

Emily R Rayfield

List of Publications by Year in descending order

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113
papers

5,388
citations

66315

42
h-index

98753

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. <i>Annual Review of Earth and Planetary Sciences</i> , 2007, 35, 541-576.	4.6	351
2	Cranial design and function in a large theropod dinosaur. <i>Nature</i> , 2001, 409, 1033-1037.	13.7	219
3	A virtual world of paleontology. <i>Trends in Ecology and Evolution</i> , 2014, 29, 347-357.	4.2	205
4	The shapes of bird beaks are highly controlled by nondietary factors. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2016, 113, 5352-5357.	3.3	192
5	Patterns of morphospace occupation and mechanical performance in extant crocodylian skulls: A combined geometric morphometric and finite element modeling approach. <i>Journal of Morphology</i> , 2008, 269, 840-864.	0.6	162
6	Cranial mechanics and feeding in <i>Tyrannosaurus rex</i> . <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2004, 271, 1451-1459.	1.2	146
7	Functional Evolution of the Feeding System in Rodents. <i>PLoS ONE</i> , 2012, 7, e36299.	1.1	146
8	Dietary specializations and diversity in feeding ecology of the earliest stem mammals. <i>Nature</i> , 2014, 512, 303-305.	13.7	125
9	The evolutionary relationship among beak shape, mechanical advantage, and feeding ecology in modern birds*. <i>Evolution; International Journal of Organic Evolution</i> , 2019, 73, 422-435.	1.1	117
10	Initial radiation of jaws demonstrated stability despite faunal and environmental change. <i>Nature</i> , 2011, 476, 206-209.	13.7	116
11	Using finite-element analysis to investigate suture morphology: A case study using large carnivorous dinosaurs. <i>The Anatomical Record Part A: Discoveries in Molecular, Cellular, and Evolutionary Biology</i> , 2005, 283A, 349-365.	2.0	107
12	Open data and digital morphology. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2017, 284, 20170194.	1.2	103
13	Combining geometric morphometrics and finite element analysis with evolutionary modeling: towards a synthesis. <i>Journal of Vertebrate Paleontology</i> , 2016, 36, e1111225.	0.4	97
14	Shape and mechanics in thalattosuchian (Crocodylomorpha) skulls: implications for feeding behaviour and niche partitioning. <i>Journal of Anatomy</i> , 2009, 215, 555-576.	0.9	90
15	Aspects of comparative cranial mechanics in the theropod dinosaurs <i>Coelophysis</i> , <i>Allosaurus</i> and <i>Tyrannosaurus</i> . <i>Zoological Journal of the Linnean Society</i> , 2005, 144, 309-316.	1.0	89
16	Adaptive plasticity in the mouse mandible. <i>BMC Evolutionary Biology</i> , 2014, 14, 85.	3.2	89
17	Functional morphology of spinosaur "crocodile-mimic" dinosaurs. <i>Journal of Vertebrate Paleontology</i> , 2007, 27, 892-901.	0.4	84
18	Morphological and biomechanical disparity of crocodile-line archosaurs following the end-Triassic extinction. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2013, 280, 20131940.	1.2	83

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19	Finite element modelling of squirrel, guinea pig and rat skulls: using geometric morphometrics to assess sensitivity. <i>Journal of Anatomy</i> , 2011, 219, 696-709.	0.9	82
20	Cranial performance in the Komodo dragon (<i>Varanus komodoensis</i>) as revealed by high-resolution finite element analysis. <i>Journal of Anatomy</i> , 2008, 212, 736-746.	0.9	79
21	Sensitivity and <i>ex vivo</i> validation of finite element models of the domestic pig cranium. <i>Journal of Anatomy</i> , 2011, 219, 456-471.	0.9	76
22	Morphospace occupation in thalattosuchian crocodylomorphs: skull shape variation, species delineation and temporal patterns. <i>Palaeontology</i> , 2009, 52, 1057-1097.	1.0	72
23	Digital dissection “ using contrast-enhanced computed tomography scanning to elucidate hard and soft tissue anatomy in the Common Buzzard <i>Buteo buteo</i> . <i>Journal of Anatomy</i> , 2014, 224, 412-431.	0.9	72
24	3D Camouflage in an Ornithischian Dinosaur. <i>Current Biology</i> , 2016, 26, 2456-2462.	1.8	72
25	The Endocranial Anatomy of Therizinosauria and Its Implications for Sensory and Cognitive Function. <i>PLoS ONE</i> , 2012, 7, e52289.	1.1	70
26	Cranial biomechanics underpins high sauropod diversity in resource-poor environments. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2014, 281, 20142114.	1.2	63
27	Pedal Claw Curvature in Birds, Lizards and Mesozoic Dinosaurs “ Complicated Categories and Compensating for Mass-Specific and Phylogenetic Control. <i>PLoS ONE</i> , 2012, 7, e50555.	1.1	63
28	Ecological and evolutionary implications of dinosaur feeding behaviour. <i>Trends in Ecology and Evolution</i> , 2006, 21, 217-224.	4.2	62
29	Disparities in the analysis of morphological disparity. <i>Biology Letters</i> , 2020, 16, 20200199.	1.0	60
30	Edentulism, beaks, and biomechanical innovations in the evolution of theropod dinosaurs. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2013, 110, 20657-20662.	3.3	59
31	The consequences of craniofacial integration for the adaptive radiations of Darwin’s finches and Hawaiian honeycreepers. <i>Nature Ecology and Evolution</i> , 2020, 4, 270-278.	3.4	57
32	Establishing a framework for archosaur cranial mechanics. <i>Paleobiology</i> , 2008, 34, 494-515.	1.3	55
33	Inter-Vertebral Flexibility of the Ostrich Neck: Implications for Estimating Sauropod Neck Flexibility. <i>PLoS ONE</i> , 2013, 8, e72187.	1.1	55
34	The Response of Cranial Biomechanical Finite Element Models to Variations in Mesh Density. <i>Anatomical Record</i> , 2011, 294, 610-620.	0.8	54
35	Feeding Mechanics in Spinosaurid Theropods and Extant Crocodylians. <i>PLoS ONE</i> , 2013, 8, e65295.	1.1	53
36	Morphological evolution of the mammalian jaw adductor complex. <i>Biological Reviews</i> , 2017, 92, 1910-1940.	4.7	51

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37	The role of miniaturization in the evolution of the mammalian jaw and middle ear. <i>Nature</i> , 2018, 561, 533-537.	13.7	51
38	Utility and validity of Middle and Late Triassic $\delta^{13}C$ land vertebrate faunachrons TM . <i>Journal of Vertebrate Paleontology</i> , 2009, 29, 80-87.	0.4	50
39	Cranial biomechanics of <i>Diplodocus</i> (Dinosauria, Sauropoda): testing hypotheses of feeding behaviour in an extinct megaherbivore. <i>Die Naturwissenschaften</i> , 2012, 99, 637-643.	0.6	50
40	The sharpest tools in the box? Quantitative analysis of conodont element functional morphology. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2012, 279, 2849-2854.	1.2	49
41	A Geographical Information System (GIS) study of Triassic vertebrate biochronology. <i>Geological Magazine</i> , 2005, 142, 327-354.	0.9	48
42	Cranial anatomy of <i>Erlidosaurus andrewsi</i> (Dinosauria, Therizinosauria): new insights based on digital reconstruction. <i>Journal of Vertebrate Paleontology</i> , 2014, 34, 1263-1291.	0.4	46
43	Feeding biomechanics in <i>Acanthostega</i> and across the fish-tetrapod transition. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2014, 281, 20132689.	1.2	45
44	Within-guild dietary discrimination from $\delta^{13}C$ textural analysis of tooth microwear in insectivorous mammals. <i>Journal of Zoology</i> , 2013, 291, 249-257.	0.8	44
45	Strain in the ostrich mandible during simulated pecking and validation of specimen-specific finite element models. <i>Journal of Anatomy</i> , 2011, 218, 47-58.	0.9	43
46	Comparative cranial myology and biomechanics of <i>Plateosaurus</i> and <i>Camarasaurus</i> and evolution of the sauropod feeding apparatus. <i>Palaeontology</i> , 2016, 59, 887-913.	1.0	43
47	Hydrodynamic constraints on the evolution and ecology of planktic foraminifera. <i>Marine Micropaleontology</i> , 2014, 106, 69-78.	0.5	42
48	Finite element modelling predicts changes in joint shape and cell behaviour due to loss of muscle strain in jaw development. <i>Journal of Biomechanics</i> , 2015, 48, 3112-3122.	0.9	41
49	Models in palaeontological functional analysis. <i>Biology Letters</i> , 2012, 8, 119-122.	1.0	40
50	Descriptive Anatomy and Three-Dimensional Reconstruction of the Skull of the Early Tetrapod <i>Acanthostega gunnari</i> Jarvik, 1952. <i>PLoS ONE</i> , 2015, 10, e0118882.	1.1	39
51	The multifactorial nature of beak and skull shape evolution in parrots and cockatoos (Psittaciformes). <i>BMC Evolutionary Biology</i> , 2019, 19, 104.	3.2	37
52	Differential effects of altered patterns of movement and strain on joint cell behaviour and skeletal morphogenesis. <i>Osteoarthritis and Cartilage</i> , 2016, 24, 1940-1950.	0.6	34
53	Retrodeformation and muscular reconstruction of ornithomimosaurian dinosaur crania. <i>PeerJ</i> , 2015, 3, e1093.	0.9	34
54	Comparative Feeding Biomechanics of <i>Lystrosaurus</i> and the Generalized Dicynodont <i>Oudenodon</i> . <i>Anatomical Record</i> , 2009, 292, 862-874.	0.8	33

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55	Functional Morphometric Analysis of the Furcula in Mesozoic Birds. <i>PLoS ONE</i> , 2012, 7, e36664.	1.1	33
56	Ecological opportunity and the rise and fall of crocodylomorph evolutionary innovation. <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2021, 288, 20210069.	1.2	33
57	Convergence and functional evolution of longirostry in crocodylomorphs. <i>Palaeontology</i> , 2019, 62, 867-887.	1.0	32
58	Validation experiments on finite element models of an ostrich (<i>Struthio camelus</i>) cranium. <i>PeerJ</i> , 2015, 3, e1294.	0.9	32
59	Functional implications of dicynodont cranial suture morphology. <i>Journal of Morphology</i> , 2010, 271, 705-728.	0.6	31
60	Finite element, occlusal, microwear and microstructural analyses indicate that conodont microstructure is adapted to dental function. <i>Palaeontology</i> , 2014, 57, 1059-1066.	1.0	30
61	Functional anatomy and feeding biomechanics of a giant <i>Upperaurassic</i> pliosaur (<i>Rhoptilia sauropterygia</i>) from <i>Weymouth Bay</i> , <i>Dorset</i> , <i>UK</i> . <i>Journal of Anatomy</i> , 2014, 225, 209-219.	0.9	30
62	Translating taxonomy into the evolution of conodont feeding ecology. <i>Geology</i> , 2016, 44, 247-250.	2.0	30
63	Modeling the effects of cingula structure on strain patterns and potential fracture in tooth enamel. <i>Journal of Morphology</i> , 2011, 272, 50-65.	0.6	29
64	Linking evolution and development: Synchrotron Radiation X-ray tomographic microscopy of planktic foraminifers. <i>Palaeontology</i> , 2013, 56, 741-749.	1.0	28
65	Herbivorous dinosaur jaw disparity and its relationship to extrinsic evolutionary drivers. <i>Paleobiology</i> , 2017, 43, 15-33.	1.3	28
66	Craniodental functional evolution in sauropodomorph dinosaurs. <i>Paleobiology</i> , 2017, 43, 435-462.	1.3	26
67	Morphological disparity in theropod jaws: comparing discrete characters and geometric morphometrics. <i>Palaeontology</i> , 2020, 63, 283-299.	1.0	26
68	Functional tests of the competitive exclusion hypothesis for multituberculate extinction. <i>Royal Society Open Science</i> , 2019, 6, 181536.	1.1	24
69	Neurocranial osteology and systematic relationships of <i>Varanus</i> (<i>Megalania</i>) <i>prisca</i> Owen, 1859 (Squamata: Varanidae). <i>Zoological Journal of the Linnean Society</i> , 2009, 155, 445-457.	1.0	22
70	Biomechanical Evaluation of Different Musculoskeletal Arrangements in <i>Psittacosaurus</i> and Implications for Cranial Function. <i>Anatomical Record</i> , 2017, 300, 49-61.	0.8	22
71	The use of extruded finite-element models as a novel alternative to tomography-based models: a case study using early mammal jaws. <i>Journal of the Royal Society Interface</i> , 2019, 16, 20190674.	1.5	22
72	Jaw shape and mechanical advantage are indicative of diet in Mesozoic mammals. <i>Communications Biology</i> , 2021, 4, 242.	2.0	22

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73	Virtual experiments, physical validation: dental morphology at the intersection of experiment and theory. <i>Journal of the Royal Society Interface</i> , 2012, 9, 1846-1855.	1.5	21
74	Computed tomography, anatomical description and three-dimensional reconstruction of the lower jaw of <i>Eusthenopteron foordi</i> Whiteaves, 1881 from the Upper Devonian of Canada. <i>Palaeontology</i> , 2015, 58, 1031-1047.	1.0	21
75	Evolution of jaw disparity in fishes. <i>Palaeontology</i> , 2018, 61, 847-854.	1.0	21
76	Ontogenetic endocranial shape change in alligators and ostriches and implications for the development of the nonavian dinosaur endocranium. <i>Anatomical Record</i> , 2021, 304, 1759-1775.	0.8	21
77	The importance of wave exposure on the structural integrity of rhodoliths. <i>Journal of Experimental Marine Biology and Ecology</i> , 2018, 503, 109-119.	0.7	19
78	Decelerated dinosaur skull evolution with the origin of birds. <i>PLoS Biology</i> , 2020, 18, e3000801.	2.6	18
79	Mechanics of the scarf premaxilla-nasal suture in the snout of <i>Lystrosaurus</i> . <i>Journal of Vertebrate Paleontology</i> , 2010, 30, 1283-1288.	0.4	17
80	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. <i>Journal of the Royal Society Interface</i> , 2012, 9, 351-361.	1.5	17
81	Increasing morphological disparity and decreasing optimality for jaw speed and strength during the radiation of jawed vertebrates. <i>Science Advances</i> , 2022, 8, eabl3644.	4.7	16
82	Testing microstructural adaptation in the earliest dental tools. <i>Biology Letters</i> , 2012, 8, 952-955.	1.0	15
83	Ontogenetic constraints on foraminiferal test construction. <i>Evolution & Development</i> , 2017, 19, 157-168.	1.1	13
84	Digital cranial endocast of <i>Riograndia guaibensis</i> (Late Triassic, Brazil) sheds light on the evolution of the brain in non-mammalian cynodonts. <i>Historical Biology</i> , 0, , 1-18.	0.7	13
85	Building Finite Element Models to Investigate Zebrafish Jaw Biomechanics. <i>Journal of Visualized Experiments</i> , 2016, , .	0.2	12
86	What Does Musculoskeletal Mechanics Tell Us About Evolution of Form and Function in Vertebrates?. <i>Fascinating Life Sciences</i> , 2019, , 45-70.	0.5	12
87	Osteological redescription of the Late Triassic sauropodomorph dinosaur <i>Thecodontosaurus antiquus</i> based on new material from Tytherington, southwestern England. <i>Journal of Vertebrate Paleontology</i> , 2020, 40, e1770774.	0.4	12
88	Osteological and Soft-Tissue Evidence for Pneumatization in the Cervical Column of the Ostrich (<i>Struthio camelus</i>) and Observations on the Vertebral Columns of Non-Volant, Semi-Volant and Semi-Aquatic Birds. <i>PLoS ONE</i> , 2015, 10, e0143834.	1.1	12
89	Was the Devonian placoderm <i>Titanichthys</i> a suspension feeder?. <i>Royal Society Open Science</i> , 2020, 7, 200272.	1.1	11
90	Niche partitioning shaped herbivore macroevolution through the early Mesozoic. <i>Nature Communications</i> , 2021, 12, 2796.	5.8	11

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91	Prey attack by a large theropod dinosaur. <i>Nature</i> , 2002, 416, 387-388.	13.7	10
92	Divergent locomotor evolution in giant kangaroos: Evidence from foot bone bending resistances and microanatomy. <i>Journal of Morphology</i> , 2022, 283, 313-332.	0.6	10
93	Functional adaptation underpinned the evolutionary assembly of the earliest vertebrate skeleton. <i>Evolution & Development</i> , 2014, 16, 354-361.	1.1	9
94	Potential and limitations of finite element modelling in assessing structural integrity of coralline algae under future global change. <i>Biogeosciences</i> , 2015, 12, 5871-5883.	1.3	9
95	Scaling and functional morphology in strigiform hind limbs. <i>Scientific Reports</i> , 2017, 7, 44920.	1.6	9
96	The braincase, brain and palaeobiology of the basal sauropodomorph dinosaur <i>Thecodontosaurus antiquus</i> . <i>Zoological Journal of the Linnean Society</i> , 2021, 193, 541-562.	1.0	9
97	Craniofacial development illuminates the evolution of nightbirds (Strisores). <i>Proceedings of the Royal Society B: Biological Sciences</i> , 2021, 288, 20210181.	1.2	9
98	The diversity of Triassic South American sphenodontians: a new basal form, clevosaurus, and a revision of rhynchocephalian phylogeny. <i>Journal of Systematic Palaeontology</i> , 2021, 19, 787-820.	0.6	9
99	Morphological Change During The Ontogeny Of The Planktic Foraminifera. <i>Journal of Micropalaeontology</i> , 0, , 2014-017.	1.3	8
100	A digital dissection of two teleost fishes: comparative functional anatomy of the cranial musculoskeletal system in pike (<i>Esox lucius</i>) and eel (<i>Anguilla anguilla</i>). <i>Journal of Anatomy</i> , 2019, 235, 189-204.	0.9	8
101	Biomechanical properties of the jaws of two species of <i>Clevosaurus</i> and a reanalysis of rhynchocephalian dentary morphospace. <i>Palaeontology</i> , 2020, 63, 919-939.	1.0	8
102	Cephalic biomechanics underpins the evolutionary success of trilobites. <i>Palaeontology</i> , 2021, 64, 519-530.	1.0	8
103	Distal Humeral Morphology Indicates Locomotory Divergence in Extinct Giant Kangaroos. <i>Journal of Mammalian Evolution</i> , 2022, 29, 27-41.	1.0	8
104	Walking with early dinosaurs: appendicular myology of the Late Triassic sauropodomorph <i>Thecodontosaurus antiquus</i> . <i>Royal Society Open Science</i> , 2022, 9, 211356.	1.1	7
105	Prey attack by a large theropod dinosaur. <i>Nature</i> , 2002, 416, 388-388.	13.7	6
106	Climate, competition, and the rise of mosasauroid ecomorphological disparity. <i>Palaeontology</i> , 2022, 65, .	1.0	6
107	Osteology and digital reconstruction of the skull of the early tetrapod <i>Whatcheeria deltae</i> . <i>Journal of Vertebrate Paleontology</i> , 2021, 41, .	0.4	5
108	Cranial functional morphology of the pseudosuchian <i>Effigia</i> and implications for its ecological role in the Triassic. <i>Anatomical Record</i> , 2022, 305, 2435-2462.	0.8	5

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109	Phylogenetic relationships of the European trilophosaurids <i>Tricuspisaurus thomasi</i> and <i>Variodens inopinatus</i> . <i>Journal of Vertebrate Paleontology</i> , 2021, 41, .	0.4	5
110	Testing for a dietary shift in the Early Cretaceous ceratopsian dinosaur <i>Psittacosaurus lujiatunensis</i> . <i>Palaeontology</i> , 2021, 64, 371-384.	1.0	4
111	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. <i>Journal of the Royal Society Interface</i> , 2014, 11, 20140700.	1.5	2
112	What makes an accurate and reliable subject-specific finite element model? A case study of an elephant femur. <i>Journal of the Royal Society Interface</i> , 2014, 11, 20140854.	1.5	2
113	Testing the influence of crushing surface variation on seed-cracking performance among beak morphs of the African seedcracker <i>Pyrenestes ostrinus</i> . <i>Journal of Experimental Biology</i> , 2021, 224, .	0.8	1