



NAME:

Prof. dr. George A. Kowalchuk

INTITUTION / FUNCTION:

**Utrecht University, Institute of Environmental Biology,
Ecology & Diversity Research Unit**

Short Professional Biography:

Current Position:

Professor and group leader Ecology and Biodiversity; Institute of Environmental Biology, Department of Biology, Utrecht University

Current of Previous Postdoc(s):

2013-present: Professor of Ecology & Biodiversity, Utrecht University. Institute of Environmental Biology (IEB), Dept. of Biology. Utrecht, the Netherlands

2013-present: Guest researcher, Netherlands Institute of Ecology (NIOO-KNAW), Dept. of Microbial Ecology, Wageningen, the Netherlands

2005-2015: Professor of Plant-Microbe Interactions: Free University Amsterdam: Institute for Ecological Sciences (IEW), Amsterdam, the Netherlands

1997-2012: Senior Researcher / Microbial ecologist; Dept. of Plant Microorganism Interactions. Centre for Terrestrial Ecology: Netherlands Institute of Ecology

1995-1996: Post-doctoral researcher; Centre for Terrestrial Ecology; Netherlands Institute of Ecology, Dept. of Plant Microorganism Interactions, Heteren, the Netherlands

1994: Guest lecturer / researcher; Dept. of Microbiology; University of Amsterdam, the Netherlands

1993: Postdoctoral Fellow; Yale University, Dept. of Biology. New Haven, Conn. USA

Studies:

MSc. in Biology at the Yale University (USA)

PhD. in Biology at the Yale University (USA) – 1993. Thesis topic: Bacterial degradation of aromatic compounds. Promotor: Prof. L.N. Ornston

Research interests

Prof. Kowalchuk currently heads the Ecology and Biodiversity research group at Utrecht University, which focuses on the development, maintenance and functioning of biodiversity, as determined by ecological processes and interactions with atmosphere, water and soil. His own multifaceted research program is centered around environmental and rhizosphere microbiology in the context of global change. Specific research foci include environmental genomics of ecologically relevant micro-organisms, rhizosphere ecology, molecular community analysis of bacterial and fungal communities, microbial diversity in the rhizosphere, interactions between aboveground and belowground biota, effects of genetically modified plants on soil communities, and roles of plant-microbe interactions in C and N cycling. Much of this work is related to the development and application of novel molecular and genomics approaches to gain insight not only into the diversity, but also the functions, of the largely unexplored soil microbial communities. Via a personal Vici grant “Crossing the frontiers of microbial ecology”, research is conducted to help unravel the fundamental patterns of microbial diversity, by applying emerging genomics toolboxes to the study of microbial diversity at scales from the individual microbe to the globe. In various other projects, more strategic approaches are taken to examine the role of soil microorganisms in a changing world and their potential in help facilitate the biobased economy. Prof. Kowalchuk also held a professor’s chair at the Free University of Amsterdam within the Department of Ecological Science, titled Plant-Microbe Interactions (1995-2015) and is a guest member of the Microbial Ecology Department of the Netherlands Institute of Ecology. He is a founding editor and co-editor-in-chief of the flagship journal of the International Society for Microbial Ecology, *The ISME Journal* (Impact factor = 10.3), launched in 2007 by The Nature Publishing Group. He also serves as editor-in-chief of the *Molecular Microbial Ecology Manual* and sits on the editor boards of the journals *Environmental Microbiology*, *Applied and Environmental Microbiology* and *FEMS Microbiology Ecology*.

Relevant publications

1. Li M, Pommier T, Yin Y, Wang J, Gu S, Jousset A, Wang H, Wie Z, Xu Y, Shen Q, **Kowalchuk GA** (2022). Indirect reduction of *Ralstonia solanacearum* via pathogen helper inhibition. *The ISME Journal*. <https://doi.org/10.1038/s41396-021-01126-2>
2. Tao C, Li R, Xiong W, Shen Z, Liu S, Wang B., ... & **Kowalchuk, GA** (2020) Bio-organic fertilizers stimulate indigenous soil *Pseudomonas* populations to enhance plant disease suppression. *Microbiome*. 10.21203/rs.3.rs-18216/v2
3. Wu X, Jousset A, Guo S, Karlsson I, Zhao Q, Wu H, **Kowalchuk GA**, Shen Q, Li R, Geisen S (2018) Soil protist communities form a dynamic hub in the soil microbiome. *The ISME Journal*, 12: 634-638
4. Kielak AM, Barreto CC, **Kowalchuk GA**, van Veen JA, Kuramae EE (2016) The Ecology of Acidobacteria: Moving beyond Genes and Genomes. *Frontiers in Microbiology*, 7:
5. Ravanbakhsh M, **Kowalchuk GA**, Jousset A (2019) Root-associated microorganisms reprogram plant life history along the growth–stress resistance tradeoff. *The ISME Journal* 13, 3093-3101
6. Vos M, Wolf AB, Jennings SJ, **Kowalchuk GA** (2013) Micro-scale determinants of bacterial diversity in soil. *FEMS Microbiology Reviews*, 37: 936–954.
7. **Kowalchuk GA** (2012) Bad news for soil carbon sequestration? *Science*, 337:1019-1020
8. Yergeau E, Bokhorst S, Kang S, Zhou J, Greer CW, Aerts R, **Kowalchuk GA** (2012) Shifts in soil microorganisms in response to warming are consistent across a range of Antarctic environments. *The ISME Journal*, 6: 692–702
9. Kiers TE, Duhamel M, Beesetty Y, Mensah JA, Franken O, Verbruggen E, Fellbaum CR,

- Kowalchuk GA**, Hart MM, Bago A, Palmer TM, West SA, Vandenkoornhuyse P, Jansa J, Bücking H (2011) Reciprocal rewards stabilize cooperation in the mycorrhizal symbiosis. *Science*. 333: 880-882
10. Drigo B, van Veen JA, Pijl AS, Kielak AM, Gamper HA, Houtekamer MJ, Bodelier PLE, Boschker HTS, Whiteley AS, **Kowalchuk GA** (2010) Shifting carbon flow from roots into associated microbial communities in response to elevated atmospheric CO₂. *PNAS USA*. 107: 10938-10942