

RESEARCH FOCUS

Bioprocess Development

As part of the Hans Knöll Institute we aim to develop processes, especially for new natural products discovered by our colleagues at HKI and our collaboration partners in academia and industry. Further information can be found on the inside of this flyer.

Microbial Bioelectrochemistry

Beside process development, a central part of the research is focused around bioelectrochemical systems and defined microbial mixed cultures. Specifically, our research interests are the investigation, understanding, and manipulation of microorganisms, which are in electrochemical interaction with electrodes and of inter-microbial relationships in these environments.

Droplet-based Microfluidics

The world's scarcely explored microbial biodiversity offers a practically inexhaustible source of naturally selected compounds. However, novel ultrahigh-throughput approaches are required to investigate the microbial cosmos and tackle the obstacles imposed by inactive gene clusters, slowly growing and unculturable microorganisms. Responding to these challenges, we use a droplet-based microfluidic approach to exploit microbial diversity by enabling ultrahigh-throughput cultivation.



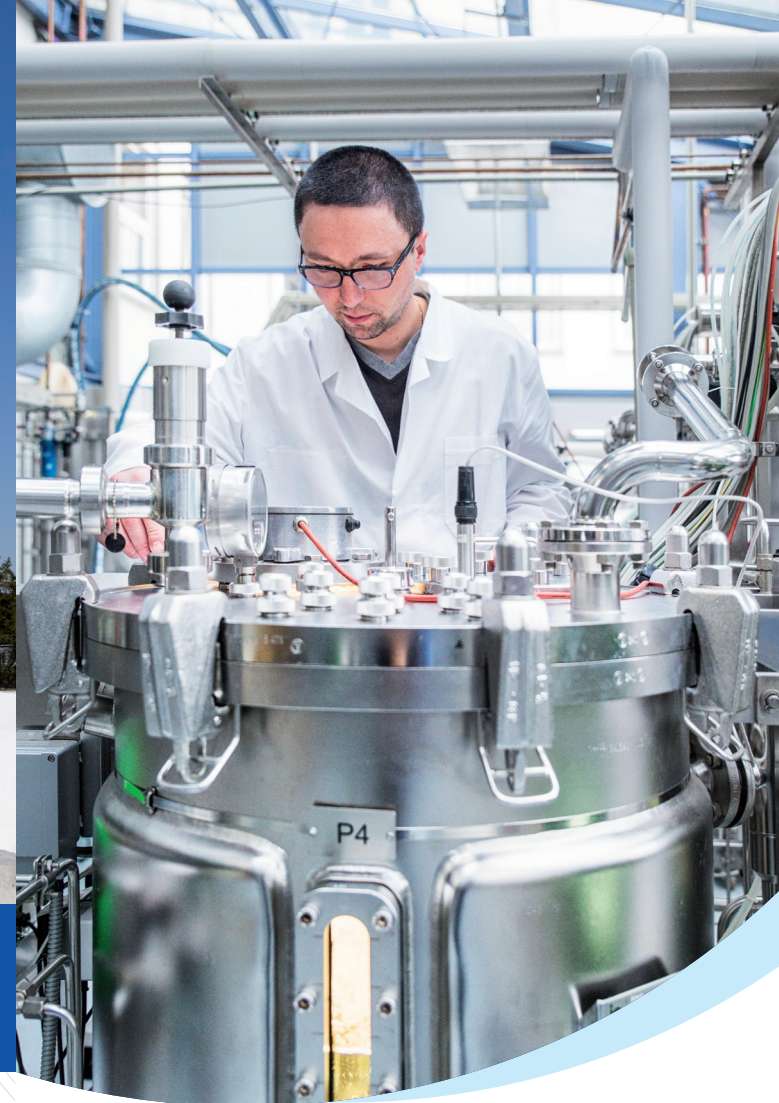
Bio Pilot Plant

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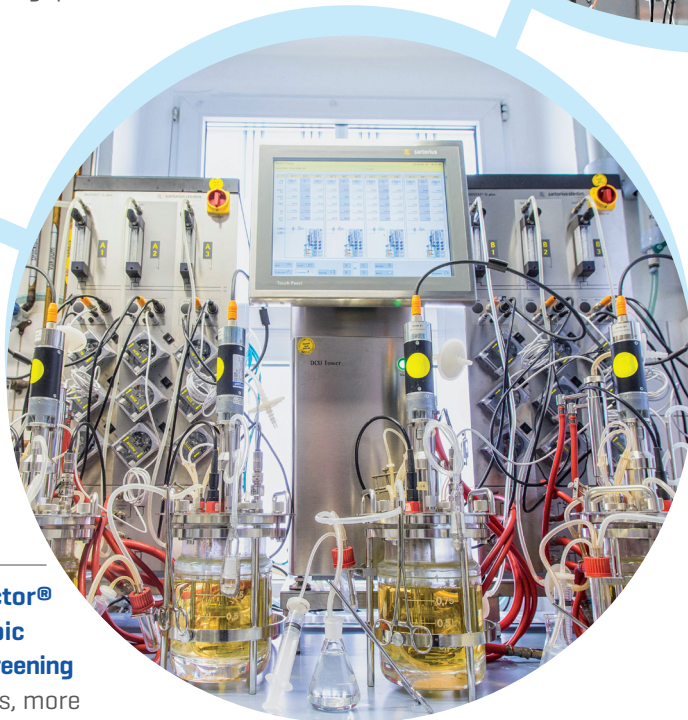
The Bio Pilot Plant is a research facility to investigate and develop new bioprocesses from substrate to pure [natural] products. In contrast to many academic pilot plants, we have an experienced permanent team of technicians, engineers and natural scientists for professional process development.

Our **droplet-based microfluidic platform** enables incubation, screening and separation with ultrahigh-throughput.



pL

Beside two **BioLector®** systems for aerobic and anaerobic screening in microtiter plates, more than **20 lab scale reactor** systems are available to develop and investigate processes in batch, fed-batch and continuous cultivations.



With our stirred tank reactors in pilot and technical scale, **scale up can be performed up to 4.3 m³.**

m³

The Bio Pilot Plant is fully equipped with a broad spectrum of **analytical techniques**, such as **HPLCs, GC-MS [triple-quad], LC-MS, off-gas analysis, rheometer etc.**

The Bio Pilot Plant aims for developing overall processes from **substrate to pure product**. Therefore, several downstream techniques are available to handle liquid streams also in m³-scale. ATEX conditions are possible if necessary.

