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## Short presentation

I am curious about all aspects of plants, plant biochemistry, and plant defense. Currently, I am working on triterpenoid plant defense compounds called saponins. The focus here is on the structure elucidation and purification of saponins from plant sources to evaluate their biological activity.

EcoSap: triterpenoid saponins as green solutions for future sustainable food production. EcoSap will evaluate the efficacy and environmental safety of saponins as a novel green solution for sustainable food production. Saponins are a natural defense compound in plants that exhibit detergent-like properties that can disrupt the cell membranes of herbivore pests, causing cell death.

## Short presentation

## Research outputs

### **Site-directed genotype screening for elimination of antinutritional saponins in quinoa seeds identifies TSARL1 as a master controller of saponin biosynthesis selectively in seeds**

Trinh, Mai Duy Luu, Visintainer, Davide, Günther, Jan, Østerberg, J. T., Rodrigues da Fonseca, Rute Andreia, Fondevilla, S., Moog, Max William, Luo, Guangbin, Nørrevang, Anton Frisgaard, Crocoll, C., Nielsen, P. V., Jacobsen, S., Wendt, T., Bak, Søren, Lopez Marques, Rosa Laura & Palmgren, Michael, 2024, (E-pub ahead of print) In: Plant Biotechnology Journal. 19 p.

### **Heterologous expression of PtAAS1 reveals the metabolic potential of the common plant metabolite phenylacetaldehyde for auxin synthesis in planta**

Günther, Jan, Halitschke, R., Gershenzon, J. & Burow, Meike, 2023, In: Physiologia Plantarum. 175, 6, 10 p., e14078.

### **Novel transformation strategies improve efficiency up to 10-fold in stramenopile algae**

Poveda Huertes, Daniel, Patwari, P., Günther, Jan, Fabris, M. & Andersen-Ranberg, Johan, 2023, In: Algal Research. 74, 11 p., 103165.

### **Heterologous expression of PtAAS1 reveals the metabolic potential of the common plant metabolite phenylacetaldehyde for auxin synthesis in planta**

Günther, Jan, Halitschke, R., Gershenzon, J. & Burow, Meike, 2022, bioRxiv.

### **Reciprocal mutations of two multifunctional $\beta$ -amyryn synthases from *Barbarea vulgaris* shift $\alpha/\beta$ -amyryn ratios**

Günther, Jan, Erthmann, P. O., Khakimov, Bekzod & Bak, Søren, 2022, In: Plant Physiology. 188, 3, p. 1483-1495

### **Imine chemistry in plant metabolism**

Torrens-Spence, M. P., Glinkerman, C. M., Günther, Jan & Weng, J., 2021, In: Current Opinion in Plant Biology. 60, 101999.

### **Phylogeny and abiotic conditions shape the diel floral emission patterns of desert Brassicaceae species**

Cna'ani, A., Dener, E., Ben-zeev, E., Günther, Jan, Köllner, T. G., Tzin, V. & Seifan, M., 2021, In: Plant, Cell and Environment. 44, 8, p. 2656-2671

**Phenylacetaldehyde synthase 2 does not contribute to the constitutive formation of 2-phenylethyl- $\beta$ -D-glucopyranoside in poplar**

Günther, Jan, Schmidt, A., Gershenzon, J. & Köllner, T. G., 2019, In: Plant Signaling & Behavior. 14, 11

**Separate Pathways Contribute to the Herbivore-Induced Formation of 2-Phenylethanol in Poplar**

Günther, Jan, 2019, In: Plant Physiology. 180, 2, p. 767-782

**The nitrilase PtNIT1 catabolizes herbivore-induced nitriles in *Populus trichocarpa***

Günther, Jan, Irmisch, S., Lackus, N. D., Reichelt, M., Gershenzon, J. & Köllner, T. G., 2018, In: BMC Plant Biology. 18

**One amino acid makes the difference: The formation of ent-kaurene and 16 $\alpha$ -hydroxy-ent-kaurane by diterpene synthases in poplar**

Irmisch, S., Müller, A. T., Schmidt, L., Günther, Jan, Gershenzon, J. & Köllner, T. G., 2015, In: BMC Plant Biology. 15, 262.

**Herbivore-induced poplar cytochrome P450 enzymes of the CYP71 family convert aldoximes to nitriles which repel a generalist caterpillar**

Irmisch, S., Clavijo McCormick, A., Günther, Jan, Schmidt, A., Boeckler, G. A., Gershenzon, J., Unsicker, S. B. & Köllner, T. G., 2014, In: Plant Journal. 80, 6, p. 1095-1107