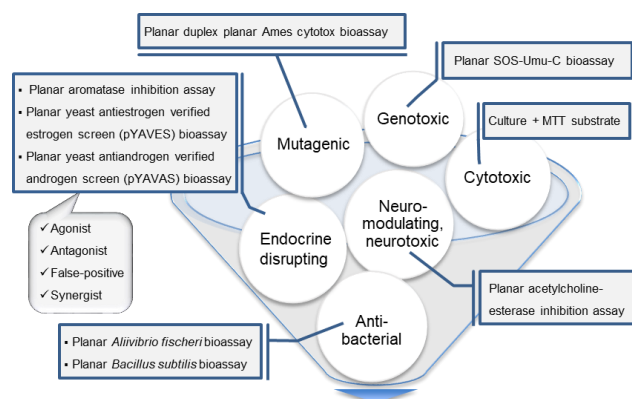




Hybrid Modul Hyphenated HPTLC

Prof. Dr. Gertrud Morlock

- Chromatography combined with assays
- Pointing to single bioactive compounds in complex samples
- Streamlined profiling via biological and biochemical assays in the adsorbent bed
- High-performance thin-layer chromatography combined with effect-directed assays and high-resolution mass spectrometry (HPTLC-UV/Vis/FLD-EDA-HRMS)



Prioritization of hazardous (known and unknown) compounds using planar assays for safety screening

SAFETY **AUTHENTICITY** **RISK ASSESSMENT**

PROGRAM

Digitally via Link:

MON 16.03. – FRI 20.03.2026

09:00 – 17:00 Theory each day

At JLU Giessen lab:

On agreement, 1 or 2 day(s) for demonstration

REGISTRATION/CERTIFICATE

Email to gertrud.morlock@uni-giessen.de

CONTENTS

- Open-source all-in-one 2LabsToGo-Eco, as sustainable lab of the future
- Antimicrobial bioassays via Gram-negative *Aliivibrio fischeri* and Gram-positive *Bacillus subtilis*
- Enzyme inhibition assays via α - and β -glucosidase, α -amylase, acetyl- and butyrylcholinesterase, tyrosinase and β -glucuronidase
- Genotoxic compounds via SOS-Umu-C bioassay, mutagenic compounds via duplex Ames bioassay, cytotoxicity bioassay, neurotoxicity assay
- Endocrine-acting compounds via planar yeast estrogen/androgen screen (pYES/pYAS)
- Four-/fivefold multiplex planar bioassays: agonistic and antagonistic effect detection (pYAES/pYAAS) with verification (pYAVES/pYAVAS), cytotoxicity exclusion, and detection of synergists
- nanoGIT^{active}: on-surface simulated static digestive system including separation and effect detection
- On-surface metabolism via S9 liver enzyme system to study toxification and detoxification
- On-surface adhesive/adherent human reporter cell assays (cytotoxicity bioassay)
- Coupling to HESI-HRMS/MS and DART-HRMS

RESPONSIBLE FOR MODULE



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MODULE AIMS

- Understand the meaning of effect-directed analysis as well as advantages and disadvantages of the different techniques
- Survey the variety of planar assays (on surface, *in situ*, in the adsorbent bed)
- Know the streamlined workflow on one plate, *i. e.* parallel separation of compounds in complex samples, discovery of active compounds and their characterization by chromatographic, spectroscopic and spectrometric information (3-20 min/sample for up to 20 samples in parallel)
- Recognize the highly efficient combination of planar chromatography with biological and biochemical or other effect-directed assays
- Realize the power of hyphenated HPTLC and the unique benefit of effect-directed profiles

