通知

现代古生物学新技术推介培训会

Workshop On new techniques in Palaeonbiology

为帮助国内从事古生物学研究的青年工作者和广大研究生开阔视野，提高研究水平，特组织此次培训会，推介当前古生物学研究领域的一些高新技术和方法。

本次培训会面向全国古生物学领域青年科学家和研究生免费开放(无需缴纳注册费，旅费和在宁期间住宿费自理，培训会期间组织方提供午餐)。

为保证培训质量，加上场地限制，本次培训会规模控制在 35 人左右。有意参加者请联系中科院南京地质古生物研究所殷宗军(电话 13951854080，邮箱 zjyin@nigpas.ac.cn)。

由于培训期间需要操作相关软件，请参与人携带高性能笔记本。

本次会议受到现代古生物学和地层学国家重点实验室以及英国皇家学会牛顿高级基金的资助，得到了中科院南京地质古生物研究所和英国布里斯托大学 Philip Donoghue 教授实验室的大力支持。特此致谢！

涉及的主题：

- 同步辐射显微断层成像技术在古生物学领域的应用(synchrotron X-ray microtomography)
- 基于 X 光管的实验室显微 CT 技术在古生物学领域的应用(computed tomography)
- 化石三维结构虚拟重建和关键软件应用培训 (软件培训涵盖 Avizo, Vgstudio Max, SPIERS)
- 流体动力学分析在古生物学领域的应用(Computed Fluid Dynamics)
- 有限元分析在古生物学领域的应用(Finite Elements Analysis)
- 分子钟与分子系统学研究现状和展望
- 埃迪卡拉动物群研究现状和展望
- 微体化石埋藏学研究

时间：

11 月 16 日-11 月 18 日，共三天

地点：

中科院南京地质古生物研究所图书馆三楼报告厅（南京市北京东路 39 号）

主讲人：

Philip Donoghue 教授， 英国 Bristol 大学，英国皇家学会院士
Emily Rayfied 教授，英国 Bristol 大学
Alexander Liu 博士，英国剑桥大学
John Cunningham 博士，英国 Bristol 大学
Imran Rahman 博士，英国牛津大学
殷宗军，博士，中科院南京地质古生物研究所

Philip C. J. Donoghue FRS

Professor of Palaeobiology
University of Bristol, School of Earth Sciences, Life Sciences Building, Tyndall Avenue, Bristol BS8 1TQ, UK.

I have degrees in Geology (BSc, Leicester 1992), Palynology (MSc, Sheffield 1994) and Palaeontology (PhD, Leicester 1997) and I held a Lectureship in Palaeobiology at the University of Birmingham until moving to Bristol in 2003. My research integrates palaeontology and molecular biology in tackling key controversies in evolutionary history, principally, the evolution of vertebrates, early metazoan evolution, and, most recently, the evolution of land plants. One of my main interests is the role of palaeontological data in divergence time estimation and I have coauthored several influential papers exploring the use of palaeontological data in molecular clock analyses. My research has been recognized by awards including the Bigsby Medal (Geological Society 2007), Charles Shuchert Award (Paleontological Society 2010), Wolfson Merit Award (Royal Society 2013), President's Medal (Palaeontological Association 2014), and election to the Royal Society (2015).

Ten Most Recent Publications:

De Baets, K, Antonelli, A, **Donoghue, PCJ.** 2016. Tectonic blocks and molecular clocks. *Philosophical Transactions of the Royal Society London, Series B: Biological Sciences* 371:20160098.

Dong, X.-P, Vargas, K, Cunningham, JA, Zhang, H, Liu, T, Chen, F, Liu, J, Bengtson, S, **Donoghue, PCJ.** 2016. Developmental biology of the early Cambrian cnidarian *Olivooides*. *Palaeontology* 59:387-407.

Donoghue, PCJ, Yang, Z 2016. The evolution of methods for establishing evolutionary timescales. *Philosophical Transactions of the Royal Society London, Series B: Biological Sciences* 371:20160020.

dos Reis, M, **Donoghue, PCJ,** Yang, Z. 2016. Bayesian molecular clock dating of species divergences in the genomics era. *Nature Reviews Genetics* 17:71-80.

Keating, J. N. and **Donoghue, P.C.J.** (2016) Histology and affinity of anaspids, and the early evolution of the vertebrate dermal skeleton. *Proceedings of the Royal Society B: Biological Sciences* 283:20152917

Marchadier, E., Oates, M. E., Fang, H., **Donoghue, P.C.J.**, Hetherington, A. M., Gough, J. (2016) Evolution of the calcium-based intracellular signalling system. *Genome Biology and Evolution* 8:2118-2132

Martínez-Perez, C., Rayfield, E. J., Botella, H., **Donoghue, P.C.J.** (2016) Translating taxonomy into the evolution of conodont feeding ecology. *Geology* 44: 247-250

O'Reilly, JE, **Donoghue, PCJ.** 2016. Tips and nodes are complementary not competing approaches to the calibration of molecular clocks. *Biology Letters* 12:20150975.

O'Reilly, JE, Puttick, MN, Parry, LA, Tanner, AR, Tarver, JE, Fleming, J, Pisani, D, **Donoghue, PCJ.** 2016. Bayesian methods outperform parsimony but at the expense of precision in the estimation of phylogeny from discrete morphological data. *Biology Letters* 12:20160081.

Tarver, JE, dos Reis, M, Mirarab, S, Moran, RJ, Parker, S, O'Reilly, JE, King, BL, O'Connell, MJ, Asher, RJ, Warnow, T, Peterson, KJ, **Donoghue, PCJ**, Pisani, D. 2016. The Interrelationships of placental mammals and the limits of phylogenetic inference. *Genome Biology and Evolution* 8:330-44.

Full Publication List: <http://palaeo.gly.bris.ac.uk/donoghue/donoghue-lab/page2/page2.html>:

Teaching responsibilities

Evolution of Earth and Life; Geological Maps; Arran Field Course; Geobiology.

Other academic activities

Editorial Boards: *Scientific Data* (Nature: 2014-), *EvoDevo* (BioMedCentral: 2009-); *Lethaia* (2009-); *Evolution & Development* (2007-); *Transactions of the Royal Society of Edinburgh: Earth Sciences* (2003-); *Palaeontology* (2009-2013), *Special Papers in Palaeontology* (2009-2013); *Organisms, Diversity & Evolution* (Elsevier: 2001-2009). **Editor:** *Proceedings of the Royal Society: Biological Sciences* (2013-), *Journal of the Geological Society* (2011-); *Palaeontology* (2006-2013). **Vice President:** The Palaeontological Association (2005-2007). **Secretary:** The European Society for Evolutionary Developmental Biology (2006-2009). **Executive:** The European Society for Evolutionary Developmental Biology (2006-2009); International Society of Vertebrate Morphologists (2004-2013). **Council Member:** The Palaeontological Association (1999-2013); The Palaeontographical Society (2000-2006); Systematics Association (2000-2003); British Micropalaeontological Society (1996-1999). **RCUK:** NERC Training Advisory Group (2011-2013); NERC Peer Review College, full member (2008-2012). **Royal Society:** Newton International Fellowship Selection Panel (2013-2018). **Grant reviewing:** Advanced Light Source, ANR, BBSRC, Canadian Light Source, CNRS, CONACYT, DFG, ERC, ESRF Evaluation Committee (2014), Finnish Research Council, GACR, Leverhulme Trust, Marsden Fund, National Geographic, Nederlandse Organisatie voor Wetenschappelijk Onderzoek, NERC, NSERC, NSF. **Fellow:** Royal Society, Paleontological Society, Geological Society, Natural History Museum London.

Recent invited lectures/keynotes at international conferences

- *Evolution of proteins, cells, and genomes*, Nanyang Technological University, Singapore, and Bintan, Indonesia (2016)
- Palaeontological and Molecular Approaches to Early Vertebrate Evolution, Royal Swedish Academy of Sciences, Jubilee Meeting, Uppsala (2015)
- Top Lecture, *Disparities in the evolution of multicellularity*, Naturalis and University of Leiden, Leiden, The Netherlands (2014)
- Keynote Lecture, *Disparities in the evolution of multicellularity*, ICREA Conference on the evolution of multicellularity, Instituta de Biologia Evolutiva, Parc de Recerca Biomedica, Barcelona (2013)

Recent Organization of Scientific Meetings

- '*Colonization of the terrestrial environment*', 38th New Phytologist Symposium, University of Bristol (2016, with, Dolan, Edwards, Gray, Harisson, Hawkesworth, Hetherington, Hiscock, Schneider)
- 'Dating species divergences using rocks and clocks, Royal Society Discussion Meeting (2015, with Ziheng Yang)

Public outreach: I actively publicize my research through writing press releases. This has resulted in local, national and international coverage in media (TV, Radio and print) and blogs, including Attenborough's *First Life*, *Material World* (R4) and French documentary 'Espèces d'espèces'.

Professor Emily J. Rayfield

My expertise lies in the application of high resolution computed tomography and the engineering technique finite element analysis (FEA) to biomechanical analysis of skeletons, with a particular focus on how skulls respond and adapt to functional demands of feeding (Gill et al. 2014 *Nature*), and how this influences morphological and ecological diversity. I have been instrumental in the development of FEA as a tool for palaeontology and biosciences (Rayfield et al. *Nature* (2001); Rayfield 2007 *Annual Reviews*), and more recently my group have been at the forefront of new methods to links trends in morphological disparity to functional and biomechanical variation including gnathostomes and early tetrapods (Anderson et al. 2011 *Nature*) and birds (Bright et al. 2016 *PNAS*), quantifying how mechanical loading influences skeletal development (Brunt et al. 2015 *J. Biomech*) and developing novel methods that link morphometrics, FEA and evolutionary modelling of form-function and selection (Polly et al. *J. Vert Paleo*).

Education

2002 PhD Palaeontology. Department of Earth Sciences, University of Cambridge
Cranial form and function in a large theropod dinosaur: a study using finite element analysis.

1996 BA (Hons) First Class, Biological Sciences. Hertford College, University of Oxford.

Present position

2014 – Present **Professor of Palaeobiology**

School of Earth Sciences, University of Bristol, Bristol, BS8 1RJ, UK
Tel: +44(0)117 3941210; e.rayfield@bristol.ac.uk

Previous appointments

2012-2014 Reader in Palaeobiology; 2010-2012 Senior Lecturer in Palaeobiology; 2005-2010 Lecturer in Palaeobiology, School of Earth Sciences, University of Bristol.

2005 Postdoctoral Researcher, Department of Palaeontology, Natural History Museum, London.

2002-2005 Junior Research Fellow, Department of Earth Sciences and Emmanuel College, University of Cambridge.

2002 Postdoctoral Research Assistant, Department of Zoology, University of Oxford.

Representative publications: (for a full list see http://tinyurl.com/hetek9c)

- Bright JA, Marugán-Lobón J, Cobb SN & Rayfield EJ. 2016. The shapes of bird beaks are highly controlled by nondietary factors. *Proc. Nat. Acad. Sci.* 113(19): 5352-5357.
- Polly D, Stayton T, Dumont E, Pierce SE, Rayfield EJ, Angielczyk K. 2016. Combining geometric morphometrics and finite element analysis with evolutionary modeling: towards a synthesis. *Journal of Vertebrate Paleontology* e1111225.
- Gill PG, Purnell MA, Crumpton N, Robson Brown K, Gostling NJ, Stampanoni M & Rayfield EJ. Dietary specializations and diversity in feeding ecology of the earliest stem mammals. *Nature* 512: 303-305. [Cover image]
- Cunningham JA, Rahman IA, Lautenschlager S, Rayfield EJ & Donoghue PCJ 2014 A virtual world of paleontology. *Trends in Ecology and Evolution* 29(6): 347-357. [Cover image]
- Button DJ, Rayfield EJ & Barrett PM 2014 Cranial biomechanics underpins high sauropod diversity in resource-poor environments. *Proc. Royal Society of London, B.* 281: 20142114.
- Lautenschlager S, Altangerel P, Witmer LM. & Rayfield EJ 2013 Edentulism, beaks and biomechanical innovations in the early evolution of theropod dinosaurs. *Proc. Nat. Acad. Sci.* 110(51) 20657-20662.
- Anderson PSL, Friedman M, Brazeau MD & Rayfield EJ. 2011. Initial radiation of jaws demonstrated stability despite faunal and environmental change. *Nature* 476: 206-209.
- Rayfield EJ 2007. Finite Element Analysis and understanding the biomechanics and evolution of living and fossil organisms. *Annual Review of Earth and Planetary Sciences* 35: 541-576.
- Rayfield EJ, Norman DB, Horner CC, Horner JR, Smith PM, Thomason JJ & Upchurch P. Cranial design and function in a large theropod dinosaur. *Nature* 409: 1033-1037.

John A. Cunningham

School of Earth Sciences, University of Bristol,
Life Science Building, Bristol, U.K. BS8 1TQ
John.Cunningham@bristol.ac.uk

Summary

My recent research has focussed on the controversial embryo-like fossils from Ediacaran Doushantuo biota. I have used a number of cutting edge techniques to study these fossils ranging from synchrotron tomography to electron probe analysis. This has allowed me to gain a better understanding of how decay and diagenetic mineralization has affected the organisms. The findings are providing new insights into the original biological structure and phylogenetic affinities of the fossils. I also have broader interests in understanding major events in the early evolution of life, such as the origins of eukaryotes, multicellularity and animals.

Education

Ph.D. in Palaeobiology (NERC Studentship)
University of Liverpool (2005-2008)
The evolution of developmental strategy in Cretaceous spatangoid echinoids

M.Sc. in Palaeobiology with distinction
University of Bristol (2001-2002)

B.Sc. (hons) Geology 2.1
University of Edinburgh (1996-2000)

Research positions

NERC Postdoctoral Fellow
University of Bristol (2012-)
Understanding the fossil evidence for major evolutionary transitions

NordCEE Researcher
Department of Palaeobiology, Swedish Museum of Natural History (2014-2016)
The evolution of multicellularity

NERC Research Associate
University of Bristol (2011-2012)
Teeth and jaws: evolutionary emergence of a model organogenic system

NERC Research Associate
University of Bristol (2008-2011)
Decoding the fossil record of embryology at the dawn of animal evolution

NERC Research Assistant
University of Bristol (2004-2005)
The development and evolution of early metazoans

Awards and grants

NERC Public Engagement Resource Development Fund (2013)

NERC Postdoctoral Fellowship (2012)

Nuffield Undergraduate Research Bursary (2010)

Palaeontological Association travel grant (2007)

Palaeontological Association Sylvester Bradley Award (2002)

Swiss Light Source: Long-term beam allocation (several applications as CoI)

Selected publications

Cunningham, J. A., Vargas, K., Liu, P., Belivanova, V., Marone, F., Martínez-Perez, C., Guizar-Sicairos, M., Holler, M., Bengtson, S. & Donoghue, P. C. J. 2015. Critical appraisal of tubular putative eumetazoans from the Ediacaran Weng'an Doushantuo biota. *Proceedings of the Royal Society Series B: Biological Sciences* 82: 20151169.

Butler, A. D., **Cunningham, J. A.**, Budd. G. E. & Donoghue, P. C. J. 2015. Experimental taphonomy of *Artemia* reveals the role of endogenous microbes in mediating decay and fossilization. *Proceedings of the Royal Society Series B: Biological Sciences* 82: 20150476.

Cunningham, J. A., Rahman, I. A., Lautenschlager, S., Rayfield, E. J. & Donoghue, P. C. J. 2014. A virtual world of paleontology. *Trends in ecology and evolution* 29: 347-357.

Dong, X.-P., **Cunningham, J. A.**, Bengtson, S., Thomas, C.-W., Liu, J.-B., Stampanoni, M. and Donoghue, P. C. J. 2013. Embryos, polyps and medusae of the early Cambrian scyphozoan *Olivooides*. *Proceedings of the Royal Society, London, Series B: Biological Sciences* 280: 20130071.

Cunningham, J. A., Thomas, C.-W., Bengtson, S., Kearns, S. L., Xiao, S., Marone, F., Stampanoni, M. & Donoghue, P. C. J. 2012. Distinguishing geology from biology in the Ediacaran Doushantuo biota constrains the timing of the origin of bilaterians. *Proceedings of the Royal Society, London, Series B: Biological Sciences* 279: 2369-2376.

Cunningham, J. A., Thomas, C.-W., Bengtson, S., Marone, F., Stampanoni, M., Turner, F. R., Bailey, J. V., Raff, R. A., Raff, E. C. & Donoghue, P. C. J. 2012. Experimental taphonomy of giant sulphur bacteria: implications for the interpretation of the embryo-like Ediacaran Doushantuo fossils. *Proceedings of the Royal Society, London, Series B: Biological Sciences* 279: 1857-1864.

Cunningham, J. A., Rücklin, M., Blom, H., Botella, H. & Donoghue, P. C. J. 2012. Testing models of dental development in the earliest bony vertebrates, *Andreolepis* and *Lophosteus*. *Biology Letters* 8: 833-837.

Huldtgren, T., **Cunningham, J. A.**, Yin, C., Stampanoni, M., Marone, F., Donoghue P. C. J. & Bengtson, S. 2011. Fossilized nuclei and germination structures identify Ediacaran 'animal embryos' as encysting protists. *Science* 334: 1696-1699.

Dr Imran A. Rahman

Oxford University Museum of Natural History
Parks Road, Oxford, OX1 3PW
United Kingdom

Office: +44 (0)1865 272996

Email: imran.rahman@oum.ox.ac.uk

SUMMARY

My research uses echinoderms as a model group for investigating the origin and early evolution of animal phyla more broadly. I analyse Cambrian fossils with the aid of X-ray tomography and computer simulations, thereby obtaining new insights into their morphology, systematics and function. This work has allowed me to test long-standing hypotheses concerning the mode of life, phylogenetic relationships and evolutionary history of early echinoderms, with implications for understanding the pattern and process underlying the Cambrian explosion.

HIGHER EDUCATION

MSc in Evolutionary Genetics & Genomics *(Class: Distinction), University of Manchester, 2010*

PhD in Palaeontology*, Imperial College London, 2009*

MSci in Palaeobiology *(Class: First Class Honours), University College London, 2005*

EMPLOYMENT

1851 Research Fellow*, Universities of Bristol and Oxford, Jan 2014–Jan 2017*
Independent research on the functional morphology and evolution of early echinoderms.

NERC Research Fellow*, Universities of Birmingham and Bristol, Jan 2011–Jan 2014*
Independent research on the palaeontology, evolution and development of early echinoderms.

Research Associate*, University of Manchester, Oct 2010–Dec 2010*

SELECTED PUBLICATIONS

Rahman, I.A., Darroch, S.A.F., Racicot, R.A. & Laflamme, M. 2015. Suspension feeding in the enigmatic Ediacaran organism *Tribrachidium* demonstrates complexity of Neoproterozoic ecosystems. *Sci. Adv*. 1: e1500800.

Rahman, I.A., Waters, J.A., Sumrall, C.D. & Astolfo, A. 2015. Early post-metamorphic, Carboniferous blastoid reveals the evolution and development of the digestive system in echinoderms. *Biol. Lett.* 11: 20150776.

Rahman, I.A., Zamora, S., Falkingham, P.L. & Phillips, J.C. 2015. Cambrian cinctan echinoderms shed light on feeding in the ancestral deuterostome. *Proc. R. Soc. B* 282: 20151964.

Dougherty, L., **Rahman, I.A.**, Burdfield-Steel, E.R., Greenway, E.V. & Shuker, D.M. 2015. Experimental reduction of intromittent organ length reduces male reproductive success in a bug. *Proc. R. Soc. B* 282: 20150724.

Zamora, S. & **Rahman, I.A.** 2014. Deciphering the early evolution of echinoderms with Cambrian fossils. *Palaeontology* 57: 1105–1119.

Cunningham, J.A., **Rahman, I.A.**, Lautenschlager, S., Rayfield, E.J. & Donoghue, P.C.J. 2014. A virtual world of palaeontology. *Trends Ecol. Evol.* 29: 347–357.

Sutton, M.D., **Rahman, I.A.** & Garwood, R.J. 2014. *Techniques for Virtual Palaeontology*. Wiley, Oxford: 208 pp.

Zamora, S., **Rahman, I.A.** & Smith, A.B. 2012. Plated Cambrian bilaterians reveal the earliest stages of echinoderm evolution. *PLoS ONE* 7: e38296.

Lin, J.-P., Zhao, Y.-L., **Rahman, I.A.**, Xiao, S. & Wang, Y. 2010. Bioturbation in Burgess Shale-type *lagerstätten* – Case study of trace fossil–body fossil association from the Kaili Biota (Cambrian Series 3), Guizhou, China. *Palaeogeogr. Palaeoclimatol. Palaeoecol.* 292: 245–256.

Rahman, I.A. & Zamora, S. 2009. The oldest cinctan carpoid (stem-group Echinodermata), and the evolution of the water vascular system. *Zool. J. Linn. Soc.* 157: 420–432.

Dr Alexander Liu, MEarthSci. D.Phil. FGS

School of Earth Sciences, Life Sciences Building, 24, Tyndall Avenue, Bristol, BS8 1TQ, U.K.

Mobile: 07732 950340 *Work*: 01173 941699
Webpage: http://alexanderliu.weebly.com
E-mail: alex.liu@bristol.ac.uk

I am a palaeobiologist whose work explores the interplay between biology and the Earth system across the Neoproterozoic–Cambrian transition. Specifically, I investigate aspects of ichnology, taphonomy, sedimentology and palaeoecology, with a strong focus on macrofossils of the Ediacaran Period. My aim is to better understand how and why complex eukaryotes evolved and diversified over this critical interval of Earth history. Experimental and field-based studies in regions including Brazil, Russia and Canada are undertaken to achieve this, in conjunction with a variety of ongoing international collaborations.

RESEARCH HISTORY AND EDUCATION

October 2016 – Lecturer in Palaeobiology, University of Cambridge
Official Fellow, Girton College, University of Cambridge

2014 – Present NERC Independent Research Fellow, University of Bristol
- Experimental, analytical (µCT, SEM and EPMA) and field-based research into global Neoproterozoic palaeobiology, ichnology, and sedimentology.
- Ongoing collaborations with academic (Oxford, Cambridge, São Paulo, Novosibirsk) and industrial (British Geological Survey, Petrobras) partners.

2011 – 2014 Junior Research Fellow, University of Cambridge, Girton College
- Independent research, including the discovery of fossilised impressions of metazoan muscular tissue within Ediacaran strata, published in *Proc. Royal Society B*.

2007 – 2011 D.Phil., Palaeobiology, University of Oxford, Exeter College
- NERC Studentship (inc. 6 months at the Memorial University of Newfoundland).
- Thesis title: "Understanding the Ediacaran biota of Avalonia: an ontogenetic, taphonomic and palaeoecological study".

2003 – 2007 MEarthSci. (1st Class Honours), Earth Sciences
University of Oxford, St. Peter's College

RESEARCH FUNDING AND FELLOWSHIPS

2014 – 2019 NERC Independent Research Fellowship
Funds totalling **£492,000** to explore Ediacaran palaeobiology.

2015 NERC NIGL Steering Committee Award
PI, grant in kind of **~£45,000** towards Brazilian geochronology.

2011 – 2014 Henslow Junior Research Fellowship, Girton College, Cambridge
Funded by the Cambridge Philosophical Society, 3 years duration, **~£63,000**.

STUDENT SUPERVISION

Christos Psarras (2014–2015, MSc), **Frances Dunn** (2015– , PhD).

SERVICE AND RECENT ACTIVITIES

2015 – Present **Chair**, Organising Committee, "International Symposium on the Ediacaran–Cambrian Transition", Newfoundland, Canada, June 2017.

2012 – 2016 **Corresponding Member of the Ediacaran Subcommission**, UNESCO International Commission on Stratigraphy.

2012 **Lead author** of the Global Comparative Analysis of Ediacaran Palaeontological sites, commissioned by the Government of Newfoundland and Labrador, and submitted to UNESCO's World Heritage Centre in 2015.

- **Fellow** of the *Geological Society, London*, and *Cambridge Philosophical Society*.
- **Member** of the *Palaeontological Association*, *Geological Association of Canada*, and *International Palaeontological Association*.

PUBLICATIONS

29 published articles or reports since 2008, including 20 articles in journals including *Nature*, *Geology*, *Proceedings B*, *PALAIOS*, *Palaeontology* and *PNAS*. As of July 2016, my H-index is 11 (Google Scholar). Selected publications include:

- **Liu, A.G.** 2016. Framboidal pyrite shroud confirms the 'death mask' model for moldic preservation of Ediacaran soft-bodied organisms. *PALAIOS*, 31, 259-274.
- Davies, N.S., **Liu, A.G.**, Gibling, M.R. & Miller, R. 2016. Resolving MISS conceptions and misconceptions: A geological approach to sedimentary surface textures generated by microbial and abiotic processes. *Earth Science Reviews*, 154, 210-246.
- Menon, L.R., McIlroy, D., **Liu, A.G.** & Brasier, M.D. 2016. The dynamic influence of microbial mats on sediments: fluid escape and pseudofossil formation in the Ediacaran Longmyndian Supergroup, UK. *J. Geol. Soc., London*, 173(1), 177-185.
- Mitchell, E.G., Kenchington, C.G., **Liu, A.G.**, Matthews, J.J. & Butterfield, N.J. 2015. Reconstructing the reproductive mode of an Ediacaran macro-organism. *Nature*, 524, 343-346.
- **Liu, A.G.**, Kenchington, C.G. & Mitchell, E.G. 2015. Remarkable insights into the paleoecology of the Avalonian Ediacaran macrobiota. *Gondwana Research*, 27, 1355-1380.
- Wacey, D., Kilburn, M.R., Saunders, M., Cliff, J.B., Kong, C., **Liu, A.G.**, Matthews, J.J. & Brasier, M.D. 2015. Uncovering framboidal pyrite biogenicity using nano-scale CN_{org} mapping. *Geology*, 43(1), 27-30.
- **Liu, A.G.**, Matthews, J.J., Menon, L.R., McIlroy, D. & Brasier, M.D. 2014. *Haootia quadriformis* n. gen., n. sp., interpreted as a muscular cnidarian impression from the late Ediacaran Period (~560 Ma). *Proc. Royal Soc. B*, 281(1793).
- Brasier, M.D., Antcliffe, J.B. & **Liu, A.G.** 2012. The architecture of Ediacaran fronds. *Palaeontology*, 55(5), 1105-1124.
- **Liu, A.G.**, McIlroy, D., Antcliffe, J.B. & Brasier, M.D. 2011. Effaced preservation in the Ediacara biota of Avalonia and its implications for the early macrofossil record. *Palaeontology*, 54(3), 607-630.
- **Liu, A.G.**, McIlroy, D. & Brasier, M.D. 2010. First evidence for locomotion in the Ediacara biota from the 565Ma Mistaken Point Formation, Newfoundland. *Geology*, 38, 123-126.

殷宗军简介

姓名：殷宗军
性别：男
出生日期：1985.10.01

教育背景：

2007.09-2012.06 中科院南京地质古生物研究所/中科院研究生院 博士研究生
2010.10-2011.11 欧洲同步辐射中心/European Synchrotron Radiation Facility，联合培养博士生
2003.09-2007.06 中国地质大学（武汉）地质学国家理科基地 本科

工作经历：

2012.08-至今 中科院南京地质古生物研究所 助理研究员

主持的科研项目：

2017-2020 国家自然科学基金面上项目（直接经费 82 万）
2015-2018 英国皇家学会牛顿高等奖学金 （人才基金，资助经费 10.3 万英镑）
2015-2018 现代古生物学与地层学国家重点实验室自主项目（资助经费 90 万）
2013-2017 国家自然科学基金委青年基金项目（资助经费 25 万）
2013-2016 江苏省自然基金委青年基金（资助经费 20 万）
2012-2015 现代古生物学与地层学国家重点实验室基础项目（资助经费 15 万）
2012-2014 中科院南京地质古生物研究所新技术新方法项目（资助经费 15 万）

奖励和人才计划：

2016 年 获德国哥廷根科学院生物学奖（2016, Prize for Biology）
2015 年 获英国皇家学会牛顿高等奖学金 （Royal Society-Newton Advanced Fellowship）
2012 年 获中国科学院院长优秀奖
2010 年 获中国留学基金委奖学金

代表性论文：

1. **Yin, Z.J**, Zhu, M.Y., Bottjer, D.J., Zhao, F.C., Tafforeau, P. (2016): Meroblastic cleavage identifies some Ediacaran Doushantuo (China) embryo-like fossils as metazoans. ***Geology,*** 44(9):735-738.
2. **Yin, Z.J**, Zhu, M.Y., Davidson, E.H., Bottjer, D.J., Zhao, F.C., Tafforeau, P. (2015): Sponge grade body fossil with cellular resolution dating 60 Myr before the Cambrian. ***Proceedings of the National Academy of Sciences*, *USA,*** 112 (12), E1453-E1460.
3. **Yin, Z.J.**, Liu, P.J., Li. G., Tafforeau, P., Zhu, M.Y. (2014): Biological and taphonomic implications of Ediacaran fossil embryos undergoing cytokinesis. ***Gondwana Research***, 25: 1019-1026.

4. **Yin, Z.J.**, Zhu, M.Y., Tafforeau, P., Chen, J.Y., Liu, P.J., Li, G. (2013): Early embryogenesis of potential bilaterian animals with polar lobe formation from the Ediacaran Weng'an biota, South China. ***Precambrian Research***, 225: 44-57.
5. **Yin, Z.J.,** Zhu, M.Y. (2012): New observations of the ornamented Doushantuo embryo fossils from the Ediacaran Weng'an biota, South China. ***Bulletin of Geosciences,*** 87(1), 171–181.
6. Zhu, S.X., Zhu, M.Y., Knoll, A.H., **Yin, Z.J.**, Zhao, F.C., Sun, S.F., Qu, Y.G., Shi, M., Liu, H. (2016): Decimetre-scale multicellular eukaryotes from the 1.56-billion-year-old Gaoyuzhuang Formation in North China. ***Nature Communications***, 7:11500 (DOI: 10.1038/ncomms11500)
7. **Yin, Z.J.**, Li, G., Zhu, M.Y. (2014): Three dimensional nondestructive imaging techniques for the microfossils: A comparision (两种微体化石三维无损成像技术的对比). ***Acta Micropalaeontologica Sinica***, 31(4): 440-452.
8. **Yin, Z.J.,** Zhu, M.Y. (2011): Critical reappraisal of Ediacaran Doushantuo animal gastrula fossils: new insights from synchrotron X-ray microtomographyic anatomic study (瓮安生物群中"内陷式动物原肠胚化石"的同步辐射无损成像及其亲缘关系的重新解释), ***Science & Technology Review***, 29(26): 18-24.
9. **Yin, Z.J.,** Zhu, M.Y. (2010): The Embryo fossils from the Neoproterozoic Weng'an Biota in Guizhou Province (South China) (埃迪卡拉纪瓮安生物群中动物胚胎化石研究进展), ***Science & Technology Review***, 6(28): 103-111.
10. **Yin, Z.J.,** Zhu, M.Y. (2010): Epibolic gastrula embryo fossils from the Ediacaran Weng'an Biota (Guizhou, South China) (外包型原肠胚化石在瓮安生物群中的发现), ***Acta Palaeontologica Sinica***, 49(3): 325-335.
11. **Yin, Z.J.,** Zhu, M.Y., Xiao, T.Q. (2009): Application of synchrotron X-ray microtomography in palaeontology for nondestructive 3D imaging of fossil specimens (同步辐射 X 射线相衬微 CT 在古生物学中的应用). ***Physics***, 7(38): 504-510.
12. **Yin, Z.J.,** Zhu, M.Y. (2008): Quantitative analysis on the fossil abundance of the Ediacaran Weng'an Biota, Guizhou (贵州埃迪卡拉纪瓮安生物群化石含量统计分析). ***Acta Palaeontologica Sinica***, 47(4): 477-487.