# Federating young researchers in microbial ecotoxicology: EcotoxicoMicYR 2021, the first international webinar organized for and by young microbial ecotoxicology researchers

Nicolas Gallois, Roxane Dhommée, Paul Braylé, Lauris Evariste, Idrissa Soumaoro, Camila Diaz-Vanegas, Floriane Larras, Giulia Cheloni

**Environmental Science and Pollution Research**
August 2022, Volume 29, Pages 65880-65885
https://doi.org/10.1007/s11356-022-22410-4
https://archimer.ifremer.fr/doc/00788/89981/



# Federating young researchers in microbial ecotoxicology: EcotoxicoMicYR 2021, the first international webinar organized for and by young microbial ecotoxicology researchers

Gallois Nicolas [1, *], Dhommée Roxane [2, 3], Braylé Paul [4], Evariste Lauris [5], Soumaoro Idrissa [6], Diaz-Vanegas Camila [7], Larras Floriane [8], Cheloni Giulia [9]

[1] Université de Lorraine, CNRS, LIEC, 54000, Nancy, France
[2] CNRS, Laboratoire Microorganismes: Génome Et Environnement (LMGE), Université Clermont Auvergne, F-63000, Clermont–Ferrand, France
[3] CNRS, Institut de Chimie de Clermont-Ferrand (ICCF), Université Clermont Auvergne, F-63000, Clermont-Ferrand, France
[4] Laboratoire d'écologie Fonctionnelle Et Environnement, Université de Toulouse, CNRS, Toulouse INP Université Toulouse 3 – Paul Sabatier (UPS), Toulouse, France
[5] Toxalim UMR1331 (Research Centre in Food Toxicology), INRAE, Toulouse University, ENVT, INP-Purpan, UPS, Toulouse, France
[6] Regional Centre of Excellency in Avian Science (CERSA), University of Lomé, Lomé, Togo
[7] HydroSciences Montpellier, Université de Montpellier, CNRS, IRD, Montpellier, France
[8] KREATiS, L'Isle-d'Abeau, France
[9] MARBEC, University Montpellier, CNRS, Ifremer, IRD, 34095, Montpellier, France

* Corresponding author : Nicolas Gallois, email address : galloisnicolas.ng@gmail.com

**Abstract :**

The EcotoxicoMicYR group was initially composed of 4 Ph.D. students and 4 post-doctoral researchers. In brief, the EcotoxicoMicYR webinar took place three Monday afternoons in a row from November 22 to December 6, 2021. These three half-day webinars reached a success beyond our expectations with 25 countries and 41 presentations. Keynote lectures were delivered by Dr Fabio Roldan (Pontificia Universidad Javeriana, Colombia), Dr Belinda Ferrari (The University of New South Wales, Australia), and Dr Ahmed Tlili (Eawag, Switzerland). Their presentations provided an insight on latest research developments in the microbial ecotoxicology field and highlighted their specific contribution to this discipline. Twenty-two oral presentations and 16 pre-recorded presentations were diffused.

**Keywords** : EcotoxicoMic, EcotoxicoMicYR, Microbial ecotoxicology, Webinar, Network

Context and objectives:

EcotoxicoMic is an open international network of partners from research, industry, and public administration. They share common interest for problematics related to Microbial Ecotoxicology, an emerging discipline facing contemporary environmental threats (Ghiglione *et al.*, 2016; Pesce *et al.*, 2020; Cébron *et al.*, 2022). More information on the network can be found on the website (https://ecotoxicomic.org/). This network, initially francophone, was opened to other countries thanks to the organization of a first international conference in 2017 (Lyon, France) and a virtual one in 2020. As of 1st January 2022, the number of members, including about one third of M.Sc., Ph.D. students and post-doctoral researchers, was 210 with 42 countries represented in the network. The EcotoxicoMic network is in full expansion

and is glad to welcome new members (30 to 40 members join each year). To do so, simply fill out the form at the following address https://ecotoxicomic.org/become-a-member/.

In order to increase and encourage the participation of young researchers (M.Sc., Ph.D. students and post-doctoral researchers) in the network, a sub-network entitled "EcotoxicoMicYR" for EcotoxicoMic Young Researchers, dedicated to and led by them, was created in 2021. This sub-group of young EcotoxicoMic members, supported by senior members, decided to get together and to propose a series of activities/initiatives. This section welcomes any M.Sc. and Ph.D. students as well as post-doctoral researchers with the desire to promote this sub-network at the international scale, with possible actions at the national level. While newly created, the EcotoxicoMicYR group, initially composed of 4 Ph.D. students and 4 post-doctoral researchers (Figure 1) was gathered with the aim to organize an international webinar: EcotoxicoMicYR 2021.

**Figure 1**: organizing committee from left to right, top lane: Ph.D. students Paul Braylé, Roxane Dhommée, Camila Diaz-Vanegas, Idrissa Soumaoro; bottom lane: post-doctoral researchers Giulia Cheloni, Lauris Evariste, Nicolas Gallois, Floriane Larras.

EcotoxicoMicYR 2021 proceedings:

Organized by and dedicated to young microbial ecotoxicologists, this series of three half-day webinars took place three Monday afternoons in a row from November 22, 2021 to December 6, 2021 (https://ecotoxicomic.org/ecotoxicomicyr_2021/). International keynote speakers, M.Sc., Ph.D. students, and post-doctoral researchers presented their research in microbial ecotoxicology to the international community as pre-recorded (3-minutes long) or live (12-minutes long) presentations. The registration was free of charges and opened to everyone (the organization costs were covered by the EcotoxicoMic network). The three webinars reached the presence of 75, 87 and 98 attendees (November 22, November 29, and December 6 respectively), representing a total of more than 760 viewing hours. Moreover, most of them stayed each Monday for the full duration of the 4 hours webinars.

Keynote lectures were delivered by Dr Fabio Roldan (Pontificia Universidad Javeriana, Colombia), Dr Belinda Ferrari (The University of New South Wales, Australia), Dr Ahmed Tlili

(Eawag, Switzerland). They presented talks entitled “Bioremediation case studies from the lab to the field: dealing with recalcitrant compounds”, “Using microbial communities as indicators of soil health in the Antarctic environment” and “Aquatic biofilms in a changing world: why they matter when assessing impacts of multiple stressors?”, respectively. Their presentations provided an insight on latest research developments in the microbial ecotoxicology field and highlighted their specific contribution to this discipline.

During the webinar, 22 oral presentations and 16 prerecorded presentations were diffused. 61% of the presenters were Ph.D. students and 27% post-doctoral researchers (Figure 2). Finally, the participation of M.Sc. students was lower than expected (12%) probably because their research time is shorter, and our webinar was scheduled during autumn long after the end of their research training period (at least in France). Nevertheless, we can only embrace that we achieve to reach M.Sc. students. University lecturers of the EcotoxicoMic network used the webinar as teaching activity for their students. The webinar participation fostered the student’s curiosity for scientific research and provided an example of international science communication activities. This educational approach was particularly interesting as one of the main objectives of the EcotoxicoMicYR team is to share and to make such events accessible to students.

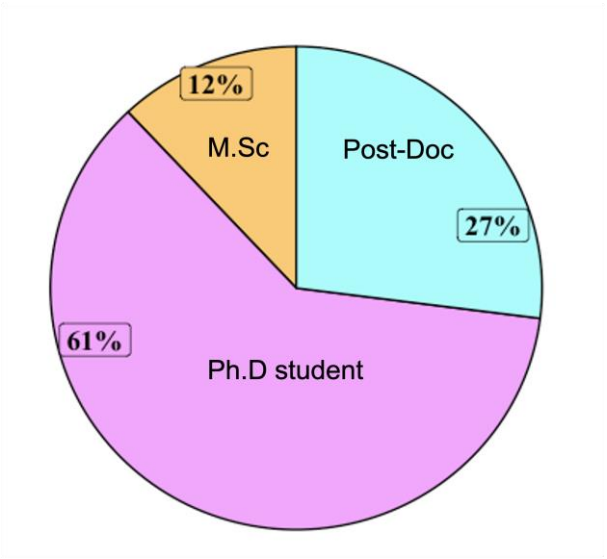


**Figure 2**: EcotoxicoMicYR attendees’ grade.

Organizers choose the SpatialChat platform to gather together speakers and participants. One of the main advantages of this virtual conference tool is the possibility to speak privately to a person while being in the same space as others (as in real life). A playful virtual space was created for all attendees with different online rooms: welcoming room**,** plenary room, coffee-break room and 6 poster rooms with the pre-recorded presentations that were accessible during the whole event. Comparably to a live congress, the interactions between attendees were possible in every room, with exception for the plenary room where only speakers allowed to reach the virtual stage could publicly communicate with the audience.

Overall, attendees were coming from up to 25 countries (Figure 3). The top 5 countries were France, Germany, Switzerland, Sweden and Spain. The 41 scientists (3 keynote speakers, 22 conference talks and 16 pre-recorded presentations) that provided a scientific communication represented 12 different countries. The majority of participants connected from France.

However, participants from all continents joined the webinar over the three afternoons, indicating that the EcotoxicomiYR webinar have the potential to become an event that may bring together young microbial ecotoxicology researchers from all over the world.

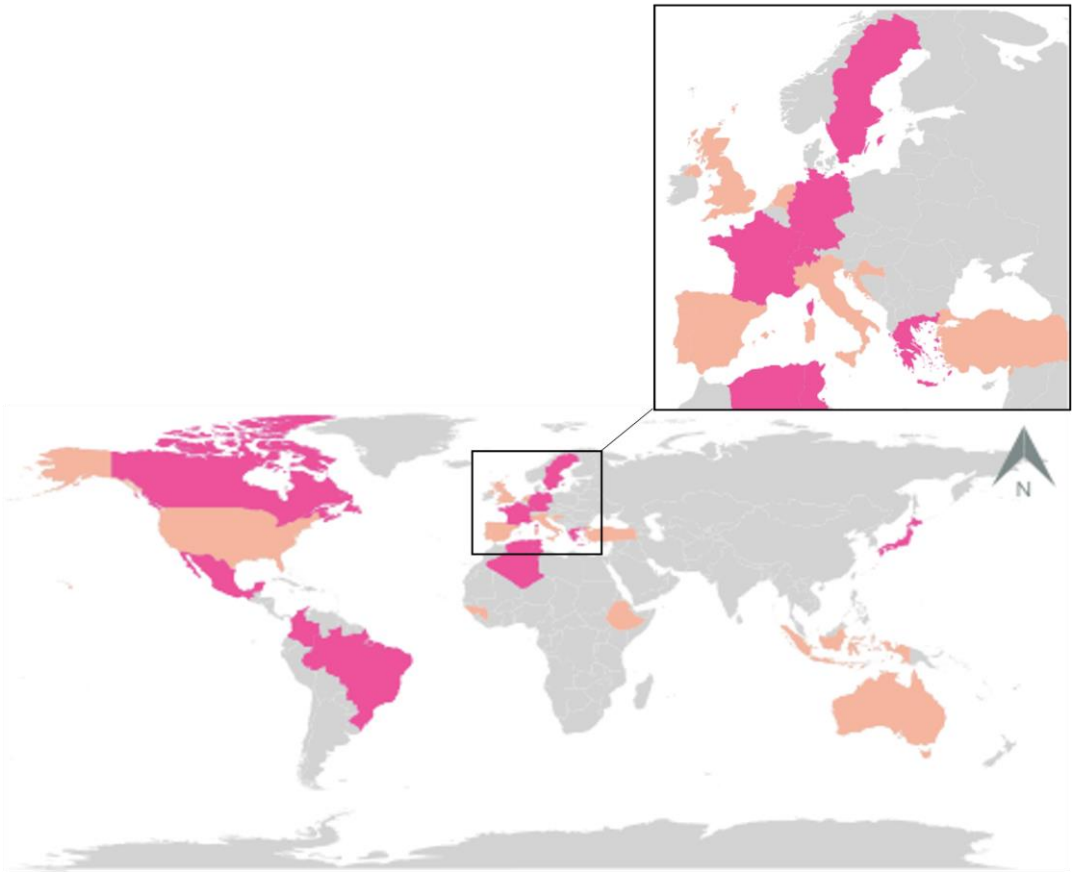


**Figure 3**: attendees' country of EcotoxicoMicYR 2021 webinar. In light orange: origin of EcotoxicoMicYR webinar attendees. In pink: origin of EcotoxicoMicYR webinar participants including keynote speakers, talks and poster presentations. The frame in black represents a focus on the European attendees.

Conference sessions and highlights

The six sessions were rather ambitious in their scope, covering some of the main questions in the field of microbial ecotoxicology. The first afternoon, we aimed at exploring the research on the role of microorganisms on contaminant dynamics, biotransformation, and bioremediation. During the second afternoon, presentations focused on microbial responses to contaminants across multiple levels of biological organization. A special session was dedicated to introducing emerging approaches in microbial ecotoxicology (*i.e*., volatolomics (Hidalgo *et al.*, 2019)). We also looked at how contaminants impacted biotic interactions. On the third afternoon, to have some insights for stakeholders, some talks focused on the use of microorganisms for environmental quality assessment. Finally, the last session aimed to investigate what are the combined responses and effects of microorganisms exposed to multiple stressors.

Our virtual conference covered a large diversity of research topics in the microbial ecotoxicology field. Works with different toxicants (metals, pesticides, antibiotics, nanoparticles, *etc.*), environments (soil, sediment, wastewater, seawater, deep-sea hydrothermal vent, *etc*.), and levels of biological organization (community, holobiont, pure

culture, *etc*.) were presented. Figure 4 highlights the word cloud created using the titles of the presentations. This is a good illustration of the research areas covered by the microbial ecotoxicology which correspond to concerns of the EcotoxicoMic network with interests, among others, in microbial communities from different environments facing various contaminants.

For each afternoon, a prize was awarded for the best oral presentation. The awarded Ph.D. students and post-doctoral (Katharine Thompson, “Glyphosate degradation by two novel *Ochrobactrum pituitosum* strains”, Microbial Ecology, Department of Geosciences, University of Tübingen, Germany - Lilian Gréau, “Response of *Populus* x *canadensis* and associated fungal endophytic communities to a PAH contamination gradient”, Université de Lorraine, CNRS, LIEC, Nancy, France - Louis Carles, “Role of wastewater microorganisms in the establishment of tolerance to micropollutants in stream periphyton”, Eawag: Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland) have been invited to present their work as speakers at the live EcotoxicoMic 2022 Conference (Montpellier, France, 15-18 November 2022). Information about this conference can be found at https://ecotoxicomic.org/ecotoxicomic-2022/.


**Figure 4:** words cloud from the titles of the abstracts presented during the EcotoxicomicYR 2021 webinar.

Conference outcomes and main conclusions

In brief, EcotoxicoMicYR webinar (1st edition) reached a success beyond our expectations with 25 countries and 41 presentations. EcotoxicoMic’s Young Researchers have the desire to repeat this event (each two years alternating with EcotoxicoMic International congress). As the format seemed to be appreciated, the EcotoxicoMicYR team will probably propose a similar webinar event for the next edition that is scheduled in November 2023. Moreover, a focus will be made to promote the broadcasting of the webinar during classes of M.Sc. students. Also, EcotoxicoMicYR wishes to promote young researchers' actions and reinforce networking at the international scale. The EcotoxicoMicYR group will organize a social evening during EcotoxicoMic 2022. This will be a great opportunity for Ph.D. students and post-doctoral

researchers from different labs and countries to meet and to share experiences. The current board would be glad to count for new members coming from different institutions and geographic locations for the upcoming EcotoxicoMicYR event. Anyone interested in joining the existing network or that wish to contribute to the organization of 2023 EcotoxicoMicYR webinar event, is warmly invited to contact us through our email address 'ecotoxicomicyr@gmail.com'.

## Acknowledgments

We would like to thank Drs Stéphane Pesce, Aurélie Cébron and Abdulsamie Hanano, members of the EcotoxicoMic steering committee, for their support during the whole process of organization, from the first meeting of the committee to the corrections of this manuscript. We also want to express our gratitude to the Rovaltain foundation for their involvement in the diffusion of the webinar and the financial management. A special acknowledgment is given to the Environmental Science and Pollution Research (ESPR) journal for the three grants awarded to the best presentations of each afternoon.

## Ethical Approval

Not applicable

## Consent to Participate

All authors have given their consent to participate to the writing and the submission of this paper.

## Consent to Publish

All authors have approved the version to be published and given their consent for the publication of this paper.

## Authors Contributions

Nicolas GALLOIS and Roxane DHOMMÉE have equally contributed to this paper as first authors. Nicolas GALLOIS, Roxane DHOMMÉE, Paul BRAYLÉ, Lauris EVARISTE, Idrissa SOUMAORO, Camila DIAZ-VANEGAS, Floriane LARRAS, Giulia CHELONI have contributed to the writing and reviewed the manuscript prior to submission.

## Funding

Not applicable

## Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Availability of data and materials

All information about the webinar is available on the website https://ecotoxicomic.org/

## References

Cébron A., Karpouzas D.G., Martin-Laurent F., Morin S., Palacios C. and Schmitt-Jansen M. (2022). Editorial: Microbial Ecotoxicology Advances to Improve Environmental and Human Health Under Global Change. Front. Microbiol. 13:870404. doi: 10.3389/fmicb.2022.870404

Ghiglione J. F., Martin-Laurent F., and Pesce S. (2016). Microbial ecotoxicology: an emerging discipline facing contemporary environmental threats. Environ. Sci. Pollut. Res. 23, 3981–3983. doi: 10.1007/s11356-015-5763-1

Hidalgo K., Ratel J., Mercier F., Gauriat B., Bouchard P., and Engel E. (2019). Volatolomics in bacterial ecotoxicology, a novel method for detecting signatures of pesticide exposure? *Frontiers in Microbiology*, 9, 3113. doi: 10.3389/fmicb.2018.03113

Pesce S., Ghiglione J.-F., Topp E., and Martin-Laurent F. (2020). Editorial: microbial ecotoxicology. *Front. Microbiol.* 11:1342. doi: 10.3389/fmicb.2020.01342