Walter Federle

List of Publications by Year
in descending order

86 papers	5,800 citations	66343 42 h-index	76900 74 g-index
101 all docs	101 docs citations	101 times ranked	3773 citing authors

#	Article	IF	Citations
1	Insect aquaplaning: Nepenthes pitcher plants capture prey with the peristome, a fully wettable water-lubricated anisotropic surface. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 14138-14143.	7.1	642
2	Wet but not slippery: boundary friction in tree frog adhesive toe pads. Journal of the Royal Society Interface, 2006, 3, 689-697.	3.4	323
3	An Integrative Study of Insect Adhesion: Mechanics and Wet Adhesion of Pretarsal Pads in Ants. Integrative and Comparative Biology, 2002, 42, 1100-1106.	2.0	316
4	Why are so many adhesive pads hairy?. Journal of Experimental Biology, 2006, 209, 2611-2621.	1.7	217
5	Mechanotransduction: use the force(s). BMC Biology, 2015, 13, 47.	3.8	183
6	Biomechanics of the movable pretarsal adhesive organ in ants and bees. Proceedings of the National Academy of Sciences of the United States of America, 2001, 98, 6215-6220.	7.1	181
7	Biomechanics of smooth adhesive pads in insects: influence of tarsal secretion on attachment performance. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2006, 192, 1213-1222.	1.6	174
8	Slippery ant-plants and skilful climbers: selection and protection of specific ant partners by epicuticular wax blooms in Macaranga (Euphorbiaceae). Oecologia, 1997, 112, 217-224.	2.0	152
9	Comparison of smooth and hairy attachment pads in insects: friction,adhesion and mechanisms for direction-dependence. Journal of Experimental Biology, 2008, 211, 3333-3343.	1.7	147
10	Attachment Forces of Ants Measured With a Centrifuge: Better â€˜Wax-Runnersâ€™ Have a Poorer Attachment to a Smooth Surface. Journal of Experimental Biology, 2000, 203, 505-512.	1.7	144
11	Fluid-based adhesion in insects â€“ principles and challenges. Soft Matter, 2011, 7, 11047.	2.7	111
12	Pushing versus pulling: division of labour between tarsal attachment pads in cockroaches. Proceedings of the Royal Society B: Biological Sciences, 2008, 275, 1329-1336.	2.6	110
13	Scaling and biomechanics of surface attachment in climbing animals. Philosophical Transactions of the Royal Society B: Biological Sciences, 2015, 370, 20140027.	4.0	108
14	The effect of surface roughness on claw and adhesive hair performance in the dock beetle Gastrophysa viridula. Insect Science, 2011, 18, 298-304.	3.0	106
15	Attachment forces of ants measured with a centrifuge: better 'wax-runners' have a poorer attachment to a smooth surface. Journal of Experimental Biology, 2000, 203, 505-12.	1.7	104
16	Harmless nectar source or deadly trap: <i>Nepenthes</i> pitchers are activated by rain, condensation and nectar. Proceedings of the Royal Society B: Biological Sciences, 2008, 275, 259-265.	2.6	101
17	Chemical composition of the slippery epicuticular wax blooms on Macaranga (Euphorbiaceae) ant-plants. Chemoecology, 2000, 10, 33-40.	1.1	97
18	Biomechanics of ant adhesive pads: frictional forces are rate- and temperature-dependent. Journal of Experimental Biology, 2004, 207, 67-74.	1.7	92

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19	Extreme positive allometry of animal adhesive pads and the size limits of adhesion-based climbing. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 1297-1302.	7.1	92
20	Locomotion and adhesion: dynamic control of adhesive surface contact in ants. Arthropod Structure and Development, 2004, 33, 67-75.	1.4	88
21	Division of labour and sex differences between fibrillar, tarsal adhesive pads in beetles: effective elastic modulus and attachment performance. Journal of Experimental Biology, 2009, 212, 1876-1888.	1.7	87
22	Sticking like sticky tape: tree frogs use friction forces to enhance attachment on overhanging surfaces. Journal of the Royal Society Interface, 2013, 10, 20120838.	3.4	78
23	Beetle adhesive hairs differ in stiffness and stickiness: in vivo adhesion measurements on individual setae. Die Naturwissenschaften, 2011, 98, 381-387.	1.6	77
24	Insect tricks: two-phasic foot pad secretion prevents slipping. Journal of the Royal Society Interface, 2010, 7, 587-593.	3.4	75
25	Functionally Different Pads on the Same Foot Allow Control of Attachment: Stick Insects Have Load-Sensitive â€œHeelâ€• Pads for Friction and Shear-Sensitive â€œToeâ€• Pads for Adhesion. PLoS ONE, 2013, 8, e81943.	2.5	68
26	Thrips pollination of the dioecious ant plant <i>Macaranga hullettii</i> (Euphorbiaceae) in Southeast Asia. American Journal of Botany, 2002, 89, 50-59.	1.7	67
27	Bioâ€Inspired Hierarchical Polymer Fiberâ€"Carbon Nanotube Adhesives. Advanced Materials, 2014, 26, 1456-1461.	21.0	61
28	Micromechanics of smooth adhesive organs in stick insects: pads are mechanically anisotropic and softer towards the adhesive surface. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2008, 194, 373-384.	1.6	59
29	Evidence for self-cleaning in fluid-based smooth and hairy adhesive systems of insects. Journal of Experimental Biology, 2010, 213, 635-642.	1.7	59
30	Pruning of host plant neighbours as defence against enemy ant invasions: Crematogaster ant partners of Macaranga protected by "wax barriers" prune less than their congeners. Oecologia, 2002, 132, 264-270.	2.0	58
31	Rate-dependence of â€˜wetâ€™ biological adhesives and the function of the pad secretion in insects. Soft Matter, 2015, 11, 8661-8673.	2.7	58
32	Strong Wet and Dry Adhesion by Cupped Microstructures. ACS Applied Materials & Interfaces, 2019, 11, 26483-26490.	8.0	58
33	The two-partner ant-plant system of Camponotus (Colobopsis) sp. 1 and Macaranga puncticulata (Euphorbiaceae): natural history of the exceptional ant partner. Insectes Sociaux, 1998, 45, 1-16.	1.2	57
34	Venus flytrap trigger hairs are micronewton mechano-sensors that can detect small insect prey. Nature Plants, 2019, 5, 670-675.	9.3	55
35	Dynamic biological adhesion: mechanisms for controlling attachment during locomotion. Philosophical Transactions of the Royal Society B: Biological Sciences, 2019, 374, 20190199.	4.0	55
36	Friction ridges in cockroach climbing pads: anisotropy of shear stress measured on transparent, microstructured substrates. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2009, 195, 805-814.	1.6	52

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37	Walking on smooth or rough ground: passive control of pretarsal attachment in ants. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2008, 194, 49-60.	1.6	48
38	Effect of pitcher age on trapping efficiency and natural prey capture in carnivorous Nepenthes rafflesiana plants. Annals of Botany, 2009, 103, 1219-1226.	2.9	48
39	Biomechanics of plantâ€"insect interactions. Current Opinion in Plant Biology, 2013, 16, 105-111.	7.1	48
40	Mechanisms of fluid production in smooth adhesive pads of insects. Journal of the Royal Society Interface, 2011, 8, 952-960.	3.4	46
41	Form follows function: morphological diversification and alternative trapping strategies in carnivorous <i>Nepenthes</i> pitcher plants. Journal of Evolutionary Biology, 2012, 25, 90-102.	1.7	45
42	Insect adhesion on rough surfaces: analysis of adhesive contact of smooth and hairy pads on transparent microstructured substrates. Journal of the Royal Society Interface, 2014, 11, 20140499.	3.4	45
43	Arachnids Secrete a Fluid over Their Adhesive Pads. PLoS ONE, 2011, 6, e20485.	2.5	44
44	Evidence for alternative trapping strategies in two forms of the pitcher plant, Nepenthes rafflesiana. Journal of Experimental Botany, 2011, 62, 3683-3692.	4.8	44
45	Coping with the climate: Cuticular hydrocarbon acclimation of ants under constant and fluctuating conditions. Journal of Experimental Biology, 2018, 221, .	1.7	44
46	Surface contact and design of fibrillar â€˜friction padsâ€™ in stick insects (<i>Carausius morosus</i>): mechanisms for large friction coefficients and negligible adhesion. Journal of the Royal Society Interface, 2014, 11, 20140034.	3.4	43
47	On Heels and Toes: How Ants Climb with Adhesive Pads and Tarsal Friction Hair Arrays. PLoS ONE, 2015, 10, e0141269.	2.5	43
48	Setting the trap: cleaning behaviour of <i>Camponotus schmitzi</i> ants increases longâ€term capture efficiency of their pitcher plant host, <i>Nepenthes bicalcarata</i>. Functional Ecology, 2012, 26, 11-19.	3.6	37
49	In vivo dynamics of the internal fibrous structure in smooth adhesive pads of insects. Acta Biomaterialia, 2012, 8, 2730-2736.	8.3	35
50	Foraging grass-cutting ants (Atta vollenweideri) maintain stability by balancing their loads with controlled head movements. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2010, 196, 471-480.	1.6	33
51	Scaling of claw sharpness: mechanical constraints reduce attachment performance in larger insects. Journal of Experimental Biology, 2018, 221, .	1.7	33
52	Elasto-capillarity in insect fibrillar adhesion. Journal of the Royal Society Interface, 2016, 13, 20160371.	3.4	32
53	Impact of chemical manipulation of tarsal liquids on attachment in the Colorado potato beetle, Leptinotarsa decemlineata. Journal of Insect Physiology, 2010, 56, 398-404.	2.0	31
54	Biomechanics of shear-sensitive adhesion in climbing animals: peeling, pre-tension and sliding-induced changes in interface strength. Journal of the Royal Society Interface, 2016, 13, 20160373.	3.4	30

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55	How Load-Carrying Ants Avoid Falling Over: Mechanical Stability during Foraging in Atta vollenweideri Grass-Cutting Ants. PLoS ONE, 2013, 8, e52816.	2.5	30
56	With a Flick of the Lid: A Novel Trapping Mechanism in Nepenthes gracilis Pitcher Plants. PLoS ONE, 2012, 7, e38951.	2.5	29
57	How to catch more prey with less effective traps: explaining the evolution of temporarily inactive traps in carnivorous pitcher plants. Proceedings of the Royal Society B: Biological Sciences, 2015, 282, 20142675.	2.6	28
58	â€˜Insect aquaplaningâ€™ on a superhydrophilic hairy surface: how<i>Heliamphora nutans</i>Benth. pitcher plants capture prey. Proceedings of the Royal Society B: Biological Sciences, 2013, 280, 20122569.	2.6	26
59	Coatings preventing insect adhesion: An overview. Progress in Organic Coatings, 2019, 134, 349-359.	3.9	26
60	Switchable Underwater Adhesion by Deformable Cupped Microstructures. Advanced Materials Interfaces, 2020, 7, 2001269.	3.7	26
61	A Novel Type of Nutritional Antâ€“Plant Interaction: Ant Partners of Carnivorous Pitcher Plants Prevent Nutrient Export by Dipteran Pitcher Infauna. PLoS ONE, 2013, 8, e63556.	2.5	26
62	A Multiaxis Force Sensor for the Study of Insect Biomechanics. Journal of Microelectromechanical Systems, 2007, 16, 709-718.	2.5	25
63	Ants swimming in pitcher plants: kinematics of aquatic and terrestrial locomotion in Camponotus schmitzi. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2012, 198, 465-476.	1.6	23
64	Rapid preflexes in smooth adhesive pads of insects prevent sudden detachment. Proceedings of the Royal Society B: Biological Sciences, 2013, 280, 20122868.	2.6	22
65	Incident daylight as orientation cue for hole-boring ants: prostomata in Macaranga ant-plants. Insectes Sociaux, 2001, 48, 165-177.	1.2	21
66	Enhanced adhesion of bioinspired nanopatterned elastomers via colloidal surface assembly. Journal of the Royal Society Interface, 2015, 12, 20141061.	3.4	21
67	<i>Camponotus (Colobopsis)</i>(Mayr 1861) and<i>Macaranga</i>(Thouars 1806): a specific two-partner ant-plant system from Malaysia. Tropical Zoology, 1998, 11, 83-94.	0.6	20
68	Froghoppers jump from smooth plant surfaces by piercing them with sharp spines. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 3012-3017.	7.1	19
69	Morphology of powerful suction organs from blephariceridae larvae living in raging torrents. BMC Zoology, 2019, 4, .	1.0	19
70	The energetics of running stability: costs of transport in grass-cutting ants depend on fragment shape. Journal of Experimental Biology, 2012, 215, 161-168.	1.7	18
71	Shear-sensitive adhesion enables size-independent adhesive performance in stick insects. Proceedings of the Royal Society B: Biological Sciences, 2019, 286, 20191327.	2.6	18
72	Jumping without slipping: leafhoppers (Hemiptera: Cicadellidae) possess special tarsal structures for jumping from smooth surfaces. Journal of the Royal Society Interface, 2017, 14, 20170022.	3.4	17

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73	Functional morphology and efficiency of the antenna cleaner in <i>Camponotus rufifemur</i> ants. Royal Society Open Science, 2015, 2, 150129.	2.4	16
74	Disentangling the role of surface topography and intrinsic wettability in the prey capture mechanism of Nepenthes pitcher plants. Acta Biomaterialia, 2021, 119, 225-233.	8.3	16
75	Mechanisms of self-cleaning in fluid-based smooth adhesive pads of insects. Bioinspiration and Biomimetics, 2012, 7, 046001.	2.9	13
76	The mechanics of nectar offloading in the bumblebee<i>Bombus terrestris</i>and implications for optimal concentrations during nectar foraging. Journal of the Royal Society Interface, 2020, 17, 20190632.	3.4	13
77	Effect of shear forces and ageing on the compliance of adhesive pads in adult cockroaches. Journal of Experimental Biology, 2015, 218, 2775-81.	1.7	12
78	Macaranga ant-plants hide food from intruders: correlation of food presentation and presence of wax barriers analysed using phylogenetically independent contrasts. Biological Journal of the Linnean Society, 2005, 84, 177-193.	1.6	11
79	Slippery paints: Eco-friendly coatings that cause ants to slip. Progress in Organic Coatings, 2019, 135, 331-344.	3.9	10
80	Developmental Nutrition Affects the Structural Integrity of a Sexually Selected Weapon. Integrative and Comparative Biology, 2021, 61, 723-735.	2.0	10
81	Small insect measurements using a custom MEMS force sensor. , 0, , .		9
82	Extreme suction attachment performance from specialised insects living in mountain streams (Diptera:) Tj ETQq0 0 0 rgBT /Overlock 10	6.0	8
83	How a sticky fluid facilitates prey retention in a carnivorous pitcher plant (Nepenthes rafflesiana). Acta Biomaterialia, 2021, 128, 357-369.	8.3	7
84	Surface contact and design of fibrillar â€˜friction padsâ€™ in stick insects (<i>Carausius morosus</i>): mechanisms for large friction coefficients and negligible adhesion. Journal of the Royal Society Interface, 2014, 11, 20140192.	3.4	4
85	Role of legs and foot adhesion in salticid spiders jumping from smooth surfaces. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2021, 207, 165-177.	1.6	3
86	Exploring Insect Biomechanics with Micromachined Force Sensors. , 2001, , 1634-1637.		0