

## DR KASIA ZIEMIŃSKA

I am a wood anatomist studying how anatomical diversity determines variation in tree functions.

[www.kasiazieminska.com/science](http://www.kasiazieminska.com/science)  
kasia.s.zieminska@gmail.com  
+44 7460976902

## WORK EXPERIENCE

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- 4/2021 – present • Marie Skłodowska-Curie Individual Fellowship, Research Institute for Development (IRD) based at Joint Research Unit AMAP (botAny and Modeling of Plant Architecture and vegetation), Montpellier, France. Advisors: Dr Raphaël Pélissier, Dr Claire Fortunel. Full-time.
- 4/2020 – 3/2021 • Carl Trygger Fellowship, Uppsala University, Sweden. Advisor: Assoc. Prof. Bob Muscarella. Full-time.
- 9/2019 – 3/2020 • Lab/data/outreach manager, Prentice Climate Group, Imperial College London, UK. Advisor: Prof. Colin Prentice. Part-time (50%).
- 6/2019 – 8/2019 • Postdoctoral assistant, Imperial College London, UK. Advisor: Prof. Jon Lloyd. Two-week contractual work. Full-time.
- 9/2018 – 3/2019 • Postdoctoral researcher, Forest Dynamics Research Unit at the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Birmensdorf, Switzerland. Advisors: Dr Roman Zweifel and Dr Sophia Etzold. Part-time (60%).
- 7/2016 – 7/2018 • Independent Postdoctoral Putnam Fellow at the Arnold Arboretum of Harvard University, Boston, USA. Full-time.
- 11/2015 – 6/2016 • Postdoctoral researcher, Ecosystems Laboratory, Oxford University, UK. Advisor: Prof. Yadvinder Malhi. Initially, part-time (50%), then advanced to full-time.
- 11/2008 – 10/2009 • Research assistant, Comparative Ecology Lab, Macquarie University, Sydney, Australia. Supervisor: Prof. Mark Westoby. Full-time.
- 1/2008 – 11/2008 • Plant anatomist and database manager, Jodrell Laboratory, Kew Royal Botanic Gardens, London, UK. Supervisor: Dr Peter Gasson. Initially volunteering and afterwards advanced to a full-time employee.

## EDUCATION

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- 11/2009 – 6/2014 • PhD, Comparative Ecology Lab, Macquarie University, Sydney, Australia. Supervisors: Prof. Mark Westoby and Prof. Ian Wright. Thesis: Anatomical variation in twig wood across Australian angiosperms.
- 9/2005 – 7/2007 • MSc, Mickiewicz University, Poznań, Poland. Thesis: Leaflet anatomy of two *Encephalartos* Lehm. species. Supervisor: Prof. Adam Woźny.
- 9/2002 – 7/2005 • BSc, Mickiewicz University, Poznań, Poland. Thesis: Genera and species of cycads in the Poznań Greenhouse. Supervisor: Dr Justyna Wiland-Szymańska.
- 9/2003 – 2/2004 • Erasmus student exchange program, Masaryk University, Brno, Czech Republic

## UNIQUE SKILLS

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- Highly skilled in wood anatomy: from lab processing to structure identification
- Measurements: physiological (leaf/stem water potential, capacitance, respiration), mechanics (MOE, MOR), soft traits (wood density, leaf area, etc.)
- Image analysis (QuPath, ImageJ, ImagePro Plus, PTGui)
- Graphic design (InDesign, Illustrator, Photoshop, GIMP, Inkscape)
- Fieldwork in remote areas from humid tropical rainforest to semi-arid woodlands (French Guiana, Australia) and in temperate regions (North-East USA)

## PUBLICATIONS

Google Scholar (September 2022): citations – 1588, h-index – 13

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- 2022 • Etzold S, Sterck F, Bose AK, Braun S, Buchmann N, Eugster W, Gessler A, Kahmen A, Peters RL, Vitasse Y, Walthert L, **Ziemińska K**, Zweifel R. *Number of growth days and not length of the growth period determines radial stem growth of temperate trees*. Ecology Letters 25: 427–439.
  - 2021 • Zweifel, R., F. Sterck, S. Braun, N. Buchmann, W. Eugster, A. Gessler, M. Häni, ..., **Ziemińska K**, Etzold S. *Why trees grow at night?* New Phytologist 231: 2174–2185.
  - 2021 • Falster, D., R. Gallagher, E. H. Wenk, I. J. Wright, D. Indriarto, S. C. Andrew, C. Baxter, ..., **Ziemińska K**. *AusTraits, a curated plant trait database for the Australian flora*. Scientific Data 8: 254.
  - 2020 • **Ziemińska K**, Rosa, Gleason SM, Holbrook NM. *Wood day capacitance is related to water content, wood density, and anatomy across 30 temperate tree species*. Plant, Cell & Environment 43: 3048-3067.
  - 2020 • Aguirre-Gutiérrez J, Malhi Y, Lewis L, Fauset S, Adu-Bredu S, Affum-Baffoe K, Baer TR, Gvozdevaite A, Hubau W, Moore W, Peprah T, **Ziemińska K**, Phillips OL, Oliveras I. *Long-term droughts may drive drier tropical forests towards increased functional, taxonomic and phylogenetic homogeneity*. Nature Communications 11: 1-10.
  - 2020 • Kattge J, Bonisch G, Diaz S, ..., **Ziemińska K**, et al. *TRY plant trait database – enhanced coverage and open access*. Global Change Biology 26(1): 119-188.
  - 2019 • Aguirre Gutiérrez J, Oliveras I, Rifai S, Fauset S, Adu-Bredu S, Affum-Baffoe K, Baker T, Feldpausch TR, Gvozevaite A, Hubau W, Kraft NJB, Lewis SL, Moore S, Niinemets Ü, Peprah T, Phillips OL, **Ziemińska K**, Enquist B, Malhi Y. *Drier tropical forests are susceptible to functional changes in response to a long-term drought*. Ecology Letters 22: 855-865.
  - 2019 • Etzold S, **Ziemińska K**, Rohner B, Bottero A, Bose AK, Rühr NK, Zingg A, Rigling A. *One century of forest monitoring data in Switzerland reveals species-specific trends of climate induced tree mortality*. Frontiers in Plant Science, 10.
  - 2018 • Morris H, Gillingham MAF, Plavcová L, Gleason SM, Olson ME, Coomes DA, Fichtler E, Klepsch MM, Martínez-Cabrera HI, McGlenn DJ, Wheeler EA, Zheng J, **Ziemińska K**, Jansen S. *Vessel diameter is related to amount and spatial arrangement of axial parenchyma in woody angiosperms*. Plant, Cell & Environment 41: 245–260.
  - 2016 • Morris H, Plavcová L, Cvecko P, Fichtler E, Gillingham MAF, Martínez-Cabrera HI, McGlenn DJ, Wheeler E, Zheng J, **Ziemińska K**, Jansen S. *A global analysis of parenchyma tissue fractions in secondary xylem of seed plants*. New Phytologist 209(4): 1553-1565.
  - 2015 • **Ziemińska K**, Westoby M, Wright IJ. *Broad anatomical variation within a narrow wood density range – a study of twig wood across 69 Australian angiosperms*. PLoS ONE 10(4): e0124892.
  - 2014 • **Ziemińska K**. *Anatomical variation in twig wood across Australian angiosperms*. PhD thesis. Macquarie University, Sydney, Australia. [link](#)
  - 2013 • **Ziemińska K**, Butler DW, Gleason SM, Wright IJ, Westoby M (2013) *Fibre wall and lumen fractions drive wood density variation across 24 Australian angiosperms*. AoB PLANTS, Volume 5, plt046.
  - 2012 • Gleason SM, Butler DW, **Ziemińska K**, Waryszak P, Westoby M. *Stem xylem conductivity is key to plant water balance across Australian angiosperm species*. Functional Ecology 26 (2): 343-352.
  - 2010 • Gasson P, Miller R, Stekel DJ, Whinder F, **Ziemińska K**. *Wood identification of Dalbergia nigra (CITES Appendix I) using quantitative wood anatomy, principal*

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*components analysis and naïve Bayes classification. Annals of Botany 105 (1): 45-56.*

## MANSUCRIPTS

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- In revision • **Ziemińska K**, Bibbo S, Farrar S, Uriarte M, Ziaco E, Zimmerman JK, Muscarella B. *Within tree shifts in wood anatomy and tree growth after major hurricanes. New Phytologist.*
- In prep (invited contribution) • **Ziemińska K**. *The study of structure-function links on example of parenchyma-capacitance relationship.* Invited contribution to the Sherwin Carlquist memorial issue to be published in IAWA Journal.
- In prep (invited review) • **Ziemińska K**, Muscarella B. *Functional significance of wood and bark components.* Current Forestry Reports.
- In prep • **Ziemińska K**, Roddy A. *Comparison of two techniques for measuring wood water potential: pressure chamber and thermocouple psychrometers.*

## AWARDS

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- 2021 – 2023 • Marie Skłodowska-Curie Individual Fellowship, AMAP – IRD, France. Project: “Towards comprehensive maps of tree structure and function: linking tree architecture, anatomy and physiology.” 180 000 EUR
- 2021 • Swedish Phytogeographical Society – personal grant for a microscope + camera 4 500 EUR
- 2020 • Smithsonian Institute Postdoctoral Fellowship, Smithsonian Environmental Research Centre, USA, declined due to MSCA. Project: “Towards comprehensive understanding of tree demography: linking anatomy with tree growth and death.” 100 000 USD
- 2019 • Carl Tryggers Fellowship. Co-written with Assoc. Prof. Bob Muscarella. Uppsala University, Sweden. Project: “Linking wood anatomy, hydraulic strategies, and species distributions – implications for tropical forest response to drought.” 300 000 SEK
- 2016 – 2018 • Independent Postdoctoral Putnam Fellowship, Arnold Arboretum of Harvard University. Project: “The role of fibers and parenchyma in tree hydraulics.” 110 000 USD
- 2009 – 2013 • Macquarie University Research Excellence Scholarship 90 000 AUD
- 2013 • My AoB PLANTS paper has been selected as “Editor’s Choice”
- 2012 • Daintree Rainforest Observatory Research Student Grant awarded by James Cook University 6 000 AUD
- 2012 • Travel grant to the annual meeting of the Ecological Society of Australia (Melbourne) awarded by the society 200 AUD
- 2011 • Travel grant to the International Botanical Congress, Melbourne, awarded by the Australian Society of Plant Scientists 400 AUD

## SUPERVISING

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- 2020 – present • Together with Assoc. Prof. Bob Muscarella, I help training and advising a PhD student, Sam Farrar, based at Uppsala University.
- 2020 – 2021 • I trained and supervised research assistant, Silvia Bibbo, in anatomical identification and image analysis.
- 2016 – 2018 • I trained and supervised two undergraduate internship students at Harvard University (Emily Rosa, Emily Brown) and two postgraduate internship students at Oxford University (Natascha Luijken, Karabi Prathak), who all finished their projects

on time, and their work contributed towards publications (e.g., Ziemińska, Rosa et al. 2020). Emily Rosa's impressions about her internship can be found [here](#).

- 2008 – 2016 • Throughout my entire career since 2008, I have trained multiple students in wood anatomy (Palasiah Jotan, Paweł Waryszak, Henrike Fürstenau Togashi, Zhou Shuangxi, Ian MacLachlan, Daniel Oakley, Frances Whinder, Alisa Zhiteneva).

## MEETINGS

\*invited

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- 2022 INTECOL • **Ziemińska K**, Martin O, Ziegler C, Fortunel C, and R Pélissier. *Conductive sapwood area in branches and its coordination with wood anatomy*. Poster presentation. [PDF](#).
- 2022 Tropical Ecology • **Ziemińska K**, Martin O, Ziegler C, Fortunel C, and R Pélissier. *Conductive sapwood area in branches*. 2-min lightning talk and poster presentation. [PDF](#).
- **Ziemińska K**, Bibbo S, Farrar S, Uriarte M, Ziaco E, Zimmerman J, and R Muscarella. *Wood anatomical and growth responses to a major hurricane*. 2-min lightning talk and poster presentation. [PDF](#).
- 2021 ForestGEO • **Ziemińska K**, Bibbo S, Farrar S, Uriarte M, Ziaco E, Zimmerman J, and R Muscarella. *Wood anatomical and growth responses to a major hurricane*. 5-min lightning talk.
- 2020 Linnean Centre for Plant Biology • **Ziemińska K**, Rosa E, Gleason SM, Holbrook NM. *Wood diurnal capacitance, water storage and their anatomical drivers across 30 temperate angiosperm tree species*. Oral presentation.
- 2020 EGU • **Ziemińska K**, Rosa E, Gleason SM, Holbrook NM. *Wood diurnal capacitance, water storage and their anatomical drivers across 30 temperate angiosperm tree species*. Oral presentation.
- 2018 Botany • **\*Ziemińska K** *The future of wood anatomy as an integral part of plant sciences*. Rochester, MN, USA. Oral presentation. [PDF](#).
- 2018 New Phyt Symposium • **Ziemińska K**, Rosa E and SM Gleason. *Where does capacitance water come from?* New Phytologist Symposium "The biology of wood: from cell to trees", CA, USA. Poster. [PDF](#).
- 2018 Gordon Conference • **Ziemińska K**, Rosa E and SM Gleason. *Where does capacitance water come from?* Gordon Research Conference "Multiscale Plant Vascular Biology", VT, USA. Poster (as above) + 1-min oral poster pitch.
- 2017 Botany • **Ziemińska K** and SM Gleason. *Wood anatomy and water storage in temperate angiosperms*. TX, USA. Oral presentation.
- 2016 • **\*Ziemińska K**. *Wood anatomy and ecological strategies*. Arnold Arboretum of Harvard University, Boston, MA, USA. Oral presentation.
- 2016 • **\*Ziemińska K**. *Patterns in wood anatomy in the GEM trait campaigns*. Queralbs, Spain. Meeting: "Traits and ecosystem function along tropical environmental gradients" organized by Dr. I Olivaras and Prof. Y Malhi. Oral presentation.
- 2015 • **\*Ziemińska K**. *Wood density, anatomy and ecological strategies in Australian angiosperms*. Oxford University, UK. Oral presentation.
- 2013 • **\*Ziemińska K**. *The myriad ways plants build their wood*. Ulm University, Germany. Oral presentation.
- 2012 ESA • **Ziemińska K**, Butler DW, Gleason SM, Wright IJ and M Westoby. *Wood density and its anatomical components*. Annual conference of the Ecological Society of Australia, Melbourne. Oral presentation.
- 2010-2012 • **Ziemińska K**, Wright IJ and M Westoby. PhD research talks. Annual postgraduate conference at the Department of Biological Sciences, Macquarie University. Oral presentation.

- 2011 IBC • **Ziemińska K**, Wright IJ and M Westoby. *Wood density – what are its underlying components and why does it vary with different climates*. International Botanical Congress, Melbourne, Australia. Poster presentation.
- 2010 ESA • One-day Postgraduate Day at the annual conference of the Ecological Society of Australia, Canberra.
- 2009 INTECOL • International Congress of Ecology, Brisbane, Australia.
- 2008 ESA • Annual conference of the Ecological Society of Australia, Sydney.
- 2008 • “Wood matters” joint meeting of IAWA, IAWS and The Linnean Society, London, UK.

## OUTREACH/ EXTRACURRICULAR

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- 2022 • I am preparing a poster for Festival of Science to be held in Montpellier, France in October 2022.
- 2018 • I have created a wood anatomy tour of the Arnold Arboretum trees. It can be viewed under Featured Tours tab on the Arboretum’s website [here](#).
- 2018 • I have designed a graphic and wrote a popular science piece about wood anatomy for “Arnoldia”, the Arnold Arboretum’s quarterly magazine. It is available [here](#).
- 2017 – 2018 • I took evening classes in graphic design at the Rhode Island School of Design (Providence) and School of Museum of Fine Arts (Boston). Selected works can be found [here](#).
- 2017 • I taught at the Summer Institute organized by the Arnold Arboretum for primary school science teachers.
- 2017 • I wrote a popular science piece about my research for “Silva”, a biannual magazine published by the Arnold Arboretum.
- 2017 • I created a t-shirt design celebrating Lilac Sunday 2017 at the Arnold Arboretum. It can be viewed [here](#).
- 2014, 2015 • I participated in the infographic/dataviz competition organized by Information Is Beautiful and Kantar. My entries can be found [here](#).
- 2012 • I competed in the “Three minutes thesis” competition where the task was to present my PhD project in max three minutes to an intelligent but not necessarily scientific audience. [One Powerpoint slide](#) was allowed.
- ongoing • My photographs can be found [here](#) and [here](#).