



**Professor Philip Donoghue**  
**B.Sc.(Leic.), M.Sc. (Sheff.), Ph.D.(Leic.)**

Professor of Palaeobiology

**Area of research**

Molecular palaeobiology

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**Summary**

My research is focused on the relationship between evolution and embryology, integrating living and fossil organisms, developmental biology, and knowledge of their evolutionary relationships, to provide an holistic understanding of major episodes in evolutionary history.

I have particular interest in the evolutionary emergence of vertebrates, and of ecdysozoans, but also in the evolutionary emergence of animals and plants more generally. This entails classical palaeobiology, but also molecular genetics – to calibrate the Tree of Life to time using molecular clock theory, and to determine the role of genetic regulators of development in effecting organismal-level evolutionary change.

My group has facilities for rock digestion, high-end computed tomography, animal culture facilities and a molecular laboratory for RNA and DNA library preparation, gene cloning, and in situ hybridisation.

**Biography**

I am the Director of the Geology undergraduate degree programme but I teach across all undergraduate degree programmes, introducing the evolution of Earth and Life. I am also part of the team that leads the first year 'Introduction to Field Skills in Earth Sciences' residential course on the Scottish Isle of Arran.

I studied BSc Geology at Leicester University (1992), MSc Palynology at the Sheffield University (1993), and for a PhD in Geology at Leicester University (1997). My PhD concerned the palaeobiology of conodonts and was supervised by Professors Richard Aldridge and Mark Purnell. I was an 1851 Royal Commission, NERC Postdoctoral Research Fellow, and then Lecturer in Palaeobiology at the University of Birmingham before moving to Bristol in 2003. I currently serve as an editor for *Journal of the Geological Society*, as well as on the editorial boards of *Evolution & Development*, *EvoDevo*, *Lethaia*, *Scientific Data* and *Transactions of the Royal Society of Edinburgh: Earth Sciences*. I served on the Council of the Palaeontological Association (1999-2013; Newsletter Editor, Vice President, Editor, Trustee), as inaugural Secretary for the European Society for Evolutionary Developmental Biology (2006-9), on the NERC Peer Review College (2008-12), the NERC Training Advisory Group (2011-2013), and the Royal Society Newton International Fellowship (2013-) and University Research Fellowship (2017-) panels, as well as Sectional Committee 9. My research has been recognized by awards including the Philip Leverhulme Prize (Leverhulme Trust 2004), the Bigsby Medal (Geological Society 2007), the Charles Shuchert Award (Paleontological Society 2010), and the President's Medal (Palaeontological Association 2014). I held a NESTA Research Fellowship (2005-7) and I currently hold a Leverhulme Research Fellowship (2013-14) and a Royal Society Wolfson Research Merit Award (2013-2018). I was elected to the Fellowship of the Royal Society in 2015.

**Teaching**

I am the Director of the Geology degree programme (2017-2020) and I teach on all of the undergraduate degree programmes in their first and second years, providing an introduction to the evolution of Earth and Life. I also lead the Year 2 Geobiology unit, in which I try to bring my integrative interdisciplinary approach to research into the teaching environment. I am part of the team leading the first year Introduction to Field Skill in Earth Sciences unit on the beautiful (and geologically fascinating) Scottish Isle of Arran. I also supervise research projects for the MSci Geology and MSc Palaeobiology degree programmes, which is a

particular delight.

Seek me out if you are interested in evolutionary history, most especially if, like me, you like working at the interfaces between disciplines!

## Keywords

- embryology
- fossil organisms
- biology
- palaeobiology
- evolution
- embryology
- fossils
- living organisms
- fossil organisms
- ecdysozoans
- vertebrates

## Memberships

### Organisations

[School of Earth Sciences](#)

### Earth Sciences staff

- [Earth Sciences academic staff including research fellows](#)

### Research groups

- [Palaeobiology](#)

### Research themes

- [Evolution of Biodiversity and Morphology](#)

### Interdisciplinary groups

- [Bristol Biogeochemistry Research Centre](#)
- [Interface Analysis Centre \(IAC\)](#)

## Links

-  [Donoghue Lab website](#)

## Recent publications

- Sousa, Fd, Foster, PG, Donoghue, P, Schneider, H & Cox, CJ, 2019, '[Nuclear protein phylogenies support the monophyly of the three bryophyte groups \(Bryophyta Schimp.\)](#)'. *New Phytologist*, vol 222., pp. 565-575
- Dhanda, R, Murdock, DJ, Repetski, JE, Donoghue, PC & Smith, MP, 2019, '[The apparatus composition and architecture of \*Erismodus quadridactylus\* and the implications for element homology in prioniodinin conodonts](#)'. *Papers in Palaeontology*, vol 5., pp. 657-677
- Mark, D, Couzens, A, Donoghue, PCJ & Rücklin, M, 2019, '[Tooth replacement in early sarcopterygians](#)'. *Royal Society Open Science*.
- Donoghue, P, 2019, '[Evolution: The Flowering of Land Plant Evolution](#)'. *Current Biology*, vol 29., pp. R753-R756
- Clark, JW, Puttick, MN & Donoghue, PCJ, 2019, '[Origin of horsetails and the role of whole genome duplication in macroevolution](#)'. *Proceedings of the Royal Society of London B: Biological Sciences*.
- Yin, Z, Vargas, KM, Cunningham, JA, Bengtson, S, Zhu, M, Marone, F & Donoghue, PCJ, 2019, '[The early Ediacaran \*Caveasphaera\* foreshadows the evolutionary origin of animal-like embryology](#)'. *Current Biology*.
- Ferron, HG, Greenwood, JM, Deline, B, Martinez-Perez, C, Botella, H, Sansom, R, Ruta, M & Donoghue, PCJ, 2019, '[Categorical versus geometric morphometric approaches to characterising the evolution of morphological disparity in Osteostraci \(Vertebrata, stem-Gnathostomata\)](#)'. *Palaeontology*.
- Ferron, HG, Martinez-Perez, C, Rahman, IA, Lucas, VSd, Botella, H & Donoghue, PCJ, 2019, '[Computational fluid dynamics reveals ecological diversification among stem-gnathostomes](#)'. *Nature*.
- Dunn, FS, Wilby, PR, Kenchington, CG, Grazhdankin, DV, Donoghue, PC & Liu, AG, 2019, '[Anatomy of the Ediacaran rangeomorph \*Charnia masoni\*](#)'. *Papers in Palaeontology*, vol 5., pp. 157-176
- [deceased], JO, Keating, J & Donoghue, P, 2019, '[The dermal skeleton of the jawless vertebrate \*Tremataspis mammilata\* \(Osteostraci, stem-Gnathostomata\)](#)'. *Journal of Morphology*, vol 280., pp. 999-1025

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

## **Courses**

Professor Donoghue currently teaches 3 courses: