Emily R Rayfield

List of Publications by Year
in descending order

113 papers	5,388 citations	66343 42 h-index	98798 67 g-index
116 all docs	116 docs citations	116 times ranked	3473 citing authors

#	Article	IF	Citations
1	Finite Element Analysis and Understanding the Biomechanics and Evolution of Living and Fossil Organisms. Annual Review of Earth and Planetary Sciences, 2007, 35, 541-576.	11.0	351
2	Cranial design and function in a large theropod dinosaur. Nature, 2001, 409, 1033-1037.	27.8	219
3	A virtual world of paleontology. Trends in Ecology and Evolution, 2014, 29, 347-357.	8.7	205
4	The shapes of bird beaks are highly controlled by nondietary factors. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 5352-5357.	7.1	192
5	Patterns of morphospace occupation and mechanical performance in extant crocodilian skulls: A combined geometric morphometric and finite element modeling approach. Journal of Morphology, 2008, 269, 840-864.	1.2	162
6	Cranial mechanics and feeding in Tyrannosaurus rex. Proceedings of the Royal Society B: Biological Sciences, 2004, 271, 1451-1459.	2.6	146
7	Functional Evolution of the Feeding System in Rodents. PLoS ONE, 2012, 7, e36299.	2.5	146
8	Dietary specializations and diversity in feeding ecology of the earliest stem mammals. Nature, 2014, 512, 303-305.	27.8	125
9	The evolutionary relationship among beak shape, mechanical advantage, and feeding ecology in modern birds*. Evolution; International Journal of Organic Evolution, 2019, 73, 422-435.	2.3	117
10	Initial radiation of jaws demonstrated stability despite faunal and environmental change. Nature, 2011, 476, 206-209.	27.8	116
11	Using finite-element analysis to investigate suture morphology: A case study using large carnivorous dinosaurs. The Anatomical Record Part A: Discoveries in Molecular, Cellular, and Evolutionary Biology, 2005, 283A, 349-365.	2.0	107
12	Open data and digital morphology. Proceedings of the Royal Society B: Biological Sciences, 2017, 284, 20170194.	2.6	103
13	Combining geometric morphometrics and finite element analysis with evolutionary modeling: towards a synthesis. Journal of Vertebrate Paleontology, 2016, 36, e1111225.	1.0	97
14	Shape and mechanics in thalattosuchian (Crocodylomorpha) skulls: implications for feeding behaviour and niche partitioning. Journal of Anatomy, 2009, 215, 555-576.	1.5	90
15	Aspects of comparative cranial mechanics in the theropod dinosaurs Coelophysis, Allosaurus and Tyrannosaurus. Zoological Journal of the Linnean Society, 2005, 144, 309-316.	2.3	89
16	Adaptive plasticity in the mouse mandible. BMC Evolutionary Biology, 2014, 14, 85.	3.2	89
17	Functional morphology of spinosaur â€˜crocodile-mimicâ€™ dinosaurs. Journal of Vertebrate Paleontology, 2007, 27, 892-901.	1.0	84
18	Morphological and biomechanical disparity of crocodile-line archosaurs following the end-Triassic extinction. Proceedings of the Royal Society B: Biological Sciences, 2013, 280, 20131940.	2.6	83

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19	Finite element modelling of squirrel, guinea pig and rat skulls: using geometric morphometrics to assess sensitivity. Journal of Anatomy, 2011, 219, 696-709.	1.5	82
20	Cranial performance in the Komodo dragon (Varanus komodoensis) as revealed by highâ€resolution 3â€Ð finite element analysis. Journal of Anatomy, 2008, 212, 736-746.	1.5	79
21	Sensitivity and ex vivo validation of finite element models of the domestic pig cranium. Journal of Anatomy, 2011, 219, 456-471.	1.5	76
22	Morphospace occupation in thalattosuchian crocodylomorphs: skull shape variation, species delineation and temporal patterns. Palaeontology, 2009, 52, 1057-1097.	2.2	72
23	Digital dissection â€“ using contrastâ€enhanced computed tomography scanning to elucidate hardâ€and softâ€tissue anatomy in the Common Buzzard Buteo buteo. Journal of Anatomy, 2014, 224, 412-431.	1.5	72
24	3D Camouflage in an Ornithischian Dinosaur. Current Biology, 2016, 26, 2456-2462.	3.9	72
25	The Endocranial Anatomy of Therizinosauria and Its Implications for Sensory and Cognitive Function. PLoS ONE, 2012, 7, e52289.	2.5	70
26	Cranial biomechanics underpins high sauropod diversity in resource-poor environments. Proceedings of the Royal Society B: Biological Sciences, 2014, 281, 20142114.	2.6	63
27	Pedal Claw Curvature in Birds, Lizards and Mesozoic Dinosaurs â€“ Complicated Categories and Compensating for Mass-Specific and Phylogenetic Control. PLoS ONE, 2012, 7, e50555.	2.5	63
28	Ecological and evolutionary implications of dinosaur feeding behaviour. Trends in Ecology and Evolution, 2006, 21, 217-224.	8.7	62
29	Disparities in the analysis of morphological disparity. Biology Letters, 2020, 16, 20200199.	2.3	60
30	Edentulism, beaks, and biomechanical innovations in the evolution of theropod dinosaurs. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 20657-20662.	7.1	59
31	The consequences of craniofacial integration for the adaptive radiations of Darwinâ€™s finches and Hawaiian honeycreepers. Nature Ecology and Evolution, 2020, 4, 270-278.	7.8	57
32	Establishing a framework for archosaur cranial mechanics. Paleobiology, 2008, 34, 494-515.	2.0	55
33	Inter-Vertebral Flexibility of the Ostrich Neck: Implications for Estimating Sauropod Neck Flexibility. PLoS ONE, 2013, 8, e72187.	2.5	55
34	The Response of Cranial Biomechanical Finite Element Models to Variations in Mesh Density. Anatomical Record, 2011, 294, 610-620.	1.4	54
35	Feeding Mechanics in Spinosaurid Theropods and Extant Crocodilians. PLoS ONE, 2013, 8, e65295.	2.5	53
36	Morphological evolution of the mammalian jaw adductor complex. Biological Reviews, 2017, 92, 1910-1940.	10.4	51

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37	The role of miniaturization in the evolution of the mammalian jaw and middle ear. Nature, 2018, 561, 533-537.	27.8	51
38	Utility and validity of Middle and Late Triassic â€˜land vertebrate faunachronsâ€™. Journal of Vertebrate Paleontology, 2009, 29, 80-87.	1.0	50
39	Cranial biomechanics of Diplodocus (Dinosauria, Sauropoda): testing hypotheses of feeding behaviour in an extinct megaherbivore. Die Naturwissenschaften, 2012, 99, 637-643.	1.6	50
40	The sharpest tools in the box? Quantitative analysis of conodont element functional morphology. Proceedings of the Royal Society B: Biological Sciences, 2012, 279, 2849-2854.	2.6	49
41	A Geographical Information System (GIS) study of Triassic vertebrate biochronology. Geological Magazine, 2005, 142, 327-354.	1.5	48
42	Cranial anatomy ofErlikosaurus andrewsi(Dinosauria, Therizinosauria): new insights based on digital reconstruction. Journal of Vertebrate Paleontology, 2014, 34, 1263-1291.	1.0	46
43	Feeding biomechanics in Acanthostega and across the fishâ€“tetrapod transition. Proceedings of the Royal Society B: Biological Sciences, 2014, 281, 20132689.	2.6	45
44	Withinâ€guild dietary discrimination from 3â€<scp>D</scp> textural analysis of tooth microwear in insectivorous mammals. Journal of Zoology, 2013, 291, 249-257.	1.7	44
45	Strain in the ostrich mandible during simulated pecking and validation of specimen-specific finite element models. Journal of Anatomy, 2011, 218, 47-58.	1.5	43
46	Comparative cranial myology and biomechanics of Plateosaurus and Camarasaurus and evolution of the sauropod feeding apparatus. Palaeontology, 2016, 59, 887-913.	2.2	43
47	Hydrodynamic constraints on the evolution and ecology of planktic foraminifera. Marine Micropaleontology, 2014, 106, 69-78.	1.2	42
48	Finite element modelling predicts changes in joint shape and cell behaviour due to loss of muscle strain in jaw development. Journal of Biomechanics, 2015, 48, 3112-3122.	2.1	41
49	Models in palaeontological functional analysis. Biology Letters, 2012, 8, 119-122.	2.3	40
50	Descriptive Anatomy and Three-Dimensional Reconstruction of the Skull of the Early Tetrapod Acanthostega gunnari Jarvik, 1952. PLoS ONE, 2015, 10, e0118882.	2.5	39
51	The multifactorial nature of beak and skull shape evolution in parrots and cockatoos (Psittaciformes). BMC Evolutionary Biology, 2019, 19, 104.	3.2	37
52	Differential effects of altered patterns of movement and strain on joint cell behaviour and skeletal morphogenesis. Osteoarthritis and Cartilage, 2016, 24, 1940-1950.	1.3	34
53	Retrodeformation and muscular reconstruction of ornithomimosaurian dinosaur crania. PeerJ, 2015, 3, e1093.	2.0	34
54	Comparative Feeding Biomechanics of Lystrosaurus and the Generalized Dicynodont Oudenodon. Anatomical Record, 2009, 292, 862-874.	1.4	33

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55	Functional Morphometric Analysis of the Furcula in Mesozoic Birds. PLoS ONE, 2012, 7, e36664.	2.5	33
56	Ecological opportunity and the rise and fall of crocodylomorph evolutionary innovation. Proceedings of the Royal Society B: Biological Sciences, 2021, 288, 20210069.	2.6	33
57	Convergence and functional evolution of longirostry in crocodylomorphs. Palaeontology, 2019, 62, 867-887.	2.2	32
58	Validation experiments on finite element models of an ostrich (Struthio camelus) cranium. PeerJ, 2015, 3, e1294.	2.0	32
59	Functional implications of dicynodont cranial suture morphology. Journal of Morphology, 2010, 271, 705-728.	1.2	31
60	Finite element, occlusal, microwear and microstructural analyses indicate that conodont microstructure is adapted to dental function. Palaeontology, 2014, 57, 1059-1066.	2.2	30
61	Functional anatomy and feeding biomechanics of a giant <scp>U</scp>pper <scp>J</scp>urassic pliosaur (<scp>R</scp>eptilia: <scp>S</scp>auropterygia) from <scp>W</scp>eymouth <scp>B</scp>ay, <scp>D</scp>orset, <scp>UK</scp>. Journal of Anatomy, 2014, 225, 209-219.	1.5	30
62	Translating taxonomy into the evolution of conodont feeding ecology. Geology, 2016, 44, 247-250.	4.4	30
63	Modeling the effects of cingula structure on strain patterns and potential fracture in tooth enamel. Journal of Morphology, 2011, 272, 50-65.	1.2	29
64	Linking evolution and development: Synchrotron Radiation Xâ€ray tomographic microscopy of planktic foraminifers. Palaeontology, 2013, 56, 741-749.	2.2	28
65	Herbivorous dinosaur jaw disparity and its relationship to extrinsic evolutionary drivers. Paleobiology, 2017, 43, 15-33.	2.0	28
66	Craniodental functional evolution in sauropodomorph dinosaurs. Paleobiology, 2017, 43, 435-462.	2.0	26
67	Morphological disparity in theropod jaws: comparing discrete characters and geometric morphometrics. Palaeontology, 2020, 63, 283-299.	2.2	26
68	Functional tests of the competitive exclusion hypothesis for multituberculate extinction. Royal Society Open Science, 2019, 6, 181536.	2.4	24
69	Neurocranial osteology and systematic relationships ofVaranus(Megalania)priscaOwen, 1859 (Squamata: Varanidae). Zoological Journal of the Linnean Society, 2009, 155, 445-457.	2.3	22
70	Biomechanical Evaluation of Different Musculoskeletal Arrangements in Psittacosaurus and Implications for Cranial Function. Anatomical Record, 2017, 300, 49-61.	1.4	22
71	The use of extruded finite-element models as a novel alternative to tomography-based models: a case study using early mammal jaws. Journal of the Royal Society Interface, 2019, 16, 20190674.	3.4	22
72	Jaw shape and mechanical advantage are indicative of diet in Mesozoic mammals. Communications Biology, 2021, 4, 242.	4.4	22

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73	Virtual experiments, physical validation: dental morphology at the intersection of experiment and theory. Journal of the Royal Society Interface, 2012, 9, 1846-1855.	3.4	21
74	Computed tomography, anatomical description and threeâ€dimensional reconstruction of the lower jaw of <scp>E</scp>usthenopteron foordi <scp>W</scp>hiteaves, 1881 from the <scp>U</scp>pper <scp>D</scp>evonian of <scp>C</scp>anada. Palaeontology, 2015, 58, 1031-1047.	2.2	21
75	Evolution of jaw disparity in fishes. Palaeontology, 2018, 61, 847-854.	2.2	21
76	Ontogenetic endocranial shape change in alligators and ostriches and implications for the development of the nonâ€avian dinosaur endocranium. Anatomical Record, 2021, 304, 1759-1775.	1.4	21
77	The importance of wave exposure on the structural integrity of rhodoliths. Journal of Experimental Marine Biology and Ecology, 2018, 503, 109-119.	1.5	19
78	Decelerated dinosaur skull evolution with the origin of birds. PLoS Biology, 2020, 18, e3000801.	5.6	18
79	Mechanics of the scarf premaxilla-nasal suture in the snout ofLystrosaurus. Journal of Vertebrate Paleontology, 2010, 30, 1283-1288.	1.0	17
80	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. Journal of the Royal Society Interface, 2012, 9, 351-361.	3.4	17
81	Increasing morphological disparity and decreasing optimality for jaw speed and strength during the radiation of jawed vertebrates. Science Advances, 2022, 8, eabl3644.	10.3	16
82	Testing microstructural adaptation in the earliest dental tools. Biology Letters, 2012, 8, 952-955.	2.3	15
83	Ontogenetic constraints on foraminiferal test construction. Evolution & Development, 2017, 19, 157-168.	2.0	13
84	Digital cranial endocast ofRiograndia guaibensis(Late Triassic, Brazil) sheds light on the evolution of the brain in non-mammalian cynodonts. Historical Biology, 0, , 1-18.	1.4	13
85	Building Finite Element Models to Investigate Zebrafish Jaw Biomechanics. Journal of Visualized Experiments, 2016, , .	0.3	12
86	What Does Musculoskeletal Mechanics Tell Us About Evolution of Form and Function in Vertebrates?. Fascinating Life Sciences, 2019, , 45-70.	0.9	12
87	Osteological redescription of the Late Triassic sauropodomorph dinosaur Thecodontosaurus antiquus based on new material from Tytherington, southwestern England. Journal of Vertebrate Paleontology, 2020, 40, e1770774.	1.0	12
88	Osteological and Soft-Tissue Evidence for Pneumatization in the Cervical Column of the Ostrich (Struthio camelus) and Observations on the Vertebral Columns of Non-Volant, Semi-Volant and Semi-Aquatic Birds. PLoS ONE, 2015, 10, e0143834.	2.5	12
89	Was the Devonian placoderm Titanichthys a suspension feeder?. Royal Society Open Science, 2020, 7, 200272.	2.4	11
90	Niche partitioning shaped herbivore macroevolution through the early Mesozoic. Nature Communications, 2021, 12, 2796.	12.8	11

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91	Prey attack by a large theropod dinosaur. Nature, 2002, 416, 387-388.	27.8	10
92	Divergent locomotor evolution in â€œgiantâ€•kangaroos: Evidence from foot bone bending resistances and microanatomy. Journal of Morphology, 2022, 283, 313-332.	1.2	10
93	Functional adaptation underpinned the evolutionary assembly of the earliest vertebrate skeleton. Evolution & Development, 2014, 16, 354-361.	2.0	9
94	Potential and limitations of finite element modelling in assessing structural integrity of coralline algae under future global change. Biogeosciences, 2015, 12, 5871-5883.	3.3	9
95	Scaling and functional morphology in strigiform hind limbs. Scientific Reports, 2017, 7, 44920.	3.3	9
96	The braincase, brain and palaeobiology of the basal sauropodomorph dinosaurThecodontosaurus antiquus. Zoological Journal of the Linnean Society, 2021, 193, 541-562.	2.3	9
97	Craniofacial development illuminates the evolution of nightbirds (Strisores). Proceedings of the Royal Society B: Biological Sciences, 2021, 288, 20210181.	2.6	9
98	The diversity of Triassic South American sphenodontians: a new basal form, clevosaurs, and a revision of rhynchocephalian phylogeny. Journal of Systematic Palaeontology, 2021, 19, 787-820.	1.5	9
99	Morphological Change During The Ontogeny Of The Planktic Foraminifera. Journal of Micropalaeontology, 0, , 2014-017.	3.6	8
100	A digital dissection of two teleost fishes: comparative functional anatomy of the cranial musculoskeletal system in pike (Esox lucius) and eel (Anguilla anguilla). Journal of Anatomy, 2019, 235, 189-204.	1.5	8
101	Biomechanical properties of the jaws of two species of Clevosaurus and a reanalysis of rhynchocephalian dentary morphospace. Palaeontology, 2020, 63, 919-939.	2.2	8
102	Cephalic biomechanics underpins the evolutionary success of trilobites. Palaeontology, 2021, 64, 519-530.	2.2	8
103	Distal Humeral Morphology Indicates Locomotory Divergence in Extinct Giant Kangaroos. Journal of Mammalian Evolution, 2022, 29, 27-41.	1.8	8
104	Walking with early dinosaurs: appendicular myology of the Late Triassic sauropodomorph Thecodontosaurus antiquus. Royal Society Open Science, 2022, 9, 211356.	2.4	7
105	Prey attack by a large theropod dinosaur. Nature, 2002, 416, 388-388.	27.8	6
106	Climate, competition, and the rise of mosasauroid ecomorphological disparity. Palaeontology, 2022, 65, .	2.2	6
107	Osteology and digital reconstruction of the skull of the early tetrapod Whatcheeria deltae. Journal of Vertebrate Paleontology, 2021, 41, .	1.0	5
108	Cranial functional morphology of the pseudosuchian Effigia and implications for its ecological role in the Triassic. Anatomical Record, 2022, 305, 2435-2462.	1.4	5

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109	Phylogenetic relationships of the European trilophosaurids Tricuspisaurus thomasi and Variodens inopinatus. Journal of Vertebrate Paleontology, 2021, 41, .	1.0	5
110	Testing for a dietary shift in the Early Cretaceous ceratopsian dinosaur Psittacosaurus lujiatunensis. Palaeontology, 2021, 64, 371-384.	2.2	4
111	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. Journal of the Royal Society Interface, 2014, 11, 20140700.	3.4	2
112	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. Journal of the Royal Society Interface, 2014, 11, 20140854.	3.4	2
113	Testing the influence of crushing surface variation on seed-cracking performance among beak morphs of the African seedcracker Pyrenestes ostrinus. Journal of Experimental Biology, 2021, 224, .	1.7	1