

**UNIVERSITÀ DEGLI STUDI DI MILANO**

selezione pubblica per n. 1 posto/i di Ricercatore a tempo determinato ai sensi dell'art.24, comma 3, lettera a) della Legge 240/2010 per il settore concorsuale 04/A2 , settore scientifico-disciplinare GEO/01 presso il Dipartimento di SCIENZE DELLA TERRA "ARDITO DESIO", (avviso bando pubblicato sulla G.U. n.69 del 1-9-2020 ) Codice concorso 4421

**Paolo Piras  
CURRICULUM VITAE****INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)**

COGNOME	PIRAS
NOME	PAOLO
DATA DI NASCITA	23/08/1075

**INSERIRE IL PROPRIO CURRICULUM  
(non eccedente le 30 pagine)**

Data  Luogo

Dichiaro ai sensi del regolamento ue n. 2016/679 (gdpr), di essere informato del fatto che i dati personali contenuti nel presente curriculum saranno trattati, anche con strumenti informatici, esclusivamente nell'ambito del procedimento e per i fini per i quali esso viene rilasciato. dichiaro inoltre di essere informato, ai sensi e per gli effetti di cui all'art. 13 del regolamento ue n. 2016/679 (gdpr), che i dati personali raccolti saranno trattati, anche con strumenti informatici, esclusivamente nell'ambito del procedimento e per i fini per i quali la presente dichiarazione viene resa e rilascia il consenso al riguardo.

**Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000**

**PERSONAL DATA**

Full Name	<b>Paolo Piras</b>
Date of Birth	23/08/1975
Place of Birth	Rome, Italy
Marital status	Single
Nationality	Italian
Fiscal Code	PRSPLA75M23H501Q
Address	Via Torriana 15, 00127 Roma, Italy
e-mail	<a href="mailto:paolopiras3@gmail.com">paolopiras3@gmail.com</a>

**EDUCATION**

- 1993-94: Diploma at “ Liceo Classico Statale Plauto ”, Rome; evaluation: 48/60.
- 2000-2001: University Degree in Natural Sciences at the University “La Sapienza” of Rome; evaluation: 110/110 e lode ; Degree Thesis : “Studio di un gavalide del Miocene inferiore del Pakistan sud-orientale” (A gavalid from Lower Miocene of south-eastern Pakistan), tutors: Prof. Daniela Esu and Prof. Anastassios Kotsakis.

- October 2003- April 2007: Ph.D obtained at Geological Sciences Department of Roma Tre University, Rome, Italy: Thesis title: Theoretical morphology of fossil and recent crocodiles skull by means of 3- and 2-dimensional geometric morphometrics. Tutor: Prof. Anastassios Kotsakis.

### **ATTENDED WORKSHOPS**

- I Workshop on geometric morphometrics at Museu de Ciencias Naturales Facultad de Ciencias Universidade de Lisboa; 6,7,10-5-2004.

- I have been the **organizer** of the Geometric Morphometrics Laboratory for Systematics and Evolutionary Researches hosted by STAT Dept., Molise University, Isernia, 1-5/2/2010.

- Mechanics in Biology Workshop @ GSSI - Gran Sasso Science Institute May, 6~9, 2014 L'Aquila, Italy.

- Biomat 2014. Stefan Banach International Mathematical Center/Institute of Mathematics/Polish Academy of Sciences, Bedlewo, near Poznan, Poland, November, 02 - 08, 2014.

- Scuola di Paleoantropologia 2015. 22/02/2015 -27/02/2015 Perugia.

### **GRANTS AND FELLOWSHIPS**

- 14/5/2003-14/5/2004. One year fellowship at Unidad de Paleontologia Universidad Autonoma de Madrid, Spain under the supervision of Prof. Angela Buscalioni for a revision of the Oligocene Alligatoroid *Hispanochampsia mulleri* from Catalunya, Spain.

- 27-2-2005/12-3-2005: SYNTHESYS GRANT WINNER for visiting the London Museum of Natural History

- 21-3-2005/1-4-2005: SYNTHESYS GRANT WINNER for visiting the Institut Royal des Sciences Naturelles, Bruxelles

- 25-4-2005/6-5-2005: SYNTHESYS GRANT WINNER for visiting the Museum National d'Histoire Naturelle, Paris

- 1/1/2008-31/12/2008. One year post-doc fellowship at Pierre et Marie Curie University (Paris VI) on a project about Geometric Morphometrics of *Arvicola terrestris* at European level. Both extinct and extant taxa of the genus *Arvicola* were studied.

- 23-12-2008/23-3-2009. Fellowship: "Contratto di collaborazione per la Realizzazione di un dataset bibliografico e iconografico per analisi di morfometria geometrica su micro mammiferi fossili e recenti".

- 25-9-2009/25-11-2009. Fellowship: "Contratto di collaborazione per la Ristrutturazione ed aggiornamento scientifico del sito web del Laboratorio di Paleontologia dei Vertebrati e predisposizione del materiale scientifico per la realizzazione del sito web del Centro di Ecologia Evolutiva" at ex Geological Science Department (now Science Department), Roma Tre University.

- 25-1-2010/24-2-2010. Fellowship: "Contratto di collaborazione per l'attività di supporto e consulenza scientifica per l'organizzazione del workshop Geometric Morphometrics Laboratory for Systematics and Evolutionary Ecology 2010" at ex Geological Science Department (now Science Department), Roma Tre University

- 7-4-2010/7-5-2010. Fellowship: "Contratto di collaborazione per la realizzazione di pannelli espositivi relativi alla biologia evolutiva dei micromammiferi, con particolare riferimento alle metodologie di morfometria geometrica a favore del Dipartimento di Biologia Animale e dell'Uomo dell'Università degli Studi di Roma "La Sapienza". Progetto: L'Origine della specie: dall'Anatomia Comparata alle nuove frontiere della Biologia Evolutiva. Responsabile: prof.ssa Luciana Sola."

1-6-2010/31-5-2012: Two years post-doc fellowship at ex Geological Science Department (now Science Department), Roma Tre University in the context of PRIN 2008 project "Paleobiogeografia e processi evolutivi negli ecosistemi plio-quadernari insulari del Mediterraneo occidentale." Title "Studio di Ctenodactylidae e Muridae fossili della Sardegna: relazioni filogenetiche e tendenze evolutive". **Legge 23/12/97 n. 449**

10-4-2013/10-5-2013: Fellowship: "Analisi craniometriche di micromammiferi (Chiroptera) attraverso raccolta ed elaborazione di dati tridimensionali". Science Department, Roma Tre University.

1-10-2013/30-9-2014: One year post-doc fellowship at "Sapienza", University of Rome, Department of Cardiovascular Sciences. "Studio delle traiettorie morfologiche in soggetti sani e portatori di cardiopatia attraverso le immagini ecocardiografiche raccolte con metodica tridimensionale mediante tecniche di morfometria geometrica". **Legge 30/12/2010 n. 240.**

1-10-2014/30-9-2015: One year post-doc fellowship at "Sapienza", University of Rome, Department of Structural Engineering and Geotechnics. "Ricostruzione della dinamica ventricolare cardiaca per mezzo della Meccanica del Continuo e della Morfometria Geometrica". **30/12/2010 n. 240.**

1-3-2016/28-2-2017: One year post-doc fellowship at "Sapienza", University of Rome, Department of Structural Engineering and Geotechnics. "La meccanica come mezzo clinico per l'individuazione di patologie cardiache nell'uomo". **Legge 30/12/2010 n. 240.**

1-3-2017/28-2-2019: Two years post-doc fellowship at "Sapienza", University of Rome, Department of Cardiovascular Sciences. "Validation and preparation of the trial protocol and patient recruitment for personal health system backend platform design and implementation in reference to Task 6.1 and Deliverable 6.2 of the HEARTMAN Project". **Legge 30/12/2010 n. 240.**

## **PROFESSIONAL EXPERIENCE**

- From 15/09/2000: naturalistic and archeologic guide of Natural Park "La Caffarella" in the context of regional Park "Appia Antica".

- 30-4-2002/30-4-2004 research collaborator in a project for the analysis of climatic changes in the last 250000 years proposed at the University and Technology Research Ministry by palaeontologists of Ferrara, Messina, Pisa, Roma "La Sapienza", Roma Tre and Torino University under coordination of Prof. A. Kotsakis.

- 30-5-2008. I have founded the Center for Evolutionary Ecology, a Research Center participated by Roma Tre University and Molise University. Website with Statute, Aims and Scope:

<http://host.uniroma3.it/laboratori/paleontologia/CEE%20home.htm>

- 1/1/2009-22/3/2016. Research Collaborator at Science Department, Roma Tre University.

## **DIDACTIC ACTIVITY**

2001-2002 ; 2002-2003: complementary modules of Botany and Geology as official guide of Natural Park "La Caffarella" at the "Diaz" and "Augusto" High School, Rome.

Academic year 2009/2010. Didactic modules on Evolutionary Theory in the context of Paleontology course at Geological Sciences Dept., Roma Tre University.

Academic year 2010/2011. Didactic modules on Evolutionary Theory in the context of Paleontology course at Geological Sciences Dept., Roma Tre University.

Academic year 2011/2012. Didactic modules on Evolutionary Theory in the context of Paleontology course at Geological Sciences Dept., Roma Tre University.

Academic year 2012/2013. 25-27/2/2013. “Corso base di R per scienze biologiche ed ambientali”. Science Departement, Roma Tre University.

Academic year 2013/2014. 7-17/4/2014. “Corso base di R per scienze biologiche ed ambientali”. Science Department, Roma Tre University.

Academic year 2014/2015. “Introduction to Biostatistics”. Scuola di Palantropologia 2015. 22/02/2015 -27/02/2015, Perugia.

Academic year 2014/2015. 4-8/5/2015. “R-The free software for Statistical Computing”. LAMS course hosted by Dipartimento di Matematica e Fisica, Università Roma Tre, Rome, Italy.

Academic year 2017/2018. 6-27/2/2018. “Corso base di R per scienze biologiche ed ambientali”. Dipartimento di Scienze, Università Roma Tre, Rome, Italy.

Academic year 2017/2018. 5-14/3/2018. “Geostatistical Analysis in R”. Dipartimento di Scienze della Terra dell’Ambiente e delle Risorse, Università Federico II, Napoli, Italy.

### **ABILITAZIONE NAZIONALE**

Habilitated as associate professor area 04/A2, sector SSD GEO/01 up to 13/05/2025

### **CO-TUTOR MASTER THESIS**

Academic year 2005/2006. LUCCI Federico. “La morfometria geometrica in 2d applicata alla mandibola di Grandi Felidi attuali e del Plio-Pleistocene europeo”, ex Dipartimento di Scienze Geologiche (now Dpartmento di Scienze), Università Roma Tre.

Academic year 2007/2008. MAIORINO Leonardo. "Geometric Morphometrics Analysis in 2-dimensions applied to Skulls and Mandibles of Plio-Pleistocene Rhinoceroses of Europe",ex Dipartimento di Scienze Geologiche (now DIpartmento di Scienze), Università Roma Tre.

SPANI Federica (2016). “Heterochely in Brachiyurans: a Geometric Morphometrics approach”, Dipartimento di Scienze, Università Roma Tre.

### **CO-TUTOR Ph.D THESIS**

MAIORINO Leonardo (2014) XXVI ciclo – “Macroevolutionary pattern of Ceratopsia (Dinosauria, Ornithischia) and biomechanics: an integrated approach by means of Geometric Morphometrics and Finite Element Analysis”, ex Dipartimento di Scienze Geologiche (now Dipartimento di Scienze), Università Roma Tre.

SANSALONE Gabriele (2015) XXVII ciclo – “Systematics and evolutionary dynamics within Talpidae (Mammalia): phylogeny and functional morphology”, ex Dipartimento di Scienze Geologiche (now Dipartimento di Scienze), Università Roma Tre.

PANDOLFI Luca (2015) XXVII ciclo – “Systematics and evolution of Rhinocerotini”, ex Dipartimento di Scienze Geologiche (now Dipartimento di Scienze), Università Roma Tre.

### **LANGUAGES**

Very good knowledge of French.

Good written English and medium conversation English.

Good conversation Spanish.

### **CONGRESS**

VI European Workshop on Vertebrate Paleontology, 19-22/09/2001, Florence-Montevarchi.

IV Italian Congress of Herpetology, 18–21/06/2002. Organised by Societas Herpetologica Italica (S.H.I.).

VI Congresso della Societas Herpetologica Italica, 27/09-01/10/2006

MICCAI 2015. October 2015; Shape Classification challenge: Myocardial Infarction Recognition. Munich, Germany.

VipImage2017: Organizer of the thematic session “Shape analysis in medical imaging: from math to clinics”. 18-20/10/2017.

### **INVITED CONFERENCES**

I coccodrilli italiani. 3-4-2003. Museo Civico di Zoologia, Roma.

I grandi mammiferi del plio-pleistocene italiano: un approccio macroevolutivo. 17-2-2005 - Museo Civico di Zoologia, Roma.

La paleobiologia evolutiva: casi studio. 12-2-2009 - Museo Civico di Zoologia, Roma.

Shaping the shape changes: statistical motion analysis for soft matter. Mechanics in Biology Workshop @ GSSI - Gran Sasso Science Institute May, 6~9/5/ 2014 L'Aquila, Italy.

La meccanica cardiaca e lo studio della forma: Special Session: “Dalla paleontologia alla medicina”. Annual Meeting Istituto Italiano di Antropologia 11-13/12/2014.

4D Cardiac mechanics and shape analysis: from basic research to clinics. Ambulatorio di Cardiologia, Padiglione San Luca Vecchio, Ospedale Careggi, 22/11/2017.

Moderni metodi di analisi delle traiettorie ontogenetiche in antropologia. “Darwin day 2018: Il posto dell'Uomo nella Scienza Moderna”. Società dei Naturalisti, Napoli, 5-3-2018.

### **COMPUTER KNOWLEDGE**

*Operating systems:*

**Mac Os 8x, 9x;**

*Software:* knowledge of principal applications for cladistic: PAUP (licensed), MacClade, Autodecay, Treeview, Treemap; knowledge of principal applications of video-editing spread-shift and database (Microsoft Office); pdf conversion.

## **Windows 9x, Windows NT, Windows 2000**

Software: knowledge of principal applications of video-editing spread-sheet and database (Microsoft Office); knowledge of principal applications for cladistics for Windows platform: Hennig 86, TreeGardener, Winclada, Peewee, Nona; pdf conversion. Very good knowledge of statistical packages SPSS, STATISTICA, NTSYS and R.

## **Biostatistics with R**

I evaluate in R any data analysis needed for my work.

From official website: “R is a language and environment for statistical computing and graphics. It is a GNU project which is similar to the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John Chambers and colleagues. R can be considered as a different implementation of S. There are some important differences, but much code written for S runs unaltered under R. R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, ...) and graphical techniques, and is highly extensible. The S language is often the vehicle of choice for research in statistical methodology, and R provides an Open Source route to participation in that activity. One of R's strengths is the ease with which well-designed publication-quality plots can be produced, including mathematical symbols and formulae where needed. Great care has been taken over the defaults for the minor design choices in graphics, but the user retains full control.”

Good R programming mainly for multiple-multivariate linear model based inferences: GLS, GLM and basic likelihood methods.

Multivariate data analysis: Exploratory: PCA, MDS, Principal Coordinates, Discriminant Analysis. Inferential: ANOVA, MANOVA.

Non parametric ANOVA and MANOVA based on permutations. Distance-matrices based non parametric regression.

Methods for handling data non independence: spatial, temporal and phylogenetic non independence: GLS, Variation Partitioning.

Temporal series: testing directional trend or random walk in time ordered measured traits.

Geometric morphometrics tools for handling two- and three-dimensional data.

Comparative methods for analysing phylogenetically structured data.

Classification problems and classification performance evaluation applied to clinics.

## **Three-Dimensional Data Analysis**

Good knowledge of main commercial and non-commercial software for handling biomedical images (i.e. DICOM files) in order to manage and build surface and volumes to be analyzed for Finite Element Modelling.

## **SCIENTIFIC ACTIVITY**

### ***1) Paleontology***

- *Systematics*: my main group is represented by Crocodylia. I faced systematics problems using both cladistics and Geometric Morphometrics. I obtained my Ph.D. on geometric morphometrics of recent and fossil crocodiles. Ever since I published several papers about systematics and biogeography of both eusuchian and non-eusuchian taxa from Mesozoic and

Cenozoic. More recently I expanded my interests to other groups given that the same methods (cladistics and Geometric Morphometrics) can be applied to a wide range of taxa. In particular, I worked on systematics of Dinosauria, Talpoidea and Rhinocerotidae.

- *Paleobiogeography*: phylogenetic systematics results for Crocodylia have been used for paleobiogeographic inference of Italian Cenozoic crocodylians and for Tomistominae. More recently a full re-assessment of Monteviale fauna (Veneto, Italy) has been published with more details about vertebrate species present in this lignite-bearing deposits.
- *Evolutionary Paleobiology*: I explored macroevolutionary dynamics in various groups of Vertebrates: Crocodylia, Artiodactyla and in recent years dinosaurs, micro-mammals and other macro-mammals. I deepened the debate about speciation theories and the connections between evolutionary theories and ecological approaches (i.e. punctuated equilibria [Eldredge & Gould] such as effect and pulse hypotheses). Recently, I explored the relationships between shape, function and phylogeny by applying new comparative methods and the relationships between modularity, adaptation and ontogeny by using Geometric Morphometrics.
- *Biomechanics*: I applied the well-known method of Finite Element Analysis and other mechanical approaches in order to unveil the relationships between shape and biomechanical performance of biological structures. This is achieved by proper handling of biomedical images for surfaces and volumes reconstructions. This has been applied to crocodiles, Talpidae and to the extinct enigmatic fossorial Proscalopidae *Mesoscalops montanensis*. I combined these approaches with appropriate phylogenetic comparative methods able to discover patterns of convergence/parallelism/divergence among different clades.
- *Biochronology*: tempo and mode of phenotypic evolution are often used, when dealing with fossil vertebrates, in order to evaluate the evolution of specific faunas and of their environments. I applied modern statistical approaches (i.e. bootstrapped cluster analysis) in order to explore the biochronological relationships among both Italian and European faunas of macro-mammals aiming at building ecologically-based paleo-communities.

## 2) Shape theory

- *Riemannian connections and metrics*: Together with other colleagues I expanded some aspects of the mathematics behind the technique of Geometric Morphometrics by proposing new connections in the Riemannian manifold for landmark based shape analysis. This is particular useful for “transporting deformations” toward a “mannequin” shape in presence of multi-group transformation series such as multiple ontogenetic trajectories.

## 3) Translation to Medicine, especially Cardiology

- *Cardiac mechanics*: Starting from 2013 the quantitative techniques I used for paleobiological investigations have been also successfully applied to clinics, in particular Cardiology, in order to explore the mechanics of human heart by comparing healthy subjects with specific pathological conditions. This is pursued by using three-dimensional Speckle Tracking Echocardiography (STE). This allows handling 3D geometries of beating human heart thus moving in time. Coupling the concept of anatomical homology with that of temporal-electromechanical homology it has been possible shaping the motion of human heart and finding new potential indicators of incumbent pathology.
- *Epidemiology*: many epidemiological studies look for risks of occurrences of specific (often fatal) events. This aim is often pursued by using classical Cox-models and Kaplan-Meyer curves. However, a fatal event can occur as a consequence of another cause that is in competition with the primary cause. A proper application of competing risk regression has

been successfully applied to Coronary Heart Disease in a 50 years follow-up as well as a more specific pairwise comparison with other competing causes of death.

#### **4) Center of Evolutionary Ecology**

- I am the founder of the Center of Evolutionary Ecology that now comprises the former Geological Science Department at Roma Tre University and STAT Department at University of Molise. This structure aims to study the evolutionary process from a multidisciplinary point of view: from Paleobiology to zoology, from botany to molecular biology. Only an integrated study of evolutionary phenomena can unveil their underlying mechanisms that of course result from the interplay of phylogeny, form, function and molecular evolution.

### **ACADEMIC EDITOR**

PlosOne: 3/6/217-Present

### **REVIEWER ACTIVITY**

Journal of Vertebrate Paleontology

Evolution

BMC Evolutionary Biology

Zoological Journal of the Linnean Society

Journal of Morphology

Biological Journal of the Linnean Society

Comptes Rendus Biologie

Atti della Società Paleontologica Italiana

Mammalian Biology

Scientific Report

Evolutionary Ecology Research

American Journal of Physical Anthropology

Geological Magazine

PlosOne

BMC Evolutionary Biology

Anatomical Record

Journal of Archaeological Science

### **Ph.D. Thesis Reviewer**

October 2018- Marina Melchionna Ph.D. Thesis: Macroevolutionary analysis of Primates with special reference to the genus *Homo*. Doctorate in Earth, Environment and Resources Science, Università di Napoli Federico II, cycle XXXI.

### **BIBLIOMETRIC INDICATORS AT 3/9/2020**



## Scopus

Articles	Citations	H index
81	1201	22

## SCIENTIFIC PUBLICATIONS AT 3/9/2020 [=86]

[\* = 5: n°2, n°4, n°6, n°33, n°37 not in indexed Journals]

[# = 0 not yet present in *Scopus* as “in press” or in “early view”]

Impact Factors are reported according to <https://www.scijournal.org/>

- 1) Kotsakis T., Delfino M. & **Piras P.** (2004) - Italian Cenozoic crocodilians: taxa, timing and palaeobiogeographic implications. *Palaeogeography Palaeoclimatology Palaeoecology*, 210: 67-87. IF: 2.322
- 2) \*Rook L., Abbazzi L., Angelone C., Arca M., Barisone G., Bedetti C., Delfino M., Kotsakis T., Marcolini F., Palombo M.R., Pavia M., Piras P., Torre D., Tuveri C., Valli A. & Wilkens B. (2004) - Osservazioni preliminari sui vertebrati fossili plio-pleistocenici del Monte Tuttavista (Orosei, Sardegna). *Sardinia Corsica et Baleares Antiquae*, 1: 11-29.
- 3) Abbazzi L., Angelone C., Arca M., Barisone G., Bedetti C., Delfino M., Kotsakis T., Marcolini F., Palombo M.R., Pavia M., **Piras P.**, Rook L., Torre D., Tuveri C., Valli A. & Wilkens B. (2004) - Plio-Pleistocene fossil vertebrates of Monte Tuttavista (Orosei, E. Sardinia, Italy), an overview. *Rivista Italiana di Paleontologia e Stratigrafia*, 110: 681-706. IF: 0.561
- 4) \*Piras P. & Kotsakis T. (2005) - A new gavialid from the Early Miocene of south-eastern Pakistan (Preliminary Report). *Rendiconti della Società Paleontologica Italiana*, 2: 201-207.
- 5) Raia P., **Piras P.** & Kotsakis T. (2005) - Turnover pulse or Red Queen? Evidence from the large mammal communities during the Plio-Pleistocene of Italy. *Palaeogeography Palaeoclimatology Palaeoecology*, 221: 293-312. IF: 2.096
- 6) \*Kotsakis T., Argenti P., Barisone G., Delfino M., Palombo M.R., Pavia M. & Piras P. (2005) - Il Paleogene: i vertebrati continentali. In: Bonfiglio L. (Ed.), *Paleontologia dei Vertebrati in Italia, Memorie del Museo Civico di Storia Naturale di Verona*, s. 2, Scienze della Terra, 6: 131-139.
- 7) Raia P., **Piras P.** & Kotsakis T. (2006) - Detection of Plio-Quaternary large mammal communities of Italy: integration to biochronology. *Quaternary Science Reviews*, 25: 846-854. IF: 4.276
- 8) Delfino M., **Piras P.** & Smith T. (2005) - Anatomy and phylogeny of the gavialoid crocodylian *Eosuchus lerichei* from the Paleocene of Europe. *Acta Palaeontologica Polonica*, 50: 565-580. IF: 1.327
- 9) **Piras P.** & Buscalioni A. (2006) - *Diplocynodon muelleri* comb. nov., an Oligocene diplocynodontine alligatoroid from Catalonia (Ebro Basin, Lleida province, Spain). *Journal of Vertebrate Paleontology*, 26: 608-620. IF: 1.16
- 10) **Piras P.**, Delfino M., Del Favero L. & Kotsakis T. (2007) - Phylogenetic position of *Megadontosuchus arduini* and tomistomines palaeobiogeography. *Acta Palaeontologica Polonica*, 52: 315-328. IF: 1.072

- 11) Meloro C., Raia P., **Piras P.**, Barbera C. & O'Higgins P. (2008) - The shape of the mandibular corpus in large fissiped carnivores: allometry, function and phylogeny. *Zoological Journal of Linnean Society*, 154: 832-845. IF: 2.238
- 12) **Piras P.**, Marcolini F., Raia P., Curcio M.T. & Kotsakis T. (2009) - Testing evolutionary stasis and trends in first lower molar shape of extinct Italian populations of *Terricola savii* (Arvicolidae, Rodentia) by means of geometric morphometrics. *Journal of Evolutionary Biology*, 22: 179-191. IF: 3.824
- 13) **Piras P.**, Teresi L., Buscalioni A.D. & Cubo J. (2009) - The shadow of forgotten ancestors differently constrains the fate of Alligatoroidea and Crocodyloidea. *Global Ecology and Biogeography*, 18: 30-40. IF: 6.255
- 14) Marcolini F., **Piras P.** & Martin R. (2009) - Testing evolutionary dynamics on first lower molars of Pliocene *Ogmodontomys* (Arvicolidae, Rodentia) from the Meade Basin of Southwestern Kansas (USA): a landmark-based approach. *Palaaios*, 24: 535-543. IF: 1.504
- 15) Raia P., Carotenuto F., Meloro C., **Piras P.**, Barbera C. & Kotsakis T. (2009) - More than three million years of community evolution. The temporal and geographical resolution of the Plio-Pleistocene Western Eurasia mammal faunas. *Palaeogeography Palaeoclimatology Palaeoecology*, 276: 15-23. IF: 2.662
- 16) Raia P., Carotenuto F., Meloro C., **Piras P.** & Pushkina D. (2010) - The shape of contention. Adaptation, history, and contingency in ungulate mandibles. *Evolution*, 64: 1489–1503. IF: 5.781
- 17) **Piras P.**, Marcolini F., Raia P., Curcio M.T. & Kotsakis T. (2010) - Ecophenotypic variation and phylogenetic inheritance in first lower molar shape of extant Italian populations of *Microtus (Terricola) savii* (Rodentia). *Biological Journal of the Linnean Society*, 99: 632-647. IF: 2.358
- 18) **Piras, P.**, Colangelo P., Adams D.C., Buscalioni A., Cubo J., Kotsakis T., Meloro C. & Raia P. (2010) - The *Gavialis-Tomistoma* debate: the contribution of skull ontogenetic allometry and growth trajectories to the study of crocodylian relationships. *Evolution and Development*, 12: 568-579. IF: 3.053
- 19) **Piras P.**, Maiorino L., Raia P., Marcolini F., Salvi D., Vignoli L. & Kotsakis T. (2010) - Functional and phylogenetic constraints in Rhinocerotinae cranio-dental morphology. *Evolutionary Ecology Research*, 12: 897–928. IF: 1.564
- 20) Buscalioni A.D., **Piras P.**, Signore M., Vullo, R. & Barbera C. (2011) - Early Eusuchia Crocodylomorpha from the vertebrate-rich plattenkalk of Pietraroia (lower Albian, Southern Apennines, Italy). *Zoological Journal of the Linnean Society*, 163: S199–S227. IF: 2.661
- 21) Raia, P., Carotenuto F., Meloro C., **Piras P.** & Barbera C. (2011) - Species accumulation over space and time in European Plio-Holocene mammals. *Evolutionary Ecology*, 25: 171–188. IF: 2.523
- 22) Marcolini F., **Piras P.**, Kotsakis T., Claude J., Michaux J., Ventura J. & Cubo J. (2011) - Phylogenetic signal and functional significance of incisor enamel microstructure in *Arvicola* (Arvicolinae, Rodentia, Mammalia). *Comptes Rendus Palevol*, 10: 479-487. IF: 1.231
- 23) **Piras P.**, Salvi D., Ferrara G., Maiorino L., Delfino M., Pedde L. & Kotsakis T. (2011) - The role of post-natal ontogeny in the evolution of phenotypic diversity in *Podarcis* lizards. *Journal of Evolutionary Biology*, 24: 2705-2720. IF: 3.464
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## ABSTRACTS

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