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

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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

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39 Context and objectives:

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

49 and is glad to welcome new members (30 to 40 members join each year). To do so, simply fill
50 out the form at the following address <https://ecotoxicomic.org/become-a-member/>.
51 In order to increase and encourage the participation of young researchers (M.Sc., Ph.D.
52 students and post-doctoral researchers) in the network, a sub-network entitled
53 “EcotoxicoMicYR” for EcotoxicoMic Young Researchers, dedicated to and led by them, was
54 created in 2021. This sub-group of young EcotoxicoMic members, supported by senior
55 members, decided to get together and to propose a series of activities/initiatives. This section
56 welcomes any M.Sc. and Ph.D. students as well as post-doctoral researchers with the desire
57 to promote this sub-network at the international scale, with possible actions at the national
58 level. While newly created, the EcotoxicoMicYR group, initially composed of 4 Ph.D. students
59 and 4 post-doctoral researchers (Figure 1) was gathered with the aim to organize an
60 international webinar: EcotoxicoMicYR 2021.



61
62 **Figure 1:** organizing committee from left to right, top lane: Ph.D. students Paul Braylé,
63 Roxane Dhommée, Camila Diaz-Vanegas, Idrissa Soumaoro; bottom lane: post-doctoral
64 researchers Giulia Cheloni, Lauris Evariste, Nicolas Gallois, Floriane Larras.
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66 EcotoxicoMicYR 2021 proceedings:

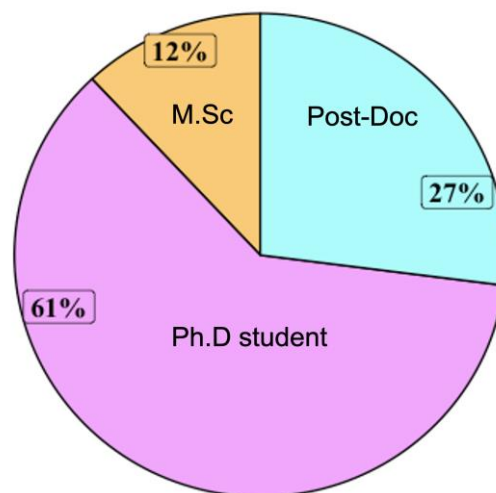
67 Organized by and dedicated to young microbial ecotoxicologists, this series of three half-day
68 webinars took place three Monday afternoons in a row from November 22, 2021 to December
69 6, 2021 (https://ecotoxicomic.org/ecotoxicomicyr_2021/). International keynote speakers,
70 M.Sc., Ph.D. students, and post-doctoral researchers presented their research in microbial
71 ecotoxicology to the international community as pre-recorded (3-minutes long) or live (12-
72 minutes long) presentations. The registration was free of charges and opened to everyone
73 (the organization costs were covered by the EcotoxicoMic network). The three webinars
74 reached the presence of 75, 87 and 98 attendees (November 22, November 29, and
75 December 6 respectively), representing a total of more than 760 viewing hours. Moreover,
76 most of them stayed each Monday for the full duration of the 4 hours webinars.
77

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

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

86

87 During the webinar, 22 oral presentations and 16 prerecorded presentations were diffused.
88 61% of the presenters were Ph.D. students and 27% post-doctoral researchers (Figure 2).
89 Finally, the participation of M.Sc. students was lower than expected (12%) probably because
90 their research time is shorter, and our webinar was scheduled during autumn long after the
91 end of their research training period (at least in France). Nevertheless, we can only embrace
92 that we achieve to reach M.Sc. students. University lecturers of the EcotoxicoMic network
93 used the webinar as teaching activity for their students. The webinar participation fostered the
94 student’s curiosity for scientific research and provided an example of international science
95 communication activities. This educational approach was particularly interesting as one of the
96 main objectives of the EcotoxicoMicYR team is to share and to make such events accessible
97 to students.



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Figure 2: EcotoxicoMicYR attendees’ grade.

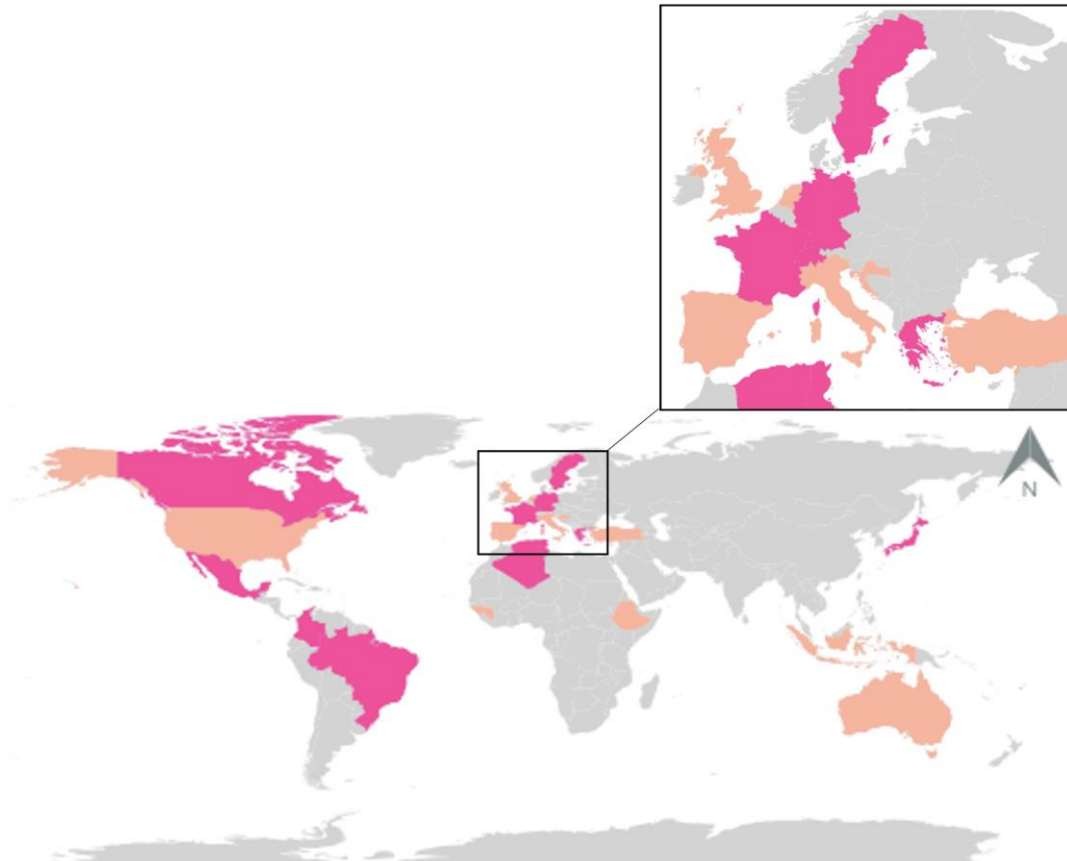
100

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

109

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

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



117 **Figure 3:** attendees' country of EcotoxicoMicYR 2021 webinar. In light orange: origin of
118 EcotoxicoMicYR webinar attendees. In pink: origin of EcotoxicoMicYR webinar participants
119 including keynote speakers, talks and poster presentations. The frame in black represents a
120 focus on the European attendees.
121
122

123 Conference sessions and highlights

124 The six sessions were rather ambitious in their scope, covering some of the main questions in
125 the field of microbial ecotoxicology. The first afternoon, we aimed at exploring the research on
126 the role of microorganisms on contaminant dynamics, biotransformation, and bioremediation.
127 During the second afternoon, presentations focused on microbial responses to contaminants
128 across multiple levels of biological organization. A special session was dedicated to
129 introducing emerging approaches in microbial ecotoxicology (*i.e.*, volatilomics (Hidalgo *et al.*,
130 2019)). We also looked at how contaminants impacted biotic interactions. On the third
131 afternoon, to have some insights for stakeholders, some talks focused on the use of
132 microorganisms for environmental quality assessment. Finally, the last session aimed to
133 investigate what are the combined responses and effects of microorganisms exposed to
134 multiple stressors.

135
136 Our virtual conference covered a large diversity of research topics in the microbial
137 ecotoxicology field. Works with different toxicants (metals, pesticides, antibiotics,
138 nanoparticles, *etc.*), environments (soil, sediment, wastewater, seawater, deep-sea
139 hydrothermal vent, *etc.*), and levels of biological organization (community, holobiont, pure

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

145 For each afternoon, a prize was awarded for the best oral presentation. The awarded Ph.D.
146 students and post-doctoral (Katharine Thompson, “Glyphosate degradation by two novel
147 *Ochrobactrum pituitosum* strains”, Microbial Ecology, Department of Geosciences, University
148 of Tübingen, Germany - Lilian Gréau, “Response of *Populus x canadensis* and associated
149 fungal endophytic communities to a PAH contamination gradient”, Université de Lorraine,
150 CNRS, LIEC, Nancy, France - Louis Carles, “Role of wastewater microorganisms in the
151 establishment of tolerance to micropollutants in stream periphyton”, Eawag: Swiss Federal
152 Institute of Aquatic Science and Technology, Dübendorf, Switzerland) have been invited to
153 present their work as speakers at the live EcotoxicoMic 2022 Conference (Montpellier, France,
154 15-18 November 2022). Information about this conference can be found at
155 <https://ecotoxicomic.org/ecotoxicomic-2022/>.

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158 **Figure 4:** words cloud from the titles of the abstracts presented during the EcotoxicoMicYR
159 2021 webinar.

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161 Conference outcomes and main conclusions

162 In brief, EcotoxicoMicYR webinar (1st edition) reached a success beyond our expectations with
163 25 countries and 41 presentations. EcotoxicoMic’s Young Researchers have the desire to
164 repeat this event (each two years alternating with EcotoxicoMic International congress). As
165 the format seemed to be appreciated, the EcotoxicoMicYR team will probably propose a
166 similar webinar event for the next edition that is scheduled in November 2023. Moreover, a
167 focus will be made to promote the broadcasting of the webinar during classes of M.Sc.
168 students. Also, EcotoxicoMicYR wishes to promote young researchers' actions and reinforce
169 networking at the international scale. The EcotoxicoMicYR group will organize a social evening
170 during EcotoxicoMic 2022. This will be a great opportunity for Ph.D. students and post-doctoral

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

177

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186

187 Ethical Approval

188 Not applicable

189

190 Consent to Participate

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

193

194 Consent to Publish

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

197

198 Authors Contributions

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

203

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207 Competing Interests

208 The authors declare that they have no known competing financial interests or personal
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210

211 Availability of data and materials

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

213

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