Dr Fabio Palmieri

Laboratory of microbiology
University of Neuchâtel
Institute of Biology
Emile-Argand 11
CH – 2000 Neuchâtel
Tel: +41 32 718 23 34
Email: fabio.palmieri@unine.ch
Date of birth: 08.02.1992
Nationality: Italian
ORCiD: 0000-0002-5241-6898

Research interests

My research interests are in the field of microbial ecology, going from soil to the plant, animal and human hosts. I'm interested in studying and understanding the interactions between microbes and their environments and with each other. During my Master project, I had the opportunity to study endospore-forming bacteria in a volcanic site in Greece (Nisyros Island) by both culturable and un-culturable methods and thus evaluate the role of endospore-formation as a survival strategy to the changing environmental conditions in these habitats. For my PhD thesis, I am interested in bacterial-fungal interactions in the context of human health and how we can use bacteria as biocontrol agents against fungal pathogens. More specifically, I evaluated the biocontrol potential of oxalotrophic bacteria to inhibit the growth of *Aspergillus niger* through oxalate degradation in 3D-lung cell tissues systems. Now in my postdoctoral work, I'm translating the results from my PhD thesis to *Aspergillus fumigatus*, which is the most common causative agent of pulmonary aspergillosis, and I'm investigating the role of bacteria from the lung microbiota in the establishment and growth of *Aspergillus*, and on their interplay with the host and the lung microenvironment.

Education

Oct. 2016 – April 2021	**PhD in Microbiology,** University of Neuchâtel, Switzerland.
2014 – 2016	**Master of Science in Biology**, Specialization: Ecology and environment, Evolution and biodiversity, Grade cum laude, University of Neuchâtel, Switzerland.
2011 – 2014	**Bachelor of Science in Biology**, Grade cum laude, University of Neuchâtel, Switzerland.

Research experiences

Sep. 2022 – Present	**Visiting researcher**, Centre Hospitalier Universitaire Vaudois - CHUV, Laboratoire de Pneumologie, Service de Pneumologie
June 2021 – Present	**Postdoctoral researcher**, Laboratory of Microbiology, University of Neuchâtel. SNSF BRIDGE Discovery project – CaOx: applying ecological theory in the fight against lung fungal pathogens. PI: Prof. Pilar Junier
Oct. 2016 – May 2021	**PhD Thesis**, Laboratory of Microbiology, University of Neuchâtel. "Bacterial oxalotrophy as an alternative biocontrol approach for the fight against pulmonary aspergillosis" Supervisor: Prof. Pilar Junier
Jan. – July 2019	**Visiting Research Scholar**, Host and Pathogen Biology Lab, Biosecurity and Public Health, Bioscience Division, Los Alamos National Laboratory, Los Alamos, NM, USA.

	"Bacterial Oxalotrophy as a Biological Mechanism to Control Aspergillosis in a Lung-on-a-Chip System" Supervisor: Dr Jennifer Foster Harris, Dr Patrick S. G. Chain
April 2015 – Aug. 2016	**Master thesis**, Laboratory of Microbiology, University of Neuchâtel. "To Sporulate or not to Sporulate: Prevalence of Endospore-Forming Firmicutes along a Thermal Gradient in Alexandros Crater (Nisyros, Greece)" Supervisors: Prof. Pilar Junier, Dr Sevasti Filippidou.
Jan. – Feb. 2015	**Internship**, Laboratory for Environmental Biotechnology (LBE), Swiss Federal Institute of Technology (EPFL). "Effect of the molecular chaperone PceT on the heterologous production of the reductive dehalogenase PceA". Supervisor: Dr Julien Maillard.
Sept. – Dec. 2014	**Internship**, Laboratory of Microbiology, University of Neuchâtel. Internship project within the project BIOPATINA.

Teaching experiences

Feb. – July 2022	**Lecturer** (Chargé d'enseignement) for the Bachelor in biology courses «Diversité de la vie» (Diversity of Life, 1st year Bachelor), and «Apprentissage Par Problème (APP)» (Problem-Based Learning, 3rd year Bachelor).
March – April 2021	**PhD Assistant** for the Problem-based learning in Microbiology for the 3rd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Sep. – Dec. 2019	**PhD Assistant** for the practicals in microbiology for the 2nd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Sep. – Dec. 2018	**PhD Assistant** for the practicals in bacteriology and mycology for the 2nd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Feb. – March 2018	**PhD Assistant** for the Problem-based learning in Microbiology for the 3rd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Nov. – Dec. 2017	**PhD Assistant** for the practicals in bacteriology for the 2nd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Feb. – March 2017	**PhD Assistant** for the Problem-based learning in Microbiology for the 3rd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Sept. – Dec. 2016	**PhD Assistant** for the practicals in bacteriology for the 2nd year biology students and for the practicals of Bioinformatics tools for the Masters students, Laboratory of Microbiology, University of Neuchâtel.
Sept. – Oct. 2015	**Student-Assistant** for the practicals in molecular biology for the 3rd year biology students (24 hours), Laboratory of Microbiology, University of Neuchâtel.
Sept. – Oct. 2014	**Student-Assistant** for the practicals in molecular biology for the 3rd year biology students (24 hours), Laboratory of Microbiology, University of Neuchâtel.

Supervising experiences

June 2023 – Dec. 2023	**Co-advising of Noha Ruffieux (intern),** Laboratory of Microbiology, University of Neuchâtel.
June 2022 – June 2023	**Co-advising of Jérémy Diserens (master student),** Laboratory of Microbiology, University of Neuchâtel.

Oct. 2022 – June 2023	**Co-advising of Margo Magnin (master student),** Laboratory of Microbiology, University of Neuchâtel.
Oct. 2020 – Mar. 2023	**Co-advising of Laura Blanco Pérez (bachelor student),** Laboratory of Microbiology, University of Neuchâtel.
Nov. 2022 – Mar. 2023	**Co-advising of Manon Gresse (master student),** Laboratory of Microbiology, University of Neuchâtel.
Mar. 2022 – Aug. 2022	**Co-advising of Eva Di Francesco (biology technician trainee)**, Laboratory of Microbiology, University of Neuchâtel.
Sept. 2020 – Aug. 2022	**Co-advising of Pauline Udriet (biology technician trainee),** Laboratory of Microbiology, University of Neuchâtel.
Sept. 2018 – Jan. 2019	**Co-advising of Alexis Hirshi (high-school student),** Maturity project, Lycée Denis-de-Rougemont.
Sept. 2017 – June 2018	**Co-advising of Aislinn Estoppey (master student),** Laboratory of Microbiology, University of Neuchâtel.
Sept. 2016 – July 2018	**Co-advising of Lindsay Pétremand (biology technician trainee),** Laboratory of Microbiology, University of Neuchâtel.

Skills

Lab skills	Microbial cultures, strain isolation, molecular methods (DNA extraction, DNA quantification, PCR, qPCR, gel electrophoresis), biochemistry methods (protein expression induction, SDS- and Native-PAGE, cellular fractionation), cell culture methods (air-liquid interface tissue culture)
IT	Microsoft Office Suite, iWork Suite, RStudio, ArcGIS, Adobe Photoshop, Adobe Illustrator, Adobe InDesign, GraphPad Prism
Languages	French (native), Italian (fluent, B2 PLIDA Certificate), English (fluent, B2 First Certificate in English), German (conversational).

Publications

(* equal contributions of the authors)

Peer-reviewed publications

1. Sevasti Filippidou, Marion Jaussi, Thomas Junier, Tina Wunderlin, Nicole Jeanneret, **Fabio Palmieri**, Ilona Palmieri, et al. 2016. "*Anoxybacillus geothermalis* Sp. Nov., a Facultatively Anaerobic, Endospore-Forming Bacterium Isolated from Mineral Deposits in a Geothermal Station." *International Journal of Systematic and Evolutionary Microbiology* 66 (8). Microbiology Society: 2944–51. doi:10.1099/ijsem.0.001125.
2. **Fabio Palmieri***, Aislinn Estoppey*, Geoffrey L. House, Andrea Lohberger, Saskia Bindschedler, Patrick S. G. Chain, Pilar Junier. 2019. "Oxalic Acid, a Molecule at the Crossroads of Bacterial-Fungal Interactions." *Advances in Applied Microbiology*. Vol. 106. 49-77. doi:10.1016/bs.aambs.2018.10.001.
3. Christophe Paul, Sevasti Filippidou, Isha Jamil, Wafa Kooli, Geoffrey House, Aislinn Estoppey, Mathilda Hayoz, Thomas Junier, **Fabio Palmieri**, Tina Wunderlin, Anael Lehmann, Saskia Bindschedler, Torsten Vennemann, Patrick S. G. Chain, Pilar Junier. 2019. "Bacterial Spores, from Ecology to Biotechnology." *Advances in Applied Microbiology*. Vol. 106. 79-111. doi:10.1016/bs.aambs.2018.10.002.
4. P. Junier, G. Cailleau, I. Palmieri, C. Valloton, O. C. Trautschold, T. Junier, C. Paul, D. Bregnard, **F. Palmieri**, A. Estoppey, M. Buffi, A. Lohberger, A. Robinson, J. M. Kelliher, K. Davenport, G. L. House, D. Morales, V. Gallegos-Graves, A. E. K. Dichosa, S. Lupini, H. N. Nguyen, J. D. Young, D. F. Rodrigues, A. N. G. Parra-Vasquez, S. Bindschedler, P. S. G. Chain. 2021. "Democratization of Fungal Highway Columns as a Tool to Investigate Bacteria Associated with Soil Fungi." *FEMS Microbiol Ecol*. doi:10.1093/femsec/fiab003.

5. Aaron J. Robinson, Geoffrey L. House, Demosthenes P. Morales, Julia M. Kelliher, La Verne Gallegos-Graves, Erick S. LeBrun, Karen W. Davenport, **Fabio Palmieri**, Andrea Lohberger, Danae Bregnard, Aislinn Estoppey, Matteo Buffi, Christophe Paul, Thomas Junier, Vincent Herve, Guillaume Cailleau, Simone Lupini, Hang N. Nguyen, Amy O. Zheng, Luciana Jandelli Gimenes, Saskia Bindschedler, Debora F. Rodrigues, James. H Werner, Jamey D. Young, Pilar Junier, Patrick S. G. Chain. 2021. «Widespread bacterial diversity within the bacteriome of fungi.» *Communications Biology* 4(1): 1168. doi: 10.1038/s42003-021-02693-y.
6. **Fabio Palmieri**, Angela Koutsokera, Eric Bernasconi, Pilar Junier, Christophe von Garnier, Niki D. Ubags. 2022. «Recent Advances in Fungal Infections: From Lung Ecology to Therapeutic Strategies With a Focus on *Aspergillus* spp.» *Frontiers in Medicine*. doi: 10.3389/fmed.2022.832510.
7. Thierry Kuhn*, Marine Mamin*, Saskia Bindschedler, Redouan Bshary, Aislinn Estoppey, Diego Gonzalez, **Fabio Palmieri**, Pilar Junier, Xiang-Yi Li. 2022. «Spatial scales of competition and a growth-motility tradeoff interact to determine bacterial coexistence.» *Royal Society Open Science*. doi: 10.1098/rsos.211592.
8. **Fabio Palmieri**, Pauline Udriet, Shannon L. Johnson, Karen Davenport, Patrick S. G. Chain, Saskia Bindschedler, Pilar Junier. "Complete Genome Sequence of *Cupriavidus oxalaticus* Strain Ox1, a Soil Oxalate-Degrading Species". *Microbiology Resource Announcements*. doi : 10.1128/mra.00181-22.

Preprints

9. **Fabio Palmieri**, Ilona Palmieri, Nourine Noormamode, Aislinn Estoppey, M. Omar Ishak, Julia M. Kelliher, Armelle Vallat, Rashi Iyer, Saskia Bindschedler, Karen Davenport, Patrick S. G. Chain, Jennifer Foster Harris, Pilar Junier. 2020. "Biocontrol of *Aspergillus niger* in 3D-Lung Cell Tissues by Oxalotrophic Bacteria." *BioRxiv*. doi:10.1101/2020.08.20.259929.
10. **Fabio Palmieri**, Margo Magnin, Jérémy Diserens, Manon Gresse, Eric Bernasconi, Julie Pernot, Apiha Shanmuganathan, Aurélien Trompette, Christophe von Garnier, Thomas Junier, Samuel Neuenschwander, Saskia Bindschedler, Marco Pagni, Angela Koutsokera, Niki Ubags & Pilar Junier. 2023. "One-step soft agar enrichment and isolation of human lung bacteria inhibiting the germination of *Aspergillus* spp. conidia". *Preprints.* doi: 10.20944/preprints202305.2247.v1

In preparation

11. **Fabio Palmieri**, Niki Ubags, Aurélien Trompette, Apiha Shanmuganathan, Julie Pernot, Samuel Neuenschwander, Thomas Junier, Marco Pagni, Christophe Von Garnier, Janick Stucki, Nina Hobi, Angela Koutsokera, Pilar Junier. "Fighting *Aspergillus* infection using biocontrol bacteria: A proof of concept study for environmental interference in a translational setting."

Grants and Awards

2015	Fonds Wütrich et Matthey-Dupraz – Travel grant for the Master thesis field work in Nisyros, Greece (1'000,00 CHF)
2019	Swiss Society for Microbiology Annual Congress – 2nd Best Poster Award (1'000,00 CHF)
2021	Ma Thèse en 180 secondes (MT180, *My Thesis in 180 sec.*) – Prix du public (*Public award*)
2022	Ligue Pulmonaire Neuchâteloise (LPN) – Research grant (8'520,00 CHF)
2023	Ligue Pulmonaire Vaudoise (LPVD) – Research grant (42'390,00 CHF)
2023	SSC/SSCS – SSP/SSTS Joint Annual Meeting 2023 – 1st Best Poster Presentation Award of the topic "Infections, cystic fibrosis/non-CF bronchiectasis, lung transplantation" (400,00 CHF)

Service-related activities

Reviewer in the following journals:

Frontiers in Microbiology, FEBS Open Bio, iScience, BMC Immunology, Microbiology Spectrum

Reviewer/Recommender:

Peer Community In Microbiology, Peer Community In Infections

Preprints-related activities:

- ASAPbio Ambassador (since April 2019)
- ASAPbio Fellows Program 2020 member
- preLighter at preLights (preprint highlights, since April 2020)

Lay communication activities:

- Contribution to TheScienceBreaker - Science Meets Society: «Insect microbiomes – a new hope against antimicrobial resistance?», doi: 10.25250/thescbr.brk239.
- Candidate for the 2021 edition of «Ma Thèse en 180 secondes» (MT180) – 22 April 2021.

Organization

- Member of the organization committee of Biology18, 14-16 February 2018, University of Neuchâtel.
- Co-organization of a course in the CUSO Microbial Sciences Doctoral Program – Students Choice: "Astrobiology", 29 November 2019, University of Neuchâtel.
- Organization of a course in the CUSO Microbial Sciences Doctoral Program – Preprint Journal Club, 8 September 2020, Online.
- Co-organisation of a course in the CUSO Microbial Sciences Doctoral Program – "B4B: Bugs 4 Biotech", 10 October 2023, University of Neuchâtel.
- Co-organisation of a symposium at the 12th International Mycological Congress (IMC12) – "Impact of Bacterial-Fungal Interactions on Fungal Traits", 11-15 August 2024 in Maastricht, Netherlands.

Memberships

British Mycological Society (BMS)

European Respiratory Society (ERS)

Swiss Society for Microbiology (SSM)

Society for Applied Microbiology (SfAM)

Federation of European Microbiological Societies (FEMS)

International Society of Microbial Ecology (ISME)

American Society of Microbiology (ASM)