Maciej A Zwieniecki

List of Publications by Year
in descending order

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126	8,794	36303	45317
papers	citations	51 h-index	90 g-index

129	129	129	6653
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Hydrogel Control of Xylem Hydraulic Resistance in Plants. Science, 2001, 291, 1059-1062.	12.6	485
2	Leaf hydraulic capacity in ferns, conifers and angiosperms: impacts on photosynthetic maxima. New Phytologist, 2005, 165, 839-846.	7.3	327
3	Angiosperm leaf vein evolution was physiologically and environmentally transformative. Proceedings of the Royal Society B: Biological Sciences, 2009, 276, 1771-1776.	2.6	316
4	Embolism Repair and Xylem Tension: Do We Need a Miracle?1. Plant Physiology, 1999, 120, 7-10.	4.8	304
5	Confronting Maxwell's demon: biophysics of xylem embolism repair. Trends in Plant Science, 2009, 14, 530-534.	8.8	282
6	In Vivo Observation of Cavitation and Embolism Repair Using Magnetic Resonance Imaging. Plant Physiology, 2001, 126, 27-31.	4.8	252
7	The hydraulic conductance of the angiosperm leaf lamina: a comparison of three measurement methods. Journal of Experimental Botany, 2002, 53, 2177-2184.	4.8	237
8	Sensing embolism in xylem vessels: the role of sucrose as a trigger for refilling. Plant, Cell and Environment, 2011, 34, 514-524.	5.7	200
9	Low leaf hydraulic conductance associated with drought tolerance in soybean. Physiologia Plantarum, 2008, 132, 446-451.	5.2	186
10	Independent variation in photosynthetic capacity and stomatal conductance leads to differences in intrinsic water use efficiency in 11 soybean genotypes before and during mild drought. Journal of Experimental Botany, 2011, 62, 2875-2887.	4.8	171
11	Diurnal variation in xylem hydraulic conductivity in white ash (Fraxinus americana L.), red maple (Acer) Tj ETQq1 1 0.784314 rgBT /Ov	5.7	170
12	Evolution of xylem lignification and hydrogel transport regulation. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 17555-17558.	7.1	167
13	The Physicochemical Hydrodynamics of Vascular Plants. Annual Review of Fluid Mechanics, 2014, 46, 615-642.	25.0	160
14	Optimal vein density in artificial and real leaves. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 9140-9144.	7.1	158
15	Stomatal Control and Leaf Thermal and Hydraulic Capacitances under Rapid Environmental Fluctuations. PLoS ONE, 2013, 8, e54231.	2.5	156
16	Changes in pit membrane porosity due to deflection and stretching: the role of vestured pits. Journal of Experimental Botany, 2004, 55, 1569-1575.	4.8	143
17	Hydraulic design of leaves: insights from rehydration kinetics. Plant, Cell and Environment, 2007, 30, 910-921.	5.7	136
18	The spatial pattern of air seeding thresholds in mature sugar maple trees. Plant, Cell and Environment, 2005, 28, 1082-1089.	5.7	126

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19	The functional role of xylem parenchyma cells and aquaporins during recovery from severe water stress. Plant, Cell and Environment, 2017, 40, 858-871.	5.7	125
20	Bordered Pit Structure and Vessel Wall Surface Properties. Implications for Embolism Repair. Plant Physiology, 2000, 123, 1015-1020.	4.8	121
21	A potential role for xylem-phloem interactions in the hydraulic architecture of trees: effects of phloem girdling on xylem hydraulic conductance. Tree Physiology, 2004, 24, 911-917.	3.1	118
22	Nitrate Control of Root Hydraulic Properties in Plants: Translating Local Information to Whole Plant Response. Plant Physiology, 2008, 148, 1159-1167.	4.8	116
23	Hydraulic architecture of leaf venation in Laurus nobilis L.. Plant, Cell and Environment, 2002, 25, 1445-1450.	5.7	114
24	Water relations under root chilling in a sensitive and tolerant tomato species. Plant, Cell and Environment, 2004, 27, 971-979.	5.7	112
25	Patterns of PIP gene expression in Populus trichocarpa during recovery from xylem embolism suggest a major role for the PIP1 aquaporin subfamily as moderators of refilling process. Plant, Cell and Environment, 2010, 33, 1285-1297.	5.7	110
26	Measurements of stem xylem hydraulic conductivity in the laboratory and field. Methods in Ecology and Evolution, 2012, 3, 685-694.	5.2	110
27	Hydraulic limitations imposed by crown placement determine final size and shape of Quercus rubra L. leaves. Plant, Cell and Environment, 2004, 27, 357-365.	5.7	108
28	Analysis of Xylem Sap from Functional (Nonembolized) and Nonfunctional (Embolized) Vessels of Populus nigra: Chemistry of Refilling Â Â Â. Plant Physiology, 2012, 160, 955-964.	4.8	108
29	Hydraulic properties of individual xylem vessels of Fraxinus americana. Journal of Experimental Botany, 2001, 52, 257-264.	4.8	106
30	Understanding the Hydraulics of Porous Pipes: Tradeoffs Between Water Uptake and Root Length Utilization. Journal of Plant Growth Regulation, 2002, 21, 315-323.	5.1	93
31	Angiosperms Helped Put the Rain in the Rainforests: The Impact of Plant Physiological Evolution on Tropical Biodiversity¹. Annals of the Missouri Botanical Garden, 2010, 97, 527-540.	1.3	92
32	Roots growing in rock fissures: Their morphological adaptation. Plant and Soil, 1995, 172, 181-187.	3.7	90
33	Dynamic changes in petiole specific conductivity in red maple (Acer rubrum L.), tulip tree () Tj ETQq1 1 0.784314 rgBT /Overlock 10 T 2000, 23, 407-414.	5.7	86
34	Direct measurements of intervessel pit membrane hydraulic resistance in two angiosperm tree species. American Journal of Botany, 2006, 93, 993-1000.	1.7	86
35	Dynamic changes in root hydraulic properties in response to nitrate availability. Journal of Experimental Botany, 2007, 58, 2409-2415.	4.8	85
36	Bark water uptake promotes localized hydraulic recovery in coastal redwood crown. Plant, Cell and Environment, 2016, 39, 320-328.	5.7	84

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37	Vulnerability of Xylem Vessels to Cavitation in Sugar Maple. Scaling from Individual Vessels to Whole Branches. Plant Physiology, 2003, 131, 1775-1780.	4.8	79
38	Field confirmation of genetic variation in soybean transpiration response to vapor pressure deficit and photosynthetic compensation. Field Crops Research, 2011, 124, 85-92.	5.1	76
39	Optimality of the MÃ¼nch mechanism for translocation of sugars in plants. Journal of the Royal Society Interface, 2011, 8, 1155-1165.	3.4	76
40	Evolution of a unique anatomical precision in angiosperm leaf venation lifts constraints on vascular plant ecology. Proceedings of the Royal Society B: Biological Sciences, 2014, 281, 20132829.	2.6	71
41	Hydraulic properties of fern sporophytes: Consequences for ecological and evolutionary diversification. American Journal of Botany, 2010, 97, 2007-2019.	1.7	68
42	Non-structural Carbohydrates in Dormant Woody Perennials; The Tale of Winter Survival and Spring Arrival. Frontiers in Forests and Global Change, 2019, 2, .	2.3	66
43	Down-Regulation of Plasma Intrinsic Protein1 Aquaporin in Poplar Trees Is Detrimental to Recovery from Embolism Â Â. Plant Physiology, 2014, 164, 1789-1799.	4.8	65
44	Nitrate induction of root hydraulic conductivity in maize is not correlated with aquaporin expression. Planta, 2008, 228, 989-998.	3.2	64
45	Stomatal plugs of Drimys winteri (Winteraceae) protect leaves from mist but not drought. Proceedings of the National Academy of Sciences of the United States of America, 1998, 95, 14256-14259.	7.1	63
46	Accumulation of sugars in the xylem apoplast observed under water stress conditions is controlled by xylem pH. Plant, Cell and Environment, 2016, 39, 2350-2360.	5.7	63
47	LeFRK2 is required for phloem and xylem differentiation and the transport of both sugar and water. Planta, 2009, 230, 795-805.	3.2	62
48	Influence of Streamside Cover and Stream Features on Temperature Trends in Forested Streams of Western Oregon. Western Journal of Applied Forestry, 1999, 14, 106-113.	0.5	61
49	Transcriptome Response to Embolism Formation in Stems of Populus trichocarpa Provides Insight into Signaling and the Biology of Refilling Â Â. Plant Physiology, 2011, 157, 1419-1429.	4.8	60
50	Daily transpiration rates of woody species on drying soil. Tree Physiology, 2005, 25, 1469-1472.	3.1	59
51	The bias of a twoâ€dimensional view: comparing twoâ€dimensional and threeâ€dimensional mesophyll surface area estimates using noninvasive imaging. New Phytologist, 2017, 215, 1609-1622.	7.3	57
52	Hydraulic design of pine needles: one-dimensional optimization for single-vein leaves. Plant, Cell and Environment, 2006, 29, 803-809.	5.7	53
53	Diurnal Variation in Nonstructural Carbohydrate Storage in Trees: Remobilization and Vertical Mixing. Plant Physiology, 2018, 178, 1602-1613.	4.8	53
54	Leaf fossil record suggests limited influence of atmospheric CO ₂ on terrestrial productivity prior to angiosperm evolution. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 10403-10408.	7.1	52

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55	Physical Limits to Leaf Size in Tall Trees. Physical Review Letters, 2013, 110, 018104.	7.8	52
56	Analysis of spatial and temporal dynamics of xylem refilling in Acer rubrum L. using magnetic resonance imaging. Frontiers in Plant Science, 2013, 4, 265.	3.6	52
57	Maximum CO₂diffusion inside leaves is limited by the scaling of cell size and genome size. Proceedings of the Royal Society B: Biological Sciences, 2021, 288, 20203145.	2.6	52
58	Seasonal pattern of water depletion from soilâ€“rock profiles in a Mediterranean climate in southwestern Oregon. Canadian Journal of Forest Research, 1996, 26, 1346-1352.	1.7	50
59	Functional Design Space of Single-veined Leaves: Role of Tissue Hydraulic Properties in Constraining Leaf Size and Shape. Annals of Botany, 2004, 94, 507-513.	2.9	50
60	Phloem Transport Velocity Varies over Time and among Vascular Bundles during Early Cucumber Seedling Development. Plant Physiology, 2013, 163, 1409-1418.	4.8	50
61	Threats to xylem hydraulic function of trees under â€˜new climate normalâ€™ conditions. Plant, Cell and Environment, 2015, 38, 1713-1724.	5.7	50
62	Ionic control of the lateral exchange of water between vascular bundles in tomato. Journal of Experimental Botany, 2003, 54, 1399-1405.	4.8	49
63	Functional analysis of putative genes encoding the PIP2 water channel subfamily in Populus trichocarpa. Tree Physiology, 2009, 29, 1467-1477.	3.1	47
64	Temperature gradients assist carbohydrate allocation within trees. Scientific Reports, 2017, 7, 3265.	3.3	47
65	Ion Induced Changes in the Structure of Bordered Pit Membranes. Frontiers in Plant Science, 2012, 3, 55.	3.6	45
66	Structural and hydraulic correlates of heterophylly in Ginkgo biloba. New Phytologist, 2011, 189, 459-470.	7.3	43
67	Spring bud growth depends on sugar delivery by xylem and water recirculation by phloem MÃ¼nch flow in Juglans regia. Planta, 2017, 246, 495-508.	3.2	42
68	Priming xylem for stress recovery depends on coordinated activity of sugar metabolic pathways and changes in xylem sap <scp>pH</scp>. Plant, Cell and Environment, 2019, 42, 1775-1787.	5.7	42
69	Tensioning the helix: a mechanism for force generation in twining plants. Proceedings of the Royal Society B: Biological Sciences, 2009, 276, 2643-2650.	2.6	41
70	The pitfalls of Âvivo imaging techniques: evidence for cellular damage caused by synchrotron Xâ€ray computed microâ€tomography. New Phytologist, 2018, 220, 104-110.	7.3	40
71	Water gate. Nature, 2003, 425, 361-361.	27.8	39
72	Frost Induces Respiration and Accelerates Carbon Depletion in Trees. PLoS ONE, 2015, 10, e0144124.	2.5	39

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73	In vivo quantification of plant starch reserves at micrometer resolution using Xâ€ray micro<scp>CT</scp> imaging and machine learning. New Phytologist, 2018, 218, 1260-1269.	7.3	38
74	Cell-to-cell pathway dominates xylem-epidermis hydraulic connection in Tradescantia fluminensis (Vell. Conc.) leaves. Planta, 2008, 227, 1311-1319.	3.2	36
75	The physiological response of Populus tremula x alba leaves to the down-regulation of PIP1 aquaporin gene expression under no water stress. Frontiers in Plant Science, 2013, 4, 507.	3.6	36
76	Relationship between Hexokinase and the Aquaporin PIP1 in the Regulation of Photosynthesis and Plant Growth. PLoS ONE, 2014, 9, e87888.	2.5	36
77	Insight into the physiological role of water absorption via the leaf surface from a rehydration kinetics perspective. Plant, Cell and Environment, 2018, 41, 1886-1894.	5.7	36
78	Comparison of phenological traits, growth patterns, and seasonal dynamics of non-structural carbohydrate in Mediterranean tree crop species. Scientific Reports, 2020, 10, 347.	3.3	36
79	The tomato plastidic fructokinase Sl<scp>FRK</scp>3 plays a role in xylem development. New Phytologist, 2016, 209, 1484-1495.	7.3	35
80	On measuring the response of mesophyll conductance to carbon dioxide with the variable J method. Journal of Experimental Botany, 2012, 63, 413-425.	4.8	33
81	Hydraulic conductivity of red oak (Quercus rubra L.) leaf tissue does not respond to light. Plant, Cell and Environment, 2011, 34, 565-579.	5.7	31
82	Root distribution of 12-year-old forests at rocky sites in southwestern Oregon: effects of rock physical properties. Canadian Journal of Forest Research, 1994, 24, 1791-1796.	1.7	30
83	Chemical inhibition of xylem cellular activity impedes the removal of droughtâ€induced embolisms in poplar stems â€“ new insights from microâ€CT analysis. New Phytologist, 2021, 229, 820-830.	7.3	30
84	Transporting water to the tops of trees. Physics Today, 2008, 61, 76-77.	0.3	28
85	The capacity for nitrate regulation of root hydraulic properties correlates with speciesâ€™ nitrate uptake rates. Plant and Soil, 2010, 337, 447-455.	3.7	28
86	Temperatureâ€assisted redistribution of carbohydrates in trees. American Journal of Botany, 2015, 102, 1216-1218.	1.7	27
87	Winteraceae Evolution: An Ecophysiological Perspective. Annals of the Missouri Botanical Garden, 2000, 87, 323.	1.3	26
88	Stomatal design principles in synthetic and real leaves. Journal of the Royal Society Interface, 2016, 13, 20160535.	3.4	26
89	Extreme midâ€winter drought weakens tree hydraulicâ€“carbohydrate systems and slows growth. New Phytologist, 2018, 219, 89-97.	7.3	26
90	Unravelling foliar water uptake pathways: The contribution of stomata and the cuticle. Plant, Cell and Environment, 2021, 44, 1728-1740.	5.7	25

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91	The Dynamics of "Dead Wood": Maintenance of Water Transport Through Plant Stems. Integrative and Comparative Biology, 2002, 42, 492-496.	2.0	24
92	Coordinated responses of plant hydraulic architecture with the reduction of stomatal conductance under elevated CO2 concentration. Tree Physiology, 2018, 38, 1041-1052.	3.1	24
93	Predicting bloom dates by temperature mediated kinetics of carbohydrate metabolism in deciduous trees. Agricultural and Forest Meteorology, 2019, 276-277, 107643.	4.8	22
94	The Dynamics of Embolism Refilling in Abscisic Acid (ABA)-Deficient Tomato Plants. International Journal of Molecular Sciences, 2013, 14, 359-377.	4.1	20
95	Spring phenology is affected by fall non-structural carbohydrate concentration and winter sugar redistribution in three Mediterranean nut tree species. Tree Physiology, 2021, 41, 1425-1438.	3.1	20
96	Waterâ€Holding Characteristics of Metasedimentary Rock in Selected Forest Ecosystems in Southwestern Oregon. Soil Science Society of America Journal, 1996, 60, 1578-1582.	2.2	19
97	The Role of Potassium in Long Distance Transport in Plants. , 2005, , 221-240.		19
98	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, 2017, 215, 552-557.	7.3	17
99	Modelled hydraulic redistribution by sunflower (<scp>H</scp>elianthus annuusâ€…<scp>L</scp>.) matches observed data only after including nightâ€time transpiration. Plant, Cell and Environment, 2014, 37, 899-910.	5.7	16
100	Sugar export limits size of conifer needles. Physical Review E, 2017, 95, 042402.	2.1	16
101	Fruit load in almond spurs define starch and total soluble carbohydrate concentration and therefore their survival and bloom probabilities in the next season. Scientia Horticulturae, 2018, 237, 269-276.	3.6	16
102	Ray fractions and carbohydrate dynamics of tree species along a 2750Âm elevation gradient indicate climate response, not spatial storage limitation. New Phytologist, 2020, 225, 2314-2330.	7.3	14
103	Hydraulic properties of Eucalyptus grandis in response to nitrate and phosphate deficiency and sudden changes in their availability. Journal of Plant Nutrition and Soil Science, 2016, 179, 303-309.	1.9	13
104	A technique to measure root tip hydraulic conductivity and root water potential simultaneously. Journal of Experimental Botany, 1997, 48, 333-336.	4.8	12
105	Acclimation of Pistacia integerrima trees to frost in semi-arid environments depends on autumnâ€™s drought. Planta, 2017, 245, 671-679.	3.2	12
106	Sodium interception by xylem parenchyma and chloride recirculation in phloem may augment exclusion in the salt tolerant Pistacia genus: context for salinity studies on tree crops. Tree Physiology, 2019, 39, 1484-1498.	3.1	12
107	The Role of Cellulose Fibers inGnetum gnemonLeaf Hydraulics. International Journal of Plant Sciences, 2014, 175, 1054-1061.	1.3	10
108	Assessing water-related plant traits to explain slow-wilting in soybean PI 471938. Journal of Crop Improvement, 2017, 31, 400-417.	1.7	10

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109	Role of Bark Color on Stem Temperature and Carbohydrate Management during Dormancy Break in Persian Walnut. Journal of the American Society for Horticultural Science, 2017, 142, 454-463.	1.0	10
110	Changes in plantâ€“soil hydraulic pressure gradients of soybean in response to soil drying. Annals of Applied Biology, 2008, 152, 49-57.	2.5	9
111	Getting variable xylem hydraulic resistance under control: interplay of structure and function. Tree Physiology, 2012, 32, 1431-1433.	3.1	9
112	Functional analysis of embolism induced by air injection in Acer rubrum and Salix nigra. Frontiers in Plant Science, 2013, 4, 368.	3.6	9
113	The prospects for constraining productivity through time with the wholeâ€plant physiology of fossils. New Phytologist, 2019, 223, 40-49.	7.3	9
114	The mechanism of sugar export from long conifer needles. New Phytologist, 2021, 230, 1911-1924.	7.3	9
115	Quantifying Green Life: Grand Challenges in Plant Biophysics and Modeling. Frontiers in Plant Science, 2011, 2, 31.	3.6	8
116	Shoot dimorphism enables Sequoia sempervirens to separate requirements for foliar water uptake and photosynthesis. American Journal of Botany, 2022, 109, 564-579.	1.7	7
117	The impact of non-structural carbohydrates (NSC) concentration on yield in Prunus dulcis, Pistacia vera, and Juglans regia. Scientific Reports, 2022, 12, 4360.	3.3	5
118	The position in the canopy and the bearing status of 1-year-old shoots affect the bearing potential and morphology of current-year shoots in walnuts (Juglans regia L.) cv. Chandler. Trees - Structure and Function, 2018, 32, 1267-1277.	1.9	4
119	Water in trees. Physics Today, 2008, 61, 12-12.	0.3	3
120	The makeup of a gamete space capsule. Nature Plants, 2019, 5, 8-8.	9.3	3
121	Winding up the bloom clockâ€”do sugar levels at senescence determine how trees respond to winter temperature?. Tree Physiology, 2021, 41, 1906-1917.	3.1	3
122	Hydraulic properties of individual xylem vessels of Fraxinus americana. Journal of Experimental Botany, 2001, 52, 257-264.	4.8	2
123	Sodium Retrieval from Sap May Permit Maintenance of Carbohydrate Reserves in Mature Xylem Tissues of a Salt-tolerant Hybrid Pistachio Rootstock Exposed to 100 mm NaCl. Journal of the American Society for Horticultural Science, 2021, 146, 224-232.	1.0	2
124	Role of Aquaporins in the Maintenance of Xylem Hydraulic Capacity. Signaling and Communication in Plants, 2017, , 237-254.	0.7	1
125	Integration of Long Distance Transport Systems in Plants: Perspectives and Prospects for Future Research. , 2005, , 537-545.		1
126	Measuring Phloem Transport Velocity on a Tissue Level Using a Phloem-Mobile Dye. Methods in Molecular Biology, 2019, 2014, 203-211.	0.9	0