

Zander Rainier Human

Institute for Biodiversity, Friedrich-Schiller University, Jena, Germany

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Nationality: South African, Current Residence: Jena, Germany

CURRENT POSITION

Postdoctoral fellow at the Institute for Biodiversity, Friedrich-Schiller University, Jena, Germany

RESEARCH EXPERIENCE

Postdoctoral Research

2018 – 2022

Advisor: Dr. Petr Baldrian

Microbiology Institute of the Czech Academy of Science, Prague, Czech Republic

The effect of carbon and nitrogen availability on coniferous forest soil microbiomes (FICUS Project)

PhD Project 2013 – 2018

Advisors: Profs. Fanus Venter, Mike Wingfield, Wilhelm de Beer

Forestry and Agriculture Biotechnology Institute, University of Pretoria, South Africa

The microbial ecology of *Protea repens* infructescences and the surrounding environment

MSc Project 2010 – 2013

Advisors: Profs. Fanus Venter, Bernard Slippers, Mike Wingfield

Forestry and Agriculture Biotechnology Institute, University of Pretoria, South Africa

The diversity and ecology of actinomycetes in environments dominated by ophiostomatoid fungi

EDUCATION

August 2013 – 2019

PhD Microbiology, FABI, University of Pretoria, South Africa

2009 – 2013

MSc Microbiology, FABI, University of Pretoria, South Africa

2009

BSc Hons Microbiology, University of Pretoria, South Africa

2006 – 2008

BSc Microbiology, University of Pretoria, South Africa

PARTICIPATION IN US DEPARTMENT OF ENERGY SUPPORTED PROJECTS

Coordinator, 2019-2021 EMSL 50759 Project “**In situ tracking of carbon flow through the soil microbiome**”, Department of Energy of the United States of America, PI Petr Baldrian

Coordinator, 2017-2020 DOE USA FICUS Project “**The impacts of nitrogen availability and seasonal dynamics on plant-microbial interactions affecting C and N cycling in coniferous forest soils**”, Department of Energy of the United States of America, PI Petr Baldrian

PEER-REVIEWED PUBLICATIONS

Algora C, Odriozola, I, **Human ZR**, Awokunle-Holla S, Baldrian P, López-Mondéjar R. 2022. Specific utilization of biopolymers of plant and fungal origin reveals the existence of substrate-specific guilds for bacteria in temperate forest soils. *Soil Biology and Biochemistry* 168:108628

Fiore-Donno AM, **Human ZR**, Štursová M, Mundra S, Morgado L, Kauserud H, Baldrian P, Bonkowski M., 2022 Soil compartments (bulk soil, litter, root and rhizosphere) as main drivers of soil protistan communities distribution in forests with different nitrogen deposition. *Soil Biology and Biochemistry*, 168: 108628

Human ZR, Roets F., Crous CJ, Wingfield MJ, De Beer ZW, and Venter SN. 2021. Fire impacts bacterial composition in *Protea repens* (Proteaceae) infructescences. *FEMS microbiology letters*, 368: p.fnab132.

Starke R., Mondéjar, R.L., **Human, ZR**, Navrátilová, D., Štursová, M., Větrovský, T., Olson, HM, Orton, DJ, Callister, SJ, Lipton, MS, and Howe, A., 2021. Niche differentiation of bacteria and fungi in carbon and nitrogen cycling of different habitats in a temperate coniferous forest: A metaproteomic approach. *Soil Biology and Biochemistry*, 155: 108170

Tláškal V, Brabcová V, Větrovský T, Jomur, M, López-Mondéjar R, Monteiro LMO, Saraiva JP, **Human ZR**, Cajthaml T, da Rocha UN, and Baldrian P. 2021. Complementary Roles of Wood-Inhabiting Fungi and Bacteria Facilitate Deadwood Decomposition. *Msystems* 6:e01078-20

Štursová M, Kohout P, **Human ZR** and Baldrian P. 2020. Production of fungal mycelia in a temperate coniferous forest shows distinct seasonal patterns. *Journal of Fungi* 6:190

Větrovský T, Morais D, Kohout P, Lepinay C, Algora C, Hollá SA, Bahnmann BD, **Human ZR**, et al. 2020. GlobalFungi, a global database of fungal occurrences from high-throughput-sequencing metabarcoding studies. *Scientific Data* 7:1-14

Větrovský T, Kohout, P, Kopecký M, Machac, A, Man M, Bahnmann BD, Brabcová V, Choi J, Meszárošová L, **Human, Z.R**, et al., 2019. A meta-analysis of global fungal distribution reveals climate-driven patterns. *Nature Communications* 10:5142

Human ZR, Crous, CJ, Roets, F, Venter, SN, Wingfield, MJ and de Beer, ZW, 2018. Biodiversity and ecology of flower-associated actinomycetes in different flowering stages of *Protea repens*. *Antonie van Leeuwenhoek* 111:209-226

Human ZR, Slippers, B, De Beer, ZW, Wingfield, MJ, Venter SN. (2017) Antifungal actinomycetes associated with the pine bark beetle, *Orthotomicus erosus*, in South Africa. *South African Journal of Science* 113:2016-0215

Human ZR, Moon K, Bae M, De Beer ZW, Cha S, Wingfield MJ, Slippers B, Oh D-C, Venter SN. (2016) Antifungal *Streptomyces* spp. associated with the infructescences of *Protea* spp. in South Africa. *Frontiers in Microbiology* 7:1657

CONFERENCE CONTRIBUTIONS

ORAL PRESENTATIONS

- 2022** The impact of the metabolome on seasonality of the *Picea abies* soil microbiome. Presented 18th conference of the International Society for Microbial Ecology, Lausanne, August 2022
- 2022** Coniferous forest soil habitats are differentiated by function and differ in seasonality. Presented at the Ecology of Soil Microorganisms Conference, Prague, July 2022
- 2019** Disentangling the effects of seasonality on the *Picea abies* (Norway spruce) forest soil microbiome. Invited presentation - Department of Biology, University of Copenhagen, 10 May 2019

POSTER PRESENTATIONS

Human ZR, Auer L, Serrano A, Law S, López-Mondéjar R, Navrátilová D, Štursová M, Větrovský T, Howe A, Pennacchio C, Grigoriev I, Hurry V, Street N, Martin F, Kauserud H, Baldrian P. **Microbial activity in coniferous forest topsoils is habitat-specific and shows seasonality.** Presented at the Ecological Sciences of America (ESA) Annual Meeting (2021), online.

Human ZR, Stursova M, Mundra S, Callister SJ, Lipton M, Kim Y-M, Navratilova D, Baldrian P. **The microbial community response to seasonality and soil metabolomes in temperate and boreal Norway spruce forests** – Presented at the Soil Metagenomics conference (2019), Braunschweig, Germany

Human ZR, Stursova M, Mundra S, Callister SJ, Lipton M, Kim Y-M, Navratilova D, Baldrian P. **The effects of seasonality and soil nitrogen content on the Norway spruce (*Picea abies*) forest soil microbiome.** Presented at the Multi-omics for Microbiomes Conference (2019), Richland, WA, USA.

Human ZR, Auer L, Serrano A, Law S, López-Mondéjar R, Navrátilová D, Štursová M, Větrovský T, Howe A, Pennacchio C, Grigoriev I, Hurry V, Street N, Martin F, Kauserud H, Baldrian P. **Seasonality and habitat specificity of microbial transcription in a temperate coniferous forest soil.** Presented at the Joint Genome Institute User Meeting (2021), online.