**Thomas Denk**

A person wearing glasses

Description automatically generated with medium confidence

Senior Curator.

**Contact**

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**Education**

**MSc** University of Vienna, 1995

**PhD** University of Vienna, Austria, 1998

**Responsibilities**

I am the contact person for the Cenozoic plant collections housed at the department and have been responsible for the registration of the large historical collections from the Arctic and Subarctic. I have been part of the *HIGH LAT* and *SYNTHESIS* evaluation panels at the museum since 2001. I have been supervising Master and PhD students since 2001 (four completed, one current). I have been teaching at Stockholm University since 2007. I taught as a visiting professor at the University of Vienna in 2011.

**Research Interests**

I am interested in the evolution of northern hemispheric terrestrial ecosystems during the Late Cretaceous and the Cenozoic. I want to understand how climate change and the re-arrangement of continents, both of which are strongly influenced by plate tectonics, shaped distributional patterns of organisms across the Northern Hemisphere.

To achieve this, I am exploring the evolutionary histories of selected genera of flowering plants using the fossil record and molecular phylogenetic data. I am particularly interested in biogeographic changes of clades and whether or not these were accompanied by ecological shifts (niche evolution).

Target groups of my current research are the Fagaceae (oak family) with a major focus on the genus *Quercus* (oaks), a north hemispheric genus of about 400-600 species, and other plant genera in different families (Aquifoliaceae, Rosaceae, Sapindaceae, etc.).

I am also investigating the vegetation development in the Mediterranean region during the Neogene (the past 23 million years) and in Arctic regions during the Cenozoic (the past 60 million years).

My overall research question is how various plant groups respond to changing climate and environments over different time scales.

**Projects**

[**Project I.** The evolution of distribution patterns in flowering plants](https://www.nrm.se/english/researchandcollections/palaeobiology/ourresearch/angiospermdistribution.9003802.html)

**Project II.** Evolution of the Madrean-Tethyan sclerophyllous vegetation and the onset of Mediterranean biotas (VR project 2013-16)

**Other Professional Roles**

* Subject Editor for the scientific journal *GRANA*
* Editorial Board member for *Turkish Journal of Botany*
* Editorial Board member for *Acta Palaeobotanica*

## 2021

**Denk, T.**, & Bouchal, J.M., 2021. Dispersed pollen and calyx remains of Dinospyros (Ebenaceae) from the middle Miocene “Plant beds” of Søby, Denmark. GFF. [https://doi.org/10.1080/11035897.2021.1907443[external link](https://doi.org/10.1080/11035897.2021.1907443)](https://doi.org/10.1080/11035897.2021.1907443)

## 2020

Bouchal, J.M. & **Denk, T**., 2020. Low taxonomic resolution of papillate Cupressaceae pollen (former Taxodiaceae) impairs their applicability for palaeo-habitat reconstruction. Grana 59, 71–93. [https://doi.org/10.1080/00173134.2019.1701704[external link](https://doi.org/10.1080/00173134.2019.1701704)](https://doi.org/10.1080/00173134.2019.1701704)

Bouchal, J.M. Güner, T.H., Velitzelos, D., Velitzelos, E. & **Denk, T**., 2020. Messinian vegetation and climate of the intermontane Florina–Ptolemais–Servia Basin, NW Greece inferred from palaeobotanical data: how well do plant fossils reflect past? Royal Society Open Science 7(5), 192067. [https://doi.org/10.1098/rsos.192067[external link](https://doi.org/10.1098/rsos.192067)](https://doi.org/10.1098/rsos.192067)

Dagtekin, D., Şahan, E.A., **Denk, T**., Köse, N. & Dalfes, H.N., 2020. Past, present and future distributions of Oriental beech (Fagus orientalis) under climate change projections.PloS one 15, e0242280. [https://doi.org/10.1371/journal.pone.0242280[external link](https://doi.org/10.1371/journal.pone.0242280)](https://doi.org/10.1371/journal.pone.0242280)

**Denk, T**., Hipp, A.L., Manos, P.S., Hahn, M., Avishai, M. & Bodénès, C., 2020. Genomic landscape of the global oak phylogeny. New Phytologist 226: 1198–1212. [https://doi.org/10.1111/nph.16162[external link](https://doi.org/10.1111/nph.16162)](https://doi.org/10.1111/nph.16162)

Kvaček, Z. & Vasilis Teodoridis, V. & **Denk, T.,** 2020. The Pliocene flora of Frankfurt am Main, Germany: taxonomy, palaeoenvironments and biogeographic affinities. Palaeobiodiversity and Palaeoenvironments 100, 647–703. [https://doi.org/10.1007/s12549-019-00391-6[external link](https://doi.org/10.1007/s12549-019-00391-6)](https://doi.org/10.1007/s12549-019-00391-6)

Sadowski, E.-M., Schmidt, A.R. & **Denk, T**., 2020. Staminate inflorescences with in situ pollen from Eocene Baltic amber reveal high diversity in Fagaceae (oak family). Willdenowia 50, 405–517. [https://doi.org/10.3372/wi.50.50303[external link](https://doi.org/10.3372/wi.50.50303)](https://doi.org/10.3372/wi.50.50303)

## 2018

Bouchal, J. M., Güner, T. H. and **Denk, T.,** 2018. Middle Miocene climate of southwestern Anatolia from multiple botanical proxies. Climates of the Past, Vol. 14: 1427–1440. [https://www.clim-past.net/14/1427/2018/[external link](https://www.clim-past.net/14/1427/2018/)](https://www.clim-past.net/14/1427/2018/)

**Denk, T**., Zohner, C. M., Grimm, G. W. & Renner, S. S. 2018. Plant fossils reveal major biomes occupied by the late Miocene Old-World Pikermian fauna. Nature Ecology & Evolution. [https://www.nature.com/articles/s41559-018-0695-z[external link](https://www.nature.com/articles/s41559-018-0695-z)](https://www.nature.com/articles/s41559-018-0695-z)

Sadowski, E.-M., Hammel, J. U. & **Denk, T**. 2018. Synchrotron X- ray imaging of a dichasium cupule of Castanopsis from Eocene Baltic amber. American Journal of Botany 105 (12): 1-12. [doi:10.1002/ajb2.1202[external link](http://dx.doi.org/10.1002/ajb2.1202)](http://dx.doi.org/10.1002/ajb2.1202)

Simeone, M. C., Cardoni, S., Piredda, R., Imperatori, F., Avishai, M., Grimm, G. W., **Denk, T**. 2018. Comparative systematics and phylogeography of Quercus Section Cerris in western Eurasia: inferences from plastid and nuclear DNA variation. PeerJ 6: e5793. [https://doi.org/10.7717/peerj.5793[external link](https://doi.org/10.7717/peerj.5793)](https://doi.org/10.7717/peerj.5793)

## 2017

Bouchal, J. M., Mayda, S., Zetter, R., Grímsson, F. and **Denk, T**., 2017. Miocene palynofloras of the Tinaz lignite mine, Mugla, southwest Anatolia: Taxonomy, palaeoecology and local vegetation change. Review of Paleobotany and Palynology, Vol. 243: 1-36.

**Denk, T**., Güner, T. H., Kvaček, Z. and Bouchal, J. M., 2017. The early Miocene flora of Güvem (Central Anatolia, Turkey): a window into early Neogene vegetation and environments in the Eastern Mediterranean. Acta Palaeobotanica, Vol. 57 (no 2): 237-338. [Journal website[external link](https://www.degruyter.com/view/j/acpa.2017.57.issue-2/acpa-2017-0011/acpa-2017-0011.xml)](https://www.degruyter.com/view/j/acpa.2017.57.issue-2/acpa-2017-0011/acpa-2017-0011.xml)

**Denk, T**., Velitzelos, D., Güner, T. H., Bouchal, J. M., Grímsson, F. and Grimm, G., 2017. Taxonomy and palaeoecology of two widespread western Eurasian Neogene sclerophyllous oak species: Quercus drymeja Unger and Q. mediterranea Unger. Review of Palaeobotany and Palynology, Vol. 241: 98-128. [Journal website[external link](http://www.sciencedirect.com/science/article/pii/S003466671630104X?via%3Dihub)](http://www.sciencedirect.com/science/article/pii/S003466671630104X?via%3Dihub)

Güner, T. H., Bouchal, J. M., Köse, N., Göktas, F., Mayda, S., and **Denk, T**., 2017. Landscape heterogeneity in the Zatagan Basin (southwestern Turkey) during the middle Miocene inferred from plant macrofossils. Palaeobographica, Abt. B, Vol. 296 (no 1–6): 113-171. [Journal website[external link](https://dx.doi.org/10.1127/palb/296/2017/113)](https://dx.doi.org/10.1127/palb/296/2017/113)

## 2016

Bouchal, J. M., Zetter. R., **Denk, T**., 2016. Pollen and spores of the uppermost Eocene Florissant Formation, Colorado: a combined light and scanning electron microscopy study. Grana 55 (3): 179-245.

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**Denk, T**. 2016. Palaeoecological interpretation of the late Miocene landscapes and vegetation of northern Greece: a comment to Merceron et al., 2016. Geobios, doi:10.1016/j.geobios.2016.01.004.

Grimm, G.W., Bouchal, J. M., **Denk, T**., Potts, A. 2016. Fables and foibles: A critical analysis of the Palaeoflora database and the Coexistence Approach for palaeoclimate reconstruction. Review of Palaeobotany and Palynology 223: 216-235. [http://dx.doi.org/10.1016/j.revpalbo.2016.07.001[external link](http://dx.doi.org/10.1016/j.revpalbo.2016.07.001)](http://dx.doi.org/10.1016/j.revpalbo.2016.07.001)

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Simeone, M. C., Grimm, G. W., Papini, A., Vessella, F., Cardoni, S., Tordoni, E., Piredda, R., Franc, A., **Denk, T**., 2016. Plastome data reveal multiple geographic origins of Quercus Group Ilex. PeerJ 4:e 1897. DOI 10.7717/peerj.1897

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**Denk, T**., Velitzelos, D., Güner, H. T., Ferrufino-Acosta, L. 2015. Smilax from the Miocene of the eastern Mediterranean with Caribbean biogeographic affinities. American Journal of Botany 102: 423-438.

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**Denk, T.**, Güner, H. T. and Grimm, G. W., 2014. From mesic to arid: Leaf epidermal features suggest preadaptation in Miocene dragon trees (Dracaena). Review of Palaeobotany and Palynology 200: 211-228.

**Denk, T.,** and Tekleva, M. V., 2014. Pollen morphology and ultrastructure of Quercus with focus on Group Ilex (=Quercus Subgenus Heterobalanus (Oerst.) Menitsky): implications for oak systematics and evolution. Grana 53: 255-282.

Grimm, G. W. and **Denk, T.,** 2014. The Colchic region as refuge for relict tree lineages: cryptic speciation in field maples. Turkish Journal of Botany 38: 1050–1066.

Grímsson, F., Zetter, R., Grimm, G. W., Krarup Pedersen, G., Pedersen, A. K. and **Denk, T.,** 2014. Fagaceae pollen from the early Cenozoic of West Greenland: revisiting Engler's and Chaney's Arcto-Tertiary hypotheses. Plant Systematics & Evolution doi: 10.1007/s00606-014-1118-5.

Velitzelos, D., Bouchal, J. M. and **Denk, T.,** 2014. Review of the Cenozic floras and vegetation of Greece. Review of Palaeobotany and Palynology 204: 56–117.

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**Denk, T.,** Grimm, G. W., Grímsson, F. and Zetter, R. in press. Effective heat transport of Gulf Stream to subarctic North Atlantic during Miocene cooling. Biogeosciences.

## 2012

**Denk, T.,** Grimm, G. W. and Röseler, A.-K., 2012. When field botany meets history: taxonomy of Platanus mexicana Moric. in Mexico. Willdenowia 42: 99-115.

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Tekleva, M. V. and **Denk, T.,** 2012. Sporoderm ultrastructure of Platanus quedlinburgensis Pacltová emend. Tschan, Denk & von Balthazar from the Late Cretaceous of Germany. Acta Palaeobotanica 52(1): 177-191.

Tschan, G. F. and **Denk, T.,** 2012. Trichome types, foliar indumentum, and epicuticular wax in the Mediterranean ‘Gall Oaks´, Quercus subsectio Galliferae (Spach) Guerke; (Fagaceae): implications for taxonomy, ecology, and evolution. Botanical Journal of the Linnean Society 169: 611-644.

## 2011

**Denk, T.**, Grimsson, F., Zetter, R. and Símonarson, L. A., 2011.  Late Cainozoic Floras of Iceland. 15 Million Years of Vegetation and Climate History in the Northern North Atlantic. Topics in Geobiology 35. Springer. Dordrecht. 870 pp. ISBN 978-94-007-0371-1

Wappler, T. and **Denk T.**, 2011. Herbivory in early Tertiary Arctic forests. Palaeogeography, Palaeoclimatology, Palaeoecology 310: 283-295.

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**Denk, T.** and Grimm, G. W., 2010. The oaks of western Eurasia: Traditional classifications and evidence from two nuclear markers. Taxon 59: 351-366.

**Denk, T.**, Grímsson, F., Zetter, R.,  2010. Episodic migration of oaks to Iceland — Evidence for a North Atlantic “land bridge" in the latest Miocene. American Journal of Botany 97: 276-287.

Grimm, G. W. and **Denk, T.,** 2010. The reticulate origin of modern plane trees (Platanus, Platanaceae) - a nuclear marker puzzle. Taxon 59: 134-147.

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## 2009

**Denk, T.** and Grimm, G. W., 2009. Significance of pollen characteristics for infrageneric classification and phylogeny in Quercus (Fagaceae). International Journal of Plant Science  170: 926-940.

**Denk, T.**and Grimm, G. W., 2009. The biogeographic history of beech trees. Review of Palaeobotany & Palynology 158: 83-100.

## 2008

Grimm, G. W. & **Denk, T.**, 2008. ITS Evolution in Platanus (Platanaceae): Homoeologues, Pseudogenes and Ancient Hybridization. Annals of Botany 101: 403-419.

Grímsson, F., **Denk, T.** & Zetter, R., 2008. Pollen, fruits, and leaves of Tetracentron (Trochodendraceae) from the Cainozoic of Iceland and western North America and their palaeobiogeographic implications. Grana 47: 1-14.

Tschan, G.F., **Denk, T**. & von Balthazar, M., 2008. Credneria and Platanus (Platanaceae) from the Late Cretaceous (Santonian) of Quedlinburg, Germany. Review of Palaeobotany and Palynology152: 211-236.

von Balthazar, M., Schönenberger, J. & **Denk, T**., 2008. In Search of the Earliest Flowers: Introduction. International Journal of Plant Sciences 169: 815-815.

## ****2007****

Grimm, G.W., **Denk, T**., Hemleben, V. 2007. Coding of intraspecific nucleotide polymorphisms: a tool to resolve reticulate evolutionary relationships in the ITS of beech trees (Fagus L., Fagaceae). Systematics and Biodiversity 5(3): 291-309.

Grimm, G.W., **Denk, T**., Hemleben, V. 2007. The Evolutionary History and Systematics of Acer section Acer − a case study of low-level phylogenetics. Plant Systematic and Evolution 267: 215-253.

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## ****2006****

**Denk, T**. & Tekleva, M.V. 2006. Comparative pollen morphology and ultrastructure of Platanus: Implications for phylogeny and evaluation of the fossil record. Grana 45: 195-221.

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## 2004

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## 2002

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