

## Research Interests

My general interest lies in microbial ecology. Specifically, I am interested in studying and understanding the mechanisms that maintain microbial diversity within an ecosystem. I am particularly keen on exploring how these mechanisms can be utilized to improve ecosystems that have been affected by human activities.

## Education

2017 – 2019	<b>Student in Master of Science in Biology.</b> <i>Cum laude</i> . Specialization: Chemical Ecology, Sustainable Agriculture, Laboratory of Mycology and Bacteriology. University of Neuchâtel, Switzerland.
2014 – 2017	<b>Bachelor of Science in Biology.</b> University of Neuchâtel, Switzerland.
2008 – 2012	<b>High School degree in Biology-Chemistry,</b> Liceo di Locarno, Ticino, Switzerland.

## Research experience

2019 – Present	<b>PhD thesis in microbiology,</b> Laboratory of microbiology, University of Neuchâtel, ongoing
2018 – 2019	<b>Master thesis in Microbiology,</b> Laboratory of Microbiology, University of Neuchâtel, “Old ideas new methods: Re-discovering Filamentous fungi electrical communication”
April – May 2014	<b>“Problem-based learning in Eco-ethology”,</b> Laboratory of Eco-Ethology, University of Neuchâtel. “House sparrow responses to Carrion crow vocalizations”.
March – April 2014	<b>Problem-based learning in parasitology,</b> Laboratory of Parasitology, University of Neuchâtel. “Food choice in malaria vector <i>Anopheles gambiae</i> after infection by <i>Plasmodium berghei</i> ”.
Feb. – March 2017	<b>Problem-based learning in microbiology,</b> Laboratory of Microbiology, University of Neuchâtel. “Biocontrol of pathogenic fungi with the utilization of oxalotrophic bacteria”.

## Teaching experience

Oct-Dec 2022	<b>PhD student assistant</b> for the practical of Microbiology for 2 <sup>nd</sup> year Biology students (half day/week one semester, Laboratory of Microbiology, University of Neuchâtel.
Oct-Dec 2021	<b>PhD student assistant</b> for the practical of Microbiology for 2 <sup>nd</sup> year Biology students (half day/week one semester, Laboratory of Microbiology, University of Neuchâtel.
Feb-March 2021	<b>PhD student assistant</b> for the Problem-based learning in Microbiology for 3 <sup>rd</sup> year Biology students (4 weeks), Laboratory of Microbiology, University of Neuchâtel.
Nov-Dec 2020	<b>PhD student assistant</b> for the practical of Molecular Biology for 1 <sup>st</sup> year Master BGS students (1day/week), Laboratory of Microbiology, University of Neuchâtel.
Feb-March 2020	<b>PhD student assistant</b> for the Problem-based learning in Microbiology for 3 <sup>rd</sup> year Biology students (4 weeks), Laboratory of Microbiology, University of Neuchâtel.
Oct-Dec 2019	<b>PhD student assistant</b> for the practical of Microbiology for 2 <sup>nd</sup> year Biology students (half day/week one semester, Laboratory of Microbiology, University of Neuchâtel.
Oct-Dec 2019	<b>PhD student assistant</b> for the course of Biostatistics for 3 <sup>rd</sup> year Biology students (half day/week one semester, Laboratory of Parasitology, University of Neuchâtel.
Feb.-April 2019	<b>Student-Assistant</b> for the practical of Histology for 1st year biology students (16 hours), Laboratory of Microbiology, University of Neuchâtel.
Oct-Nov 2018	<b>Student-Assistant</b> for the practical of Molecular Biology and Biochemistry (24 hours) for 3rd year biology students, Laboratory of Microbiology, University of Neuchâtel.
Nov 2017	<b>Student-Assistant</b> for the excursions of microbiology for the 1st year biology students (8 hours), Laboratory of Microbiology, University of Neuchâtel.

## Conferences

19 January 2023	<b>Swiss Microbial Ecology Meeting</b> ; SUPSI Mendrisio, Switzerland; <b>presentation</b> title: Development of an inexpensive and fast method to study and quantify modularity in filamentous fungi at both the mycelial and hyphal scales.
31 August 2022	<b>Swiss Society for Microbiology</b> , EPFL, Lausanne, Switzerland, <b>presentation</b> title: Fungal drops: a novel method for the observation of fungal modularity and coordination
10 June 2022	<b>Zurich Mycology Symposium</b> ; Neuchâtel University, Switzerland; <b>presentation</b> title: Fungal drops: a novel method for the observation of fungal modularity and coordination
July 2019	<b>AFMBioMed summer school</b> 2018, Marseille, France.
March 2019	<b>Electromicrobiology 2019</b> , Aarhus University, Denmark. Travel grant for <b>poster</b> presentation: "Electric signaling in filamentous fungi"

## Prizes and subventions

January 2023	<b>Best oral presentation</b> at the <b>Swiss Microbial Ecology Meeting</b> , SUPSI Mendrisio;
March 2019	Travel grant for <b>Electromicrobiology symposium</b> at Aarhus University, Denmark

## Supervising experiences

Sept. 2021 – August 2022	<b>Co-advising</b> of Junna Frei (Master student), Laboratory of Microbiology, University of Neuchâtel.
May 2021 - August 2022	<b>Co-advising</b> of Margaux Leisi (Master student), Laboratory of Microbiology, University of Neuchâtel.
2021	<b>Co-advising</b> of Matys Constantino (Biology technician trainee), Laboratory of Microbiology, University of Neuchâtel.
March- May 2021	<b>Co-advising</b> of Laura Blanco Pérez (Bachelor student), Laboratory of Microbiology, University of Neuchâtel.

## Event organization:

September 2022	<b>Co-organizer</b> of the annual Ph.D meeting of the university of Neuchâtel at the Natural history Museum, Neuchâtel. Title: Science and Society.
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## External collaborations / public mandates:

Translator French – Italian, English – Italian for the Service Learning "Microbes go to school".  
Fungal and Bacterial identifications for private and public mandates.  
In charge for the preparation and signal registration of carpophores for the art exposition: "I wanna say a word" by Maëlle Gross 27-29 October, Berlin, Germany (to be performed also at the Natural History Museum, Neuchâtel).

## Media:

May 2024 (to be done)	« La vie secret de champignons » Presentation at the Open University (université ouverte de Franche-Comté), France.
May 2023	« Le langage subtil des champignons » Avis d'expert, CQFD, RTS. <u>Interview</u>
Mars 2023	« Subtilités de langage : Secrets de Champignons », En Direct journal, Université de Franche-Comté. <u>Article</u>
28 July 2022	« Les ondes électriques des champignons », Les bonnes ondes, RTS <u>Interview</u>
2 December 2021	"Les champignons champions de la transaction écologique », Avis d'expert, CQFD, RTS <u>Interview</u>

## Publications:

"**Democratization of fungal highway columns as a tool to investigate bacteria associated with soil fungi**"  
"Pilar Junier, (...), Matteo Buffi et al; February 2021, FEMS Microbiology Ecology, Volume 97, Issue 2; <https://doi.org/10.1093/femsec/fiab003>

"**Widespread bacterial diversity within the bacteriome of fungi**" Aaron J. Robinson (...), Matteo Buffi, et al, October 2021, Nature, Communication Biology; <https://doi.org/10.1038/s42003-021-02693-y>.

**“Design and construction of 3D printed devices to investigate active and passive bacterial dispersal on hydrated surfaces”**; Thierry Kuhn, Matteo Buffi, Saskia Bindschedler, Patrick S. Chain, Diego Gonzalez, Claire E. Stanley, Lukas Y. Wick, Pilar Junier & Xiang-Yi Li Richter; September 2022; BMC Biology; <https://doi.org/10.1186/s12915-022-01406-z>

### First author publications in preparation:

Published 2023	“Fungal drops: a novel approach for macro- and microscopic analyses of fungal mycelial growth” Buffi Matteo ; Cailleau Guillaume; Kuhn Thierry; Richter Xiang-Yi Li; Stanley Claire; Wick Lukas; Chain Patrick; Bindschedler Saskia; Junier Pilar; Published, FEMS $\mu$ Life.
In preparation:	Review on electrical communication in filamentous fungi; Buffi Matteo, Bindschedler Saskia, Junier Pilar.
To send in review	Article on bacterial movement speed on fungal hyphae at the single cell level; Buffi Matteo, Kuhn Thierry, Bindschedler Saskia, Junier Pilar & Xiang-Yi Li Richter; in preparation.
In preparation	“Article on a new method developed to measure electricity in mycelium at the hyphal level” Buffi Matteo, Foiada Valerio, Puthod Loic, Pirrami Lorenzo, Oberson Daniel, Bindschedler Saskia, Chain Patrick, Junier Pilar.

### Skills

Lab skills	Microbial cultures, strain isolation, molecular methods (DNA extraction, DNA quantification, PCR, gel electrophoresis), biochemistry methods basics (protein expression induction, SDS- and Native-PAGE, phase-phase extraction with HPLC determination, enzymatic activity measurements).
IT	Microsoft Office Suite, RStudio. Adobe Illustrator, Image J, Python (basics)
Languages	Italian (native), French (fluent, Bachelor in French), English (fluent, MSc and Ph.D. in English, public presentations).

### References

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