

引用文献

1 章

- Bottke, W. F. and Norman, M. (2017). The late heavy bombardment. *Annual Review of Earth and Planetary Sciences* 45: 619-647.
- Ciesla, F. J. and Sandford, S. A. (2012). Organic synthesis via irradiation and warming of ice grains in the solar nebula. *Science* 336: 452-454.
- Higgs, P. G. and Lehman, N. (2015). The RNA world: molecular cooperation at the origins of life. *Nature Reviews Genetics* 16: 7-17.
- Lane, N. (2016). *The Vital Question: Energy, Evolution and the Origins of Complex Life*. New York: W.W. Norton & Co.
- Lin, D.N.C. (2008). The genesis of planets. *Scientific American* 298 (5): 50-59.
- McCollom, T. M. (2013). Miller-Urey and beyond: what have we learned about prebiotic organic synthesis reactions in the past 60 years? *Annual Review of Earth and Planetary Sciences* 41: 207-229.
- Pressman, A., Blanco, C., and Chen, I.A. (2015). The RNA world as a model system to study the origin of life. *Current Biology* 25: R953-R963.
- Saha, R. and Chen, I. A. (2015). Origin of life: protocells red in tooth and claw. *Current Biology* 25: R1175-R1177.
- Schmitt-Kopplin, P., Gabelica, Z., Gougeon, R. D. et al. (2010). High molecular diversity of extraterrestrial organic matter in Murchison meteorite revealed 40 years after its fall. *Proceedings of the National Academy of Sciences of the United States of America* 107: 2763-2768.
- Smith, H. A. (2011). Alone in the universe. *American Scientist* 99: 320-328.
- Weiss, M. C., M, P., Xavier, J. C. et al. (2018). The last universal common ancestor between ancient earth chemistry and the onset of genetics. *PLoS Genetics* 14 (8): e1007518.

2 章

- Betts, H. C., Puttick, M. N., Clark, J. et al. (2018). Integrated genomic and fossil evidence illuminates life's early evolution and eukaryote origin. *Nature Ecology and Evolution* 2: 1556-1562.
- Busigny, V., Planavsky, N. V., Jézéquel, D. et al. (2014). Iron isotopes in an Archean ocean analogue. *Geochimica et Cosmochimica Acta* 133: 443-462.
- Gold, D. A., Caron, A. M., Fournier, G. et al. (2017). Paleoproterozoic sterol biosynthesis and the rise of oxygen. *Nature* 543: 420-423.
- Hazen, R. M. (2010). How old is Earth, and how do we know? *Evolution: Education and Outreach* 3: 198-205.
- Himmler, T., Smrzka, D., Zwickler, J. et al. (2018). Stromatolites below the photic zone in the northern Arabian Sea formed by calcifying chemotrophic microbial mats. *Geology* 46: 339-342.
- Kerr, R. A. (2011). Asteroid model shows early life suffered a billion-year battering. *Science* 332: 302-303.
- Luo, G., Ono, S., Beukes, N. J. et al. (2016). Rapid oxygenation of Earth's atmosphere 2.33 billion years ago. *Science Advances* 2: e1600134.
- Lyons, T. W., Reinhard, C. T., and Planavsky, N. J. (2014). The rise of oxygen in Earth's early ocean and atmosphere. *Nature* 506: 307-315.
- Paterson, D. M., Aspden, R. J., Visscher, P. T. et al. (2008). Light-dependent biostabilisation of sediments by stromatolite assemblages. *PLoS One* 3 (9): e3176.
- Schopf, J. W. and Kudryavtsev, A. B. (2010). Biogenicity of Earth's earliest fossils: a resolution of the controversy. *Gondwana Research* 22: 761-771.
- Tashiro, T., Ishida, A., Hori, M. et al. (2017). Early trace of life from 3.95 Ga sedimentary rocks in Labrador, Canada. *Nature* 549: 516-518.
- Valley, J. W., Cavosie, A. J., Ushikubo, T. et al. (2014). Hadean age for a post-magma-ocean zircon confirmed by atom-probe tomography. *Nature Geoscience* 7: 219-223.

3 章

- Betts, H. C., Puttick, M. N., Clark, J. et al. (2018). Integrated genomic and fossil evidence illuminates life's early evolution and eukaryote origin. *Nature Ecology and Evolution* 2: 1556-1562.
- Brusatte, S. L., O'Connor, J. K., and Jarvis, E. D. (2015). The origin and diversification of birds. *Current Biology* 25: R888-R898.
- Butterfield, N. J. (2015). Early evolution of the Eukaryota. *Palaeontology* 58: 5-17.
- Eme, L., Spang, A., Lombard, J. et al. (2017). Archaea and the origin of eukaryotes. *Nature Reviews Microbiology* 15: 711-723.
- Martin, W. and Muller, M. (1998). The hydrogen hypothesis for the first eukaryote. *Nature* 392: 37-41.
- Williams, T. A., Foster, P. G., Cox, C. J., and Embley, M. (2013). An archaeal origin of eukaryotes supports only two primary domains of life. *Nature* 504: 231-236.

4 章

- Barnes, R., Callow, P., Olive, P. et al. (2001). *The Invertebrates: A Synthesis*, 3e. Oxford: Blackwell Science.
- Boardman, R., Cheetham, A., and Rowell, A. (1987). *Fossil Invertebrates*. Oxford: Blackwell Science.
- Brocks, J. J., Jarrett, A. J. M., Sirantoine, E. et al. (2017). The rise of algae in Cryogenian oceans and the emergence of animals. *Nature* 548: 578-581.
- Butterfield, N. J. (2018). Oxygen, animals and aquatic bioturbation: an updated account. *Geobiology* 16: 3-16.
- Cunningham, J. A., Liu, A. G., Bengtson, S. et al. (2017a). The origin of animals: can molecular clocks and the fossil record be reconciled? *BioEssays* 39: 1600120.
- Cunningham, J. A., Vargas, K., Yin, Z. et al. (2017b). The Weng'an Biota (Doushantuo formation): an Ediacaran window on soft-bodied and multicellular microorganisms. *Journal of the Geological Society, London* 174: 793-802.
- dos Reis, M., Thawornwattana, Y., Angelis, K. et al. (2015). Uncertainty in the timing of origin of animals and the limits of precision in molecular timescales. *Current Biology* 25: 1-12.
- Gingras, M., Hagadorn, J. W., Seilacher, A. et al. (2011). Possible evolution of mobile animals in association with microbial mats. *Nature Geoscience* 4: 372-375.
- Hoffman, P. F., Abbott, D. S., Ashkenazy, Y. et al. (2017). Snowball earth climate dynamics and Cryogenian geology-geobiology. *Science Advances* 3 (11): e1600983.
- Lenton, T. M., Boyle, R. A., Poulton, S. W. et al. (2014). Co-evolution of eukaryotes and ocean oxygenation in the Neoproterozoic era. *Nature Geoscience* 7: 257-265.
- Narbonne, G. M., La Flamme, M., Greentree, C., and Trusler, P. (2009). Reconstructing a lost world: Ediacaran rangeomorphs from Spaniard's Bay, Newfoundland. *Journal of Paleontology* 83: 503-523.

5 章

- Barnes, R., Callow, P., Olive, P. et al. (2001). *The Invertebrates: A Synthesis*, 3e. Oxford: Blackwell Science.
- Butterfield, N. J. (2018). Oxygen, animals and aquatic bioturbation: an updated account. *Geobiology* 16: 3-16.
- Cunningham, J. A., Liu, A. G., Bengtson, S. et al. (2017). The origin of animals: can molecular clocks and the fossil record be reconciled? *BioEssays* 39: 1600120.
- Hou, X. -G., Siveter, D. J., Siveter, D. J. et al. (2007). *The Cambrian Fossils of Chengjiang, China: The Flowering of Early Animal Life*, 2e. Oxford: Wiley-Blackwell.
- Paterson, J. R., García-Bellido, D. C., Lee, M. S. Y. et al. (2011). Acute vision in the giant Cambrian predator *Anomalocaris* and the origin of compound eyes. *Nature* 480: 237-240.
- Peters, S. E. and Gaines, R. R. (2012). Formation of the 'Great Unconformity' as a trigger for the Cambrian explosion. *Nature*

484: 363-366.

6 章

- Algeo, T. J., Chen, Z. -Q., Fraiser, M. L. *et al.* (2011). Terrestrial-marine teleconnections in the collapse and rebuilding of Early Triassic marine ecosystems. *Palaeogeography, Palaeoclimatology, Palaeoecology* 308: 1-11.
- Sepkoski, J. J. (1981). A factor analytic description of the Phanerozoic marine fossil record. *Paleobiology* 7: 36-53. [Identifying the three great marine faunas].
- Sepkoski, J. J. (1984). A kinetic model of Phanerozoic taxonomic diversity. III. Post-Paleozoic families and mass extinctions. *Paleobiology* 10: 246-267. [Putting it all together].

7 章

- Anderson, P. S. L. and Westneat, M. W. (2009). A biomechanical model of feeding kinematics for *Dunkleosteus terrelli* (Arthrodira, Placodermi). *Paleobiology* 35: 251-269.
- Anderson, P. S. L., Friedman, M., Brazeau, M. D., and Rayfield, E. J. (2011). Initial radiation of jaws demonstrated stability despite faunal and environmental change. *Nature* 476: 206-209. [Devonian disparity among gnathostomes].
- Farmer, C. G. (1999). Evolution of the vertebrate cardiopulmonary system. *Annual Reviews of Physiology* 61: 573-592.
- Gai, Z., Donoghue, P. C. J., Zhu, M. *et al.* (2011). Fossil jawless fish from China foreshadows early jawed vertebrate anatomy. *Nature* 476: 324-327. [The galeaspid *Shuyu*].
- Long, J. A., Mark-Kurik, E., Johanson, Z. *et al.* (2015). Copulation in antiarch placoderms and the origin of gnathostome internal fertilization. *Nature* 517: 196-199.
- Rucklin, M., Donoghue, P. C. J., Johanson, Z. *et al.* (2012). Development of teeth and jaws in the earliest jawed vertebrates. *Nature* 491: 748-751.
- Zhu, M., Zhao, W., Jia, L. *et al.* (2009). The oldest articulated osteichthyan reveals mosaic gnathostome characters. *Nature* 458: 469-474. [And comment by M. I. Coates, pp. 413-414].

8 章

- Boyce, C. K., Fan, Y., and Zwieniecki, A. (2017). Did trees grow up to the light, up to the wind, or down to the water? How modern high productivity colors perception of early plant evolution. *New Phytologist* 215: 552-557.
- Edwards, D., Cherns, L., and Raven, J. A. (2015). Could land-based early photosynthesizing ecosystems have bioengineered the planet in mid-Palaeozoic times. *Palaeontology* 58: 803-837.
- Garwood, R. J. and Edgecombe, G. D. (2011). Early terrestrial animals, evolution, and uncertainty. *Evolution Education Outreach* 4: 489-501.
- Jeram, A. J., Selden, P. A., and Edwards, D. (1990). Land animals in the Silurian - arachnids and myriapods from Shropshire, England. *Science* 250: 658-661.
- Lozano-Fernandez, J., Carton, R., Tanner, A. R. *et al.* (2016). A molecular palaeobiological exploration of arthropod terrestrialization. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 371: 20150133.
- MacNaughton, R. B., Cole, J., Dalrymple, R. *et al.* (2002). First steps on land: arthropod trackways in Cambrian-Ordovician eolian sandstone, southeastern Ontario, Canada. *Geology* 30: 391-394.
- Morris, J. L., Puttick, M. N., Clarke, J. W. *et al.* (2018). The timescale of early land plant evolution. *Proceedings of the National Academy of Sciences of the United States of America* 115: E2274-E2283.
- Puttick, M. N., Morris, J. L., Williams, T. A. *et al.* (2018). The interrelationships of land plants and the nature of the ancestral embryophyte. *Current Biology* 28: 733-745.
- Wellman, C. H. and Strother, P. K. (2015). The terrestrial biota prior to the origin of land plants (embryophytes): a review of the evidence. *Palaeontology* 58: 601-627.

11 章

- Chen, Z. Q. and Benton, M. J. (2012). The timing and pattern of biotic recovery following the end-Permian mass extinction. *Nature Geoscience* 5: 375-383.
- Lindgren, J., Caldwell, M. W., Konishi, T. *et al.* (2010). Convergent evolution in aquatic tetrapods: insights from an exceptional fossil mosasaur. *PLoS One* 5 (8): e11998.
- Lindgren, J., Everhart, M. J., Caldwell, M. W. *et al.* (2011). Three-dimensionally preserved integument reveals hydrodynamic adaptations in the extinct marine lizard *Ectenosaurus* (Reptilia, Mosasauridae). *PLoS One* 6 (11): e27343.

12 章

- Carrier, D. R. (1987). The evolution of locomotor stamina in tetrapods: circumventing a mechanical constraint. *Paleobiology* 13: 326-341. [A breakthrough paper].

13 章

- Bates, K. T. and Falkingham, P. L. (2012). Estimating maximum bite performance in *Tyrannosaurus rex* using multi-body dynamics. *Biology Letters* 8: 660-664.
- Button, D. J., Rayfield, E. J., and Barrett, P. M. (2014). Cranial biomechanics underpins high sauropod diversity in resource-poor environments. *Proceedings of the Royal Society B: Biological Sciences* 281: 20142114.
- Cieri, R. L. and Farmer, C. G. (2016). Unidirectional pulmonary airflow in vertebrates: a review of structure, function, and evolution. *Journal of Comparative Physiology. B, Biochemical, Systemic, and Environmental Physiology* 186: 541-552.
- Erickson, G. M. (2005). Assessing dinosaur growth patterns: a microscopic revolution. *Trends in Ecology and Evolution* 20: 677-684.
- Evans, D., Ridgely, R., and Witmer, L. (2009). Endocranial anatomy of lambeosaurine dinosaurs: a sensorineural perspective on cranial crest function. *Anatomical Record* 292: 1315-1337.
- Godefroit, P., Sinitsa, S. M., Dhouailly, D. *et al.* (2014). A Jurassic ornithischian dinosaur from Siberia with both feathers and scales. *Science* 345: 451-455.
- Hutchinson, J. R., Bates, K., Molnar, J. *et al.* (2011). A computational analysis of limb and body dimensions in *Tyrannosaurus rex* with implications for locomotion, ontogeny, and growth. *PLoS One* 6: e26037.
- Ibrahim, N., Sereno, P. C., Dal Sasso, C. *et al.* (2014). Semiaquatic adaptations in a giant predatory dinosaur. *Science* 345: 1613-1616.
- Li, Q., Gao, K. Q., Vinther, J. *et al.* (2010). Plumage color patterns of an extinct dinosaur. *Science* 327: 1369-1372.
- O'Connor, P. and Claessens, L. (2005). Basic avian pulmonary design and flow-through ventilation in non-avian theropod dinosaurs. *Nature* 436: 253-256.
- Vinther, J. A., Nicholls, R., Lautenschlager, S. *et al.* (2016). 3D camouflage in an ornithischian dinosaur. *Current Biology* 26: 2456-2462.
- Wedel, M. J. (2006). Origin of postcranial skeletal pneumaticity in dinosaurs. *Integrative Zoology* 1: 80-85.
- Weishampel, D. B. (1981). Acoustic analyses of potential vocalization in lambeosaurine dinosaurs (Reptilia: Ornithischia). *Paleobiology* 7: 252-261.
- Wings, O. and Sander, P. M. (2007). No gastric mill in sauropod dinosaurs: new evidence from analysis of gastrolith mass and function in ostriches. *Proceedings of the Royal Society B: Biological Sciences* 274: 635-640.
- Zhang, F., Kearns, S. L., Orr, P. J. *et al.* (2010). Fossilized melanosomes and the colour of Cretaceous dinosaurs and birds. *Nature* 463: 1075-1078.

14 章

- Alonso, P. D., Milner, A. C., Ketcham, R. A. *et al.* (2004). The avian nature of the brain and inner ear of *Archaeopteryx*. *Nature* 430:

666-669.

Angst, D., Lécuyer, C., Amiot, R. *et al.* (2014). Isotopic and anatomical evidence of an herbivorous diet in the early Tertiary giant bird *Gastornis*: implications for the structure of Paleocene terrestrial ecosystems. *Naturwissenschaften* 101: 313-322.

Birn-Jeffery, A. V., Miller, C. E., Naish, D. *et al.* (2012). Pedal claw curvature in birds, lizards and Mesozoic dinosaurs – complicated categories and compensating for mass-specific and phylogenetic control. *PLoS One* 7 (12): e50555.

Carney, R. M., Vinther, J., Shawkey, M. D. *et al.* (2012). New evidence on the colour and nature of the isolated archaeopteryx feather. *Nature Communications* 3: 637.

Degrange, F. J., Tambussi, C. P., Moreno, K. *et al.* (2010). Mechanical analysis of feeding behavior in the extinct “terror bird” *Andalgalornis steulleti* (Gruiformes: Phorusrhacidae). *PLoS One* 5 (8): e11856.

Frey, E. and Tischlinger, H. (2012). The Late Jurassic pterosaur *Rhamphorhynchus*, a frequent victim of the ganoid fish *Aspidorhynchus*? *PLoS One* 7 (3): e31945.

Norberg, U. M. L. (2002). Structure, form, and function of flight in engineering and the living world. *Journal of Morphology* 252: 52-81.

Voeten, D. F. A. E., Cubo, J., Margerie, E. *et al.* (2018). Wing bone geometry reveals active flight in *Archaeopteryx*. *Nature Communications* 9: 923.

Witton, M. P. and Naish, D. (2008). A reappraisal of azhdarchid pterosaur functional morphology and paleoecology. *PLoS One* 3 (5): e2271.

15 章

Vermeij, G. J. and Grosberg, R. K. (2010). The great divergence: when did diversity on land exceed that in the sea? *Integrative & Comparative Biology* 50: 675-682.

17 章

Oreskes, N. and Conway, E. M. (2010). *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury.

Pörtner, H. O., Karl, D. M., Boyd, P. W. *et al.* (2014). Ocean systems. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (ed. C.B. Field, V. Barros, D.J. Dokken, *et al.*), 411-484. Cambridge: Cambridge University Press.

18 章

Martinelli, A. G., Bento Soares, M., and Schwanke, C. (2016). Two new cynodonts (Therapsida) from the Middle-Late Triassic of Brazil and comments on South American probainognathians. *PLoS One* 11 (10): e0162945.

19 章

Gingerich, P. D., von Koenigswald, W., Sanders, W. J. *et al.* (2009). New protocetid whale from the middle Eocene of Pakistan: birth on land, precocial development, and sexual dimorphism. *PLoS One* 4: e4366. [*Maiacetus*].

21 章

Bloch, J. I. and Boyer, D. M. (2002). Grasping primate origins. *Science* 298: 1606-1610, and comment, pp. 1564-1565; arguments, *Science* 300: 741.

Franzen, J. L., Gingerich, P., Habersetzer, J. *et al.* (2009). Complete primate skeleton from the middle Eocene of Messel in Germany: morphology and paleobiology. *PLoS One* 4: e5723.

22 章

Bae, C. J., Douka, K., and Petraglia, M. D. (2017). On the origin of modern humans: Asian perspectives. *Science* 358: eaai9067.

Bermúdez de Castro, J. M., Martínón-Torres, M., Arsuaga, J. L. *et al.* (2017). Twentieth anniversary of *Homo antecessor* (1997-2017): a review. *Evolutionary Anthropology* 26: 157-171.

Elguero, E., Delicat-Loembet, L., Rougeron, V. *et al.* (2015). Malaria continues to select for sickle cell trait in Central Africa. *Proceedings of the National Academy of Sciences of the United States of America* 112: 7051-7054.

Green, R. E., Krause, J., Briggs, A. W. *et al.* (2010). A draft sequence of the Neandertal genome. *Science* 328: 710-722.

Hawkes, K. and Coxworth, J. E. (2013). Grandmothers and the evolution of human longevity: a review of findings and future directions. *Evolutionary Anthropology* 22: 294-302.

Scally, A. and Durbin, R. (2012). Revising the human mutation rate: implications for understanding human evolution. *Nature Reviews in Genetics* 13: 745-753.

Scerri, E. M. L., Thomas, M. G., Manica, A. *et al.* (2018). Did our species evolve in subdivided populations across Africa, and why does it matter? *Trends in Ecology and Evolution* 33: 582-594.

Shaw, C. N., Hofmann, C. L., Petraglia, M. D. *et al.* (2012). Neandertal humeri may reflect adaptation to scraping tasks, but not spear thrusting. *PLoS One* 7: e40349.

Slatkin, M. and Racimo, F. (2016). Ancient DNA and human history. *Proceedings of the National Academy of Sciences of the United States of America* 113: 6380-6387.

Slon, V., Mafessoni, F., Vernot, B. *et al.* (2018). The genome of the offspring of a Neandertal mother and a Denisovan father. *Nature* 561: 113-116.

Spoor, F. (2011). Malapa and the genus *Homo*. *Nature* 478: 44-45.

Stringer, C. and Galway-Witham, J. (2017). On the origin of our species. *Nature* 546: 212-214.

Wood, B. and Harrison, T. (2011). The evolutionary context of the first hominins. *Nature* 470: 347-352.