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## **Antiquities of the rainforest: evolution of mycoheterotrophic angiosperms growing on Glomeromycota**

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## Curriculum Vitae



Constantijn Mennes was born in Dordrecht, The Netherlands, on April 8, 1987. He received his secondary education (HAVO) at the Titus Brandsma College (now Stedelijk Dalton Lyceum) in 2005, after which he attended the bachelor of biology and medical laboratory research at the University of Applied Sciences in Leiden (Hogeschool Leiden). After completing the first year (propedeuse), he started studying Biology at Leiden University in 2006. During this period he conducted a BSc research project at the National Herbarium of the Netherlands (NHN) in palynology, for which he obtained an honourable citation of the NHN Professor Lam Student Prize. During his MSc, he studied molecular systematics of Arctic bryophytes (including fieldwork in Svalbard), and did an internship at Landcare Research, New Zealand, focusing on population genetics and species delimitation of endemic composites (*Brachyglottis*, Asteraceae). During his University education, Constantijn was an active member of student fraternity SSR-Leiden, participated as student assistant in the educational committee of Biology and worked as laboratory technician at the DNA barcoding lab of Naturalis Biodiversity Center. In 2011 he obtained his MSc degree, after which he started the current PhD program under the supervision of Dr. Vincent Merckx and Prof. dr. Erik Smets, focusing on the evolution and biogeography of mycoheterotrophic flowering plants. During these PhD studies, he performed fieldwork in Sabah (Malaysia), Tasmania (Australia) and New Zealand. He furthermore visited conferences in New York and Edmonton (Canada), and followed international courses in Paris and Stockholm. In Leiden he participated in the educational program of Biology by assisting the courses Tree of Life (plants, fungi and protists), Plant Families of the Tropics, and co-supervision of MSc student Angelo Moerland. He furthermore was member of the colloquium committee, organized a day-symposium on the software package BEAST, and pursued public outreach of his research by interviews and news items.

## List of publications

### SCI Publications:

Merckx, V.S.F.T., Hendriks, K., Beentjes, K.K., **Mennes, C.B.**, Becking, L.E., Peijnenburg, K.T.C.A., *et al.* (2015) Evolution of endemism on a young tropical mountain. *Nature* 524: 347-350.

**Mennes, C.B.**, Lam, V.K.Y., Rudall P.J., Lyon, S.P., Graham, S.W., Smets, E.F., Merckx, V.S.F.T. (2015a) Ancient Gondwana break-up explains the distribution of the mycoheterotrophic family Corsiaceae (Liliales). *Journal of Biogeography* 42(6): 1123-1136.

**Mennes, C.B.**, Moerland, M.S., Rath, M., Smets, E.F., Merckx, V.S.F.T. (2015b) Evolution of mycoheterotrophy in Polygalaceae: The case of *Epirixanthes*. *American Journal of Botany* 102(4): 598-608.

**Mennes, C.B.**, Smets, E.F., Moses, S.N., Merckx, V.S.F.T. (2013) New insights in the long-debated evolutionary history of Triuridaceae (Pandanales). *Molecular Phylogenetics and Evolution* 69: 994-1004.

Merckx, V.S.F.T., Kissling, J., Hentrich, H., Janssens, S.B., **Mennes, C.B.**, Specht, C.D., Smets, E.F. (2013) The phylogenetic relationships of the mycoheterotrophic genus *Voyria* and the implications for the biogeographic history of the Gentianaceae. *American Journal of Botany* 100(4): 712-721.

**Mennes, C.B.**, Smissen, R.D., Pelsler, P.B. (2012) AFLP analyses do not provide support for recognising *Brachyglottis saxifragoides* as a species distinct from *B. lagopus* (Asteraceae, Senecioneae). *New Zealand Journal of Botany* 50(4): 489-495.

Ham, R.W.J.M. van der, **Mennes, C.B.**, Van Heuven, B.J. (2010) Fevilleoideae pollen (Cucurbitaceae): a study in striate ornamentation. *Grana* 49(3): 157-169.

### Chapters in books:

Merckx, V.S.F.T., **Mennes, C.B.**, Peay, K.G., Geml, J. (2013) Evolution and diversification. In: Merckx, V.S.F.T. (ed.) Mycoheterotrophy. The biology of plants living on fungi, Springer, New York: 215-244. ISBN 978-1-4614-5208-9 (chapter in book)

**Mennes, C.B.**, Ham, R.W.J.M. van der. (2011) Pollen morphology. In: Schaefer, H., Renner, S.S. Cucurbitaceae. In: Kubitzki, K. *The families and genera of vascular plants 10, Flowering plants, Eudicots; Sapindales, Cucurbitales, Myrtales*. Springer, Heidelberg: 115-116. ISBN 978-3-642-14396-0 (chapter in book)

**Mennes, C.B.** & Ham, R.W.J.M. van der (2010) Pollen morphology of Cucurbitaceae. In: De Wilde, W.J.J.O. & Duyffjes, B.E.E., *Flora Malesiana I*, 19: 11-15. ISBN 978-90-71236-72-3 (chapter in book)

Abstracts and other publications:

**Mennes, C.B.**, Lam, V.K.Y., Rudall P.J., Lyon, S.P., Graham, S.W., Smets, E.F., Merckx, V.S.F.T. (2015) The “odd man out” in mycoheterotrophic angiosperms: a Gondwanan origin of Corsiaceae. *Conference “Botany 2015”*, Edmonton, July 2015. (oral presentation)

Merckx, V.S.F.T., Gomes, S.I.F., **Mennes, C.B.**, Wapstra, M., Hunt, C., Smets, E.F. (2014) Mycorrhizal specificity in space and time: the *Thismia rodwayi* species-complex and its associated AM fungi. *Networks of power & influence: ecology & evolution of symbioses between plants and mycorrhizal fungi – 33rd New Phytologist Symposium*, Zurich, Switzerland, May 2014. (poster presentation)

**Mennes, C.B.**, Smets, E.F., Moses, S.N., Merckx, V.S.F.T. (2013) New insights in the evolutionary history of Triuridaceae (Pandanales). *Conference “Monocots V”*, New York City, July 2013. (oral presentation)

Keßler, P.J.A., **Mennes, C.B.**, Mota de Oliveira, S., Thomas, D.C. [eds] (2013) Plant Families of the Tropics. Eighth revised edition. MSc course Syllabus, Leiden University.

Stech, M., Cornelder, B., Lang, A.S., **Mennes, C.B.**, Veldman, S., Kruijer, J.D. (2012) Molecular identification of Arctic moss species for ecosystem and biodiversity studies. *MOSS 2012 and Mol. Sys. Conference*, New York. June 2012 (oral presentation)

Stech, M., **Mennes, C.B.**, Sparrius, L. (2011) DNA barcoding van de Nederlandse mosflora. *Buxbaumiella* 90: 38-39 (article in journal)

Stech, M., Kolvoort, E., **Mennes, C.B.**, Kruijer, J.D. (2010) Onderzoek aan poolmossen in Leiden. *Poolmarkt*, Poolnacht van Groningen (poster presentation)

Stech, M., **Mennes, C.B.**, Veldman, S., Kruijer, J.D. (2010) Improving arctic biodiversity assessments by moss systematic research. *Oslo IPV Science Conference 2010*, Oslo, Norway (poster presentation)

Ham, R.W.J.M. van der, **Mennes, C.B.** (2009) Pollen morphological trends in Cucurbitaceae, *Conference “Systematics 2009”*, Leiden, August 2009. (poster presentation)

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**Mennes, C.B.**, Ham, R.W.J.M. van der (2009) Pollen morphology and evolution in Cucurbitaceae, *Conference "Systematics 2009"*, Leiden, August 2009. (oral presentation)

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