



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE 4736

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Scienze per gli Alimenti, la Nutrizione e l'Ambiente**
Scientist- in - charge: **Prof.Simone Guglielmetti**

Márton Szoboszlay

CURRICULUM VITAE

PERSONAL INFORMATION

Surname	Szoboszlay
Name	Márton
Date of birth	08. 01. 1985.

PRESENT OCCUPATION

Appointment	Structure
-	-

June 2016 – July 2020

Thünen Institute, Institute of Biodiversity (Braunschweig, Germany)

Scientist in the Microbiology and Molecular Ecology Group led by Christoph Tebbe

August 2011 – December 2015

University of Kentucky, Department of Plant and Soil Sciences (Lexington KY, USA)

Graduate research assistant in the laboratory of Luke A. Moe

September 2010 – February 2011:

Helmholtz Centre for Environmental Research, Department of Environmental Microbiology (Leipzig, Germany)

Research assistant working with Kathleen Schleinitz in the Microbial Ecosystem Services Group (first 3 months as DAAD scholar)

November 2009 – June 2010:

Synlab Hungary Ltd. Central Microbiology Laboratory (Budapest, Hungary)

Clinical microbiologist

October 2006 – July 2009:

Eötvös Loránd University, Department of Microbiology (Budapest, Hungary)

MSc student in the laboratory of Erika M. Tóth



EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree			
Specialization			
PhD	Soil Science	University of Kentucky	2015
Master	Biologist	Eötvös Loránd University	2009
Degree of medical specialization			
Degree of European specialization			
Other			

REGISTRATION IN PROFESSIONAL ASSOCIATIONS

FOREIGN LANGUAGES

Languages	level of knowledge
Hungarian	Native
English	Full proficiency (C2)
German	Advanced (C1)
Italian	Intermediate (B1)

AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2015	TerraGenome travel award
2014	Scholarship of the Marine Biological Laboratory
2010	DAAD (German Academic Exchange Service) scholarship

TRAINING OR RESEARCH ACTIVITY



Summary of career

Part of my recent work in the group of Christoph Tebbe at the Thünen Institute of Biodiversity in Germany is centered on the concept of studying the soil microbiota at the spatial scale of individual soil aggregates to reveal heterogeneity and co-occurrence patterns in the soil microbial community (manuscript under review). In parallel, I participated in the VIROPLANT project (<https://www.viroplant.eu>) directed by Massimo Turina in the work package led by Rob Lavigne. My task was to develop a strategy for the environmental risk assessment of bacteriophages used as biocontrol agents in agriculture. I utilized field trials and developed a microcosm system to assess the off-target effects of bacteriophages on the soil- and plant microbiota. Previously in Christoph Tebbe's group, I worked on several research projects in soil microbial ecology addressing e.g. how climate change (Microbiology Open. 2017; e462.), land use and soil organic matter quality (FEMS Microbiology Ecology. 2017; 93:fix146.), GM crops (PLoS ONE. 2019; 14(12):e0222737), or saline water irrigation (Scientific Reports. 2019; 9:9795) influence microbial diversity. I've also been responsible for keeping the bioinformatical and statistical toolset of the group up to date, advising students and visiting scholars, and overseeing the work of technicians.

I've obtained my PhD in soil science at the University of Kentucky, where I also participated in teaching classes in microbiology and soil science. As a graduate student, it was my responsibility to establish the use of next generation sequencing in the laboratory of my PI, Luke Moe. Therefore, I took every opportunity to participate in external courses, workshops, and meetings to further my knowledge in bioinformatics and multivariate statistics, and then coached members of our lab in applying NGS in their research. My work focused on plant-microbe interactions in the rhizosphere. I studied how the domestication of corn influenced the structure and activity of the soil microbiota (Soil Biology and Biochemistry. 2015; 80: 34-44.) and used a model system to investigate the effect of root exudate flavonoids on the soil bacterial community (PLoS ONE. 2016; 11:e0146555.). I performed growth chamber and greenhouse experiments, and also laboratory experiments under sterile conditions with *Medicago truncatula*.

I have a diploma with master degree in biology from the Eötvös Loránd University in Hungary. My education covered a wide spectrum of microbiology. During my work as an MSc student in the laboratory of Erika M. Tóth, and later as a research assistant working with Kathleen Schleinitz at the Helmholtz Centre for Environmental Research in Leipzig, Germany, I've gained experience in various aerob and anaerob cultivation techniques and also cultivation independent molecular methods.

I'm passionate about teamwork and actively contribute to build a supportive atmosphere at the workplace. At the Thünen Institute, I helped the PhD students in our group with experimental design and data analysis and assisted members of our group, and occasionally others at our institute, with academic writing. I supported the work of several guest researchers and students and recently initiated and led weekly discussions in our group on presentation techniques. I put strong emphasis on transparency and clear record keeping in scientific work.

I hope my professional experience in three countries shows my competence in working in diverse, international teams, my willingness to travel and ability to adapt.



Skills and expertise

microbiology, microbial ecology
soil science
high-throughput sequencing, bioinformatics
multivariate statistics, R, network analysis
molecular methods, DNA and RNA extraction, qPCR, cloning
T-RFLP, FAME, PLFA
soil enzyme assays
cultivation methods, anaerob systems
microcosms and model systems
greenhouse and growth chamber experiments with plants
epifluorescence microscopy, DAPI cell counts
clinical bacteriology

Workshops and courses

September 2016

Bioinformatics in the Thünen Institute – Thünen Institute (Braunschweig, Germany)
2 day internal workshop organized by Christoph Tebbe

August 2016

de.NBI & DZIF Metagenomics Training Course – Bielefeld University (Bielefeld, Germany)
1 week course organized by Andreas Bremges and Sebastian Jünemann

June – August 2014

Microbial Diversity – Marine Biological Laboratory (Woods Hole MA, USA)
6.5 weeks course directed by Jared Leadbetter and Dianne Newman

July 2013

Essentials of Next Generation Sequencing – University of Kentucky (Lexington KY, USA)
1 week workshop organized by the University of Kentucky Advanced Genetic Technology Center

June 2012

Microbial Metagenomics – Michigan State University (East Lansing MI, USA)
2 weeks workshop directed by Thomas Schmidt



Teaching experience

Microbial Metabolism in Natural and Artificial Environments – course for MSc students at the Braunschweig University of Technology

Lecture on molecular methods in microbial ecology

2017 and 2018 winter semesters

Fundamentals of Soil Science – undergraduate course at the University of Kentucky

Teaching assistant for the 2014 spring semester

Laboratory classes, field trips, and consultation to accompany lectures in introductory soil science

Food Microbiology – course for graduate and advanced undergraduate students at the University of Kentucky

Lecture on biofilms

Lecture on methods for investigating bacterial community structure

2013 fall semester

Microbial Structure and Function – advanced course for graduate students at the University of Kentucky

Lectures on microbial metabolism

2013, 2014, and 2015 fall semesters

Mentoring

Janet Chappelle

University of Kentucky, fall 2011, spring 2012.

I mentored Janet during her capstone research project in her senior year in the agricultural biotechnology BSc program. She went on to pursue a master degree in soil microbiology at North Carolina State University.

Christopher Will

University of Kentucky, 2014.

Christopher worked with me during his second and third semester in the agricultural biotechnology BSc program. I trained him in molecular biology and working with clone libraries.

Derek Law

University of Kentucky, 2012 – 2015.

Derek was a PhD student at the Department of Geography. He developed an interdisciplinary project linking physical geography and environmental microbiology. I taught him molecular methods used in environmental microbiology, helped him develop his project and analyze his data.

Naomi Oßwald

Thünen Institute of Biodiversity, November 2017 – February 2018.



Naomi pursued a BSc in biology at the Braunschweig University of Technology. I participated in designing the research project for her thesis and coached her during the analysis of the results.

Bei Liu

Thünen Institute of Biodiversity, February and March 2018.

Bei was an MSc student at Nanjing University. I coached her in bioinformatics and multivariate statistics during her visit at the Thünen Institute of Biodiversity.

Oluwaseun Olasinde

Thünen Institute of Biodiversity, from March to September 2018.

Oluwaseun was a visiting PhD student from the University of Ibadan. I trained her in statistics and in molecular methods used in microbial ecology.

PROJECT ACTIVITY

PATENTS

CONGRESSES AND SEMINARS

Márton Szoboszlay, Dominique Holtappels, Jeroen Wagemans, Rob Lavigne, and Christoph C. Tebbe.

Developing an environmental risk assessment strategy for phage biocontrol in agriculture. 4th

Thünen Symposium on Soil Metagenomics, Braunschweig, Germany, 2019.

Christoph C. Tebbe, Márton Szoboszlay. What's happening in the neighborhood? The need for soil

Aggregatomics. 4th Thünen Symposium on Soil Metagenomics, Braunschweig, Germany, 2019.

Christoph C. Tebbe, Damini, Sascha M. Krause, Nicole Rudolph-Mohr, Márton Szoboszlay. Microbial networks in soil aggregates and their dynamics in the root-soil continuum. Rhizosphere5, Saskatoon, Canada, 2019.

Christoph C. Tebbe, Márton Szoboszlay. Understanding the patterns of soil microbial diversity – A question of scale. International Conference on Microbiome Research, Pune, India, 2018.

Márton Szoboszlay, Astrid Näther, Ewen Mullins, Christoph C. Tebbe. The effect of genetic modification of maize on soil fungi, bacteria, and bacterial denitrifiers at different field sites across Europe. Annual Conference of the Association for General and Applied Microbiology, Wolfsburg, Germany, 2018.

Christoph C. Tebbe, Anja B. Dohrmann, Michael Hemkemeyer, Márton Szoboszlay. Finding important environmental factors and the best spatial scale for soil prokaryotic community analyses. 8th Annual Argonne Soil Metagenomics Meeting, Lemont IL, USA, 2017.



- Márton Szoboszlay, Anja B. Dohrmann, Axel Don, Christopher Poeplau, Christoph C. Tebbe. Implications of land use change on soil bacterial diversity and association networks. 2nd Global Biodiversity Conference, Nanjing, China, 2017.
- Márton Szoboszlay, Anja B. Dohrmann, Axel Don, Christopher Poeplau, Christoph C. Tebbe. The effect of soil organic carbon fractions and land use on the composition of microbial communities in European soils. BAGECO 14th Symposium on Bacterial Genetics and Ecology, Aberdeen, Scotland, 2017.
- Márton Szoboszlay, Thelma Castellanos, Astrid Näther, José-Luís Diaz de Leon, Angel Carrillo, Christoph C. Tebbe, Kornelia Smalla. The effects of seawater irrigation and inoculation with *Azospirillum brasiliense* on the rhizosphere prokaryotic community of two wheat cultivars. BAGECO 14th Symposium on Bacterial Genetics and Ecology, Aberdeen, Scotland, 2017.
- Márton Szoboszlay, Astrid Näther, Anja-Bettina Dohrmann, Christoph C. Tebbe. Assessing the variability of the rhizomicrobiome of maize across Europe. 3rd Thünen Symposium on Soil Metagenomics, Braunschweig, Germany, 2016.
- Anja-Bettina Dohrmann, Márton Szoboszlay, Christopher Poeplau, Axel Don, Christoph C. Tebbe. Impact of land use change and soil organic carbon fractions on microbial diversity in European soils. SOMmic International Workshop on Microbial Contribution and Impact on Soil Organic Matter, Structure and Genesis, Leipzig, Germany, 2016.
- Márton Szoboszlay, Alison White-Monsant, Luke A. Moe. The effect of root exudate 7,4'-dihydroxyflavone and naringenin on soil bacterial community structure. 7th Annual Argonne Soil Metagenomics Meeting, Lisle IL, USA, 2015.
- Márton Szoboszlay, Julie Lambers, Janet Chappell, Joseph V. Kupper, Luke A. Moe, David H. McNear Jr. Getting to the root of corn domestication: comparing root system architecture and rhizosphere processes of Balsas teosinte and domesticated corn cultivars. American Society for Microbiology KY-TN Branch Meeting, Bowling Green KY, USA, 2013.
- Kathleen M. Schleinitz, Márton Szoboszlay, Christin Dathe, Thore Rohwerder, Stefan Bertilsson, Annelie Wendeberg, Hauke Harms, Carsten Vogt, Sabine Kleinsteuber. Metagenome of an epsilonproteobacterium enriched from a sulfidic BTEX-contaminated aquifer. FEMS 4th Congress of European Microbiologists, Geneva, Switzerland, 2011.
- Erika M. Tóth, Márton Szoboszlay, Veronika Bohus, Judit Makk, Károly Márialigeti. Studies of biofilms formed in ultra pure water pipelines of a power plant. FEMS 3rd Congress of European Microbiologists, Gothenburg, Sweden, 2009.
- Erika M. Tóth, Zsuzsa Kéki, Judit Makk, Márton Szoboszlay, Veronika Bohus, Károly Márialigeti. Biofilm formation and elimination from surfaces of industrial facilities. 2nd Central European Forum for Microbiology, Keszthely, Hungary, 2009.
- Márton Szoboszlay, Veronika Bohus, Erika M. Tóth. Study of bacterial biofilms in an ultra pure water industrial system using cultivation. Congress of the Hungarian Society for Microbiology, Keszthely, Hungary, 2008.



Invited seminar talks

Increasing the spatial resolution of our view of the soil microbiota to the scale of soil aggregates – invited by Marcel van der Heijden to Agroscope, Zürich, Switzerland, 2020.

Applications of bioinformatics in soil microbial ecology – invited by Kornelia Smalla to the Julius Kühn Institute for Epidemiology and Pathogen Diagnostics. Braunschweig, Germany, 2017.

PUBLICATIONS

Under review: Márton Szoboszlay, Christoph C. Tebbe. Hidden heterogeneity and co-occurrence networks of soil prokaryotic communities revealed at the scale of individual soil aggregates. <https://doi.org/10.1101/2020.06.24.169037>

Márton Szoboszlay, Astrid Näther, Ewen Mullins, Christoph C. Tebbe. Annual replication is essential in evaluating the response of the soil microbiome to the genetic modification of maize in different biogeographical regions. *PLoS ONE*. 2019; 14(12):e0222737.

Márton Szoboszlay, Astrid Näther, Bei Liu, Angel Carrillo, Thelma Castellanos, Kornelia Smalla, Zhongjun Jia, Christoph C. Tebbe. Contrasting microbial community responses to salinization and straw amendment in a semiarid bare soil and its wheat rhizosphere. *Scientific Reports*. 2019; 9:9795.

Christopher Poeplau, Mirjam Helfrich, Rene Dechow, Márton Szoboszlay, Christoph C. Tebbe, Axel Don, Bärbel Greiner, Dorit Zopf, Ulrich Thumm, Hein Korevaar, Rob Geerts. Increased microbial anabolism contributes to soil carbon sequestration by mineral fertilization in temperate grasslands. *Soil Biology and Biochemistry*. 2019; 130: 167-176.

Andrea Čerevková, Dana Miklisová, Márton Szoboszlay, Christoph C. Tebbe, Ľudovít Cagáň. The responses of soil nematode communities to Bt maize cultivation at four field sites across Europe. *Soil Biology and Biochemistry*. 2018; 119: 194-202.

Márton Szoboszlay, Anja B. Dohrmann, Christopher Poeplau, Axel Don, Christoph C. Tebbe. Impact of land-use change and soil organic carbon quality on microbial diversity in soils across Europe. *FEMS Microbiology Ecology*. 2017; 93:fix146.

Editor's Choice article for issue 93/12 of FEMS Microbiology Ecology.

Márton Szoboszlay, Astrid Näther, Esther Mitterbauer, Jürgen Bender, Hans-Joachim Weigel, Christoph C. Tebbe. Response of the rhizosphere microbial community of barley (*Hordeum vulgare* L.) to elevated atmospheric CO₂ concentration in open-top chambers. *Microbiology Open*. 2017; e462.

Márton Szoboszlay, Alison White-Monsant, Luke A. Moe. The effect of root exudate 7,4'-dihydroxyflavone and naringenin on soil bacterial community structure. *PLoS ONE*. 2016; 11:e0146555.

Qingxinag Yang, Ruifei Wang, Siwei Ren, Márton Szoboszlay, Luke A. Moe. Practical survey on antibiotic-resistant bacterial communities in livestock manure and manure-amended soil. *Journal of Environmental Science Part B*. 2016; 51:14-23.



Márton Szoboszlay, Julie Lambers, Janet Chappell, Joseph V. Kupper, Luke A. Moe, David H. McNear Jr. Comparison of root system architecture and rhizosphere microbial communities of Balsas teosinte and domesticated corn cultivars. *Soil Biology and Biochemistry*. 2015; 80: 34-44.

Veronika Bohus, Márton Szoboszlay, Károly Márialigeti, Erika M. Tóth. 2008. Bacteriological study of an industrial cooling water using cultivation and molecular methods. *Journal of the Hungarian Hydrological Society*. 2008; 88: 31-33. (in Hungarian)

OTHER INFORMATION

Driver's license

2009, 2010, 2011, 2017: Voluntary worker at Bátor Tátor (Camp of Courage, member of the Serious Fun Children's Network), a therapeutic recreation camp for children living with cancer or other serious illnesses.

Referees

Christoph C. Tebbe

Head of the Microbiology and Molecular Ecology Group at the Thünen Institute of Biodiversity (Braunschweig, Germany)

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Rob Lavigne

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Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Place and date: Braunschweig, 24/10/2020

SIGNATURE

Szoboszlay Marton

