B·R·A·I·N

Solutions above technologies

Our research and development acitivties are driven by a solution focused creative mindset which overcomes single technology limitations. Our **Biotechnology Portfolio** and experience enable us to focus on the challenges that we and our partners face.

Bio-based resources

BioArchive – industry leading collection of natural resources and metagenome libraries

- **MetXtra™:** unique *in silico* enzyme selection (Biocatalysts)
- **ABEL®:** Activity-Based Expression Libraries (BRAIN)
- **LIL®:** Large Insert Libraries (BRAIN)
- **METAGENOME®:** substantial metagenome libraries (BRAIN)
- **CompActives®:** easily scalable compounds for bioactivity screenings (BRAIN)
- **MEGx:** world's most sustainable collection of purified natural products, isolated from plants (MEGxp) and microorganisms (MEGxm) (AnalytiCon Discovery)

Candidate discovery

High-throughput isolation – extraction and purification of natural products from variable biological resources (AnalytiCon Discovery)

Compound discovery – activity- and sequence-based screenings for application-driven research incl. biochemical and human cell-based assays

- screenline®: human cell-based receptor cell lines (BRAIN)

Structure elucidation – determination of molecular structure of (novel) natural compounds

Sample provision – rapid production of selected enzyme samples for customer testing

- Research Grade Sample (RGS): small volume enzyme sample production platform (Biocatalysts)
- Design for Manufacture (DFM): selection principles of enzyme candidates to maximise the probability for high expression *in vivo* and production scale-up (Biocatalysts)

Product development

Microbial expression – large set of pro- and eukaryotic expression strains, termed chassis, for the economic production of enzymes and biocatalysts

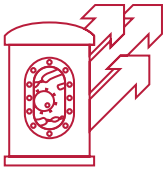
Microbial strain development – tailor-made designer strains based on conventional methodologies, plus engineering novel synthetic pathways and artificial operons for high-value industrial production

Gene and protein engineering – expression of genes and gene clusters for rationally redesigned production strains, including synthetic biology application, for customized enzymes and biocatalysts with optimized properties

Data evaluation

Analytics – state of the art equipment up to implementation of quality and stability control; covering proteins, metabolites and synthetic compounds

Bioinformatics – top-modern bioinformatic technologies for read-out of Next Generation Sequencing (NGS) results, Design Of Experiments (DOE), big data analysis



Production scale-up

Process development – establishment of up- and downstream processes for efficient and cost-effective microbial production

Process optimization – identification of optimal parameters for superior production results

Product blending & formulation – superior knowhow for blending enzymes and formulation of bio-based products

Industry-leading BioArchive

The BRAIN Group's proprietary BioArchive offers access to an immense variety of new biological solutions for sustainable industrial processes and ingredients. The BRAIN BioArchive encompasses microorganisms, natural compounds, fractions obtained from edible plant material, metagenome and enzyme libraries, as well as complete metabolic paths including previously uncultivable organisms. The company is continuously expanding this unique, dynamic "nature's toolbox".

Speciality Enzymes

>130
Enzyme products

~600
Characterized enzymes from EC1-5

>230
Giga-bp DNA

54
Metagenome libraries

~50 Mio
Digitalized metagenomic open reading frames

High-performance Microorganisms

~53,000
Characterized microorganisms

~2000
Strains in Green-Mining-Toolbox

~40
Strains from China List

450
Habitat collections and environmental samples

~15
Different expression hosts

Bioactive Compounds

~50,000
Natural and naturally inspired compounds

~22,000
Bioactive natural ingredients of plant origin identified

~13,000
Plant fractions available for isolation campaign

~10,000
Fractions from edible source, "china list"

~32,000
Synthetic compounds from ~120 highly diverse chemotypes

Get in touch with BRAIN

You want to find the right product for your needs, learn more about our product innovations or join in on an R&D partnership? Contact us today. We will find the right approach matching your need.

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