



biocrates  
The future of research and health

# biocrates kit technology

The gold standard in quantitative metabolomics

[biocrates.com](https://www.biocrates.com)

## Mass spectrometry-based metabolomics kits



Ready-to-use



Automated  
workflow



Standardized,  
quantitative



High  
throughput

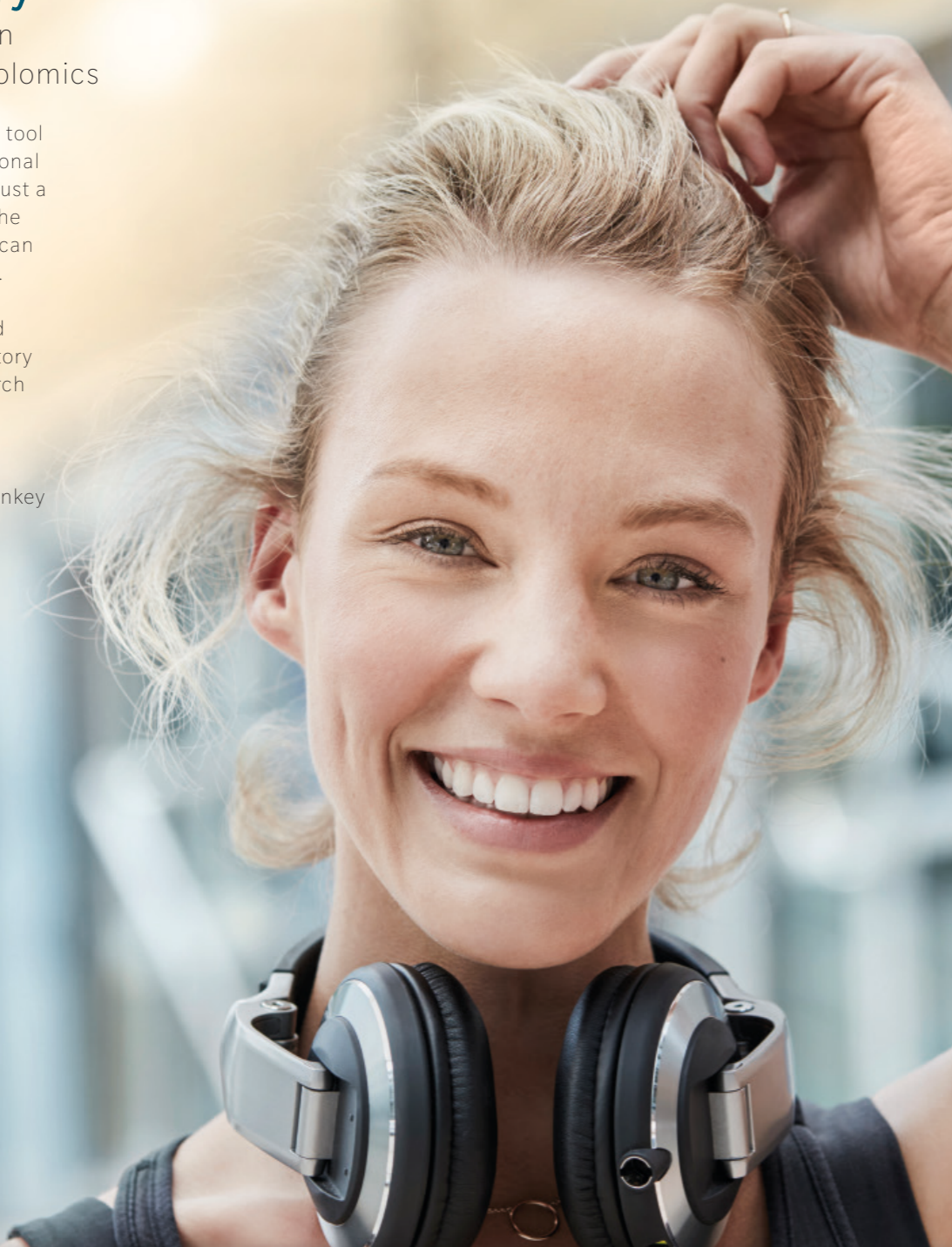
For research use only. Not for use in diagnostic procedures.

# biocrates kit technology

The gold standard in quantitative metabolomics

Metabolomics is a powerful tool to answer the multidimensional questions of biology. From just a few microliters of sample, the phenotype of an individual can be uncovered and explored. Metabolomics is key to generating high-quality and reliable data that is mandatory for today's biological research and individualized health.

biocrates provides you with metabolomics kits – the turnkey solution for the success of your metabolomics study.



## Why use metabolomics kits



### Ready-to-use

- ▶ Fully integrated workflow in one box (reagents, consumables, LC-MS methods, workflow manager WebIDQ software)
- ▶ Kit implementation in less than 2 days (no method optimization required)



### High throughput with minimal sample volume

- ▶ Hundreds of samples per week from minimal sample amounts
- ▶ Ability to measure metabolites in many matrices and species on a single plate



### Automated and guided workflow

- ▶ Validated and easy-to-use sample extraction protocols
- ▶ Workflow manager WebIDQ allows data export in various file formats for statistical analysis
- ▶ Automated quantification and technical validation

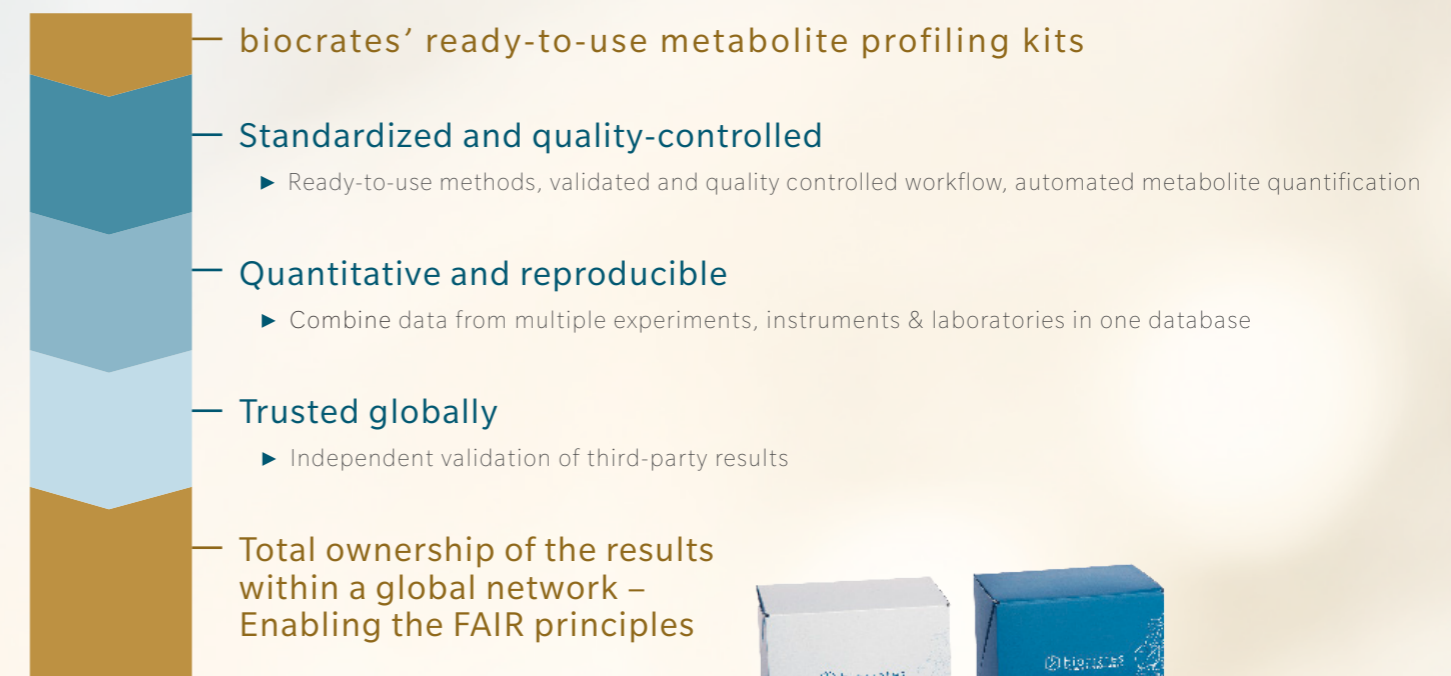


### Standardized, quantitative and quality-controlled

- ▶ Automated quantification and highly reproducible data
- ▶ Quality controls for performance check and data normalization
- ▶ Designed for longitudinal studies and inter-lab comparability

## Use kits locally to connect science globally

Connected data brings your research to a new level



## More information



Visit our website to find out more about metabolomics and our products [biocrates.com](https://biocrates.com)








# Mass spectrometry-based metabolomics kits – Workflow

- 
**Workflow initiation**
  - ▶ Create a new project in WebIDQ and register your samples
  - ▶ Customize plate layout and export sample sequence to MS software
- 
**Sample preparation**
  - ▶ Run test samples and perform system suitability test
  - ▶ Reconstitute calibration and QC samples, thaw study samples, prepare kit plate
- 
**Data collection**
  - ▶ Import sample sequence from WebIDQ (compatible with MS software)
  - ▶ Run the samples using LC-MS/MS and FIA-MS/MS methods
- 
**Quantification & Validation**
  - ▶ Process data in WebIDQ with automated peak picking and metabolite quantification
  - ▶ Use integrated features for performance check and data normalization, and export results
- 
**Statistics & Interpretation**
  - ▶ Export results from WebIDQ to your statistics software of choice
  - ▶ Use MetaboINDICATOR and explore advanced insights into metabolic processes and pathways
- 
**Insight & Understanding**
  - ▶ Use Quantitative metabolomics database (QMDB) and compare your results with reference ranges
  - ▶ Contact biocrates for data services (i. e. statistical packages or data interpretation)

## Reliable data for sustained scientific impact

Standardization for increased reliability

- 
**Scalable kit technology**
  - ▶ Quantitative data
  - ▶ Standardized workflow
  - ▶ Technical validation
  - ▶ Optimized methods
- 
**Across laboratories and instruments**
  - ▶ **AbsoluteIDQ® p180 kit**  
Ring trial with 5 labs (3 MS platforms)  
**7.6 % mean inter-lab precision**  
(Siskos et al. Anal. Chem. 2016)
  - ▶ **MxP® Quant 500 (XL) kit**  
Ring trial currently in progress
- 
**Data can be compared and combined across labs, longitudinal and worldwide**
  - ▶ Inter-laboratory comparison
  - ▶ Inter-MS instrument comparison
  - ▶ Quantitative metabolomics database

## Workflow manager WebIDQ

WebIDQ is our cloud-based workflow management software that guides you through the entire kit workflow, from sample registration and plate layout customization, through metabolite quantification and data reporting. It is a required companion to run biocrates kits and available as separate cloud or on-premises subscription.





WebIDQ has been designed specifically for a cloud-based infrastructure with automatic backups and updates, allowing data to be accessed and processed from any device through a browser.

Advanced features, such as peak picking for accelerated metabolite quantification, and advanced validation features for quality control and performance check, streamline sample analysis and give confidence in your generated metabolomics data.



# More than metabolites

Our specialized software module MetaboINDICATOR™ automatically calculates and reports up to 474 relevant metabolite sums and ratios from the data generated with the MxP® Quant 500 XL kit. This adaptable feature also allows the user to define new sums and ratios to explore new biochemical aspects of the data.

 <p>Fischer et al. 1974.</p>	<h3>Fischer ratio</h3> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\frac{\text{BCAA (Val + Leu + Ile)}}{\text{AAA (Phe + Try + Trp)}}</math> </div> <p>↓ ratio ↑ severity of liver failure</p>	 <p>Hornýák et al. 2018.</p>	<h3>IDO activity</h3> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\frac{\text{Kynurenine (Kyn)}}{\text{Tryptophan (Trp)}}</math> </div> <p>↑ ratio ↑ cancer invasiveness &amp; progression</p>
 <p>Paapstel et al. 2018.</p>	<h3>Phospholipase A2 activity</h3> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\frac{\text{Lysophosphatidylcholines (LPCs)}}{\text{Phosphatidylcholines (PCs)}}</math> </div> <p>↑ ratio ↑ inflammation and CVD</p>	 <p>Nho et al. 2019.</p>	<h3>Gut bacterial profile</h3> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\frac{\text{Secondary bile acids}}{\text{Primary bile acids}}</math> </div> <p>↑ ratio ↑ cytotoxicity ▶ NAFLD, AD, cancer</p>

# Exploring your data

No matter which way you choose to generate your data, we offer a variety of data analysis and interpretation options when you need it. This shortens your time to finalize your project and gives you the freedom to explore the future of research and health.

## Data only

- ▶ Raw data processing
- ▶ Quality control
- ▶ Data normalization

## Statistical package

- ▶ Data processing (e.g. handling of values < LOD, outlier detection, log transformation)
- ▶ MetaboINDICATOR™ (i.e. calculation of metabolite sums and ratios incl. background information)
- ▶ Descriptive statistics (e.g. mean, median, SD, IQR)
- ▶ Univariate statistics
- ▶ Significance testing (e.g. p-values, false discovery rates)
- ▶ Fold changes
- ▶ Multivariate statistics (e.g. PCA, PLSDA, cluster analysis)
- ▶ Data visualization (e.g. box plots, score plots, heatmaps)

## Data interpretation

- ▶ Pathway analysis
- ▶ Biochemical interpretation (e.g. consideration of specific metabolite sums)
- ▶ Literature research

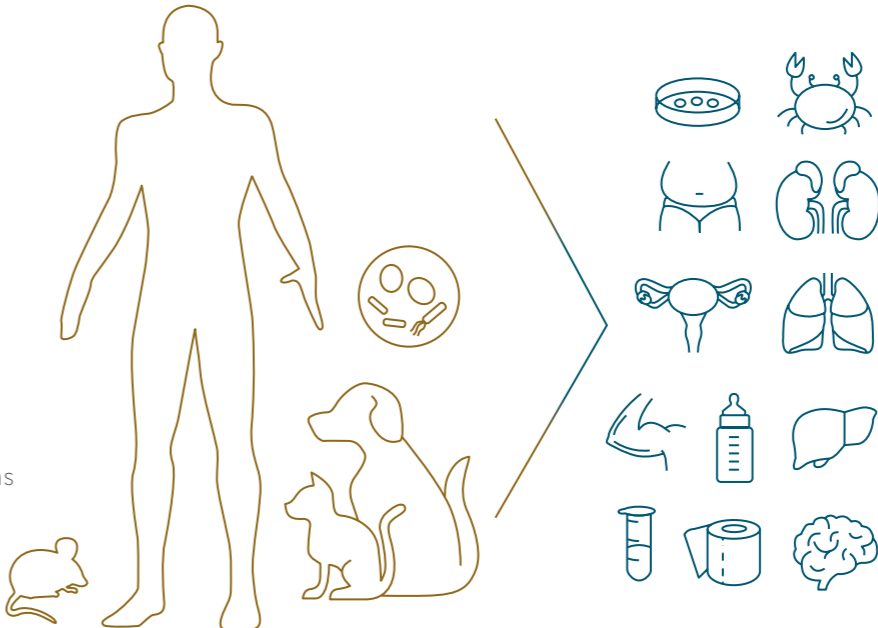
# Metabolomics – The universal language of biology

Connecting biological systems

Application of metabolomics is feasible for a wide range of sample matrices and species. Which samples do you work with?

### Species

- ▶ Human
- ▶ Mouse
- ▶ Rat
- ▶ Monkey
- ▶ Cow
- ▶ Dog
- ▶ Zebrafish
- ▶ Cat
- ▶ Yeast
- ▶ C. elegans
- ▶ E. coli



### Matrices

- ▶ Plasma, serum
- ▶ Dried blood spots
- ▶ Cells and culture medium
- ▶ Tissue
- ▶ Feces
- ▶ Follicular fluid
- ▶ Milk
- ▶ Urine
- ▶ CSF
- ▶ Many more

# Zoom into your favorite pathway

From hypothesis generation to verification

## Choose the kit

### MxP® Quant 500 (XL) kit

- ▶ The largest combination of lipids and small molecules for quantitative metabolic profiling in a single kit
- ▶ Up to 107 small molecules and 912 lipids

### MxP® Quant HR Xpress kit

- ▶ Covers 42 small molecules & 321 lipids

### AbsoluteIDQ® p180 kit

- ▶ Targeted metabolomics with >1000 scientific publications
- ▶ Up to 43 small molecules & 145 lipids

### AbsoluteIDQ® p400 HR kit

- ▶ Up to 43 small molecules & 365 lipids

## Zoom into interesting pathways with more sensitivity and broader coverage

## Hypothesis verification

available as a service only

biocrates kits

### Steroids

- ▶ 17 metabolites

### Oxysterols, free

- ▶ 18 metabolites

### Acylcarnitines

- ▶ 44 metabolites

### AbsoluteIDQ®

### Bile Acids kit

- ▶ Up to 20 bile acids

### Tryptophan

- ▶ 17 metabolites

### Short- and medium chain fatty acids (SCFA+)

- ▶ 19 metabolites

## Detailed pathway view

## Read more



biocrates  
list of metabolites

More than 1,000 metabolites accessible through targeted metabolomics

[biocrates.com/metabolites](https://biocrates.com/metabolites)



Applications of  
metabolomics

Understand where metabolomics is already changing lives today

[biocrates.com/applications](https://biocrates.com/applications)



Our technology

Get a detailed view of how you can implement our kits in your laboratory and which kit is best to choose for your application.

[biocrates.com/our-technology](https://biocrates.com/our-technology)



Compatibility

Mass spectrometry systems

[biocrates.com/compatibility](https://biocrates.com/compatibility)

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