

# CURRICULUM VITAE

October 2022

## **Klaus Winter**

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Plant Physiology Laboratory  
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## **Personal data:**

Birth date: 10 June 1949  
Birth place: Groß-Umstadt, Germany  
Citizenship: German

## **Research discipline:**

Plant Physiology, Plant Ecophysiology

## **Research topics:**

Functional plant diversity, photosynthetic pathway biodiversity.  
Evolution and ecophysiology of CAM photosynthesis.  
Plant stress physiology and metabolic plasticity.  
Tropical plant responses to elevated [CO<sub>2</sub>] and elevated temperature.

## **Qualifications, awards, positions held:**

- (1967) Abitur, Max-Planck-Gymnasium, Groß-Umstadt.
- (1972) Staatsexamen in Biology and Chemistry, Technical University of Darmstadt, Germany.
- (1972-75) Doctoral fellowship, Technical University of Darmstadt.
- (1975) Dr. rer. nat., graded *summa cum laude*, Botany Institute, Technical University of Darmstadt; U. Lüttge's lab.
- (1975-77) Research Scientist (Wissenschaftlicher Mitarbeiter, supported by the Deutsche Forschungsgemeinschaft [German Grant Committee]), Botany Institute, Technical University of Darmstadt.
- (1978-79) Postdoctoral fellow with C.B. Osmond, Department of Environmental Biology, Research School of Biological Sciences, Australian National University, Canberra, Australia.

- (1980) Postdoctoral research associate with G.E. Edwards, Department of Horticulture, University of Wisconsin, Madison, USA.
- (1981-83) Habilitation Fellowship given by the Deutsche Forschungsgemeinschaft, Botany Institute, University of Würzburg, Germany.
- (1981) Heinz-Maier-Leibnitz-Prize given by the German Federal Ministry of Education and Science for research in photosynthesis.
- (1983) Dr. rer. nat. habil., Habilitation in Botany, Faculty of Biology, University of Würzburg.
- (1983) Heisenberg Fellowship given by the Deutsche Forschungsgemeinschaft, Botany Institute, University of Würzburg.
- (1985) Professor of Botany (C 3), Faculty of Biology, University of Würzburg.
- (1989/90) Offered, but declined position of Full Professor (C 4) in Botany/Physiological Ecology, University of Heidelberg, Germany.
- (1991) Staff Scientist, Plant Physiology Program, Smithsonian Tropical Research Institute, Republic of Panama.
- (1998) Senior Staff Scientist, Smithsonian Tropical Research Institute, Republic of Panama.
- (2002) Highly cited researcher in the category Plant & Animal Science according to ISIHighlyCited.com.

**Mentors:**

Ulrich Lüttge, Technical University Darmstadt.  
 Michael Evenari, Hebrew University and Avdat Desert Research Station (Negev).  
 Barry Osmond, RSBS, Australian National University, Canberra.  
 Gerald Edwards, University of Wisconsin, Madison.

**Field research:**

Israel and Sinai Peninsula (Acre, Caesarea, Tel Aviv shore, Dead Sea, Avdat, Wadi Paran, Nabek), Australia (Barrington Tops National Park, Atherton Tableland, Western Australia), Madagascar (Fort-Dauphin), Venezuela (IVIC, Caracas; CIEZA, Coro), Papua New Guinea (Mt. Wilhelm, Lae, Baiyer River), Portugal, Panama.

**Organizer of International Symposia at STRI:**

- (1993) Crassulacean Acid Metabolism, March 21–26.  
 (2010) Crassulacean Acid Metabolism, March 21–24.  
 (2011) Responses of Tropical Vegetation to Elevated [CO<sub>2</sub>], March 31–April 1.

(2012) Tropical Vegetation and Rising Temperatures, May 31 –June 1.  
(2019) Tropical Plant Ecophysiology, July 12.

**Former students and postdocs include:**

Gerhard Zotz, Professor, University of Oldenburg.  
Catherine Lovelock, Professor, FAA, ARC Laureate, University of Queensland.  
John Skillman, Professor, California State University, San Bernardino.  
Simon Pierce, Associate Professor, University of Milan.  
Darren Crayn, Professor, James Cook University.  
Lucas Cernusak, Associate Professor, James Cook University.  
Martijn Slot, Staff Scientist, Smithsonian Tropical Research Institute.

## List of Publications

Most significant publications in yellow

### Submitted/Accepted

- 307. Winter K** (2022) Brief reflections on 50 years as a plant ecophysiologicalist. *Annals of Botany*, submitted.
- 306. Winter K** (2022) CAM photosynthesis. In: Muller-Landau H, Wright SJ (eds) *The First 100 Years of Research on Barro Colorado: Plant and Ecosystem Science*. Smithsonian Contributions to Botany. Smithsonian Scholarly Press, accepted.
- 305. Winter K** (2022) C<sub>4</sub> photosynthesis. In: Muller-Landau H, Wright SJ (eds) *The First 100 Years of Research on Barro Colorado: Plant and Ecosystem Science*. Smithsonian Contributions to Botany. Smithsonian Scholarly Press, accepted.
- 304. Winter K** (2022) CO<sub>2</sub> enrichment experiments. In: Muller-Landau H, Wright SJ (eds) *The First 100 Years of Research on Barro Colorado: Plant and Ecosystem Science*. Smithsonian Contributions to Botany. Smithsonian Scholarly Press, accepted.
- 303. Ávila-Lovera E, Winter K, Goldsmith G** (2022) Evidence for phylogenetic signal and correlated evolution in plant-water relations traits. *New Phytologist*, accepted.
- 302. Barker W, Winter K, Palmer S, Phillips O, Ashley D, Virgo A, Aranda J, Batterman SA** (2022) Herbivory regulates nitrogen fixation rates in tropical trees. *Nature Plants*, submitted.
- 301. Blonder BW, Aparecido L, Hultine K, Lombardozzi D, Michaletz S, Slot M, Winter K** (2022) Plant water use theory should better incorporate extreme environments, life history, and community ecology concepts. *New Phytologist*, submitted.
- 300. Gilman IS, Smith JAC, Holtum JAM, Sage RF, Winter K, Edwards EJ** (2022) The CAM lineages of planet Earth. *Annals of Botany*, submitted.

**299.** Leverett A, Ferguson K, **Winter K**, Borland A.M. (2022) Exploring xylem anatomical adaptations associated with crassulacean acid metabolism and hydraulic capacitance in *Clusia* leaves: lessons for CAM bioengineering. *Annals of Botany*, submitted.

**298.** Leverett A, Hartzell S, **Winter K**, Garcia M, Aranda J, Virgo A, Smith A, Focht P, Rasmussen-Arda A, Willats WGT, Cowan-Turner D, Borland AM (2022) Dissecting succulence: crassulacean acid metabolism and hydraulic capacitance are independent adaptations in *Clusia* leaves. *Biorxiv.org*, prepublication.

**297.** Slot M, Schuttenhelm N, Eze CE, Winter K (2022) Effects of rising temperature on flower production and pollen viability in a widespread tropical tree species, *Muntingia calabura*. In: Bhadouria R et al. (eds) *Ecophysiology of Tropical Plants: Recent Trends and Future Perspectives*. CRC Press (Taylor & Francis), submitted.

## 2022

**296.** **Winter K**, JAC Smith (2022) CAM photosynthesis: the acid test. *New Phytologist* 233: 599–609.

**295.** Lujan M, Oleas N, **Winter K** (2022) Evolutionary history of CAM photosynthesis in neotropical *Clusia*: insights from genomics, anatomy, physiology and climate. *Botanical Journal of the Linnean Society* 199: 538–556.

**294.** Pachon P, **Winter K**, Lasso E (2022) Updating the occurrence of crassulacean acid metabolism (CAM) in the genus *Clusia* through carbon isotope analysis of species from Colombia. *Photosynthetica* 60: 304–322.

## 2021

**293.** **Winter K** (2021) Diversity of CAM plant photosynthesis (crassulacean acid metabolism): a tribute to Barry Osmond. *Functional Plant Biology* 48: iii–ix.

**292.** **Winter K**, Garcia M, Virgo A, Smith JAC (2021) Low-level CAM photosynthesis in a succulent-leaved member of the Urticaceae, *Pilea peperomioides*. *Functional Plant Biology* 48: 683–690.

**291.** **Winter K**, Virgo A, Garcia M, Aranda J, Holtum JAM (2021) Constitutive and facultative crassulacean acid metabolism (CAM) in Cuban oregano, *Coleus amboinicus* (Lamiaceae). *Functional Plant Biology* 48: 647–654.

**290.** **Winter K**, Garcia M, Virgo A, Ceballos J, Holtum JAM (2021) Does the C<sub>4</sub> plant *Trianthema portulacastrum* (Aizoaceae) exhibit weakly expressed crassulacean acid metabolism (CAM)? *Functional Plant Biology* 48: 655–665.

- 289.** De Guzman ME, Acosta-Rangel A, Winter K, Meinzer FC, Bonal D, Santiago LS (2021) Hydraulic traits of Neotropical canopy liana and tree species across a broad range of wood density: implications for predicting drought mortality with models. *Tree Physiology* 41: 24–34.
- 288.** Gamisch A, **Winter K**, Fischer GA, Comes HP (2021) Evolution of crassulacean acid metabolism (CAM) as an escape from ecological niche conservatism in Malagasy *Bulbophyllum* (Orchidaceae). *New Phytologist* 231: 1236–1248.
- 287.** Holtum JAM, Hancock LP, Edwards EJ, **Winter K** (2021) CAM photosynthesis in desert blooming *Cistanthe* of the Atacama, Chile. *Functional Plant Biology* 48: 691–702.
- 286.** Krause GH, **Winter K** (2021) The photosynthetic system in tropical plants under high irradiance and temperature stress. *Progress in Botany* 82: 131–170.
- 285.** Leverett A, Castaño NH, Ferguson K, **Winter K**, Borland AM (2021) Crassulacean acid metabolism (CAM) supersedes the turgor loss point (TLP) as an important adaptation across a precipitation gradient, in the genus *Clusia*. *Functional Plant Biology* 48: 703–716.
- 284.** Mejia-Chang M, Reyes-Garcia C, Seibt U, Royles J, Meyer MT, Jones GD, **Winter K**, Arnedo M, Griffiths H (2021) Leaf water  $\delta^{18}\text{O}$  reflects water vapour exchange and uptake by  $\text{C}_3$  and CAM epiphytic bromeliads in Panama. *Functional Plant Biology* 48: 732–742.
- 283.** Tiwari R, Gloor E, da Cruz WJA, Marimon BS, Marimon-Junior BH, Reis SM, de Souza IA, Krause HG, Slot M, **Winter K**, Ashley D, Béu RG, Borges CS, da Cunha M, Fauset S, Ferreira LDS, Gonçalves MDA, Lopes TT, Marques EQ, Mendonça NG, Mendonça NG, Noletto PT, de Oliveira CHL, Oliveira MA, Pireda S, dos Santos Prestes NCC, Santos DM, Santos EB, da Silva ELS, de Souza IA, de Souza LJ, Vitória AP, Foyer CH, Galbraith D (2021) Photosynthetic quantum efficiency in south-eastern Amazonian trees may be already affected by climate change. *Plant Cell and Environment* 44: 2428–2439.
- 282.** Slot M, Rifai S, **Winter K** (2021) Photosynthetic plasticity of a tropical tree species, *Tabebuia rosea*, in response to elevated temperature and  $[\text{CO}_2]$ . *Plant Cell and Environment* 44: 2347–2364.
- 281.** Slot M, Cala D, Aranda J, Virgo A, Michaletz ST, **Winter K** (2021) Leaf heat tolerance of 147 tropical forest species varies with elevation and leaf functional traits, but not with phylogeny. *Plant Cell and Environment* 44: 2414–2427.
- 280.** Slot M, Nardwattanawong T, Hernández GG, Bueno A, Riederer M, **Winter K** (2021) Large differences in leaf cuticle conductance and its temperature response among 24 tropical tree species from across a rainfall gradient. *New Phytologist* 232: 1618–1631

## 2020

- 279.** De Sedas A, Turner BL, **Winter K**, Lopez OR (2020) Salinity responses of inland and coastal neotropical tree species. *Plant Ecology* 221: 695–708
- 278.** Hernández GG, **Winter K**, Slot M (2020) Similar temperature dependence of photosynthetic parameters in sun and shade leaves of three tropical tree species. *Tree Physiology* 40: 637–651.
- 277.** Kattge J, ....., **Winter K**, ..... (2020) TRY plant trait database – enhanced coverage and open access. *Global Change Biology* 26: 119–188.
- 276.** Palma AC, **Winter K**, Aranda J, Dalling JW, Cheesman AW, Turner BL, Cernusak LA (2020) Why are tropical conifers disadvantaged in fertile soils? Comparison of *Podocarpus guatemalensis* with an angiosperm pioneer, *Ficus insipida*. *Tree Physiology* 40: 810–821.
- 275.** Torres-Morales G, Lasso E, Silvera K, Turner BL, **Winter K** (2020) Occurrence of crassulacean acid metabolism in Colombian orchids determined by leaf carbon isotope ratios. *Botanical Journal of the Linnean Society* 193: 431–477.
- 274.** Vogado NO, **Winter K**, Ubierna N, Farquhar GD, Cernusak LA (2020) Directional change in leaf dry matter  $\delta^{13}\text{C}$  during leaf development is widespread in  $\text{C}_3$  plants. *Annals of Botany* 126: 981–990.
- 273.** Zemunik G, **Winter K**, Turner BL (2020) Toxic effects of soil manganese on tropical trees. *Plant Soil* 453: 343–354

## 2019

- 272.** **Winter K** (2019) Ecophysiology of constitutive and facultative CAM photosynthesis. *Journal of Experimental Botany* 70: 6495–6508.
- 271.** **Winter K**, Garcia M, Virgo A, Holtum JAM (2019) Operating at the very low end of the crassulacean acid metabolism (CAM) spectrum: *Sesuvium portulacastrum* (Aizoaceae). *Journal of Experimental Botany* 70: 6561–6570.
- 270.** **Winter K**, Sage RF, Edwards EJ, Virgo A, Holtum JAM (2019) Facultative crassulacean acid metabolism in a  $\text{C}_3$  –  $\text{C}_4$  intermediate. *Journal of Experimental Botany* 70: 6571–6579.
- 269.** De Sedas A, González Y, **Winter K**, Lopez OR (2019) Seedling responses to salinity of 26 neotropical tree species. *AoB PLANTS* 11: plz06  
doi:10.1093/aobpla/plz062.

**268.** Heyduk K, Hwang M, Albert V, Silvera K, Lan T, Farr K, Chang T-H, Chan M-T, **Winter K**, Leebens-Mack J (2019) Altered gene regulatory networks are associated with the transition from C<sub>3</sub> to crassulacean acid metabolism in *Erycina* (Oncidiinae: Orchidaceae). *Frontiers in Plant Science* 9:2000.

**267.** Nasto MK, **Winter K**, Turner BL, Cleveland CC (2019) Nutrient acquisition strategies enable high growth rates in tropical nitrogen fixing trees in nutrient poor soil and under elevated carbon dioxide. *Ecology* 100: e02646.

**266.** Piperno DR, Holst I, Moreno EJ, **Winter K** (2019) Experimenting with domestication: understanding macro- and micro-phenotypes and developmental plasticity in teosinte in its ancestral pleistocene and early holocene environments. *Journal of Archaeological Science* 108: 104970.

**265.** Slot M, Krause GH, Krause B, Hernández GG, **Winter K** (2019) Photosynthetic heat tolerance of shade and sun leaves of three tropical tree species. *Photosynthesis Research* 141: 119–130.

**264.** Terrer C, Jackson RB, Prentice IC, Keenan TF, Kaiser C, Vicca S, Fisher JB, Reich PB, Stocker BD, Hungate BA, Peñuelas J, McCallum I, Soudzilovskaia NA, Cernusak LA, Talhelm AF, Van Sundert K, Piao S, Newton PCD, Hovenden MJ, Blumenthal DM, Liu YY, Müller C, **Winter K**, Field CB, Viechtbauer W, Van Lissa CJ, Hoosbeek MR, Watanabe M, Koike T, Leshyk VO, Polley HW, Franklin O (2019) The CO<sub>2</sub> fertilization effect on global plant biomass. *Nature Climate Change* 9: 684–689.

**263.** Thompson JB, Slot M, Dalling JW, **Winter K**, Turner BL, Zalamea P-C (2019) Species-specific effects of phosphorus addition on tropical tree seedling response to elevated CO<sub>2</sub>. *Functional Ecology* 33: 1871–1881.

## 2018

**262.** Holtum JAM, Hancock LP, Edwards EJ, **Winter K** (2018) Crassulacean acid metabolism (CAM) in the Basellaceae (Caryophyllales). *Plant Biology* 20: 409–414.

**261.** Luján M, Aranda J, Virgo A, **Winter K** (2018) *Clusia guabalensis* (Clusiaceae), a new hemiepiphyte species with floral resins from the Atlantic wet forest in Panama. *Brittonia* 70: 412–417.

**260.** Slot M, **Winter K** (2018) High tolerance of tropical sapling growth and gas exchange to moderate warming. *Functional Ecology* 32: 599–611.

**259.** Trierweiler A, **Winter K**, Hedin L (2018) Rising CO<sub>2</sub> accelerates phosphorus and molybdenum limitation of N<sub>2</sub>-fixation in young tropical trees. *Plant and Soil* 429: 363–373.

## 2017

**258. Winter K**, Holtum JAM (2017) Facultative crassulacean acid metabolism (CAM) in four small C<sub>3</sub> and C<sub>4</sub> leaf-succulents. *Australian Journal of Botany* 65: 103–108.

**257.** Holtum JAM, Hancock LP, Edwards EJ, **Winter K** (2017) Optional use of CAM photosynthesis in two C<sub>4</sub> species, *Portulaca cyclophylla* and *Portulaca digyna*. *Journal of Plant Physiology* 214: 91–96.

**256.** Holtum JAM, Hancock LP, Edwards EJ, **Winter K** (2017) Facultative CAM photosynthesis (crassulacean acid metabolism) in four species of *Calandrinia*, ephemeral succulents of arid Australia. *Photosynthesis Research* 134: 17–25.

**255.** Lorant A, Pedersen S, Holst I, Hufford MB, **Winter K**, Piperno D, Ross-Ibarra J (2017) The potential role of genetic assimilation during maize domestication. *PLoS One* 12(9):e184202.

**254.** Norby RJ, Gu L, Haworth IC, Jensen AM, Turner BL, Walker AP, Warren JM, Weston DJ, Xu C, **Winter K** (2017) Informing models through empirical relationships between foliar phosphorus, nitrogen and photosynthesis across diverse woody species in tropical forests of Panama. *New Phytologist* 215: 1425–1437.

**253.** Schneider GF, Cheesman AW, **Winter K**, Turner BL, Sitch S, Kursar TA (2017) Current ambient concentrations of ozone in Panama modulate the defense chemistry of a tropical tree. *Chemosphere* 172: 363–372.

**252.** Slot M, **Winter K** (2017) In situ temperature response of photosynthesis of 42 tree and liana species in the canopy of two Panamanian lowland tropical forests with contrasting rainfall regimes. *New Phytologist* 214: 1103–1117.

**251.** Slot M, **Winter K** (2017) Photosynthetic acclimation to warming in tropical forest tree seedlings. *Journal of Experimental Botany* 68: 2275–2284.

**250.** Slot M, **Winter K** (2017) *In situ* temperature relationships of biochemical and stomatal controls of photosynthesis in four lowland tropical tree species. *Plant Cell and Environment* 40: 3055–3068.

**249.** Turner BL, Zalamea P-C, Condit R, **Winter K**, Wright SJ, Dalling JW (2017) No evidence that boron influences species distributions in lowland tropical forests of Panama. *New Phytologist* 214: 108–119.

**248.** Yang X, Hu R, Yin H, Jenkins J, Shu S, Tang H, Liu D, Weighill DH, Ha J, Heyduk K, Goodstein DM, Guo H-B, Moseley RC, Fitzek E, Jawdy S, Zhang Z, Xie M, Hartwell J, Grimwood J, Abraham PE, Mewalal R, Yim WC, Beltrán JD, Boxall SF, Dever LV, Palla KJ, Albion R, Garcia T, Mayer J, Lim SD, Wai CM, Van Buren R, De Paoli HC, Borland AM, Guo H, Chen J-G, Muchero W, Yin Y, Jacobson DA, Tschaplinski TJ, Hettich RL, Ming R, **Winter K**, Leebens-Mack JH, Smith JAC, Cushman J, Schmutz J, Tuskan GA



(2017) The *Kalanchoë* genome provides insights into convergent evolution and building blocks of crassulacean acid metabolism. *Nature Communications* 8: 1899.

## 2016

**247.** Brillhaus D, Bräutigam A, Mettler-Altman T, **Winter K**, Weber A (2016) Reversible burst of transcriptional changes during induction of crassulacean acid metabolism (CAM) in *Talinum triangulare*. *Plant Physiology* 170: 102–122

**246.** Dalling JW, Cernusak LA, **Winter K**, Aranda J, Garcia M, Virgo A, Cheesman AW, Baresch A, Jaramillo C, Turner BL (2016) Two tropical conifers show strong growth and water-use efficiency responses to altered CO<sub>2</sub> concentration. *Annals of Botany* 118: 1113–1125.

**245.** Fahey C, **Winter K**, Slot M, Kitajima K (2016) Influence of arbuscular mycorrhizal colonization on whole-plant respiration and thermal acclimation of tropical tree seedlings. *Ecology and Evolution* 6: 859–870.

**244.** Holtum JAM, Hancock LP, Edwards EJ, Crisp MD, Crayn DM, Sage R, **Winter K** (2016) Australia lacks stem succulents but is it depauperate in plants with crassulacean acid metabolism (CAM)? *Current Opinion in Plant Biology* 31: 109–117.

**243.** Krause GH, **Winter K**, Krause B, Virgo A (2016) Protection by light against heat stress in leaves of tropical CAM plants containing high acid levels. *Functional Plant Biology* 43: 1061–1069.

**242.** Reef R, Slot M, Motro U, Motro M, Motro Y, Adame MF, Garcia M, Aranda J, Lovelock CE, **Winter K** (2016). The effects of CO<sub>2</sub> and nutrient fertilisation on the growth and temperature response of the mangrove *Avicennia germinans*. *Photosynthesis Research* 129: 159–170.

**241.** Slot M, **Winter K** (2016) The effects of rising temperature on the ecophysiology of tropical forest trees. In: Goldstein G, Santiago LS (eds.) *Tropical Tree Physiology: Adaptations and Responses in a Changing Environment*. Springer International Publishing Switzerland, pp. 385–412.

**240.** Slot M, Garcia MN, **Winter K** (2016) Temperature responses of CO<sub>2</sub> exchange in three tropical tree species. *Functional Plant Biology* 43: 468–478.

**239.** Zalamea P-C, Turner BL, **Winter K**, Jones FA, Sarmiento C, Dalling JW (2016) Seedling growth responses to phosphorus reflect adult distribution patterns of tropical trees. *New Phytologist* 212: 400–408.

## 2015

**238.** **Winter K**, Holtum JAM (2015) Cryptic crassulacean acid metabolism (CAM) in *Jatropha curcas*. *Functional Plant Biology* 42: 711–717

**237. Winter K, Holtum JAM, Smith JAC (2015). Crassulacean acid metabolism: a continuous or discrete trait? New Phytologist 208: 73–78**

**236. Crayn DM, Winter K, Schulte K, Smith JAC (2015) Photosynthetic pathways in Bromeliaceae: phylogenetic and ecological significance of CAM and C<sub>3</sub> based on carbon isotope ratios for 1893 species. *Botanical Journal of the Linnean Society* 178: 169–221**

**235. Holtum J, Winter K, Osmond B (2015) Crassulacean acid metabolism (CAM). Online book chapter In: Plants in Action, second edition, plantsinaction.science.uq.edu.au, Chapter 2.2.8. Australian Society of Plant Scientists.**

**234. Krause GH, Winter K, Krause B, Virgo A (2015) Light-stimulated heat tolerance in leaves of two neotropical tree species, *Ficus insipida* and *Calophyllum longifolium*. *Functional Plant Biology* 42: 42–51**

**233. Marvin DC, Winter K, Burnham RJ, Schnitzer SA (2015) No evidence that elevated CO<sub>2</sub> gives tropical lianas an advantage over tropical trees. *Global Change Biology* 21: 2055–2069**

**232. Piperno DR, Holst I, Winter K, McMillan O (2015) Teosinte before domestication: experimental study of growth and phenotypic variability in late Pleistocene and early Holocene environments. *Quaternary International* 363: 65–77**

**231. Reef R, Winter K, Morales J, Adame MF, Reef DL, Lovelock CE (2015) The effect of atmospheric carbon dioxide concentrations on salinity tolerance in the mangrove *Avicennia germinans* over a range of salinities. *Physiologia Plantarum* 154: 358–368**

**230. Yang X, Cushman JC, Borland AM, Edwards EJ, Wulschleger SD, Tuskan GA, Owen NA, Griffiths H, Smith JAC, de Paoli HC, Weston DJ, Cottingham R, Hartwell J, Davis SC, Silvera K, Ming R, Schlauch K, Abraham P, Stewart JR, Guo H-B, Albion R, Ha J, Lim SD, Wone BWM, Yim WC, Garcia T, Mayer JA, Petereit J, Nair SS, Casey E, Hettich RL, Ceusters J, Ranjan P, Palla KJ, Yin H, Reyes-García C, Andrade JL, Freschi L, Beltrán JD, Dever LV, Boxall SF, Waller J, Davies J, Bupphada P, Kadu N, Winter K, Sage RF, Aguilar CN, Schmutz J, Jenkins J, Holtum JAM (2015). A roadmap for research on crassulacean acid metabolism (CAM) to enhance sustainable food and bioenergy production in a hotter, drier world. *New Phytologist* 207: 491–504**

## 2014

**229. Winter K, Holtum JAM (2014) Facultative crassulacean acid metabolism (CAM) plants: powerful tools for unravelling the functional elements of CAM photosynthesis. *Journal of Experimental Botany* 65: 3425–3441**

**228. Winter K, Garcia M, Holtum JAM (2014) Nocturnal versus diurnal CO<sub>2</sub> uptake: how flexible is *Agave angustifolia*? *Journal of Experimental Botany* 65: 3695–3703**

**227.** Céron-Souza I, Turner BL, **Winter K**, Medina E, Bermingham E, Feliner GN (2014) Reproductive phenology and physiological traits in the red mangrove hybrid complex (*Rhizophora mangle* and *R. racemosa*) across a natural gradient of nutrients and salinity. *Plant Ecology* 215: 481–493

**226.** Givnish TJ, Barfuss MHJ, Van Ee B, Riina R, Schulte K, Horres R, Gonsiska PA, Jabaily RS, Crayn DM, Smith JAC, **Winter K**, Brown GK, Evans TM, Holst BK, Luther H, Till W, Zizka G, Berry PE, Sytsma KJ (2014) Adaptive radiation, correlated and contingent evolution, and net species diversification in Bromeliaceae. *Molecular Phylogenetics and Evolution* 71: 55–78

**225.** Holtum JAM, **Winter K** (2014) Limited photosynthetic plasticity in the leaf-succulent CAM plant *Agave angustifolia* grown at different temperatures. *Functional Plant Biology* 41: 843–849

**224.** Mejía LC, Herre EA, Sparks JP, **Winter K**, Garcia MN, Van Bael SA, Stitt J, Shi Z, Zhang Y, Guiltinan MJ, Maximova SN (2014) Pervasive effects of a dominant foliar endophytic fungus on host genetic and phenotypic expression in a tropical tree. *Frontiers in Microbiology*: <https://doi.org/10.3389/fmicb.2014.00479>.

**223.** Silvera K, **Winter K**, Rodriguez BL, Albion RL, Cushman JC (2014) Multiple isoforms of phosphoenolpyruvate carboxylase in the Orchidaceae (subtribe Oncidiinae): implications for the evolution of crassulacean acid metabolism. *Journal of Experimental Botany* 65: 3623–3636

**222.** Slot M, Rey-Sánchez C, Gerber S, Lichstein JW, **Winter K**, Kitajima K (2014) Thermal acclimation of leaf respiration of tropical trees and lianas: response to experimental canopy warming, and consequences for tropical forest carbon balance. *Global Change Biology* 20: 2915–2926

**221.** Slot M, Rey-Sánchez C, **Winter K**, Kitajima K (2014) Trait-based scaling of temperature-dependent foliar respiration in a species-rich forest canopy. *Functional Ecology* 28: 1074–1086

**220.** Sun Y, Gu Lianhong, Dickinson RE, Pallardy SG, Baker J, Cao Y, Murilo da Matta F, Dong X, Ellsworth D, Van Goethem D, Jensen AM, Law BE, Loos R, Martins SCV, Norby RJ, Warren J, Weston D, **Winter K** (2014) Asymmetrical effects of mesophyll conductance on fundamental photosynthetic parameters and their relationships estimated from leaf gas exchange measurements. *Plant, Cell and Environment* 37: 978–994.

## 2013

**219.** Beltrán JD, Lasso E, Madriñán S, Virgo A, **Winter K** (2013) Juvenile tank-bromeliads lacking tanks: do they engage in CAM photosynthesis? *Photosynthetica* 51: 55–62

**218.** Cernusak LA, **Winter K**, Dalling JW, Holtum JAM, Jaramillo C, Körner C, Leakey ADB, Norby RJ, Poulter B, Turner BL, Wright SJ (2013) Tropical forest responses to increasing atmospheric CO<sub>2</sub>: current knowledge and opportunities for future research. *Functional Plant Biology* 40: 531–551

**217.** Cernusak LA, Ubierna N, **Winter K**, Holtum JAM, Marshall JD, Farquhar GD (2013) Environmental and physiological determinants of carbon isotope discrimination in terrestrial plants. *New Phytologist* 200: 950–965

**216.** Cheesman AW, **Winter K** (2013) Elevated night-time temperatures increase growth in seedlings of two tropical pioneer tree species. *New Phytologist* 197: 1185–1192

**215.** Cheesman AW, **Winter K** (2013) Growth response and acclimation of CO<sub>2</sub> exchange characteristics to elevated temperatures in tropical tree seedlings. *Journal of Experimental Botany* 64: 3817–3828

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