# 3rd Palaeontological Virtual Congress: palaeontology in the virtual era

Vicente D. CRESPO[1,2,3]*, María RÍOS[1,2], Fernando A. MARTÍN ARNAL[4], Arturo GAMONAL[5], Penélope CRUZADO-CABALLERO[6,7], Javier GONZÁLEZ-DIONIS[8], Evangelos VLACHOS[9], Rosalía GUERRERO-ARENAS[10] and Alba SÁNCHEZ-GARCÍA[11]

[1] GeoBioTec, Department of Earth Sciences, NOVA School of Science and Technology, FCT- NOVA, Universidade NOVA de Lisboa, Caparica, Portugal.
[2] Museu da Lourinhã, R. João Luís Moura, 95, 2530-158, Lourinhã, Portugal.
[3] Museu Valencià d'Història Natural, L'Hort de Feliu, PO Box 8460, Alginet, 46230 València, Spain.
[4] Department of Life Sciences, Milner Centre for Evolution, University of Bath, Claverton Down, BA2 7AY, Bath, UK.
[5] Museo Paleontológico de Alpuente, Avenida San Blas 17, Alpuente, 46178 València, Spain.
[6] Área de Paleontología, Faculta de Ciencias, Universidad de La Laguna, Avenida Astrofísico Francisco Sánchez, 2, 38206, San Cristóbal de La Laguna, Santa Cruz de Tenerife, Spain.
[7] Grupo Aragosaurus-IUCA, Facultad de Ciencias, Universidad de Zaragoza, C/ Pedro Cerbuna, 12, 50009 Zaragoza, Spain.
[8] Instituto Patagónico de Geología y Paleontología (CONICET-CENPAT), Boulevard Brown 2915, 9120, Puerto Madryn, Chubut, Argentina.
[9] CONICET and Museo Paleontologico Egidio Feruglio, Avenida Fontana 140, 9100, Trelew, Chubut, Argentina.
[10] Universidad del Mar, campus Puerto Escondido, San Pedro Mixtepec, 71980 Oaxaca, México.
[11] CN Instituto Geológico y Minero de España-CSIC, Cirilo Amorós 42, València 46004, Spain.
*Corresponding author. Email: vidacres@gmail.com

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After the success of the first two editions of the Palaeontological Virtual Congress in 2019 (first PVC) and 2021 (second PVC; Crespo & Manzanares 2019; Crespo & Citton 2021), we have decided to try to replicate the success with a third meeting of the PVC (Fig. 1). The appearance of new applications and technological advances has played a crucial role in paving the way for enhanced avenues of effective scientific communication. This became even more pronounced from more than two years of challenges stemming from the COVID-19 pandemic. Due to this crisis, online platforms gained more relevance and proved key to keeping up the drive for science communication and the dissemination of scientific results (Barral 2020).

Thanks to the collaboration of various international institutions including Museo de La Plata, Consejo Nacional de Investigaciones Científicas y Técnicas, Museo Paleontológico de Alpuente, Museu Valencià d'Historia Natural, Université de Montpellier, University of Bath, Universitat de València, Universidad Nacional de Educación a Distancia, Museo Paleontológico Egidio Feruglio, Universidad de La Laguna, Universidad Nacional de Río Negro, Universidad del Mar, and the University of Bristol, in Spain, Argentina, France, Portugal, the United Kingdom and Mexico, we made the decision to embark on this endeavour once again, this time with an even more international focus.

The Palaeontological Virtual Congress (PVC) was innovative in palaeontological science as it was the first congress designed and developed in an exclusively virtual environment and held every year and a half (Sánchez-García *et al*. 2023). We were driven by three primary objectives to undertake this third meeting: social; ecological; and pandemic-related. The novel format we

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**Figure 1** Logo of the third Palaeontological Virtual Congress, designed by Hugo Salais.

developed for the PVC combines the benefits of traditional meetings with the advantages and simplicity of online platforms (e.g., providing a forum for discussion, merchandising, guest lectures, 'field trips' and an abstract book). Through this format, we successfully reached a high number of palaeontologists around the world, especially, bringing scientific discussion forums closer to researchers from countries with fewer economic means.

Recognising the obstacles encountered by researchers from developing countries, independent researchers and those lacking financial resources in attending conferences, the PVC emerged as a significant avenue to foster their scientific networks and collaborations. Hence, the PVC remains dedicated to the pursuit of an inclusive congress, which is evident from the increasing range and diversity of age, gender, nationalities and areas of expertise of all the participants, from the organising committee to the presenters or viewers. Thanks to the creation of a social fund, the congress offers free registration to participants from low-income and middle-income countries listed as such by The World Bank (Sánchez-García *et al*. 2023). In addition, these kinds of congresses allow us to reduce the carbon footprint that we leave on our planet, as we avoid the pollution associated with in-person congresses, including the emissions from air travel, car, or train (Abbott 2019).

## 1. Results

### 1.1. Participation

Building upon the success of the first PVC with 376 participants from 41 countries, the third PVC surpassed expectations, attracting 535 palaeontologists and palaeontology enthusiasts from 56 different countries.

### 1.2. Congress format

This congress was organised similarly to a traditional congress featuring keynotes, general sessions, workshops and virtual field trips. In charge of the keynotes were Anusuya Chinsamy-Turan from University of Cape Town (South Africa), Ignacio Escapa from Palaeontological Museum Egidio Feruglio (Argentina), Xiaoya Ma from University of Yunnan (China) and University of Exeter (United Kingdom), Maria McNamara from University College Cork (Ireland), Karen Moreno from Austral University of Chile (Chile) and Donald R. Prothero from Cal Poly Pomona University and Natural History Museum of Los Angeles County (United States). Participants were provided with three options for presenting their work: a video presentation lasting 10 to 15 min; presentation slides consisting of 6–30 slides; or a poster of up to five slides. All contributions have been published in the abstract book titled *3rd Palaeontological Virtual Congress. Book of abstracts. Palaeontology in the virtual era* (Vlachos *et al*. 2021), which can be downloaded for free from our website (palaeovc.org), as well as those from the first and second PVC meetings (Crespo *et al*. 2018; Vlachos *et al*. 2020).

### 1.3. Thematic sessions

Due to the diversity of topics in palaeontology, it was possible to present a variety of sessions. This idea was warmly embraced, with a total of eight invited thematic sessions and four general sessions hosted on the virtual platform. The invited sessions included:

- Virtual Palaeontology: novel solutions for old (and new) questions moderated by Gabriel S. Ferreira from the Senckenberg Centre for Human Evolution and Palaeoenvironment at the Eberhard Karls Universität Tübingen and Fachbereich Geowissenschaften, Eberhard Karls Universität Tübingen (Germany); Josephina Hartung, and Panagiotis Kampouridis from the Fachbereich Geowissenschaften, Eberhard Karls Universität Tübingen.
- Palaeontological Heritage in the 21st Century moderated by Penélope Cruzado-Caballero and Carolina Castillo Ruiz from Universidad de La Laguna, Santa Cruz de Tenerife (Spain); and Rosalía Guerrero Arenas from Universidad del Mar (Oaxaca, México).
- Conservation Paleobiology–Bridging Past and Future, moderated by Paolo Abondio from the Department of Biological, Geological and Environmental Sciences, University of Bologna (Italy); and Danijela Dimitrijević and Niklas Hohmann from GeoZentrum Nordbayern, FAU Erlangen-Nürnberg (Germany).
- The Multiple Perceptions of Fossils, moderated by Felisa Josefina Aguilar-Arellano from Consejo de Paleontología, Instituto Nacional de Antropología e Historia (México) and Rosalía Guerrero-Arenas from Universidad del Mar (México).
- Palynology, Palaeoenvironment and Palaeoclimate, moderated by Adele Bertini from Dipartimento di Scienze della Terra, Università degli Studi di Firenze (Firenze, Italy); Nathalie Combourieu-Nebout from Histoire Naturelle de l'Homme Prehistorique, Département Homme et Environnement (Paris, France); and Gabriele Niccolini from Dipartimento di Scienze Della Terra e Geoambientali, Università di Bari Aldo Moro (Bari, Italy).
- New Advances on Stratigraphy and Palaeontology in Taiwan, moderated by Jih-Pai Lin from the Department of Geosciences, National Taiwan University (Taiwan); Chien-Hsiang Lin from Biodiversity Research Centre, Academia Sinica (Taiwan); and Wei-Chia Chu from Environmental and Engineering Geology Division, Central Geological Survey, Ministry of Economic Affairs (Taiwan).
- Molecular Palaeontology, moderated by Ana García Vázquez from Instituto Universitario de Xeoloxía Isidro Parga Pondal, Universidade da Coruña (A Coruña, Spain) and ArchaeoScience#RO Platform, Research Institute of the University of Bucharest (Bucharest, Romania); and Aurora Grandal d'Anglade from Instituto Universitario de Xeoloxía Isidro Parga Pondal, Universidade da Coruña (A Coruña, Spain).

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- Co-evolution of Life and Environment During the Key Geological Transitions, moderated by Jing Lu from Key Laboratory of Vertebrate Evolution and Human Origins of Chinese Academy of Sciences, Institute of Vertebrate Palaeontology and Palaeoanthropology and Centre for Excellence in Life and Palaeoenvironment, Chinese Academy of Sciences, (Beijing, China); Zongjun Yin from State Key Laboratory of Palaeobiology and Stratigraphy, Nanjing Institute of Geology and Palaeontology and Centre for Excellence in Life and Palaeoenvironment, Chinese Academy of Sciences (Nanjing, China); and Zhuo Feng from Institute of Palaeontology, Yunnan University (Kunming, China).

### 1.4. Special issue

Like the first and second meetings, we also sought to produce a special volume to uphold the essence of a traditional congress. On this occasion, it is published in the *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*. This special issue consists of 17 papers derived from the expanded abstracts that were presented during the congress.

Arceredillo *et al*. (2023) describe a new record of the woolly rhinoceros *Coelodonta antiquitatis* from Central Spain; Arjanto *et al*. (2023) describe a new assemblage of small mammals from the Late Glacial of Iberian Peninsula; Chukwuma-Orji (2023) describes the palynostratigraphy, biochronology and palaeobathymetry from at a section of Awaizombe 1 well, from the Eastern Niger Delta (Nigeria); Collareta *et al*. (2023) describe a new species of whale barnacle and its palaeoecology from California (United States); Crespo *et al*. (2023) review the Pliocene classical collections of small mammals from Bereşti and Mălușteni (Romania); Dankina *et al*. (2023) report the first Late Permian fish fossils from Lesszczyna quarry, in Poland; Gamarra *et al*. (2023) propose a new colour pattern for the reconstruction of basal cervids; García-Vázquez *et al*. (2023) review the peptide mass fingerprinting markers in the cave bear *Ursus spelaeus*; Ivantsov & Zakrevskaya (2023) describe the body plan of *Dickinsonia* from materials collected in the southeastern White Sea; Jiménez-Hidalgo & Carbot-Chanona (2023) report the first Mexican remains of a Anthracotheriidae from the zones of Santiago Yolomécatl and Simojovel de Allende; Kirichenko-Babko & Perkovsky (2023) report the first neotropical carabid beetle from Eocene amber of Ukraine; Mateos-Carralafuente *et al*. (2023) evaluate the shell spiral and microstructure of tertiary layers in gigantoproductids (Brachiopoda) as taxonomic characters; Luci *et al*. (2023) describe an Early Cretaceous sponge meadow as an unsuspected host of a dynamic sclerobiont community from the Neuquén Basin (Argentina); Ríos *et al*. (2023) describe the variability of the anterior ossicone in the giraffe *Decennatherium rex*; Senan *et al*. (2023) show us predator–prey interactions through an example of turritelline gastropods from the Pleistocene of Taiwan; Sianis *et al*. (2023) describe the Pleistocene remains of a large cercopithecid from Karnezeika (Greece); and Sukhomlyn & Perkovsky (2023) describe the first Cretaceous carnivorous fungus from North Asia. The papers by Chukwuma-Orji, Collareta *et al*. Mateos-Carralafuente *et al*. Ríos *et al*. and Sianis *et al*. were first published online in 2022.

### 1.5. The future

With the conclusion of this third meeting, we have consolidated our position in the competitive world of online congresses, being the pioneers of organising this type of congress in the field of palaeontology. With the experience gained from these three successful meetings, a fourth PVC was recently held on 8–22 May 2023, with a great success. We look forward to seeing you at the fifth PVC.

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## 4. Conflict of interests

The authors declare no conflicts of interest.

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