PL., Castanera, D., Manning, PL. & Galobart, À. (2013). New ichnological data from Galinha dinosaur tracksite (Bajocian-Bathonian, West-Central Portugal): depth analyses through laser scan. In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 62.

Razzolini, NL., Fondevilla, V., Gaete, R. & Galobart, À. (2013). Puzzling new large-sized hadrosaur remains (late Maastrichtian, NE Iberian Peninsula). In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 61-62.

Soares, M.B., Dalla Vecchia, F.M., Schultz, C. L., & Kellner, A.W.A. (2013). On the supposed pterosaurian nature of *Faxinalipterus minima* Bonaparte et al. (2010) from the Upper Triassic of Rio Grande do Sul, Brazil. In: Short Communications, Rio Ptero 2013 - International Symposium on pterosaurs (Rio de Janeiro, Brazil, 2013). (Book of Abstracts). Sayão-Manso, J., Costa-Rodrigues, F., Bantim, R.A.M. & Kellner, A.W.A. (eds): 95-97.

Vila, B. (2013). Resultats de la recerca paleontològica al Cretaci final del Pirineu català: el cas de la diversitat, icnologia i reproducció dels dinosaures sauròpodes. In: I Jornades d’Arqueologia de la Catalunya Central. Homenatge a Miquel Cura. pp. 36-40.

Vila, B. (2013).Th e dinosaurs of the Pyrenees: distribution and palaeoenvironments. In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 33. Vila, B. & Garcia-Sellés, A. (2013). Updating the Maastrichtian dinosaur record of the Southern Pyrenees (SW Europe). In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 44.

Vila, B., Garcia-Sellés, A., Petruzzelli, M., Jackson, F. & Varricchio, D. (2013). Assessment of Troodon clutch morphology provides new data about brooding behavior. In: 61st Symposium on Vertebrate Palaeontology and Comparative Anatomy. (Edinburgh, United Kingdom, 2013) (Book of abstracts). Walsh, S., Fraser, N., Brusatte, S., Liston, J. & Carrió, V. (eds): 65.

Vila, B., Marmi, J., Villalba-Breva, S. & Martín-Closas, C. (2013). Reconstructing the environment and foraging behaviour of the latest titanosaur herds (Fumanaya tracksite, NE Spain). In: VI Jornadas Internacionales sobre Paleontología de Dinosaurios y su Entorno. (Burgos, Spain, 2013) (Book of abstracts): 132.

Villa, A., Delfino, M. & van den Hoek Ostende, L.W. (2013). Early Pleistocene Palaeobatrachids from Tegelen (The Netherlands). In: “XIII Giornata di Paleontologia” della Società Paleontologica Italiana. Volume dei Riassunti. (Perugia, Italy, 2013). Baldanza, A. & Monaco, P. (eds.): 60.

Villalba-Breva, S., Marmi, J., Gomez, B., Martín-Closas, C. & Daviero-Gomez, V. (2013). Paleoeecología de las plantas vasculares en el Maastrichtiense inferior de las Cuencas Surpirenaicas. In: XXIX Jornadas de Paleontología y del Simposio del Proyecto PICG 596. (Córdoba, Spain, 2013) (Book of abstracts): 129-130.

Vinuesa-Vinuesa, V., Madurell-Malapeira, J., Fortuny, J. & Alba, D.M. (2013). A complete skull of *Pliocrocota perrieri* (Carnivora, Hyaenidae) from the late Pliocene of Villarroya (MN16, NE Iberian Peninsula): internal and external morphological comparisons with extant and extinct species. In: XI Encuentro de Jóvenes Investigadores en Paleontología (EJIP) (Atarfe, Granada, Spain, 2013) Trending Topics in Palaeontology (Book of abstracts). Navas-Parejo, P., Martínez-Pérez, C. & Pla-Pueyo, S. (eds.): 109-111.

BOOKS

Álvarez-Sierra, M., Astibia, H., Hernández-Fernández, M. & Moyà-Solà, S. (eds.) (2013). Tribute to Nieves López Martínez. Spanish Journal of Palaeontology, vol. 28.

Dalla Vecchia, F.M. (2013). Sulle tracce del passato. Piste e impronte fossili di vertebrati in Carnia e nelle aree contermini. Comunità Montana della Carnia: 176 pp.

Marmi, J. (2013). Un passeig per la història de la biosfera. Edició de l’ICP: 248 pp.

BOOK CHAPTERS

Carter, J.G. & Malchus, N. (2013). Bivalvia Hard Parts - Adult ligaments (chapter 2.2). In: Treatise on Invertebrate Paleontology. Treatise Online. Part N, Bivalvia, Revised. Volume 1.

Dalla Vecchia, F.M. (2013). Triassic pterosaurs. In: Buffetaut, E. & Mazin, M. (eds.). Evolution and palaeobiology of pterosaurs. The Geological Society of London (Special publications), 379: 119-155.

Delfino M. (2013). Giù il cappello davanti ai dilettanti. In: Di Tizio, L., Brugnola, L., Cameli, C. & Di Francesco, N. (Eds.), Atti II Congresso SHI Abruzzo e Molise “Testuggini e Tartarughe”. Ianieri Edizioni, Pescara: 7-9.

Malchus, N. & Sartori, A.F. (2013). The early shell: ontogeny, features and evolution (Chapter 4). In: Treatise on Invertebrate Paleontology. Treatise Online. Part N, Bivalvia, Revised. Volume 1: Introduction.

Moyà-Solà, S. (2013). El origen de los grandes simios y de los humanos. Aportaciones del registro fósil catalán. In: Publicaciones de la Agrupación Astronómica de Sabadell (ed). Ciclo de conferencias · Curso 2012 -2013. 34: 187-202.

Razzetti E. & Delfino M. (2013). Prefazione. In: Scillitani, G., Liuzzi, C., Lorusso L., Mastropasqua F. & Ventrella P. (Eds.). Atti IX Congresso Nazionale della Societas Herpetologica Italica. Bari - Conversano, 26-30 settembre 2012, 2 pp [not-numbered]. Pineta, Conversano (BA).

Razzetti, E. & Delfino M. (2013). Foreword. In: Sindaco, R., Venchi, A. & Grieco, C. (Eds.), The reptiles of the western Palearctic. 2. Annotated checklist and distributional atlas of the snakes of Europe, North Africa, Middle East and Central Asia, with an update to the Vol. 1, Monografie della Societas Herpetologica Italica II, Belvedere, Latina: 8-9.

Sánchez Marco, A. (2013). Avifauna finipleistocena de la Peña de Estebanvela (Segovia). In: Cacho, C. (coord.).Ocupaciones magdalenienses en el interior de la Península Ibérica. La Peña de Estebanvela (Ayllón, Segovia). Junta de Castilla y León: pp: 149-155.

Scheyer, T.M., Werneburg, I., Mitgutsch, C., Delfino, M. & Sánchez-Villagra, M.R. (2013). Three ways to tackle the turtle: integrating fossils, comparative embryology and microanatomy. In: Brinkman D.B., Holroyd P.A. & Gardner J.D. (editors), Morphology and Evolution of Turtles: Origin and Early Diversification. Springer, Dordrecht: 63-70.

POPULARIZING AND INFORMATIVE ARTICLES

Delfino M. (2013). Amphibians, reptiles, fossils and islands [in Italian]. Invited conference for the “Evolution Day 2013”, Museo di Storia Naturale di Milano, Milan, Italy, 9 February 2013.

Delfino M. (2013).The Buia Project - Eritrea [in Italian]. Invited conference at the “Fondazione Arte Nova”, Romano Canavese (TO), Italy.

Delfino, M. (2013).The evolution of man and the Buia project [in Italian]. Invited conference at Museo di Scienze Planetarie. Prato (PO), Italy.

Delfino M. (2013). Palaeoherpetology and conservation biology [in Italian]. Invited conference for the cycle “HerpeThon” organized by the Societas Herpetologica Italica, Dipartimento di Scienze della Terra, Università di Firenze, Florence, Italy.

Delfino M. (2013).Palaeoherpetology and conservation biology [in Italian]. Invited conference for the cycle “HerpeThon” organized by the Societas Herpetologica Italica, Regional Museum of Natural Sciences, Torino, Italy.

Delfino M. (2013).Palaeoherpetology and conservation biology [in Italian]. Invited conference for the cycle “HerpeThon” organized by the Societas Herpetologica Italica, Dipartimento di Scienze della Terra, Università di Cagliari, Cagliari, Italy.

Delfino M. (2013).Crocodiles, the predators that survived the dinosaurs [in Italian]. Invited conference for the cycle of seminars and conferences related to the exhibition “Dinosauri in carne e ossa”, Villa Marabello, Parco di Monza, Monza, Italy.

Delfino M. (2013). Evoluzione, quo vadis? / Evolution: where do you go? Interview for “Oggi Scienza TV”.

Fortuny, J., Mujal, E. & Oms, O. (2013). La Biodiversitat del Passat. La Vall de Siarb i el Port del Cantó fa més de 200 millions d’anys. Xerrada i Taller a Sort, Montferrer i Llagunes (Dissabtes de setembre). Dins del projecte del Parc Natural de l’Alt Pirineu. La Biodiversitat del Passat.

Fortuny J. (2013). Instructors of the course entitled: Finite Element Analysis Advanced: 2D and 3D case study. Organized by *Transmitting Science Company*.

Galobart, À. (2013). El mon dels dinosaures, Conferència per Aula d’Extensió Universitària

Sènior UPC de Castelldefels. Sala d’actes de l’Escola d’Enginyeria de Telecomunicacions i Aeroespacial de Castelldefels, Campus UPC.

Galobart, À. (2013). Els dinosaures de Tremp. Conferència al poble de Vilamitjana (Tremp), 23 d’agost de 2013.

Galindo, J. (2013). Roben un fòssil de gran valor a Coll de Nargó. (Article d’opinió dins la notícia a càrrec de Jordi Galindo). *Sàpiens* (núm. juliol), *Notícies de la història*: 7.

Marmi, J. (2013). Un passeig per la història de la biosfera. Tres conferències a Sabadell, Berga i Tremp entre Juny i Juliol de 2013.

Marmi J. (2013). Un passeig per la història de la biosfera. Alumnes 1er BAT IES Guillem de Berguedà, Berga.

Marmi J. (2013). Reconstruint l’ambient dels darrers dinosaures pirinencs. Institució Catalana d’Història Natural, Delegació del Bages, Manresa.

Meijer, J.M.H. (2013) Why 2 Birds in the Hand May Be Better Than a “Hobbit” Skull (in a Cave Deposit, at Least). *Scientific american*.

Mujal, E., Fortuny, J., Oms, O. & Bolet, A. (2013). L’ambient del Triàsic al Parc Natural de l’Alt Pirineu. (Pòster divulgatiu).

Mujal, E., Fortuny, J., Oms, O. & Bolet, A. (2013). Les roques vermelles del Parc Natural de l’Alt Pirineu. (Pòster divulgatiu).

Mujal, E., Fortuny, J., Oms, O. & Bolet, A. (2013). Qui vivia als Pirineus fa més de 200 milions d’anys? (Pòster divulgatiu).



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Institut Català de Paleontologia
Miquel Crusafont

Edificio Z
c/ de les Columnes, s/n.
Campus de la UAB.
08193 (Cerdanyola del Vallès)
Barcelona - Spain
Tel. 93.586.87.65
icp@icp.cat

www.icp.cat



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