

## Leibniz-Institute of Plant Biochemistry (IPB)



Research at the Leibniz Institute of Plant Biochemistry (IPB) focuses on the chemical diversity, the biosynthesis, the biological roles, and the mechanisms of action of plant and fungal natural products, with an emphasis on specialized metabolites and signaling molecules. Our aim is to develop a comprehensive molecular understanding of the adaptive and developmental processes which plants evolved as a consequence of their dynamic interaction with the environment. The resulting changes in gene expression and phenotype are analyzed in interdisciplinary approaches at the genome, proteome and foremost at the metabolome level. The knowledge gained will pave the way to a plant-based bio-economy: it will facilitate sustainable crop production, innovative biotechnology and drug development to improve the nutrition and health of humans, animals and plants.

### The IPB department Bioorganic Chemistry

(Natur- und Wirkstoffchemie, NWC, head: Prof. Dr. Ludger Wessjohann),

Ludger Wessjohann currently heads the library and screening activities of IPB. He also chairs the Leibniz Research Alliance on “Bioactive Compounds and Biotechnology”, that bundles the Leibniz Association’s broadly-based research on molecules with biological effects.

### Research interest:

Bioactive natural and synthetic compounds, medicinal chemistry (incl. bioinformatics, computational chemistry and virtual screening)

Application areas: Antiinfectives (mostly against plant pathogens), Anticancer compounds, Neuroactive compounds (Taste, Learning, Neurodegeneration), Plant Protection and Plant Growth

### Assays:

#### Plant Physiology / Growth:

Herbicide action

Plant growth (hormones, other)

Drought stress tolerance (enhancement)

Plant bioavailability (upcoming)

Test Organisms: *Lemna minor* (dicot, MTP), *Arabidopsis thaliana* (dicot), if required *Lolium perenne* (monocot),

Larger plants if required (tomato, barley, medicago, rape etc.)

#### Pathogens / Antiinfectives (mostly plant pathogens):

Antifungal and Anti-oomycete:

*Septoria tritici*\*, *Botrytis cinerea*\*, *Phytophthora infestans*\*, *Cladosporium cucumerinum*, *Candida parapsilosis*, further pathogens available  
(\* run according to FRAC industry standard)

Other: nematocides, antibacterials as required/funded

## Anticancer

(cell lines, FACS, cooperative effects, targeting)

### **Compound / Extract Collection:**

Our inhouse library currently lists

- ca. 20.000 compounds of mostly unique, commercially unavailable isolated natural products of plant and mushroom origin, and synthetic compounds (usually single chemical entities, but may also be racemates or mixes of stereoisomers in some cases)
- 2000 extracts of plants and fungi world wide (incl. fractions to some extent)