

Swiss Chemical Society (SCS)

# *Symposium on Chemical Ecology 2026 (ChemEco26)*

February 11, 2026, 09.00 – 18.00h  
University of Neuchâtel



**unine**<sup>•</sup>  
Université de Neuchâtel



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## Symposium on Chemical Ecology 2026

Switzerland has a distinguished track record of achievements in Chemical Ecology, particularly in agricultural applications and beyond. With the growing importance of understanding ecosystems and developing sustainable solutions, advances in Chemical Ecology represent a promising path forward. Given the highly interdisciplinary nature of Chemical Ecology, it is essential to nurture the Swiss scientific community, celebrate past achievements, and collectively explore future perspectives.

### Target audience

Swiss Scientific Community including and private R&D organizations.

We are organizing the first National Symposium on Chemical Ecology to honor Prof. Ted Turlings' distinguished career and advance this vital interdisciplinary field in Switzerland. We expect 60 participants, and the target audience includes academic researchers, industry professionals, and early-career scientists.

### Aims

- Advance chemical ecology as a vital interdisciplinary field bridging chemistry, biology, and agriculture.
- Showcase cutting-edge research and major developments from Swiss research institutions.
- Foster and strengthen collaborative networks among Swiss and international experts in the field.
- Create opportunities for early-career Swiss scientists to exchange ideas and build connections in chemical ecology.
- Celebrate the distinguished career and significant contributions of Prof. Ted Turlings to chemical ecology in Switzerland and globally.

### Registration

Free admission for all participants.

Coffee and lunch is provided by the organizers.

### Conference Location

University of Neuchâtel  
Faculté des Sciences  
Institute of Biology  
Petit auditoire, Emile-Argand 11  
2000 Neuchâtel

### Organizing Committee

Dr. Claudio Screpanti, Syngenta Crop Protection AG  
Prof. Sergio Rasmann, University of Neufchatel  
Dr. Ivan Hiltbold, Agroscope  
Prof. Christelle Robert, Bern University

### Symposium Office

SCS Head Office, Bern  
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<https://chemeco26.scg.ch>

## Program

- 08.30 Opening of the registration desk. Welcome coffee
- 09.00 Welcome and symposium opening  
David Spichiger, SCS Executive Director  
Dr. Claudio Screpanti, Syngenta Crop Protection AG
- 09.10 Prof. Matthias Erb, University of Bern  
«Swiss chemical ecology meeting: past, present and future»
- 09.20 Prof. Ted Turlings, University of Neuchâtel  
«My life in chemical ecology»
- 10.00 Break and poster session

## Session 1 - Chemical Ecology of Plant-Herbivore Interactions

Chair: Prof. Christelle Robert, Bern University

- 10.20 Prof. em. Ted Farmer, University of Lausanne  
«Title»
- 10.50 Baptiste Bovay, Université de Neuchâtel  
«Climate-dependent trophic interactions restructure plant chemistry and ecosystem functioning»
- 11.05 Dr. Mitchel E. Bourne, University of Zurich  
«Aphid parasitism alters induced plant responses allowing a hyperparasitoid to locate its hidden parasitoid host»

## Session 2 - Molecular Mechanisms

Chair: Prof. Matthias Erb, University of Bern

- 11.20 Prof. Philippe Reymond, University of Lausanne  
«Insect egg-derived phospholipids trigger immune responses in Arabidopsis thaliana»
- 11.50 Dr. Hao Yu, University of Bern  
«A novel uptake pathway allows plants to perceive volatiles with closed stomata»
- 12.05 Marina Garcia-Alonso, University of Bern  
«Spatially resolved real-time volatile profiling reveals novel plant volatile release patterns in open headspace environments»
- 12.20 Lunch break and poster session

## Session 3 - Evolutionary Biology

Chair: Prof. Sergio Rasmann, University of Neuchâtel

- 13.45 Prof. Florian Schiestl, University of Zurich  
«Title»
- 14.15 Dr. Emilio Guerrieri, Institute for Sustainable Plant Protection URT IPSP-DISIT  
«Root exudome: the hidden world of plant communication»
- 14.30 Dr. Quint Rusman, University of Zürich  
«Coevolution in a warming world: an experimental test of the geographic mosaic of coevolution»

## Session 4 – Ecometabolomics

Chair: Dr. Emmanuel Defosse, University of Neuchâtel

- 14.45 Dr. Thomas Dussarrat, Universität Bielefeld  
«Spatial and evolutionary drivers of phytochemical diversity»
- 15.15 Celilia Brunetti, IPSP-CNR  
«Impact of Quercus ilex Dieback on the Composition of Biogenic Volatile Organic Compounds in a Mediterranean Forest»
- 15.30 Mazzarine Laboureau, Neuchâtel University  
«Uncovering the Chemical Signature of Neuchâtel Absinthe Artemisia absinthium L.»
- 15.45 Short break

## Session 5 – Agroecology

Chair: Dr. Ivan Hiltbold, Agroscope

- 16.00 Prof. Consuelo De Moraes, ETH Zurich  
«Bumblebee Leaf-Damaging Behavior and Its Effects on Plant Flowering»
- 16.30 Jasmine Cadena i Canals, Agroscope  
«Cultivar-Dependent Plant–Insect Interactions Explain Differential Incidence Of Flavescence Dorée In Swiss Vineyards»
- 16.45 Lea Bolis, University of Neuchâtel  
«Interspecific plant interactions hamper host seeking efficiency of two important pests of oilseed rape»
- 17.00 Conclusive Remarks  
Dr. Ivan Hiltbold & Dr. Claudio Screpanti
- 17.10 Apéro and networking

The Event is supported by



## Poster Session

The poster session takes place during breaks and the lunch time, from 12.20h - 13.45h.  
Make sure that you pin your poster to the panel until 10.00h.

### Agroecology

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**Dr. Alan Kergunteuil**, INRAE, Paris

«Plant-plant communication in domesticated tomato : work-in-progress to tease apart defense induction and priming»

**Dr. Diana la Forgia**, Agroscope

«Signals in the dark: enhancing *Cydia pomonella* monitoring with kairomones and UV light traps»

**Dr. Laurie Magnin**, Agroscope Changins

«What roles do glucosinolates and morphological traits play in limiting *Psylliodes chrysocephala* larval infestation across crop variety and companion planting? A field investigation»

**Dr. Joelle Schläpfer**, Agroscope

«How to harness chemical crosstalk of plants for sustainable agriculture»

### Ecometabolomics

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**Dr. Pierre Mateo**, Universität Bern

«Insights into the Biosynthetic Pathway of Multihexose Benzoxazinoids in Maize (*Zea mays*)»

### Evolutionary biology

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**Yulisa Moreno Patino**, University of Zürich

«Skin microbes, volatiles, and vector behaviour: A strain-level perspective»

### Molecular mechanisms

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**Dr. Andrew Quinn**, Université de Lausanne

«Reciprocal interactions between agrochemicals and the commensal gut microbiota impact honeybee health»

**Salomé Ifergan**, INRAE

«Exploring and characterising the role of volatile organic compounds from aromatic plants to disrupt interactions between grapevines and the insect vector, *Scaphoideus titanus*»

**Dr. Valentina Lazazzara**, IPSP, institute for sustainable Plant protection, National Research Council (CNR), Italy

«Female-associated semiochemicals as candidates in the pine shoot beetle *Tomicus destruens*»

**Dr. Clémence Nicollerat**, Institute of Plant Sciences, University of Bern

«Systemic defense induction by volatiles renders plants susceptible to manipulation by insect herbivores»

**Rebekka Ricci**, University of Bern

«Dietary plant metabolites as modulators of gut microbial dynamics»

**Prof. Christelle Robert**, University of Bern

«E-NICHE: A European Network In Chemical Ecology: Translating the language of life into sustainability»

**Johanna Visconti**, Institute of Plant Sciences University of Bern

«From Diet to Microbiome: Exposure, Metabolism, and Gut Interactions of Benzoxazinoids»

**Ayomide Joseph Zannou**, Agroscope/University of Bern

«Tomato plant-mediated physical and chemical defenses shape tritrophic interactions between an herbivorous pest and its predator»

# Lecture Abstracts

## **Swiss chemical ecology meeting: past, present and future**

Matthias Erb

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Ted Turlings is a pioneer and a true giant in Chemical Ecology. His work has shaped the past, present, and future of the field, both in Switzerland and globally. To celebrate his achievements and “retirement” (in name only), I will briefly present his career and major contributions. I will also share some anecdotes and personal experiences with Ted as a mentor, colleague, and friend.

## **Climate-dependent trophic interactions restructure plant chemistry and ecosystem functioning**

Baptiste Bovay<sup>1†\*</sup>, Pilar Fernandez-Conradi<sup>1,2†</sup>, Mathis Joz-Roland<sup>1</sup>, Gilles Blandenier<sup>3</sup>, Emmanuel Defosse<sup>1</sup>, Gaétan Glauser<sup>4</sup>, Sergio Rasmann<sup>1</sup>

<sup>1</sup> Laboratory of Functional Ecology, Institute of Biology, University of Neuchâtel,  
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<sup>4</sup> Neuchâtel Platform of Analytical Chemistry, University of Neuchâtel, CH-2000 Neuchâtel, Switzerland

† Shared first co-authorship

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Trophic interactions are fundamental to understand the functioning and persistence of ecosystems. One of the greatest current challenges in ecology is to predict how ecosystems will face the changes induced by climate change. Here we investigate this question with multi-trophic communities in common garden experiments along an elevation gradient as a proxy for different climatic conditions. We monitored the combined influence of trophic levels and climatic conditions on plant growth, herbivory, phytochemistry and organic matter degradation rate. We found that the outcome of trophic interaction is strongly elevation-dependant with plants being unaffected to herbivory/predation pressure at optimal temperature while losing their ability to defend themselves efficiently under cooler or warmer temperatures, which in turn influences organic matter decomposition. This study is thus the first to reveal current outcomes of trophic interactions and ecosystem functioning along elevation, as well as how they may change under future climate scenarios.

## Aphid parasitism alters induced plant responses allowing a hyperparasitoid to locate its hidden parasitoid host

Mitchel E. Bourne<sup>1,2</sup>, Alessia Vitiello<sup>1</sup>, Gabriel A. Charvalakis<sup>1,3</sup>, Leandra Meerkerk<sup>1</sup>, Berhane T. Weldegergis<sup>1</sup>, Karen J. Kloth<sup>1</sup>, Erik H. Poelman<sup>1</sup>

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Plants typically host insect communities composed of multiple trophic levels that are intricately linked through interactions mediated by the shared food plant. Hyperparasitoids are top-level carnivores in such systems, preying on parasitoid larvae developing inside herbivores. These hyperparasitoids can dramatically reduce the effectiveness of aphid biological control, but how they locate parasitised aphids remained unknown.

In this study [1], we compared two aphid–parasitoid systems occurring on the same host plant to test whether a common aphid hyperparasitoid uses plant volatiles induced by parasitised aphids to locate its host. In addition, we combined behavioural assays with transcriptomic analyses, volatile profiling and aphid feeding behaviour measurements to investigate the underlying mechanisms.

The aphid hyperparasitoid responded to volatile cues induced specifically by its primary host–parasitoid association to locate its concealed host. Transcriptomic analysis indicated that parasitism attenuated plant defence responses to aphid feeding, with changes in homoterpene biosynthesis observed only in the primary host–parasitoid association. In both systems, parasitised aphids increased their xylem feeding activity.

These findings show that parasitism reshapes plant signalling in ways that enable hyperparasitoids to detect hidden hosts via herbivore-induced cues. This interaction web mirrors caterpillar-based systems, despite fundamental differences in herbivore feeding strategies and their induced plant responses.

[1] Mitchel E. Bourne, Alessia Vitiello, Gabriel A. Charvalakis, Leandra Meerkerk, Berhane T. Weldegergis, Karen J. Kloth, Erik H. Poelman, *New Phytologist*, **2025**, *Early View*.

## **Insect egg-derived phospholipids trigger immune responses in *Arabidopsis thaliana***

Philippe Reymond

Department of Plant Molecular Biology, University of Lausanne

*Arabidopsis* recognizes insect egg-derived phosphatidylcholine (PC) and triggers defense responses, including a burst of reactive oxygen species, salicylic acid accumulation, defense gene expression and localized cell death. Intriguingly, PC is converted to phosphatidic acid (PA) in the extracellular space by plant phospholipases D. PA then interacts with membrane-localized receptors LecRK-I.1 and LecRK-I.8 to activate downstream signalling events. Furthermore, the glutamate receptor like 2.7 modulates immunity by inducing cytosolic Ca<sup>2+</sup> accumulation upon activation by a potential release of glutamate from eggs. Thus, although they appear as inert structures deposited on leaves, insect eggs contain chemical signals that drastically affect their interaction with host plants. Also, our data provide a rare example of extracellular modification of a non-self molecule to trigger defenses.

## A novel uptake pathway allows plants to perceive volatiles with closed stomata

Hao Yu, Tristan M. Cofer, Heike Lindner, Michael T. Raissig, Lei Wang, Antonio Aristides Pereira Gomes Filho, Jamie M. Waterman, Christelle A. M. Robert, Matthias Erb

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Plants can perceive and respond to volatile organic compounds (VOCs) from their environment [1, 2]. VOCs are generally thought to be taken up by open stomata, thus severely limiting VOC perception under stress [3-5]. Here, we asked how plants may overcome this sensory limitation. We took advantage of the fact that the Crassulacean acid metabolism (CAM) plant *Kalanchoë laxiflora* opens its stomata at night and closes them during the day to assess the role of stomatal and non-stomatal VOC uptake independently of photosynthesis [6]. We find that 80% of the highly conserved green leaf volatile (*Z*)-hexenyl acetate is taken up by stomata, while 20% is taken up through a novel, non-stomatal pathway. The pathway shows a preference for lipophilic VOCs. Neither hydathodes nor residual stomatal conductance can account for non-stomatal uptake. We find that the non-stomatal pathway is sufficient for *K. laxiflora* to perceive exogenous VOCs and activate its defenses. Together, these results reveal a previously unrecognized route for volatile uptake and demonstrate how plants can perceive airborne chemical cues with closed stomata.

### References

- [1] R. Escobar-Bravo, P.A. Lin, J.M. Waterman, M. Erb, *Natural product reports*, **2023**, *40*, 840-865.
- [2] A. Brosset, J.D. Blande, *Journal of experimental botany*, **2022**, *73*, 511-528
- [3] F.A. Maleki, I. Seidl-Adams, G.W. Felton, M.F. Kersch-Becker, J.H. Tumlinson, *Journal of Experimental Botany*, **2024**, *75*, 6872-6887.
- [4] N.M. Aguirre, J.M. Grunseich, A.F. Lima, S.D. Davis, A.M. Helms, *Plant, Cell & Environment*, **2023**, *46*, 2017-2030.
- [5] G. Arimura, T. Uemura, *Trends in Plant Science*, **2025**, *30*, 105 – 115.
- [6] S.F. Boxall, N. Kadu, L.V. Dever, J. Kneřová, J.L. Waller, P.J.D. Gould, J. Hartwell, *The Plant Cell*, **2020**, *32*, 1136-1160.

## **Spatially resolved real-time volatile profiling reveals novel plant volatile release patterns in open headspace environments**

Marina Garcia-Alonso, Tristan M. Cofer, Matthias Erb

(Institute of Plant Sciences, University of Bern, Altenbergrain 21, Bern, Switzerland)  
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Volatile organic compounds (VOCs) shape ecological interactions between plants and other organisms. Yet most of our current knowledge is based on constrained dynamic headspace systems (e.g. glass bottles), and we know relatively little about volatile dynamics under realistic, open-air conditions. To address this limitation, we developed a field-compatible analytical system that combines proton-transfer-reaction time-of-flight mass spectrometry (PTR-ToF-MS) with an automated robotic sampling arm that allows real-time measurements of VOCs within a defined vertical plane. Using this system, we mapped emission patterns of maize plants that were induced by mechanical damage, herbivore feeding, and the volatile (Z)-3-hexenyl acetate (HAC). Wounding and herbivory resulted in highly localised VOC emissions around the wound site. HAC exposure generated broader and more diffuse VOC emission patterns that depended on the site of exposure. Our system is thus capable of mapping volatile dynamics in open headspace environments and allows us to uncover novel emission patterns. This work provides a foundation for a more realistic understanding of volatile emission and response patterns in natural and agricultural systems in the future.

## Root exudome: the hidden world of plant communication

Emilio Guerrieri, Sergio Rasmann

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Belowground plant-plant communication has received little attention when compared to what has been observed aboveground, particularly when studying the emission and perception of volatile organic compounds. Nonetheless, recent evidence suggests that plants can also interact via underground communication, mediated by root exudates. For example, the neurotransmitter L-DOPA, released belowground by broad bean roots upon aphid attack, has been demonstrated to induce in conspecific neighbouring plants the release of specific volatile organic compounds aboveground which are attractive for the aphid parasitoid [1]. Now, whether similar chemically mediated interactions are widespread in nature remains to be assessed. Preliminary observations using tomato plants, show that herbivore attack also alters the composition of root exudates whose activity in terms of conspecific induction is currently being investigated. To date, the study, characterization, and role of root exudates in plant communication is still largely unexplored, but, when confirmed, it could offer novel tools for the sustainable protection of cultivated plants [2] [3].

[1] P.Cascone, J. Vuts, M.A. Birkett, S. Dewhurst, S. Rasmann, J.A. Pickett, E. Guerrieri, *Ecology Letters*, **2023**, *26*, 460-469.

[2] E. Guerrieri, S. Rasmann, *Science*, **2024**, *69*, 500-510.

[3] E. Guerrieri, S. Rasmann, *Ent. Gen.*, **2024**, *44*, 1081-1090

## **Coevolution in a warming world: an experimental test of the geographic mosaic of coevolution**

Quint Rusman, Tyler Figueira, Juan Traine, Florian P. Schiestl

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According to the geographic mosaic theory of coevolution (GMTC), coevolution varies with abiotic and biotic environmental factors. We assessed this hypothesis using experimental plant-butterfly coevolution and by testing the effects of temperature and the presence of mutualistic bumblebees on co-divergence during six generations of selection. Butterflies are mutualistic by pollinating plants and antagonistic by ovipositing on plants from which caterpillars feed. We found unique plant-butterfly coevolutionary trajectories in response to abiotic and biotic factors: plants evolved strong herbivore resistance when exposed to either bumblebee presence or elevated temperatures, while their combination led to less strong plant-resistance evolution and the evolution of butterfly-foraging traits. We provide experimental proof for the GMTC and show rapid divergent coevolution to the combination of local abiotic and biotic conditions.

## Impact of *Quercus ilex* Dieback on the Composition of Biogenic Volatile Organic Compounds in a Mediterranean Forest

Cecilia Brunetti<sup>1</sup>, Antonella Gori<sup>2</sup>, Francesca Alderotti<sup>1</sup>, Dalila Pasquini<sup>2</sup>, Francesco Ferrini<sup>2</sup>, Mauro Centritto<sup>1</sup>

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Climate change is impairing tree physiology and growth, causing an increase in tree dieback in many Mediterranean forests. Mediterranean vegetation is known for emitting substantial amounts of Biogenic Volatile Organic Compounds (BVOCs), with their emission and biosynthesis being highly sensitive to environmental conditions. These compounds have a key antioxidant function for plant tissues, thus improving ozone and drought tolerance, while also acting as pollinator attractors and repellents for dangerous herbivorous insects (contributing to the taste and odour of different plants). Our study applied a fast and easy-to-handle analytical methodology to sample BVOCs using solidphase microextraction (SPME) fibres at the canopy level. An improvement of BVOCs adsorption from SPME fibres was obtained by coupling the fibres with fans to create a dynamic sampling system (DBSS) and the results obtained showed high efficiency and sensitivity of SPME fibres, reducing sampling time. These DBSS devices were used to seasonally monitor the changes in BVOC emission of a *Quercus ilex* L. (holm oak) coastal forest in Southern Tuscany (Maremma Regional Park, Grosseto, Italy). In particular, we evaluated the BVOC emissions and the relationship with the changes in understory species composition in two forest stands characterized by different levels of holm oak crown defoliation (low and high defoliation, LD and HD) over three years. We found significant changes in the understory plant community following holm oak decline, observing an increment in the number of shrubs both in HD and LD stands. The environmental sampling of BVOCs fully reflected the changes in vegetation cover and composition in the two stands, with a reduction in the amount of monoterpene emissions due to the increasing rates of defoliation and mortality of the dominant species. Our results suggest that terpene emissions from Mediterranean forests would be modified by an increase of *Q. ilex* dieback, with important consequences for the functioning of this forest ecosystem. This study will be further implemented in the next five years through the LIFE RECLOAK project, aimed at studying the metabolomics changes induced in *Q. ilex* trees by drought and the pathogen *Phytophthora cinnamomi* in their natural environment.

**Keywords:** Biogenic Volatile Organic Compounds (BVOCs), drought, *Quercus ilex* L., Mediterranean forests, SPME fibres.

## **Uncovering the Chemical Signature of Neuchâtel Absinthe *Artemisia absinthium* L.**

Mazzarine Laboureau<sup>1</sup>, Camille Christe<sup>2</sup>, Sarah Semeraro<sup>1</sup>, Camille Rieder<sup>3</sup>,  
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*Artemisia absinthium* is a key plant used in the traditional liquor “absinthe,” closely associated with Swiss culture and heritage. However, this species is not native to Switzerland, raising important questions about the respective contributions of genetic and environmental factors to the liquor’s chemical composition and distinctive taste. To address this, we translocated eight wild populations, originating from elevations between 450 and 2000 meters, into the Neuchâtel Botanical Garden. From both the wild populations and their cultivated counterparts, we sampled leaves, roots, flowers, and stems, and analyzed their metabolomic profiles. The results revealed that plant organs exhibit highly distinct chemical signatures, reflecting strong organ-specific differentiation. Furthermore, cultivated individuals displayed tightly clustered metabolomic profiles, clearly separated from their wild relatives. This convergence suggests that cultivation in the botanical garden environment reduces natural variability and shapes specific chemical phenotypes.

## Cultivar-Dependent Plant–Insect Interactions Explain Differential Incidence Of Flavescence Dorée In Swiss Vineyards

Jasmine Cadena i Canals<sup>1</sup>, Christophe Debonneville<sup>1</sup>, Clara Chevalley<sup>2</sup>, Agnes Dienes-Nagy<sup>3</sup>, Christian Linder<sup>4</sup> and Olivier Schumpp<sup>1</sup>

Agroscope, Route de Duillier 60, Nyon, Switzerland (<sup>1</sup> Virology, Bacteriology and Phytoplasma; <sup>2</sup> Mycology; <sup>3</sup> Wine Quality; <sup>4</sup> Entomology and Nematology)  
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While vector biology is a central focus in the study of vector-borne plant diseases, chemical and physiological interactions between plants and insect vectors at the cultivar level remain poorly understood, particularly for bacterial vector-borne pathogens. This is especially true in the Flavescence dorée-*Scaphoideus titanus*-grapevine pathosystem, where such interactions may critically shape epidemiological outcomes. Flavescence dorée (FD) is a major quarantine disease of grapevine associated with a phytoplasma transmitted by the leafhopper *S. titanus*. In Switzerland, FD incidence in the field differs between cultivars, with *Vitis vinifera* cv. Chasselas being markedly less affected than cv. Pinot noir. Nevertheless, laboratory susceptibility assays performed under no-choice conditions showed no difference in infection rates between the two cultivars, suggesting that epidemiological patterns are more likely driven by plant–insect vector interactions than by direct differences in pathogen susceptibility.

We therefore investigated cultivar-specific interactions with the insect vector using a combination of field surveys and laboratory assays. In vineyards, *S. titanus* populations and egg hatchings were consistently lower on Chasselas than on Pinot noir. Under controlled conditions, several life-history traits indicated reduced vector performance on Chasselas. Short-term choice assays (9 h) revealed no clear host preference, whereas longer-term choice tests (72 h) showed an increased use of Pinot noir, suggesting that differences between cultivars emerge with prolonged interaction rather than through immediate attraction.

To explore the chemical basis of these interactions, we analysed grapevine phytohormone profiles at the constitutive level and after exposure to healthy or FD-infected *S. titanus*. Marked cultivar-specific differences were observed, with Chasselas displaying hormonal signatures potentially less favourable to sap-feeding insects. In addition, preliminary metabolomic analyses of phenolic profiles revealed higher levels of certain flavonoids in Chasselas leaves. These compounds are widely reported in the literature to play a role in plant defence against herbivorous insects, although their functional contribution in this pathosystem remains to be demonstrated.

Overall, our results suggest that the lower susceptibility of Chasselas to FD is primarily shaped by antibiosis-based effects on the insect vector rather than by differences in its interaction with the pathogen, although the key metabolites underlying these effects remain to be identified. These findings highlight the relevance of chemical ecology in plant-pathogen-vector systems and open perspectives for more sustainable FD management strategies based on plant-vector interactions.

## Interspecific plant interactions hamper host seeking efficiency of two important pests of oilseed rape

Léa Bolis<sup>1,2</sup> ([lea.bolis@unine.ch](mailto:lea.bolis@unine.ch)), Ivan Hiltpold<sup>1</sup> ([ivan.hiltpold@agroscope.admin.ch](mailto:ivan.hiltpold@agroscope.admin.ch)),  
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<sup>1</sup> Entomology and Nematology research group, Agroscope, Nyon, Switzerland; <sup>2</sup> Laboratory of Functional Ecology, University of Neuchâtel, Switzerland

Associative cropping of oilseed rape (*Brassica napus*) with faba bean (*Vicia faba*), traditionally used for weed control and nitrogen supply, has recently been shown to help reduce pest pressure from major pests of oilseed rape such as the cabbage stem flea beetle (CSFB, *Psylliodes chrysocephala*) and the rape stem weevil (RSW, *Ceutorhynchus napi*). Mechanisms underlying these pest-regulating effects remain poorly understood and are likely multifactorial, with previous research mainly emphasizing the visual impact of faba bean on pest migration and colonization. However, the effects of such associative system on plant chemical traits, particularly the volatilome and the resulting ecological interactions have yet to be fully understood. Recent laboratory studies have demonstrated significant shifts in the emission of key volatile compounds in oilseed rape and faba bean when grown in association compared to sole cropping systems. Consistently, olfactometer assays revealed that these altered volatile profiles can disrupt host-location mechanisms in both insect pests, leading to pronounced species-specific differences in host preference. Together, these findings provide new insights into the chemical and behavioral processes shaping pest dynamics in diversified oilseed rape cropping systems.

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- [2] Magnin, L., Hiltpold, I., Jullien, A., & Baux, A. (2025). Intercropping mitigates incidence of the oilseed rape insect pest complex. *Pest Management Science*.

## Poster Abstracts

## Plant-plant communication in domesticated tomato : work-in-progress to tease apart defense induction and priming

Alan Kergunteuil<sup>1</sup>, Claude Castella<sup>1</sup>, Guy Costagliola<sup>1</sup>, Kenia Quinzoni<sup>1</sup>, Alexandre Gorit<sup>1</sup>, Doriane Dumont<sup>1</sup>, Bernard Caromel<sup>2</sup>, Anne-Violette Lavoit<sup>3</sup>

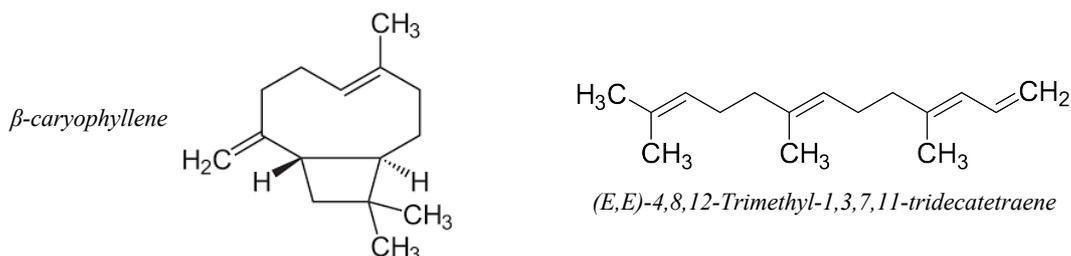
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The role of volatile organic compounds (VOC) as vehicle of information between plants has long sparked the imagination of plant ecologists<sup>1</sup>. Currently, “plant-plant communication” expand functional frameworks of plant defense theory from organism to ecosystem functioning<sup>2</sup> and, thereby, opens new avenues for agroecological research<sup>3,4</sup>. For this purpose, we need to better understand the dynamic of two different outputs of plant-plant communication that sometimes remain confused<sup>5</sup>, *i.e.* defense induction (immediate response to signalling cues) and defense priming (response occurring after “memorisation” process). Here, we developed an original 2-steps experimental design with time-serie of VOC capture over 5 days to (i) track HIPVs released by emitter tomato infested with *Tuta absoluta*, and (ii) test separately defense induction and priming in receiver tomato.



Our results suggest that the induction of some sesquiterpenoids, like  $\beta$ -caryophyllene and TMTT, could support information transfer between plants, despite counter-selection of constitutive emissions during domestication<sup>6</sup>. Based on VOC profiles of receiver plants, our study points that defense induction is a progressive mechanism which is quickly initiated, even if its intensity increases over 3 days. However, we failed to discriminate receiver plants that are supposed to have kept in memory previous exposure to HIPVs. This suggests that defense priming could have been lost in domesticated tomato. In this context, we would be pleased to discuss our very first results with the Swiss Chemical Society to integrate to the best on-going metabolomic and phytohormonal analyses. Furthermore, we hope to feed our thinking about a research agenda addressing the evolution of defense induction and priming in the plant clade *Solanum* section *Lycopersicon*, including domesticated tomato and wild relatives.

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**What's my age again? Assessing the impact of stink bug egg mass age on host recognition by egg parasitoids *Trissolcus basal* and *Trissolcus japonicus* (Hymenoptera: Scelionidae)**

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Wasps, from the genus *Trissolcus*, are egg parasitoids that are commonly used in biological control programs targeting stink bugs. They navigate a complex environment, relying on a diverse array of biochemical and ecological cues to locate their hosts. Through this endeavour, these parasitoid wasps have to discriminate between young and old eggs as development is only achieved in the latter. In this study, we evaluated the ability of two parasitoid wasps, *Trissolcus japonicus* and *Trissolcus basal*, on utilising short-range cues and, more specifically, volatile organic compounds emitted by stink bug egg masses to locate their hosts. We hypothesised that (1) stink bug eggs (i.e., *Halyomorpha halys* and *Nezara viridula*) emit short-range cues that are exploited by egg parasitoids (i.e., *T. japonicus* and *T. basal*) to locate their hosts in addition to insect chemical footprints; (2) *Trissolcus* spp. have the ability to differentiate young eggs from older ones to increase their fitness (3) based on changes in the chemical profiles of the egg masses according to their age. Our behavioural assays suggested that *T. japonicus* did not respond to stink bug footprints, whereas *T. basal* was significantly oriented toward the footprints of gravid host females. Both parasitoids preferentially oriented towards young eggs rather than footprints. The parasitism rate of *T. japonicus* was not significantly different between young and old eggs unlike *T. basal* which preferred parasitising on young eggs. We identified  $\gamma$ -butyrolactone and  $\beta$ -funebrene in the headspace of *N. viridula* eggs and we discussed the putative role of these secondary metabolites on *T. basal* locating their host. Behavioural, performance and VOCs collection of this study contribute to a nuanced understanding of host–parasitoid dynamics along with implications for developing effective pest management strategies.

## What roles do glucosinolates and morphological traits play in limiting *Psylliodes chrysocephala* larval infestation across crop variety and companion planting? A field investigation.

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The cabbage stem flea beetle (*Psylliodes chrysocephala*) is a key pest of winter oilseed rape (OSR, *Brassica napus*); larval stages develop by feeding on petioles and stems during winter. Larval infestation may be influenced by plant traits and cropping systems. We investigated the effects of OSR genotype and cropping system on larval infestation through specific ecophysiological traits, and their interactions. In a field trial with four replicates, three OSR varieties (Mambo, Feliciano and Angelico) were cultivated as monocrops or were sown with faba bean (*Vicia faba*) companion plants. Ecophysiological traits (morphological and metabolic) and *P. chrysocephala* larval infestation were assessed using a two-phase analysis combining direct relationship analysis and a regularized structural equation model.

The varietal factor had a greater influence on larval infestation than companion planting in this experiment. Larval infestation correlated positively with plant fresh weight, glucoraphanin, and butyl glucosinolate (butyl-GLS), and negatively with glucobrassicinapin concentration. The ecophysiological traits of Angelico, with lower concentration of glucoraphanin and butyl-GLS, explained its moderate decrease in larval infestation compared to Mambo. The ecophysiological traits of Feliciano, with a higher concentration of glucobrassicinapin and lower concentration of glucoraphanin and butyl-GLS, partially explained the resistance effect of this variety compared to Mambo.

Contrary to expectations, companion planting slightly increased larval infestation, particularly in Mambo. This may be due to greater plant biomass under companion planting conditions rather than a direct effect of the companion plant on infestation rates. However, OSR grown with companion plants expressed greater concentration of glucobrassicinapin and a reduction in glucoraphanin which may result in an indirect negative effect on the larval infestation. Microclimatic changes were observed when OSR was grown with companion plants, including elevated canopy temperature, reduced photosynthetically active radiation, and a lower red: far-red light ratio compared to monocropped OSR.

The variation in *P. chrysocephala* larval infestation in OSR plants may be partly explained by an interplay of specific concentrations of GLS and morphological traits such as plant biomass. The influence of crop microenvironmental alterations on glucosinolate production warrants further investigation, as these factors may be involved in plant-insect interactions.

## How to harness chemical crosstalk of plants for sustainable agriculture

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Plants interact with organisms in their surroundings by regulating the release of metabolites, which are nutrients and signals to these surrounding organisms [1]. Characterizing the primary and secondary metabolites underlying these interactions would allow to boost interactions with beneficials and deter pathogens. In addition, plants adjust their metabolic profile in response to environmental factors [2]. In a sustainable agricultural setting, the engineering of plant metabolism and with that of plant-plant and plant-microbe interactions would allow to reduce input of fertilizers and pesticides while maintaining crop growth. Interestingly, ancient agricultural systems such as intercropping and crop rotation are based on optimizing temporal and spatial interactions of plants. The underlying molecular causes why some crop combinations are beneficial and others are not can likely be traced back to molecular interactions between crops, either directly via exchange of molecules or indirectly via shaping microbial communities or via shaping soil properties [3].

We investigate plant metabolic responses to various environmental stimuli, such as to the presence of beneficial or pathogenic microbes. Specifically, we investigate pea and barley grown in monoculture or intercropped to determine the molecular and microbial changes present across the differing agricultural systems. For this, we employ untargeted liquid chromatography mass spectrometry, flow injection analysis, and next generation sequencing.

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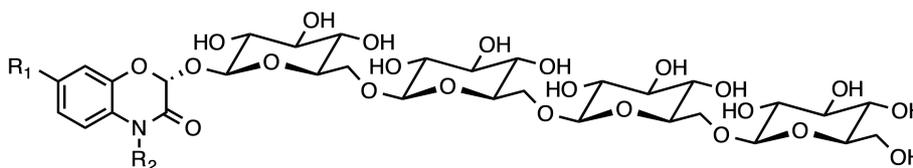
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## Insights into the Biosynthetic Pathway of Multihexose Benzoxazinoids in Maize (*Zea mays*)

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Benzoxazinoids (BXDs) are plant specialized metabolites exerting a pivotal role in plant nutrition, allelopathy, and defenses.<sup>1</sup> Multihexose BXDs were previously observed in cereal-based food products, such as whole-grain bread,<sup>2</sup> but their synthesis in planta remained unclear. Our data show that drought, but not elevated CO<sub>2</sub> nor temperature, induced the production of di-, tri-, and even tetrahexose BXDs in maize. The drought-mediated induction of multihexose BXDs was common among several maize lines. Bioinformatic analyses identified two UDP-glycosyltransferase candidates that, when heterologously expressed in *E. coli*, catalyzed the glucosylation of BXD glucosides, producing multihexose derivatives. We report here on our recent efforts to further characterize the BXD synthetic pathway and its relevance in maize-environment interactions.<sup>3</sup>



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## **Skin microbes, volatiles, and vector behaviour: A strain-level perspective**

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Mosquitoes depend strongly on volatile organic compounds (VOCs) emitted in body odours to locate suitable blood-hosts. These VOCs allow them to discriminate between host species and even between individuals at a distance. Most VOCs in human body odours are produced by microorganisms present on the skin. Previous work has identified correlations between mosquito attraction and skin bacterial communities. Several bacterial species have been implicated as enhancers or suppressors of mosquito attraction. However, behavioural validation studies typically test only a single representative strain per bacterial species, assuming species-level uniformity. Different strains of the same bacterial species typically share 80%–90% of their genes. Still, genomic differences between strains are known to include important biological functions, and recent studies have shown that strains belonging to the same species can emit different VOCs when grown under identical conditions. This is known to have consequences for the degree of attractiveness or repellence towards insects [1].

In this project, we systematically assess mosquito attraction across a diverse panel of human-associated bacterial strains to disentangle species- and strain-level contributions to host attractiveness. Using isolates obtained from the DSMZ biobank, we assemble a panel maximising intraspecific diversity across eight skin-associated bacterial species previously linked to mosquito behaviour. Bacteria are cultured under standardised conditions and presented to mosquitoes in a custom two-choice video-tracking arena, enabling quantification of behavioural attraction metrics. In parallel, headspace VOCs from all strains are collected for chemical profiling (GC–MS). Together, the outcomes will provide systematic evidence of how much intraspecific bacterial variation contributes to host odours, attractiveness and will clarify whether studies focusing only on species-level comparisons risk overlooking critical strain-level effects.

In addition, we are developing tools to decrease human and animal attractiveness to mosquitoes by altering the composition of the bacteria on our skin. We use an innovative methodology (bacteriophage-derived endolysins) to selectively kill bacteria that increase human attractiveness to mosquitoes, thereby reducing pathogen transmission and disease.

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## Reciprocal interactions between agrochemicals and the commensal gut microbiota impact honeybee health

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Bees are key pollinators suffering sharp population declines due, in part, to agrochemical usage. [1]. While agrochemicals are tested and regulated for their acute toxicity to bees, sub-lethal exposure can depress immunocompetence, pathogen resistance, and foraging behavior. These traits are modulated by the specialized microbial communities in the gut of social bees, who also play an indispensable role in digestion and synthesizing beneficial metabolites [2]. Therefore, investigating the mechanistic interplay between agrochemicals, bees and their microbiota is crucial to understand the full impact of chronic, sub-lethal agrochemical exposure. Limited findings already indicate that the honeybee gut microbiota is perturbed by widely used pesticides [3]. However, practical constraints have prevented widescale investigation of diverse agrochemicals.

We screened reciprocal interactions of chemical toxicity and microbial biotransformation of an agrochemical library against 20 isolate strains representing the species level diversity of the honeybee gut microbiota. We measured in vitro toxicity of 1054 pesticides, antibiotics, and other agrochemical compounds, finding that 13% of the chemicals inhibit bacterial growth at environmentally relevant concentrations. While broad spectrum fungicides such as chlorothalonil, fluazinam, or dodine were more often toxic than herbicides or insecticides, toxicity proved difficult to predict from chemical structure alone. Bacterial susceptibility also diverged sharply across bacterial genera. Many toxic compounds were degraded by the microbiota, though this provided little protective benefit for degrader strains nor cross-protection in microbial communities. We then confirmed that chronic oral exposure to sublethal pesticide doses can perturb microbiota assembly in adult bees, alter gut metabolic function and enhance infection by the opportunistic pathogen *Serratia marcescens*.

In parallel, we found significant biotransformation by at least one strain in 15% of the 656 measurable, non-toxic agrochemicals. Biotransformation was enriched in sulfonylurea and cyclohexanedione oxime herbicides as well as in organothiophosphate insecticides. Well known biotransformation reactions, such as nitroreductase activity, were prevalent. However, we also found numerous instances of unreported degradation and conjugation reactions. Together, our results highlight the gut importance of the gut microbiota in modulating agrochemical impacts on bees.

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## Exploring and characterising the role of volatile organic compounds from aromatic plants to disrupt interactions between grapevines and the insect vector, *Scaphoideus titanus*

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Flavescence dorée (FD) is a devastating phytoplasma disease that threatens European grapevines. The leafhopper *Scaphoideus titanus* is the primary vector of FD, and its management relies only on pesticides. To reduce this reliance, I aim to understand the potential of chemical cues - specifically volatile organic compounds (VOCs) emitted by aromatic plants - to mediate plant defences and disrupt vector behaviour. Unlike most studies focusing on annual crops, during my PhD I will investigate how specific thyme chemotypes influence the behavioural and physiological interactions between grapevine cultivars and *S. titanus*. Thyme chemotypes synthesise large amounts of VOCs that may induce plant defences in receiver plants or directly affect the behaviour of pests. **First**, I will compare the host suitability of four grapevine cultivars differing in their sensitivity to the vector. Short-term host preference of *S. titanus* will be evaluated using two-choice assays on whole plants and leaf discs. Long-term acceptance and host suitability will be evaluated in cages by measuring different fitness proxies (e.g. survival, developmental time, etc). **Second**, feeding behaviour of *S. titanus* is a key step in phytoplasma transmission; therefore, I will use electropenetrography (EPG) to evaluate access to and phloem ingestion by *S. titanus* on the four grapevine cultivars and characterise their resistance to the pest. **Third**, I will assess the effectiveness of aromatic plant VOCs on *S. titanus* behaviour and performance. EPG and performance assays will be repeated on the two extreme grapevine cultivars after pre-exposure to different thyme chemotypes to determine whether aromatic plant VOCs induce resistance in grapevine, leading to altered feeding behaviour or reduced performance of the pest. Overall, my PhD aims to identify cultivar x chemotype combinations capable of improving pest management of *S. titanus*, contributing to more sustainable solutions for modern agriculture.

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## **Female-associated semiochemicals as candidates in the pine shoot beetle *Tomicus destruens***

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In Maremma (Tuscany, Italy), *Pinus pinea* L. forests have long been affected by damage caused by the pine shoot beetle *Tomicus destruens* Woll. (Coleoptera, Curculionidae, Scolytinae) [1]. Despite the increasing ecological and economic impact of this species in Mediterranean pine stands, its chemical ecology remains poorly understood. In particular, information on semiochemicals potentially involved in mate-finding and aggregation is still scarce, limiting the development of effective control strategies. This study aimed to identify volatile organic compounds (VOCs) consistently associated with *T. destruens* and/or attacked host material that could represent candidate cues for future pheromone/kairomone-based trapping systems. Volatile emissions were investigated using thermal desorption–gas chromatography–mass spectrometry (TDU/GC–MS). VOCs were collected from 100 L chambers containing either *P. pinea* branches infested with *T. destruens* or non-infested control branches. VOCs sampling was performed for one minute using an air sampling pump (flow rate 200 sccm) through glass thermal desorption (TD) tubes packed with carbograph® at different mesh sizes. In parallel, the VOC profiles of ten mating pairs of *T. destruens*, that were separated at the onset of copulation, were determined in order to explore differences between sexes. In addition, frass collected in maternal galleries was analysed using dynamic headspace technique coupled with TDU/GC–MS.

Chemical analyses revealed qualitative differences among VOC blends emitted by infested and non-infested pine material. Notably, a consistent volatile profile was detected across infested branches, frass, and isolated females, characterized by the predominance of three sesquiterpenes. These compounds were absent or present only in trace amounts in control branches and in emissions from males, indicating a female-specific association. Overall, these results suggest that *T. destruens* females are associated with a specific sesquiterpene-based chemical signal potentially mediates mate-finding or aggregation. The identification of these candidate compounds represents a crucial step toward understanding the chemical ecology of *T. destruens* and provides promising insights for the development of new semiochemical-based monitoring and mass-trapping strategies aimed at mitigating infestations in Mediterranean pine ecosystems.

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## **Systemic defense induction by volatiles renders plants susceptible to manipulation by insect herbivores**

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Upon herbivore attack, plants can induce systemic defenses through both vascular and volatile signals. So far, the relative contribution of the two pathways and the capacity of herbivores to interfere with them remains unclear. We quantified the contribution of herbivore-induced plant volatiles (HIPVs) to systemic defense induction in maize and tested to what extent herbivores can interfere with volatile mediated defense. We monitored real-time volatile emissions and measured phytohormone levels of systemic tissues following wounding. We assessed the role of volatile signals by mechanically blocking HIPV transmission. We then evaluated the contribution of Green Leaf Volatiles (GLVs) as systemic signals using a GLV biosynthesis mutant and synthetic complementation. Finally, we investigated how *Spodoptera* oral secretions (OS) influence systemic signaling during simulated herbivory. We found that systemic induction of plant volatiles can be fully explained by GLV signaling, without the need for vascular signals. Systemic responses were suppressed when volatiles were mechanically blocked and when GLV biosynthesis was impaired. *Spodoptera* OS reduced systemic induction of plant volatiles by reducing GLV emissions at the feeding site. Our results identify GLVs as primary systemic signals in maize and demonstrate that herbivores can attenuate systemic defense activation by interfering with GLV signaling during feeding.

## Dietary plant metabolites as modulators of gut microbial dynamics

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Plant specialized metabolites (PSMs) are increasingly consumed with plant-rich diets, yet quantitative dietary exposure and microbiome-relevant mechanisms remain poorly resolved. Here, we quantified the dietary occurrence of *Plant Metabolite a* (PMA) across ~300 plant-based foods and beverages using Liquid-Chromatography coupled to Mass-Spectrometry (LC-MS) and observed strong variability across product categories, consistent with highly heterogeneous dietary exposure. *In vivo* PMA ingestion in mice was associated with microbiome shifts in both the colon and feces, including a decrease in the relative abundance of *Lactobacillus reuteri* and *Enterococcus faecalis*. To mechanistically link these observations to direct bacterial responses, we profiled PMA effects on *E. faecalis* and *L. reuteri* in monoculture. While PMA did not alter *L. reuteri* growth under the tested conditions, it triggered a time-dependent response in *E. faecalis*, with early growth inhibition (~6 h) followed by a rebound (~18 h) and no detectable effect at stationary phase (~28 h). Untargeted metabolomics of culture supernatants further indicated that both strains depleted PMA from the medium, suggesting microbial processing that may reflect utilization as a carbon source, unspecific metabolization, and/or detoxification, possibly explaining the time-dependent response of *E. faecalis*. Together, these results suggest that the *in vivo* decrease of *E. faecalis* and *L. reuteri* may arise from both direct and indirect PMA-mediated mechanisms in the gut environment. Ongoing work therefore aims to bridge *in vitro* and *in vivo* outcomes by testing (i) PMA-driven changes in gut physicochemical conditions, and (ii) microbiome-mediated conversion of PMA into secondary products. Because *E. faecalis* is an opportunistic pathobiont whose abundance is tightly linked to gut ecosystem stability, the observed PMA-dependent responses suggest that dietary plant metabolites may play a role in constraining taxa with high inflammatory potential.

## **E-NICHE: A European Network In Chemical Ecology: Translating the language of life into sustainability**

Christelle Robert, on behalf of the E-NICHE Core Group

E-NICHE COST ACTION CA22102

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The main aim and objective of this EU COST Action network is to unify European players in chemical ecology, enhancing cooperation, promoting visibility and sharing knowledge, tools, and platforms. It addresses major societal issues for environmental and sustainable development goals by describing chemodiversity, evolutionary forces, and global changes that will impact biodiversity and ecological interactions. E-NICHE is bringing together researchers and companies who study natural compounds that can act as semiochemicals (i.e., communication signals) across a diversity of organisms and ecological systems, including insects. This work will be nourished by a deeper understanding of the living world through the lens of chemical mediation, the main system of biological communication. It will also aim to prevent the loss of the chemical biodiversity found in nature, under threat because of global changes. Within this collaborative scientific effort, the participation of Young Researchers plays a key role in fostering innovation, ensuring continuity, and promoting inclusiveness within the European chemical ecology community.

Consequently, E-NICHE's overarching objective is to establish a strong, extended European CE network that catalyses international, interdisciplinary, and cross-sectoral exchanges with a view to building knowledge and intergenerational sustainable development solutions. Ultimately, the Action aims to build a European Association in Chemical Ecology as it exists already in Asia-Pacific (APACE) and the Latino Americas (ALAEQ) linked to the international one (ISCE).

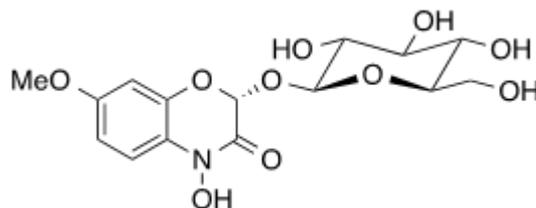
## From Diet to Microbiome: Exposure, Metabolism, and Gut Interactions of Benzoxazinoids

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As human nutrition increasingly shifts toward plant-based diets, exposure to plant specialized metabolites (PSMs) is rising, yet their dietary occurrence, metabolic fate, and effects on the gut microbiome remain poorly understood.



Representative example for BXs: DIMBOA-Glc

This study aimed to investigate dietary exposure, host metabolization, and microbial impact of benzoxazinoids (BXs), a class of PSMs found in cereals such as wheat, rye, and maize. Metabolomic analyses of 300 plant-based food and beverage products revealed that BXs are present in 14% of the analysed samples. In mice, the dietary BX DIMBOA-Glc was rapidly metabolized into HMBOA, HMBOA-Glc, and MBOA and excreted in urine within hours. Germ-free mice also converted DIMBOA-Glc in HMBOA-Glc and HMBOA, indicating host-mediated metabolism independently of the gut microbiota. Complementary microsomal assays using mouse and human preparations confirmed that BXs can be processed by mammalian hepatic enzymes. In parallel, selected gut microbial strains (of sDMDMm2 mice) were found to metabolize DIMBOA-Glc, DIMBOA, HMBOA, and MBOA in a strain-specific manner. Notably, the intake of BXs modulated the alpha diversity, but not the composition, of the mouse gut microbiome, and ongoing in-vitro growth assays revealed strain-specific direct effects of BXs. Overall, this study provides an integrated view of dietary BX exposure, host metabolism, and gut microbial interactions, contributing to a systems-level understanding of the fate of plant-derived metabolites in the host-microbiome axis.

## Tomato plant-mediated physical and chemical defenses shape tritrophic interactions between an herbivorous pest and its predator

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Plant physical and chemical defense traits play a central role in mediating plant-insect interactions, exerting direct effects on herbivorous pests and indirect effects by influencing the behavior or performance of natural enemies. Consequently, characterizing plant defense traits and their interactions with both herbivores and their natural enemies is essential for understanding tritrophic dynamics in agroecosystems. In this study, we investigated how six tomato genotypes differing in physical defense traits influence the performance of the tomato leafminer *Tuta (Phthorimaea) absoluta* (Meyrick) (Lepidoptera: Gelechiidae), a globally important pest, and its predator *Macrolophus pygmaeus* (Rambur) (Hemiptera: Miridae). We further examined the behavioral responses of both species to volatile organic compounds emitted by these tomato genotypes. We found that the wild, resistant tomato *Solanum arcanum*, characterized by a high density of glandular trichomes, significantly reduced *T. absoluta* pressure [1] but also constrained predator efficacy, revealing trade-offs at the tritrophic level [2]. Volatiles emitted by *T. absoluta*-infested *Solanum arcanum* were more attractive to female *M. pygmaeus* than those from the susceptible, domesticated *S. lycopersicon* cultivar Noire de Crimée, which possesses fewer glandular trichomes. Female predators showed no discrimination between constitutive and *T. absoluta*-induced volatile blends in resistant genotypes, whereas responses varied in susceptible domesticated tomatoes. Females were more attracted to constitutive volatiles from Noire de Crimée than to *T. absoluta*-induced volatiles from Noire de Crimée but preferentially responded to volatile blends emitted by *T. absoluta*-induced volatiles from Rentita over constitutive volatiles from Rentita. In contrast, female *T. absoluta* were attracted to volatiles emitted by conspecific-infested Noire de Crimée but did not distinguish among volatile cues from other genotypes. Our findings demonstrate that variation in glandular trichome density and volatile profiles among and within tomato genotypes influence herbivore and predator responses. Chemical characterization of volatile emissions will allow the identification of compounds associated with differential herbivore and predator responses among tomato genotypes.

[1] A. J. Zannou, J. Romeis, J. Collatz, *Pest Management Science*, **2025**, *81*, 1345–1359.

[2] A. J. Zannou, J. Arnó, J. Romeis, J. Collatz, *Biological Control*, **2025**, *205*, 1–12.



## SCS Events 2026

- Swiss Snow Symposium, Saas-Almagell, Jan 15-17, 2026
- 6<sup>th</sup> Swiss Industrial Chemistry Symposium, Basel, Jan 30, 2026
- DMCCB Basel Symposium, Basel, Feb 5, 2026
- Symposium on Chemical Ecology, Neuchatel, Feb 11, 2026
- CHanalysis, Beatenberg, Mar 18-19 2026
- BeNeFri Symposium, Bern, Apr 10, 2026
- SCS Spring Meeting, Fribourg, Apr 23, 2026
- Bürgenstock Conference, Brunnen, May 3 - 7, 2026
- Workshop on AI: Simulations to Solutions, Fribourg, May 29, 2026
- ETH Conference on Nanoparticles, Zürich, Sun, May 31 - Wed, Jun 3, 2026
- Peptide Therapeutics Forum, Basel, Jun 4-5, 2026
- SCS Seminar on Flow Chemistry, Fribourg, Jun 11-12, 2026
- SCS Photochemistry Symposium, Fribourg, Jun 12, 2026
- Summer School on Visualization, Fribourg Jun 15-19, 2026
- ECC10, Antwerp, Jul 12-16, 2026
- Int. Summer School on Nanocrystals, Haute-Nendaz, Aug 16-20, 2026
- SCS Fall Meeting, Bern, 27.-28. Aug, 2026
- Int. Summer School on Electrocatalysis, Aug 30 – Sep 3, 2026
- EFMC-ISMIC 2026, Basel, 6.-10. Sep 2026
- EFMC-YMCS 2026, Basel, 10.-11. Sep 2026
- Swiss Chemistry Science Night, Bern, Sep 18, 2026
- Ilmac Lausanne, Beaulieu Lausanne, 23.-24. Sep 2026
- Zentralkurs Chemie (VSN), Bern-Köniz, Oct 7-9, 2026
- Swiss Course on Medicinal Chemistry, Leysin, Oct 4-9, 2026
- SCS Syngenta Symposium, Stein (AG), Oct 2026



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