Publications, patents, talks, and other contributions

Dr. rer. nat. Simon Poppinga

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Group leader at the Plant Biomechanics Group Freiburg
Honorary curator for carnivorous plants at the Freiburg Botanic Garden
Associate Editor for the *American Journal of Botany*

Plant Biomechanics Group Freiburg
& Freiburg Materials Research Center
Botanic Garden
Schänzlestrasse 1
D-79104 Freiburg i.Br.

Email: simon.poppinga [at] biologie.uni-freiburg.de
Phone: ++49-(0)761-203-2999
Fax: ++49-(0)761-203-2880

ORCID ID: orcid.org/0000-0001-5341-9188

GoogleScholar
ResearchGate
ResearcherID

Patent

2011: EP 2 320 015 - Hingeless, infinitely deformable folding mechanism (Gelenkloser, stufenlos verformbarer Klappmechanismus). Inventors: Knippers J, Lienhard J, Schleicher S, Poppinga S, Masselter T, Speck T. Filing: 10.11.2009, EP20060743126. Disclosure: 11.05.2011, EP 2 320015 A2.

Peer-reviewed original articles

* corresponding author; # equal contribution

2018: **Horstmann M*, Heier L, Kruppert S, Weiss LC, Tollrian R, Adamec L, Westermeier A, Speck T, Poppinga S*** (2018) Comparative prey spectra analyses of the endangered aquatic carnivorous waterwheel plant (*Aldrovanda vesiculosa*, Droseraceae) at several naturalized microsites in the Czech Republic and Germany (under review).

Kampowski T*, Demandt S, Poppinga S, Speck T (2018) Kinematical, structural and mechanical adaptations to desiccation in poikilohydric *Ramonda myconi* (Gesneriaceae). *Frontiers in Plant Science* (accepted).

Westermeier AS*#, Sachse R*#, Poppinga S, Vögele P, Adamec L, Speck T, Bischoff M (2018) How the carnivorous waterwheel plant (*Aldrovanda vesiculosa*) snaps. *Proceedings of the Royal Society B: Biological Sciences* 285(1878): 20180012. doi: 10.1098/rspb.2018.0012.

Gallenmüller F*, Langer M, Poppinga S, Kassemeyer H-H, Speck T (2018) Spore liberation in mosses revisited. *AoB PLANTS* 10: plx075. doi: 10.1093/aobpla/plx075

Kampowski T*, Mylo MD, Poppinga S, Speck T (2018) How water availability influences morphological and biomechanical properties in the one-leaf plant *Monophyllaea horsfieldii* R.Br.. *Royal Society Open Science* 5: 171076. doi: 0.1098/rsos.171076

Körner A*, Born L, Mader A, Sachse R, Saffarian S, Westermeier AS, Poppinga S, Bischoff M, Gresser GT, Milwich M, Speck T, Knippers J (2018) Flectofold – A biomimetic compliant shading device for complex free form facades. *Smart Materials and Structures* 27: 017001. doi: 10.1088/1361-665X/aa9c2f

2017: **Kampowski T*, Mylo MD, Speck T, Poppinga S (2017)** On the morphometry, anatomy and water stress behaviour of the anisocotyledonous *Monophyllaea horsfieldii* (Gesneriaceae) and their eco-evolutionary significance. *Botanical Journal of the Linnean Society* 185(3): 425-442. doi: 10.1093/botlinnean/box063

Westermeier AS, Fleischmann A, Müller K, Schäferhoff B, Rubach C, Speck T, Poppinga S* (2017) Trap diversity and character evolution in carnivorous bladderworts (*Utricularia*, Lentibulariaceae). *Scientific Reports* 7: 12052. doi:10.1038/s41598-017-12324-4

Poppinga S*, Daber LE, Westermeier AS, Kruppert S, Horstmann M, Tollrian R, Speck T (2017) Biomechanical analysis of prey capture in the carnivorous Southern bladderwort (*Utricularia australis*). *Scientific Reports* 7: 1776. doi: 10.1038/s41598-017-01954-3

Poppinga S*, Nestle N, Šandor A, Reible B, Masselter T, Bruchman B, Speck T (2017) Hygroscopic motions of fossil conifer cones. *Scientific Reports* 7: 40302. doi: 10.1038/srep40302

2016: **Adamec L*, Poppinga S (2016)** Measurement of the critical negative pressure inside traps of aquatic carnivorous *Utricularia* species. *Aquatic Botany* 133: 10-16. doi: 10.1016/j.aquabot.2016.04.007.

Poppinga S*, Kampowski T, Metzger A, Speck O, Speck T (2016) Comparative kinematical analyses of Venus flytrap (*Dionaea muscipula*) snap-traps. *Beilstein Journal of Nanotechnology* 7: 664-674 (part of the thematic series "Biological and biomimetic materials and surfaces"). doi:10.3762/bjnano.7.59

Kampowski T*, Eberhard L, Gallenmüller F, Speck T, Poppinga S (2016) Functional morphology of suction discs and attachment performance of the Mediterranean medicinal leech (*Hirudo verbana* CARENA). *Journal of the Royal Society Interface* 13: 20160096. doi: 10.1098/rsif.2016.0096

2015: **Poppinga S*, Haushahn T, Warnke M, Masselter T, Speck T (2015)** Sporangium exposure and spore release in the Peruvian maidenhair fern (*Adiantum peruvianum*, Pteridaceae). *PLOS ONE* 10(10): e0138495. doi: 10.1371/journal.pone.0138495

Schleicher S*, Lienhard J, Poppinga S, Speck T, Knippers J (2015) A methodology for transferring principles of plant movements to elastic systems in architecture. *Computer-Aided Design* 60: 105-117 (part of the special issue "Material ecology: design and computational issues").
doi: http://dx.doi.org/10.1016/j.cad.2014.01.005

2013: **Hartmeyer S*, Hartmeyer I, Masselter T, Seidel R, Speck T, Poppinga S (2013)** Catapults into a deadly trap: The unique prey capture mechanism of *Drosera glanduligera. Carnivorous Plant Newsletter* 42(1): 4-14 (with cover picture).

2012: **Poppinga S*, Hartmeyer S, Seidel R, Masselter T, Hartmeyer I, Speck T (2012)** Catapulting tentacles in a sticky carnivorous plant. *PLOS ONE* 7(9): e45735. doi: 10.1371/journal.pone.0045735

2011: **Poppinga S, Joyeux M* (2011)** Different mechanics of snap-trapping in the two closely related carnivorous plants *Dionaea muscipula* and *Aldrovanda vesiculosa. Physical Review E* 84: 041928.
doi: 10.1103/PhysRevE.84.041928

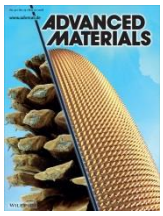
Lienhard J, Schleicher S, Poppinga S, Masselter T, Milwich M, Speck T, Knippers J* (2011) Flectofin: a hinge-less flapping mechanism inspired by nature. *Bioinspiration & Biomimetics* 6: 045001 (part of the special section "Biomimetics of movement"). doi: 10.1088/1748-3182/6/4/045001

Vincent O, Weißkopf C, Poppinga S, Masselter T, Speck T, Joyeux M, Quilliet C, Marmottant P* (2011) Ultra-fast underwater suction traps. *Proceedings of the Royal Society B* 278(1720): 2909-2914.
doi: 10.1098/rspb.2010.2292

2010: **Poppinga S, Koch K, Bohn H, Barthlott W* (2010)** Comparative and functional morphology of hierarchically structured anti-adhesive surfaces in carnivorous plants and kettle trap flowers. *Functional Plant Biology* 37(10): 952–961. doi: 10.1071/FP10061

Rembold K*, Irmer A, Poppinga S, Rischer H, Bringmann G (2010) Propagation of *Triphyophyllum peltatum* (Dioncophyllaceae) and observations on its carnivory. *Carnivorous Plant Newsletter* 39(3): 71-77 (with cover).

Peer-reviewed (research) review articles



2018: **Poppinga S*, Zollfrank C, Prucker O, Rühe J, Menges A, Cheng T, Speck T (2018)** Toward a new generation of smart biomimetic actuators for architecture. *Advanced Materials* 30(19): 1703653 (Special Issue:

Bioinspired Materials). doi: 10.1002/adma.201703653. **Back cover for article**: *Advanced Materials* 30(19): 1870135. doi: 10.1002/adma.201870135

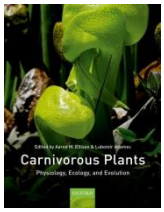
2016: **Poppinga S*, Weißkopf C, Westermeier AS, Masselter T, Speck T (2016)** Fastest predators in the plant kingdom: Functional morphology and biomechanics of suction traps found in the largest genus of carnivorous plants. *AoB PLANTS* 8: plv140. doi:10.1093/aobpla/plv140

2013: **Poppinga S*, Hartmeyer S, Masselter T, Hartmeyer I, Speck T (2013)** Trap diversity and evolution in the family Droseraceae. *Plant Signaling & Behavior* 8(7): e24685 (invited review). doi: 10.4161/psb.24685

Poppinga S*, Masselter T, Speck T (2013) Faster than their prey: New insights into the rapid movements of active carnivorous plants traps. *BioEssays: News and Reviews in Molecular, Cellular and Bevelopmental Biology* 35: 649-657 (invited review; issue highlight). doi: 10.1002/bies.201200175

Peer-reviewed book chapters

2018: **Speck T*, Bauer G, Masselter T, Poppinga S, Schmier S, Thielen M, Speck O (2018)** Biomechanics and functional morphology of plants – inspiration for biomimetic materials and structures. In: A. Geitmann, J. Gril (eds.), *Plant Biomechanics*. Springer International Publishing AG, pp. 399-422. doi: 10.1007/978-3-319-79099-2_18



Poppinga S*, Bauer U, Speck T, Volkov AG (2018) Motile traps. In: Ellison AM, Adamec L (eds.) *Carnivorous plants - Physiology, ecology, and evolution*. Oxford University Press, pp. 180-193. doi: 10.1093/oso/9780198779841.003.0014

Bauer U*, Jetter R, Poppinga S (2018) Non-motile traps. In: Ellison AM, Adamec L (eds.) *Carnivorous plants - Physiology, ecology, and evolution*. Oxford University Press, pp. 194-206. doi: 10.1093/oso/9780198779841.003.0015

2016: **Poppinga S*, Körner A, Sachse R, Born L, Westermeier AS, Hesse L, Knippers J, Bischoff M, Gresser GT, Speck T (2016)** Compliant mechanisms in plants and architecture. In: Knippers J, Speck T, K. Nickel (eds.), *Biomimetic research for architecture and building construction: biological design and integrative structures*. Biologically-inspired systems, Springer, Heidelberg, Berlin, pp. 169-193. doi: 10.1007/978-3-319-46374-2_9

2011: **Masselter T, Barthlott W, Bauer G, Bertling J, Cichy F, Ditsche-Kuru P, Gallenmüller F, Gude M, Haushahn T, Hermann M, Immink H, Knippers J, Lienhard J, Luchsinger R, Lunz K, Mattheck C, Milwich M, Mölders N, Neinhuis C, Nellesen A, Poppinga S, Rechberger M, Schleicher S, Schmitt C, Schwager H, Seidel R, Speck O, Stegmaier T, I. Tesari, Thielen M, Speck T (2011)** Biomimetic products. In: Y. Bar-Cohen (ed.), *Biomimetics - Nature Based Innovation*, pp. 377-429. CRC Press, Pasadena.

Peer-reviewed conference proceedings

2018: **Nestle N*, Šandor1 A, Bruchmann B, Speck T, Gallenmüller F, Poppinga S (2018)** Fossilized but functional – Tomographic insights into nature's most resilient actuators. *Proceedings of the Bruker Micro-CT User Meeting* 2018: 49-55.

2017: **Bischoff M*, Sachse R, Westermeier AS, Körner A, Born L, Poppinga S, Gresser GT, Speck T, Knippers J (2017)** Modeling and analysis of the trapping mechanism of *Aldrovanda vesiculosa* as biomimetic inspiration for façade elements. In: A. Bögle, M. Grohmann (eds.) IASS Annual Symposium 2017 Interfaces: architecture.engineering.science, 25–28th September, Hamburg, Germany.

Born L*, Körner A, Schieber G, Westermeier AS, Poppinga S, Sachse R, Bergmann P, Betz O, Bischoff M, Speck T, Knippers J, Milwich M, Gresser GT (2017) Fiber-reinforced plastics with locally adapted stiffness for bio-inspired hingeless, deployable architectural systems. In: Herrmann A (eds.) 21st Symposium on Composites, Vol. 742: Trans Tech Publications (Key Engineering Materials), pp. 689-696. doi: 10.4028/www.scientific.net/KEM.742.689

2016: **Speck T*, Masselter T, Poppinga S, Thielen M, Bauer G, Bunk K, Hesse L, Schmier S, Westermeier AS (2016)** Fibres in biology and technology: smart fibre-reinforced materials and structures inspired by

plants and animals. *Proceedings of the ECCM17 - 17th European Conference on Composite Materials Munich*, Germany, 26-30th June 2016 (ISBN 978-3-00-053387-7).

2011: **Schleicher S, Lienhard J, Knippers J, Poppinga S, Masselter T, Speck T (2011)** Bio-inspired kinematics of adaptive shading systems for free form facades. In: D. Nethercot et al. (eds), *Proceedings of the 35th Annual Symposium of IABSE / 52nd Annual Symposium of IASS / 6th International Conference on Space Structures 'Taller Longer Lighter - Meeting growing demand with limited resources'*, London, UK, 0551.

Schleicher S[*], Lienhard J, Poppinga S, Masselter T, Speck T, Knippers J (2011) Adaptive façade shading systems inspired by natural elastic kinematics. *Proceedings of the International Adaptive Architecture Conference IAAC* (2011), London, pp. 2-12.

2010: **Marmottant P[*], Vincent O, Quilliet C, Weißkopf C, Poppinga S, Masselter T, Speck T, Joyeux M (2010)** The ultrafast valve of an aquatic carnivorous plant. *Bulletin of the American Physical Society* 55(16), 63rd Annual Meeting of the APS Division of Fluid Dynamics 2010, Long Beach, California.

Lienhard J[*], Schleicher S, Knippers J, Poppinga S, Speck T (2010) Form-finding of nature inspires kinematics for pliable structures. In: Q. Zhang et al. (eds.), *Proceedings of the International Symposium of the International Association of Shell and Spatial Structures (IASS*), Spatial Structures Temporary and Permanent, Shanghai, China, pp. 2545-2554.

Poppinga S, Lienhard J, Masselter T, Schleicher S, Knippers J, Speck T[*] (2010) Biomimetic deployable systems in architecture. In: C. T. Lim, J. C. H. Goh (eds.), *IFMBE Proceedings 31*, 6th World Congress on Biomechanics (WCB) 2010, Singapore, pp. 40-43. doi: 10.1007/978-3-642-14515-5_11

Poppinga S, Masselter T, Lienhard J, Schleicher S, Knippers J, Speck T (2010) Plant movements as concept generators for deployable systems in architecture. In: C. A. Brebbia (ed.), *Design & Nature V: Comparing Design in Nature with Science and Engineering*, WIT Press, Southampton, Boston, pp. 403-409. doi: 10.2495/DN100351

Lienhard J, Poppinga S, Schleicher S, Speck T, Knippers J (2010) Elastic architecture: nature inspired pliable structures. In: C. A. Brebbia (ed.), *Design & Nature V: Comparing Design in Nature with Science and Engineering*, WIT Press, Southampton, Boston, pp. 469-477. doi: 10.2495/DN100421

Schleicher S, Lienhard J, Poppinga S, Speck T, Knippers J (2010) Abstraction of bio-inspired curved-line folding patterns for elastic foils and membranes in architecture. In: C. A. Brebbia (ed.), *Design & Nature V: Comparing Design in Nature with Science and Engineering*, WIT Press, Southampton, Boston, pp. 479-489. doi: 10.2495/DN100431

2009: **Lienhard J, Poppinga S, Schleicher S, Masselter T, Speck T, Knippers J (2009**) Abstraction of plant movements for deployable structures in architecture. In: B. Thibaut (ed.), *Proceedings of the 6th Plant Biomechanics International Conference*, Ecofog, Cayenne, French Guyana, pp. 389-397.

2007: **Poppinga S[*], Barthlott W, Koch K (2007)** Plants that trap animals: microscopic characteristics of anti-adhesive surfaces. 33rd Microscopy Conference of the Deutsche Gesellschaft für Elektronenmikroskopie e. V., Saarbrücken, 02.-07.09.2007. *Microscopy and Microanalysis* 13(3): 192-193. doi: 10.1017/S1431927607080968

Other publications (§ peer-reviewed)

2018: **[§]Poppinga S[*], Speck T (2018)** Bark, the neglected tree postural motor system. *New Phytologist* (accepted). Commentary on Clair et al. (2018) *New Phytologist*. doi: 10.1111/nph.15375

Poppinga S[*], Westermeier AS, Fleischmann A, Müller K, Speck T (2018) Evolution of a sucker: Functional principles of traps in carnivorous bladderworts (*Utricularia*, Lentibulariaceae). *Atlas of Science* (http://atlasofscience.org/evolution-of-a-sucker-functional-principles-of-traps-in-carnivorous-bladderworts-utricularia-lentibulariaceae/).

Poppinga S[*], Westermeier AS, Speck T, Fleischmann A (2018) Differenze strutturali e funzionali nelle trappole delle utricolarie (Structural and functional diversity of bladderwort traps). *AIPC (Associatione Italiana Piante Carnivore) Magazine* 50(2): 4-17.

Poppinga S[*], Alamsyah F, Bauer U, Fleischmann A, Horstmann M, Klink S, Kruppert S, Lin Q, Müller U, Northrop A, Płachno BJ, Prins A, Scharmann M, Sirová D, Skates L, Westermeier AS, Ellison AM* (2018) What's new in the world of carnivorous plants - Summary of two symposia held in July 2017. *Carnivorous Plant Newsletter* 47(1): 18-27.

2017: **Westermeier AS, Poppinga S, Körner A, Born L, Sachse R, Saffarian S, Knippers J, Bischoff M, Gresser GT, Speck T (2017)** Keine Gelenkbeschwerden – Wie Pflanzen sich bewegen und die Technik inspirieren. In: Knippers J, U. Schmid & Speck T (eds.), Baubionik - Biologie beflügelt Architektur. – Stuttgarter Beiträge zur Naturkunde, Serie C, Band 82, Stuttgart., pp. 30-39.

Poppinga S, Nestle N, Reible B, Masselter T, Bruchmann B, Speck T (2017) Fossile Zapfenschuppen bewegen sich noch nach Millionen von Jahren. *Naturwissenschaftliche Rundschau* 70(3), 139-140.

2016: **Poppinga S[*], Speck T (2016)** 3D-gedruckte, bewegliche Strukturen inspiriert von langsamen und schnellen Pflanzenbewegungen. In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 8. Bionik-Kongress Hochschule Bremen, pp.12-18.

Born L[*], Westermeier AS, Gresser GT, Poppinga S, Speck T (2016) Catching inspiration from the carnivorous plant *Aldrovanda vesiculosa* – The biomimetic façade shading system "Flectofold". In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 8. Bionik-Kongress. Hochschule Bremen, pp. 137-143.

Kampowski T[*], Eberhard L, Gallenmüller F, Poppinga S, Speck T (2016) Medicinal leeches suck, don't they? – Investigating the functional morphology and general attachment performance of *Hirudo verbana* suction discs. In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 8. Bionik-Kongress. Hochschule Bremen, pp. 193-200.

Kampowski T[*], Mylo MD, Demandt S, Poppinga S, Speck T (2016) The impact of water stress on morphological and biomechanical properties of desiccation-tolerant and desiccation-intolerant Gesneriaceae. In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 8. Bionik-Kongress. Hochschule Bremen, pp.214-219.

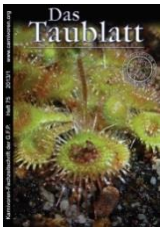
2015: **Poppinga S (2015)** *Nepenthes gracilis*, die Kannenpflanze mit Sprungbrett. *Das Taublatt* 82: 104-111.

Poppinga S[*], Speck T (2015) New insights into the passive nastic motions of pine cone scales and false indusia in ferns. *Proceedings of the 8th Plant Biomechanics International Conference*, 30.11.-04.12.2015, Nagoya, Japan

2014: **Poppinga S[*], Speck T (2014)** Hygroscopic pine cone movement re-visited - Biomimetic actuators inspired by passive nastic plant movements. In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 7. Bionik-Kongress Hochschule Bremen, pp. 256-260.

2013: **Poppinga S, Masselter T, Lienhard J, Schleicher S, Knippers J, Müller L, Milwich M, Speck T (2013)** Strelitzie inspiriert Architektur. *Naturwissenschaftliche Rundschau* 66(12): 649-651.

[§]Poppinga S, Metzger A, Speck O, Masselter T, Speck T[*] (2013) Schnappen, schleudern, saugen: Fallenbewegungen fleischfressender Pflanzen. *Biologie in unserer Zeit* 43(6): 352-361 (invited article; with cover picture). doi: 10.1002/biuz.201310520



Hartmeyer S[*], Hartmeyer I, Masselter T, Seidel R, Speck T, Poppinga S (2013) Per Katapult in die Todesfalle: Der einzigartige Fangmechanismus von *Drosera glanduligera*. Deutsche Übersetzung des CPN-Artikels "Catapults into a deadly trap: The unique prey capture mechanism of *Drosera glanduligera*". *Das Taublatt* 75: 12-32 (with cover picture).

Poppinga S, Hartmeyer S, Seidel R, Masselter T, Hartmeyer I, Speck T (2013) Eine fleischfressende Pflanze mit Katapultfalle. *Naturwissenschaftliche Rundschau* 66(1): 37-38.

2012: **Poppinga S[*], Masselter T, Speck T (2012)** Fast plant movements. In: Moulia, B., Fournier, M. (eds.) *Proceedings of the 7th Plant Biomechanics International Conference*, Clermont-Ferrand, France, pp. 315-318.

Masselter T[*], Poppinga S, Lienhard J, Schleicher S, Speck T (2012) The flower of *Strelitzia reginae* as concept generator for the development of a technical deformation system for architectural purposes. In: B. Moulia, M. Fournier (eds.) *Proceedings of the 7th Plant Biomechanics International Conference*, Clermont-Ferrand, France, pp. 389-392.

[§]Poppinga S[*], Lienhard J, Schleicher S, Speck O, Knippers J, Speck T, Masselter T (2012) Paradiesvogelblume trifft Architektur - Bionische Innovation für gelenkfreie technische Anwendungen. *Praxis der Naturwissenschaften – Biologie* 5(61): 31-35.

Lienhard J, Poppinga S, Schleicher S (2012) Es geht auch ohne Gelenke. *architektur+technik* 4(12): 80-81.

2011: **Poppinga S, Weißkopf C, Masselter T, Speck T (2011)** Ultraschnelle Saugfallen beim fleischfressenden Wasserschlauch. *Naturwissenschaftliche Rundschau* 64(4): 205-206.

2010: **Poppinga S, Lienhard J, Schleicher S, Masselter T, Milwich M, Stegmaier T, Sartori J, Walter A, Schur H-F, Vogg K, Speck T, Knippers J (2010)** Architektur und Bionik - Wandelbarkeit ohne Gelenke. *ibr RKW Informationen Bau-Rationalisierung* 38(4): 24-25.

Poppinga S[*], Lienhard J, Schleicher S, Masselter T, Knippers J, Speck T (2010) Gelenkfreie Klappen bei *Strelitzia reginae*. In: A. B. Kesel, D. Zehren (eds.), Bionik: *Patente aus der Natur*. Tagungsbeiträge zum 5. Bionik-Kongress Hochschule Bremen, pp. 320-326.

Lienhard J[*], Schleicher S, Poppinga S, Walter A, Sartori J, Milwich M, Stegmaier T, Masselter T, Speck T, Knippers J (2010) Optimierung und Weiterentwicklung des Flectofin®. In: A. B. Kesel, D. Zehren (eds.), *Bionik: Patente aus der Natur*. Tagungsbeiträge zum 5. Bionik-Kongress Hochschule Bremen, pp. 36-45.

2009: **Poppinga S, Müller K, Omlor R (2009)** Darwin entdeckt tierische Eigenschaften an fleischfressenden Pflanzen. In: Schneckenburger, S., Omlor, R. (eds.), *Darwins Garten – Evolution entdecken*. Verband Botanische Gärten e. V., Berlin, pp. 42-43.

1997: **Poppinga S (1997)** *Drosophyllum lusitanicum* (L.) Link – Portugiesisches Taublatt. *Das Taublatt* 30(1): 4.

Further conference contributions, posters and oral presentations

(**T) keynote lecture, (*T) invited talk, (T) regular talk, (ST) short talk accompanying poster presentation, (P) poster presentation, (A) abstract accompanying a talk. Presenter is underlined when several authors are listed.

2018: (P) (A) Mylo MD, Westermeier A, Poppinga S, Speck T (2018) Establishment of a methodology for full-field 3D displacement and deformation analyses in plants. 9. Bionik-Kongress - Patente aus der Natur, Bremen, 26.-27.10.2016.

(T) (A) Poppinga S, Speck T (2018) Abstraction of slow and fast plant movement principles for the technical transfer into biomimetic structures. 9th Plant Biomechanics Conference, Montreal, Canada, 09.-14.08.2018.

(P) Thielen M, Poppinga S, Speck T (2018) 4D-printed material systems for sports and medicine inspired by the deformation of butterwort (*Pinguicula* sp.) leaves. 9th Plant Biomechanics Conference, Montreal, Canada, 09.-14.08.2018.

(P) Speck T, Eberhard L, Gallenmüller F, Poppinga S, Kampowski T (2018) Leech suction in air and under water: Secure attachment on plant leaves and other biological surfaces. 9th Plant Biomechanics Conference, Montreal, Canada, 09.-14.08.2018.

(A) Westermeier A, Sachse R, Poppinga S, Körner A, Born L, Bischoff M, Gresser GT, Knippers J, Speck T (2018) The fast snap-traps of the carnivorous aquatic waterwheel plant (*Aldrovanda vesiculosa*) – biomechanics, functional morphology, ecology, and biomimetic potential. 9th Plant Biomechanics Conference, Montreal, Canada, 09.-14.08.2018.

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