



Professor Davide Pisani
BSc(Parma), PhD(Bristol)

Professor of Phylogenomics

Area of research

The application of comparative genomics to investigate key problems in organismal evolution.

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Summary

My research is at the interface of molecular and organismal biology. I am interested in the application of comparative genomics (including novel genomic markers - e.g. microRNAs) to investigate key problems in organismal evolution. Currently addressed problems include early animal evolution and the evolution of sensorial reception (particularly vision) in early animal evolution. A major driver of this research line is to understand the factors that caused the animals to radiate only during the Cambrian despite their early (Cryogenian) origins. Further to that I am interested in the evolution of the Ecdysozoa, particularly the Arthropoda, and the process through which arthropods colonised the land. Finally, I am extremely interested in early evolution, which underpinned the origin of the major prokaryotic lineages and eukaryogenesis. I am not, however, only interested in comparative genomics; a strong focus of my research group is in the development of novel phylogenetic methods and analytical protocols. These include supertree methods, methods to distinguish phylogenetic from non-phylogenetic signals, and approaches to differentiate homologous from homoplastic similarity in morphological data sets.

Biography

I obtained a degree in Natural Sciences (Zoology) at the University of Parma (Italy) in 1998, with a thesis discussing the behavioural ecology of the Italian ruin lizard. In 2002 I obtained a PhD from the University of Bristol (School of Earth Sciences, under the supervision of Prof. Michael Benton and Dr Mark Wilkinson) with a thesis discussing the application of novel phylogenetic methods (including supertree methods) and types of data (molecular data) in Palaeobiology. In July 2002 I moved to the Pennsylvania State University to pick up a NASA funded postdoctoral research assistantship in the laboratory of S. Blair Hedges. During my time in the US I applied molecular methods to investigate the process of animal terrestrialisation. In October 2003 I came back to Europe to pick up a second postdoctoral research assistantship in the laboratory of Dr Mark Wilkinson at the Department of Zoology of the Natural History Museum (London). While in London I started to investigate the molecular aspects of the origin of vision and sensory receptor evolution. In 2004 I was awarded a Marie Curie postdoctoral fellowship and in January 2005 I moved to the National University of Ireland, Maynooth to pick up my Marie Curie fellowship (in the laboratory of Prof. James McInerney). As a Marie Curie fellow I mostly investigated the application of super tree methods in phylogenomics, and used these approaches to investigate the origin of the eukaryotes and hypotheses relating to the tree of life and early evolution. In 2007 I was appointed Lecturer of Bioinformatics at the National University of Ireland, Maynooth. In 2007 I was also appointed as a Scientific Associate of the Department of Zoology of the Natural History Museum of London, and in 2011 I became a member of the NASA Astrobiology Institute (MIT-lead Team). While I was in Ireland my research was primarily funded by Science Foundation Ireland and by the Irish Research Council for Science Engineering and Technology. During this period I sat in the scientific council of the Irish Centre for High-End Computing. In 2012 I moved back to Bristol to pick up the position of Reader in Phylogenomics at the Schools of Earth Sciences and of Biological Sciences. I am currently serving on the council of the Systematic Association and as an editor in BMC Evolutionary Biology. My research is currently funded by the Templeton Foundation.

Memberships

Organisations

[School of Biological Sciences](#)

Other sites

- [Earthsciences](#)

Research groups

- [Evolutionary Biology](#)

Recent publications

- Zhao, Y, Vinther, J, Parry, L, Wei, F, Green, E, Pisani, D, Hou, X, Edgecombe, GD & Cong, P, 2019, '[Cambrian Sessile, Suspension Feeding Stem-Group Ctenophores and Evolution of the Comb Jelly Body Plan](#)'. *Current Biology*, vol 29., pp. 1112-1125.e2
- Pett, W, Adamski, M, Adamska, M, Warren, F, Eitel, M, Pisani, D & Woerheide, G, 2019, '[The Role of Homology and Orthology in the Phylogenomic Analysis of Metazoan Gene Content](#)'. *Molecular Biology and Evolution*, vol 36., pp. 643-649
- Lozano-Fernandez, J, Tanner, AR, Giacomelli, M, Carton, R, Vinther, J, Edgecombe, GD & Pisani, D, 2019, '[Author Correction: Increasing species sampling in chelicerate genomic-scale datasets provides support for monophyly of Acari and Arachnida \(Nature Communications, \(2019\), 10, 1, \(2295\), 10.1038/s41467-019-10244-7\)](#)'. *Nature Communications*, vol 10.
- Lozano-Fernandez, J, Giacomelli, M, Fleming, JF, Chen, A, Vinther, J, Thomsen, PF, Glenner, H, Palero, F, Legg, DA, Iliffe, TM, Pisani, D & Olesen, J, 2019, '[Pancrustacean Evolution Illuminated by Taxon-Rich Genomic-Scale Data Sets with an Expanded Remipede Sampling](#)'. *Genome Biology and Evolution*, vol 11., pp. 2055-2070
- Lozano-Fernandez, J, Tanner, A, Giacomelli, M, Carton, R, Vinther, J, Edgecombe, GD & Pisani, D, 2019, '[Increasing species sampling in chelicerate genomic-scale datasets provides support for monophyly of Acari and Arachnida](#)'. *Nature Communications*, vol 10.
- Püschel, H, O'Reilly, J, Pisani, D & Donoghue, P, 2019, '[The impact of fossil stratigraphic ranges on tip-calibration, and the accuracy and precision of divergence time estimates](#)'. *Palaeontology*.
- Siu-Ting, K, Torres-Sanchez, M, Mauro, DS, Wilcockson, D, Wilkinson, M, Pisani, D, O'Connell, MJ & Creevey, CJ, 2019, '[Inadvertent Paralog Inclusion Drives Artifactual Topologies and Timetree Estimates in Phylogenomics](#)'. *Molecular Biology and Evolution*, vol 36., pp. 1344-1356
- Puttick, MN, O'Reilly, JE, Pisani, D & Donoghue, PC, 2019, '[Probabilistic methods outperform parsimony in the phylogenetic analysis of data simulated without a probabilistic model](#)'. *Palaeontology*, vol 62., pp. 1-17
- Howard, R, Edgecombe, GD, Legg, D, Pisani, D & Lozano-Fernandez, J, 2019, '[Exploring the evolution and terrestrialization of scorpions \(Arachnida: Scorpiones\) with rocks and clocks](#)'. *Organisms Diversity and Evolution*, vol 19., pp. 71-86
- Betts, HC, Puttick, MN, Clark, JW, Williams, TA, Donoghue, PC & Pisani, D, 2018, '[Integrated genomic and fossil evidence illuminates life's early evolution and eukaryote origin](#)'. *Nature Ecology and Evolution*, vol 2., pp. 1556-1562

[View complete publications list](#) in the University of Bristol publications system

Courses

Professor Pisani currently teaches 1 courses: