

IRC One Health: Cascading- and Microbiome-Dependent Effects on Multitrophic Health

Final Report

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Figure 1: IRC One Health and SAB members at the first annual meeting on 7 May 2019. The IRC One Health brought together nine research groups from the faculties of science, medicine and veterinary medicine to characterize the health impacts of chemicals across food chains using a novel, interdisciplinary approach. During its lifetime, the IRC generated several major scientific breakthroughs and had a major positive structuring effect on collaborative science at UniBe.

A. EXECUTIVE SUMMARY

The IRC One Health (2018-2024) was a strategic interdisciplinary initiative of the University of Bern that brought together nine research groups across the Faculties of Science, Medicine, and Veterinary Medicine. Led by Prof. Dr. Matthias Erb and Prof. Dr. Andrew Macpherson, the IRC investigated how environmental chemicals – pesticides, heavy metals and plant secondary metabolites – influence health across food chain systems. By linking soil, plants, animals, and humans through microbial processes, the IRC developed a systems-level perspective on health, with a special focus on microbiomes and their role in mediating health.

Over its six-year duration, the IRC established a highly productive interdisciplinary network, strengthened collaboration across faculties, supported early-career researchers, and developed innovative teaching activities. During the funding period, the IRC members generated over 490 peer-reviewed papers, won over > 41 M CHF in third party funding and founded an award-winning spin-off. Although the NCCR application “Plant Chemistry and Health” was ultimately not retained by the SNSF, the IRC had a major positive effect on inter-faculty research at UniBe. Nine early career scientists were promoted to professors at UniBe. Many of the involved PIs continue to work together with the on pressing fundamental and applied research questions through third party funded research projects. Thus, we consider the IRC One Health a major success.

B. OUTPUT

1. What knowledge did the IRC generate?

The IRC One Health generated new mechanistic knowledge on how environmental chemicals, plant-derived compounds, and microbiomes interact across the food chain to influence health from soil and plants to animals and humans. A few selected highlights are as follows:

We made several major discoveries of the role of plant secondary metabolites in structuring soil microbial communities, thereby enhancing cereal yields and reducing arsenic toxicity. Varieties that release these metabolites can be used in the field to improve productivity and reduce heavy metal toxicity.

- Thönen et al. (2023), PNAS: "Bacterial tolerance to host-exuded specialized metabolites structures the maize root microbiome". Shows that plant-specialized metabolites actively shape the maize root microbiome and provides mechanistic evidence for microbiome-mediated effects across trophic levels. Link: [PNAS](#)
- Caggia et al. (2024), PNAS: "Root-exuded specialized metabolites reduce arsenic toxicity in maize". Shows that maize root chemistry can reduce arsenic toxicity and arsenic uptake, with direct relevance for food-chain safety. Link: [PNAS](#)
- Gfeller et al. (2023), eLife: "Plant secondary metabolite-dependent plant-soil feedbacks can improve crop yield in the field". Demonstrates that benzoxazinoids exuded by maize roots condition the soil and increase subsequent wheat yield by over 4% in the field, without compromising grain quality. Link: [eLife](#), [UniBE media release](#)

We uncovered how to improve biological control agents by modifying their microbial community to tolerate plant secondary metabolites that are sequestered by an important insect pest. This discovery paves the way for the targeted improvement of biological control in pesticide free agriculture and is currently tested in the field.

- Machado et al. (2020), Nature Biotechnology: "Engineering bacterial symbionts of nematodes improves their biocontrol potential to counter the western corn rootworm". Identifies an aquaporin that can be modified in symbionts of entomopathogenic nematodes to improve their efficacy in biocontrol by providing benzoxazinoid resistance. Link: [Nature Biotechnology](#), [UniBE media release](#)

We provided novel insights into the role of the gut microbiome in arsenic metabolism and food safety. In particular, we demonstrated *in vivo* that gut microbial status can influence the arsenic species present in the gut

and modulate the disposition and accumulation of arsenic during chronic consumption of arsenobetaine-containing diets.

- Mukherjee et al. (2024), Journal of Hazardous Materials: "Microbiota-dependent in vivo biotransformation, accumulation, and excretion of arsenic from arsenobetaine-rich diet". Key output supporting the IRC gut-microbiome and food-safety line. Link: [ScienceDirect](#), [UniBE media release](#)

Using a large field experiment, we demonstrated for the first time how plant secondary metabolites in cereals influence silage quality for ruminants.

- Gross et al. (2023), Animal Feed Science and Technology: "Short communication: Metabolization of benzoxazinoids during silage fermentation of maize and their effects on silage quality". Shows that benzoxazinoids are transformed during silage fermentation and links plant metabolites to feed quality and livestock-relevant processes. Link: [ScienceDirect / DOI](#)

In a large cross-sectional study, we demonstrated how microbiomes shape the mobilization, transformation, uptake, and biological effects of chemical exposure across food chains, and how they are shaped by these processes in turn.

- Wasimuddin et al. (2025), Environmental Microbiome: "Component specific responses of the microbiomes to common chemical stressors in the human food chain". Demonstrates compartment-specific microbiome responses to shared chemical stressors along the food chain. Link: [Environmental Microbiome / DOI](#)

2. What innovations did the IRC produce?

The IRC One Health produced three types of innovations: 1) A Spin-Off, 2) An International One Health Summer School and 3) Methodological advances for the scientific community.

In the context of the IRC One Health, we discovered a novel selective antibiotic against *Helicobacter pylori*, the causal agent of peptic ulcers, gastritis and stomach cancer. This resulted in the development of a UniBe patent (in development) and the Spin-Off Enzoxa, which aims at bringing this discovery to the market. Enzoxa won the 2023 Bernese start-up competition STAGE-UP and outperformed more than 60 other projects. Link: [IFIK news](#), [uniaktuell interview](#), [UniBE innovation archive](#), [UniBE Venture Fellowship](#).

The IRC also generated innovation in teaching and training by translating its interdisciplinary research agenda into a dedicated International One Health summer school. The summer school made One Health tangible for Bachelor and Master students as well as for PhD candidates and postdoctoral researchers and was very well received by the international students that attended the summer school. [Summer School 2023 flyer](#), [UniBE International blog](#)

The IRC developed and transferred analytical methods across different biological matrices and model systems, thus empowering the involved research groups and delivering novel tools for interdisciplinary research. This included a deep evaluation and selection of primers for microbiome profiling across the food chain [Wiley / DOI](#), and secondary metabolite profiling approaches that were used to understand their effects in plants, soils, animals and humans (see reference list). In this form, the IRC created a platform for innovation that extends beyond the lifetime of the funding period and provides a strong basis for current follow-up research, external funding, and translational activities.

3. Promotion of young scientists

The IRC One Health had a major positive effect on the careers of early career scientists and has thus contributed significantly to shaping the future academic landscape. In particular, nine IRC One Health members (4 F / 5 M) received appointments as professors during the funding period or briefly after:

- PI Adrian Mestrot: Promoted to Assistant Professor (tt). at the Institute of Geography of the University of Bern, (2019, since 2022 Associate Professor)

- Associate PI Stephanie Ganai-Vonarburg: Obtained Assistant Professorship (ntt) at the Department for BioMedical Research of the University of Bern (2020, now Research Group Leader)
- PI Klaus Schläppli: Appointed as Associate Professor at the University of Basel (2020)
- PI Siegfried Hapfelmeier: Promoted to Associated Professor at the Institute for Infectious Diseases of the University of Bern (2020)
- Associate PI Christelle Robert: Obtained Assistant Professorship (ntt) at the Institute of Plant Sciences of the University of Bern (2021, permanent Lecturer since 2026)
- PostDoc Francesca Ronchi: Appointed as Associate Professor at Charité Berlin (2021)
- PI Moritz Bigalke: Appointed as Professor at TU Darmstadt (2022)
- PostDoc Aurea C. Hernández: Obtained Assistant Professorship at the Institute of Geography of the University of Bern (2022, permanent Lecturer since 2022)
- PI Josef Gross: Appointed as Assistant Professorship (tt) at the Department of Clinical Research and Veterinary Public Health (2023)

4. Third-party funding

During the funding period, members of the IRC One Health acquired more than 41 million CHF third party funding. Third party funded projects that are most directly related to the IRC are provided in Table 1 (funding volume: > 18.5 M CHF).

Table 1: Additional acquired third party funding during the funding period related to the IRC One Health.

IRC member(s)	Project name	Source	Amount
Chiaia-Hernández	ContaSed2020, 2nd International Conference on Contaminated Sediments, 14 – 18 June 2020, University of Bern, Switzerland	SNSF Scientific Exchange	20'200 CHF
Erb, Hapfelmeier	Engineering bacterial symbionts to improve the biological control of an important agricultural pest	Microbials Programme Gebert RUF Stiftung	298'000 CHF
Hapfelmeier	NCCR "Microbiomes"	SNSF	Hapfelmeier: 920'000 CHF
Ganai-Vonarburg	The role of maternal microbiota in durably shaping immunity and microbiota composition in the offspring through epigenetic mechanisms	Peter Hofschneider Stiftungsprofessur (Assistant Professorship)	1'300'000 CHF
Macpherson	Inter-microbial and host-microbial interactions that determine the trajectory of mammalian microbial colonization in early life	SNSF Sinergia	Macpherson: 900'272 CHF
Mestrot	Funding for a new mercury analyzer	Swiss Federal Office for the Environment	40'417 CHF
Mestrot	Enrichment of mercury in food chains	Swiss Federal Office for the Environment	240'000 CHF
Mestrot	Biomethylation and biovolatilisation of arsenic, antimony and mercury	SNSF Professorship (extension)	115'092 CHF
Schlaeppli	Plant Responsiveness to Microbiota	SNSF Project Grant	572'000 CHF
Spielvogel	Spatio-temporal pattern of root exudation and enzyme activities in the rhizosphere (Rhizopattern)	DFG Priority Program 2089	Spielvogel & Razavi: 195'200 EUR
Spielvogel	Deep-rooting cover crop mixtures: Creating highways to subsoil water and nutrient resources (RootWayS)	BMBF: 2020 – 2024	Spielvogel: 856'400 EUR
Erb	Mechanisms and biological consequences of benzoxazinoid resistance in natural enemies of herbivores	SNSF Project Grant	1'094'067 CHF
Erb	Rapid Volatile Release as a Response to Herbivore Induced Plant Volatiles- Mechanisms and Biological Relevance	SNSF Project Grant	721'648 CHF
Erb, Robert	Biological Impact of Benzoxazinoid Metabolization by a Specialist Root Herbivore	EU Horizon 2020 MC IEF (to Adriana Jeckel)	~200'000 CHF
Mestrot/Bigalke	Emerging challenges for soil management. The use of plastic in agriculture and its impact on soils	EU Horizon 2020 (SFS-21B-2020)	500'000 EUR

Mestrot/Bigalke	Release, biomethylation and biovolatilisation of antimony in soils. Drivers, mechanisms and global environmental implications	SNSF Project Grant	711'354 CHF
Mestrot/Bigalke	Assessing geogenic arsenic and other potentially toxic trace elements in groundwater of the Bolivian Amazon	State Secretariat for Education, Research and Innovation. Seed Money.	22'403 CHF
Mestrot/Bigalke	Microplastics in agriculture	Federal Office for Agriculture FOAG	100'000 CHF
Mestrot/Bigalke	Novel DNA-based Indicators for Soil Health and Soil Pollution Assessment – Dr. Eric Pinto-Figueroa	BRIDGE Fellowship - Proof of concept	130'000 CHF
Robert	Mechanisms and ecological relevance of direct plant responses to the third trophic level	EU Horizon 2020 (ERC-StG-2019)	1'500'000 EUR
Schlaeppli	Deciphering plant exudate and root microbiota dynamics during pathogen attack	Syngenta Fellows	280000 CHF
Mestrot/Bigalke, Hapfelmeier	New trace element speciation infrastructure to advance the research on environmentally relevant trace elements across disciplines	SNF R'equip	203'820 CHF
Macpherson/Hapfelmeier	Development of functional secretory IgA responses against the intestinal microbiota	SNSF Project Grant	1'100'000 CHF
Hapfelmeier	Engineering safety of live microbials for human health	SNSF Bridge Discovery	1'561'346 CHF
Ganal-Vonarburg	The impact of maternal microbiota and breast milk on host epigenetics and immune repertoire in the offspring	SNSF Project Grant	862'839 CHF
Chiaia-Hernández	Tracing plant protection products across the environment - Source, transport, sink, and relevance for risk assessment (TraPPP)	SNSF PRIMA	1'507'427 CHF
Schlaeppli	Specific and conserved patterns of microbiota-structuring by maize benzoxazinoids in the field	SNSF Open Access Article	2'900 CHF
Notter	Translating fundamental discoveries into an entrepreneurial journey	UniBE Venture Fellowships	100'000 CHF
Robert/Hapfelmeier/Notter/Mateo	1. Price Winner: ENZOXA, a One-Health UniBe Spin-Off developing plant metabolites for treatment against <i>Helicobacter pylori</i>	STAGE UP Bernese business creation competition, Entrepreneurship Center UniBe	10'000 CHF
Notter/Hapfelmeier/Robert	Benzoxazinoids as a novel and selective antibiotic to treat <i>Helicobacter pylori</i>	UniBe Venture Fellowship; Innovation Office UniBe	100'000 CHF
Schlaeppli	Decoding microbiota feedbacks on plants - mifeePs	EU Horizon Europe (ERC-2021-CoG)	2'100'000 CHF
Erb	Canopy Waves - Volatile Information Transfer Across Multiple Plants	EU Horizon Europe (ERC-2021-CoG)	2'000'000 CHF
Mestrot/Hapfelmeier	Gut microbiome mediated arsenobetaine degradation	Federal Office for Food Safety	300'000 CHF

C. LIST OF PUBLICATIONS

During the funding period, members of the IRC One Health published > 490 peer reviewed articles. Below, selected publications that involve several IRC One Health members or groups (indicated in bold) are shown.

1. **K. Schlaeppli, J. J. Gross, S. Hapfelmeier, M. Erb**, Plant chemistry and food web health. *New Phytologist*, 2021.
2. S. Cadot, **H. Guan, M. Bigalke**, J.-C. Walser, G. Jander, **M. Erb**, M. van der Heijden M, **K. Schlaeppli**, Specific and conserved patterns of microbiota-structuring by maize benzoxazinoids in the field. *Microbiome* **9**, 2021.
3. Y. Bahtiyar, C. Mooser, I. Keller, H. Li, J. Zimmermann, L. Bosshard, T. Fuhrer, M. Gomez de Agüero, N. F. Trigo, H. Tschanz-Lischer, J. P. Limenitakis, W.-D. Hardt, K. D. McCoy, B. Stecher, L. Excoffier, U. Sauer, **S. C. Ganal-Vonarburg, A. J. Macpherson**, Long-term evolution and short-term adaptation of microbiota strains and sub-strains in mice. *Cell Host & Microbe*, 2021.
4. S. Makri, G. Wienhues, **M. Bigalke**, A. Gilli, F. Rey, W. Tinner, H. Vogel, **M. Grosjean**, Variations of sedimentary Fe and Mn fractions under changing lake mixing regimes, oxygenation and land surface processes during Late-glacial and Holocene times. *Science of the Total Environment* **755**, 1-12 (2021).

5. R. A. R. Machado, V. Theepana, **C. A. M. Robert**, T. Züst, L. Hu, Q. Su, B. C. J. Schimmel, **M. Erb**, The plant metabolome guides fitness-relevant foraging decisions of a specialist herbivore. *PLoS Biology* **19**, 1-29 (2021).
6. T. Roder, D. Wuthrich, C. Bär, Z. Sattari, U. von Ah, **F. Ronchi**, **A. J. Macpherson**, **S. C. Ganai-Vonarburg**, **R. Bruggmann**, G. Vergeres, In silico comparison shows that the pan-genome of a dairy-related bacterial culture collection covers most reactions annotated to human microbiomes. *Microorganisms* **8**, 1-16 (2020).
7. **S. C. Ganai-Vonarburg**, M. W. Hornef, **A. J. Macpherson**, Microbial-host molecular exchange and its functional consequences in early mammalian life, *Science* **368**, 604-607 (2020).
8. L. Muri, S. Oberhänsli, M. Buri, Michelle; D. Le Ngoc, D. Grandgirard, **R. Bruggmann**, R. M. Muri, **S. L. Leib**, Repetitive transcranial magnetic stimulation activates glial cells and inhibits neurogenesis after pneumococcal meningitis. *PLoS ONE* **15**, 1-17 (2020).
9. **Wasimuddin**, **K. Schlaeppli**, **F. Ronchi**, **S. L. Leib**, **M. Erb**, **A. Ramette**, Evaluation of primer pairs for microbiome profiling from soils to humans within the One Health framework. *Molecular Ecology Resources* **20**, 1558-1571 (2020).
10. T. Schneider, B. A. Musa Bandowe, M. **Bigalke**, **A. Mestrot**, H. Hampel, P. V. Mosquera, L. Fränkl, G. Wienhues, H. Vogel, W. Tylmann, **M. Grosjean**, 250-year records of mercury and trace element deposition in two lakes from Cajas National Park, SW Ecuadorian Andes. *Environmental Science and Pollution Research*, 1-17 (2020).
11. H. Li, J. P. Limenitakis, V. Greiff, B. Yilmaz, O. P. Schären, C. Urbaniak, M. Zünd, M. Lawson, I. Young, S. Rupp, M. Heikenwälder, K. D. McCoy, **S. Hapfelmeier**, **S. C. Ganai-Vonarburg**, **A. J. Macpherson**, Mucosal or systemic microbiota exposures shape the B cell repertoire. *Nature* **584**, 274-278 (2020).
12. S. Cadot, **V. Gfeller**, L. Hu, N. Singh, A. Sanchez-Vallet, G. Glauser, D. Croll, **M. Erb**, M. Heijden, **K. Schlaeppli**, Soil composition and plant genotype determine benzoxazinoid-mediated plant-soil feedbacks in cereals. *Plant Cell Environ.*, **44(12)**, 3502-3514 (2021).
13. L. Hu, Z. Wu, **C. A.M. Robert**, X. Ouyang, T. Züst, **A. Mestrot**, J. Xu, **M. Erb**, Soil chemistry determines whether defensive plant secondary metabolites promote or suppress herbivore growth. *Proc. Natl. Acad. Sci. U. S. A*, **118(43)** (2021).
14. **J. J. Gross**, **P. Mateo**, D. Ramhold, E. Kramer, **M. Erb**, **C. A. M. Robert**, Turnover of benzoxazinoids during the aerobic deterioration of maize silage (*Zea mays*). *Journal of agricultural and food chemistry* **71(5)**, 2370-2376 (2023).
15. **V. Gfeller**, S. Cadot, J. Waelchli, S. Gulliver, C. Terrattaz, **L. Thoenen**, **P. Mateo**, **C. A. M. Robert**, F. Mascher, T. Steinger, **M. Bigalke**, **M. Erb**, **K. Schlaeppli**, Soil chemical and microbial gradients determine accumulation of root-exuded secondary metabolites and plant-soil feedbacks in the field. *J Sustain Agric Environ.* **2**, 173–188 (2023).
16. X. Liu, Y. Huang, **H. Guan**, M. Wiggenhauser, **V. Caggia**, **K. Schlaeppli**, **A. Mestrot**, **M. Bigalke**, Soil (microbial) disturbance affect the zinc isotope biogeochemistry but has little effect on plant zinc uptake. *Science of the Total Environment* **875**, 1-7 (2023).
17. A. M. Jeckel, F. Beran, T. Züst, G. Younkin, G. Petschenka, P. Pokharel, D. Dreisbach, **S. C. Ganai-Vonarburg**, **C. A. M. Robert**, Metabolization and sequestration of plant specialized metabolites in insect herbivores: Current and emerging approaches. *Frontiers in physiology* **13**, 1-24 (2022).
18. **J. J. Gross**, **K. Schlaeppli**, U. Wyss, E. Kramer, D. Ramhold, **P. Mateo**, **C. A. M. Robert**, **M. Erb**, Conversion of benzoxazinoids during ensiling of maize. *Journal of dairy science*, **105**, 298 (2022).
19. **J. J. Gross**, **P. Mateo**, D. Ramhold, E. Kramer, **C. A. M. Robert**, **M. Erb**, Changes of benzoxazinoids during aerobic deterioration of maize silage. *Journal of dairy science*. **105**, 298-299 (2022).
20. **V. Gfeller**, J. Waelchli, S. Pfister, G. Deslandes-Hérolde, F. Mascher, G. Glauser, Y. Aeby, **A. Mestrot**, **C. A. M. Robert**, **K. Schlaeppli**, **M. Erb**, Plant secondary metabolite-dependent plant-soil feedbacks can improve crop yield in the field. *eLife*. 1-20 (2023).
21. **J.J. Gross**, **P. Mateo**, **K. Schlaeppli**, U. Wyss, E. Kramer, D. Ramhold, **M. Erb**, **C.A. Robert**, Short communication: Metabolization of benzoxazinoids during silage fermentation of maize and their effects on silage quality, *Animal Feed Science and Technology* **304**, 115748 (2023).
22. **L. Thoenen**, C. Giroud, M. Kreuzer, J. Waelchli, **V. Gfeller**, G. Deslandes-Hérolde, **P. Mateo**, **C.A.M. Robert**, C.H. Ahrens, I. Rubio-Somoza, **R. Bruggmann**, **M. Erb**, **K. Schlaeppli**, Bacterial tolerance to host-exuded specialized metabolites structures the maize root microbiome, *Proc. Natl. Acad. Sci. U. S. A.* **120**, e2310134120 (2023).

23. **L. Thoenen, M. Kreuzer, C. Pestalozzi, M. Florean, P. Mateo, T. Zuest, A. Wei, C. Giroud, L. Rouyer, V. Gfeller, M. Notter, E. Knoch, S. Hapfelmeier, C. Becker, N. Schandry, C. A. M. Robert, T. G. Koellner, R. Bruggmann, M. Erb, K. Schlaeppli,** The lactonase BxdA mediates metabolic specialisation of maize root bacteria to benzoxazinoids. *Nature communications*. **15:6535**, 1-17 (2024).
24. **V. Caggia, J. Waelchli, A.C. Chiaia-Hernandez, L. Weihermueller, M. Grosjean, S. Spielvogel, K. Schlaeppli,** Glyphosate and terbutylazine effects on soil functions, microbiome composition and crop performance, *Applied Soil Ecology* **191**, 105036 (2023).
25. **V. Caggia, J. Wälchli, G. Deslandes-Hérolde, P. Mateo, C.A.M. Robert, H. Guan, M. Bigalke, S. Spielvogel, A. Mestrot, K. Schlaeppli, M. Erb,** Root-exuded specialized metabolites reduce arsenic toxicity in maize, *Proc. Natl. Acad. Sci. U. S. A.* **121**, e2314261121 (2024).
26. **V. Gfeller, L. Thoenen, M. Erb,** Root-exuded benzoxazinoids can alleviate negative plant-soil feedbacks, *New Phytol.* **241**, 2575–2588 (2024).
27. **H. Guan, V. Caggia, A. Gómez-Chamorro, D. Fischer, M. Coll-Crespí, X. Liu, T. Chávez-Capilla, K. Schlaeppli, A. Ramette, A. Mestrot, M. Bigalke,** The Effects of Soil Microbial Disturbance and Plants on Arsenic Concentrations and Speciation in Soil Water and Soils, *Expo Health* **16**, 805–820 (2024).
28. **M. Mukherjee, L. Brandenburg, Y. Dong, S. Pfister, A. Sidler, A. Ramette, A. Mestrot, T. Chávez-Capilla, S. Hapfelmeier,** Microbiota-dependent in vivo biotransformation, accumulation, and excretion of arsenic from arsenobetaine-rich diet, *J. Hazard. Mater.* **480**, 136463 (2024).
29. **G. Pimentel, T. Roder, C. Bär, S. Christensen, Z. Sattari, C. Kalbermatter, U. von Ah, C.A.M. Robert, P. Mateo, R. Bruggmann, S.C. Ganai-Vonarburg, G. Vergères,** Maternal consumption of yoghurt activating the aryl hydrocarbon receptor increases group 3 innate lymphoid cells in murine offspring, *Microbiol. Spectr.* **12**, e0039324 (2024).
30. **Wasimuddin, A. Chiaia-Hernandez, C. Terrettaz, L. Thoenen, V. Caggia, P. Mateo, M. Coll-Crespí, M. Notter, M. Mukherjee, T. Chavez-Capilla, F. Ronchi, S.C. Ganai-Vonarburg, M. Grosjean, M. Bigalke, S. Spielvogel, A. Macpherson, A. Mestrot, S. Hapfelmeier, M. Erb, K. Schlaeppli, A. Ramette,** Component specific responses of the microbiomes to common chemical stressors in the human food chain, *Environ. Microbiome* **20**, 43 (2025).
31. **L. Thoenen, C. Pestalozzi, T. Zuest, M. Kreuzer, P. Mateo, M. Karasawa, G. Deslandes, C.A.M. Robert, R. Bruggmann, M. Erb, K. Schlaeppli,** Synthetic communities of maize root bacteria interact and redirect benzoxazinoid metabolism, *mSphere* **10**, e0015925 (2025).
32. **H. Guan, V. Caggia, A. Gómez-Chamorro, M. Coll-Crespí, T. Chávez-Capilla, K. Schlaeppli, A. Ramette, A. Mestrot, M. Bigalke,** Soil Indigenous Microbes Interact with Maize Plants in High-Arsenic Soils to Limit the Translocation of Inorganic Arsenic Species to Maize Upper Tissues, *Expo Health* **17**, 201–219 (2025).