MALDISTAR

CeMOS
Center for Mass Spectrometry and Optical Spectroscopy

MALDISTAR

– Goals & Next Steps –

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Goals of MALDISTAR

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CeMOS Center for Mass Spectrometry and Optical Spectroscopy

The **MALDISTAR** project aims at **improving standardization and reproducibility for MALDI imaging applications**. Focusing on **pilot scenarios** in imaging of peptides and small molecules from **FFPE** and **fresh-frozen** tissue, we are **investigating and developing methods** for **quality assessment, data normalization and enhanced data comparability.**

QQ-Metrics

The **MALDISTAR** project aims to **develop quality assessment** tools and **quantitative metrics** that allow **evaluating** whether a given **MALDI MSI dataset** should be rejected or is of sufficient **quality for a given analysis task**, or whether **multiple datasets** show **sufficiently similar** characteristics in order to be **analysed collectively**.

The QQ-Metrics will be used to answer the following questions:

→ "Is the quality of this dataset sufficient for a given task or should it be rejected?"

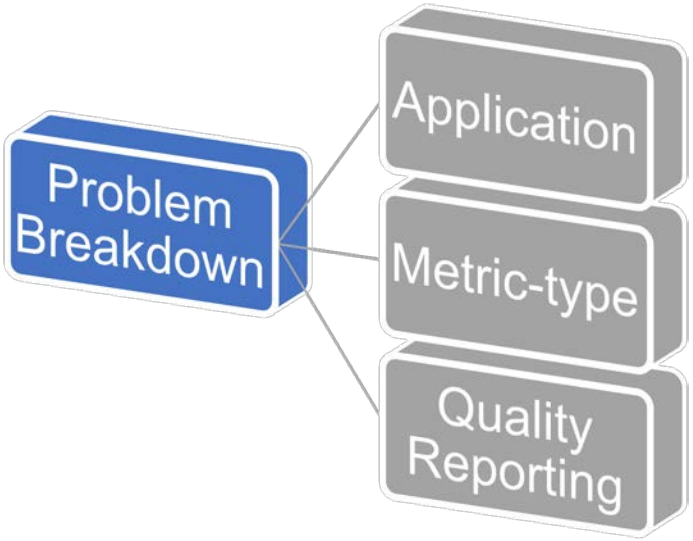
→ "Is this collection of data sufficiently homogenous to allow joint analysis?"

→ "Which of these datasets should be used in an analysis to obtain most reliable results?"

Problem Breakdown

Applications portfolio of MALDI MSI has grown to include a **wide variety of focus areas** from drug quantification to tissue typing and classification. It is important to recognize that there is no "**one solution fits all**" when it comes to relevant QQ-Metrics.

The problem of developing suitable QQ-Metrics has to be broken down into meaningful sub-focus areas:



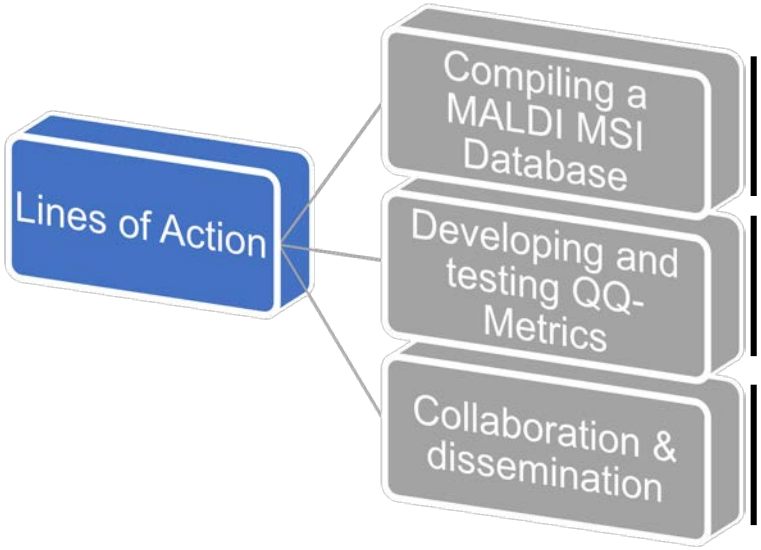
- Quantification of analytes.
- Tissue typing and classification.
- Targeted analysis.

- Spectrum-based.
- Image-based.
- Molecular semantics.

- Absolute metrics (reproducible/not reproducible).
- relative metrics (more/less reproducible).
- Visualization metrics.

MALDISTAR Lines of Action

For achieving the main objectives, MALDISTAR will combine three parallel lines of action:

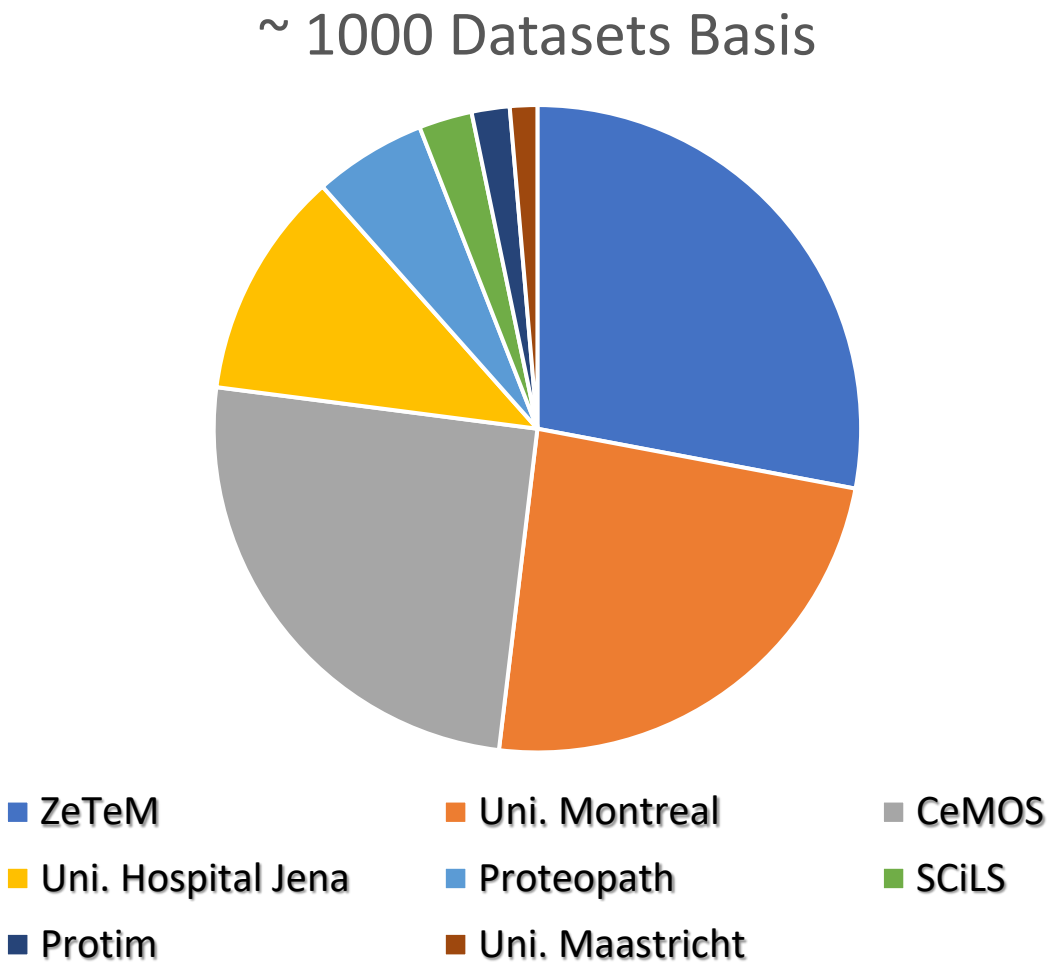


Existing data contributed by MSI-community and dedicated series of experiments with controlled conditions.

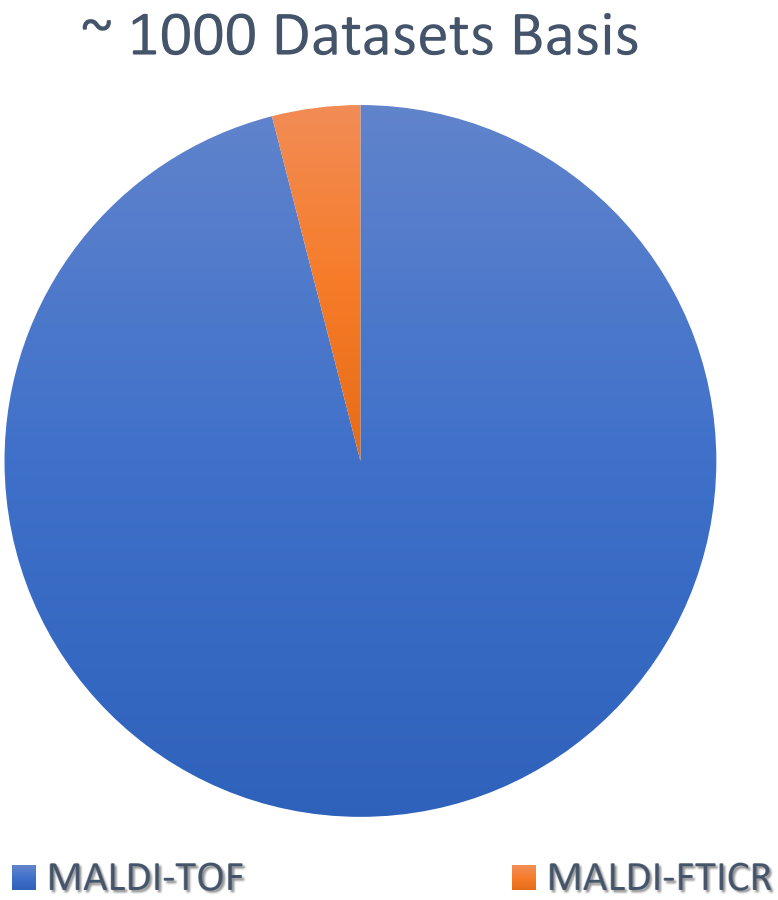
According to the problem breakdown principle.

Actively involving representatives of the MALDI MSI-Community to foster dissemination.

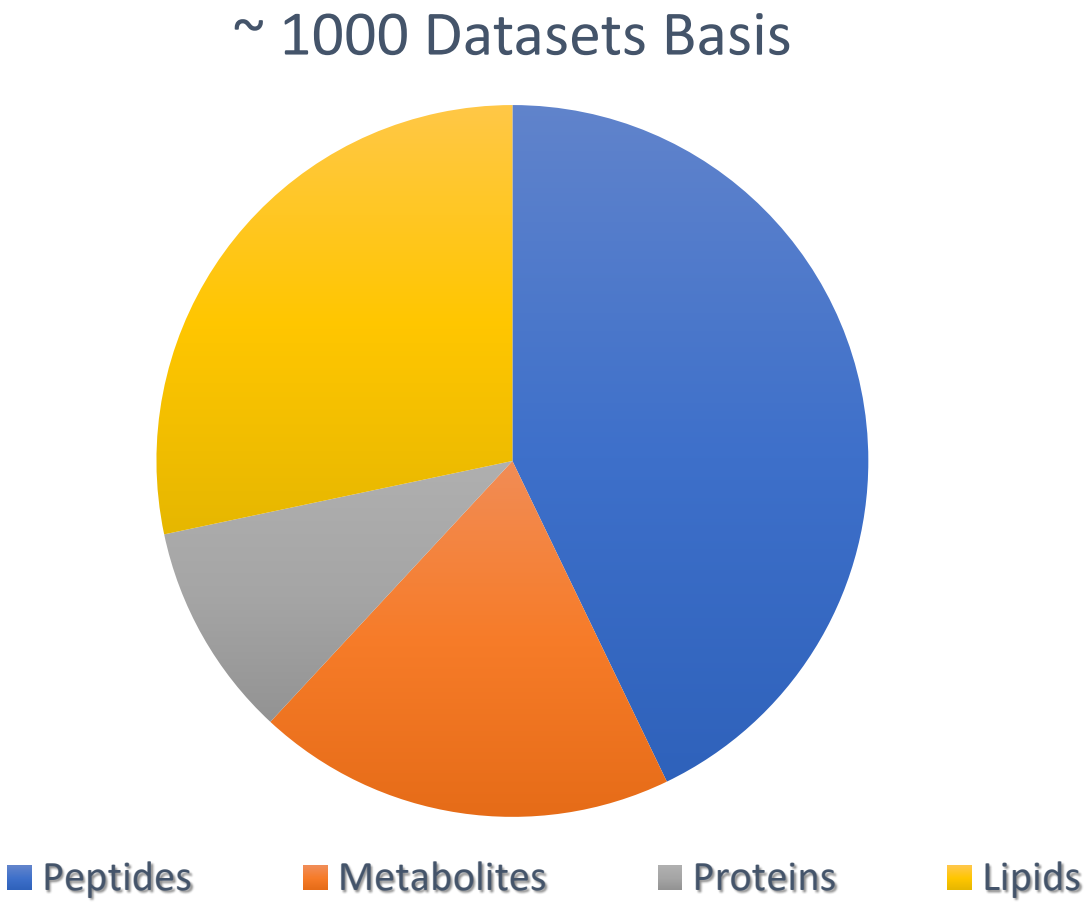
Collaboration with MSI-Community



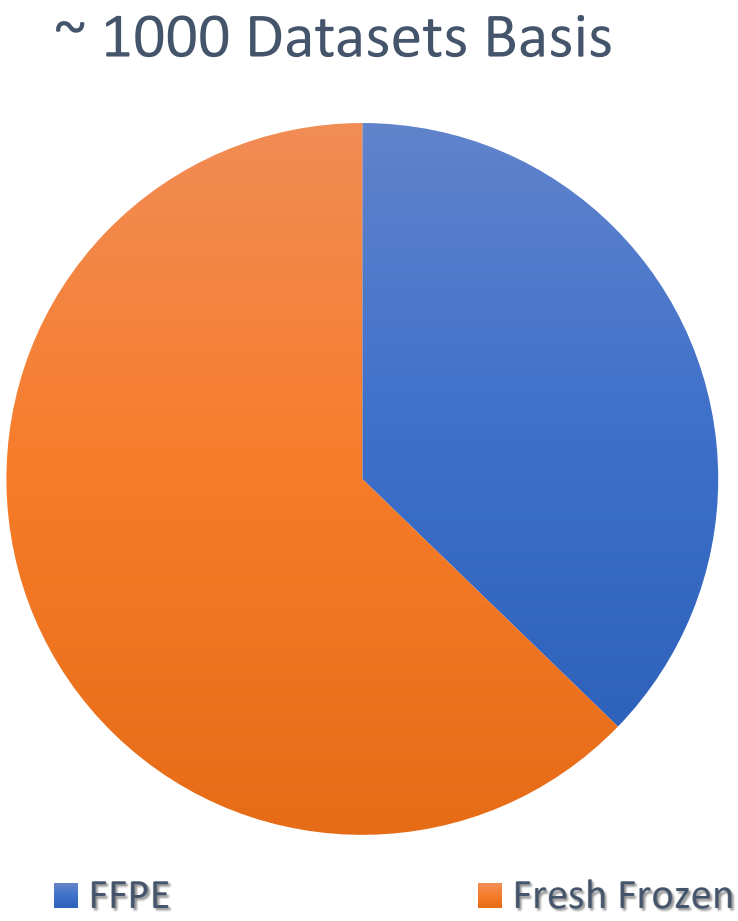
Collaboration with MSI-community



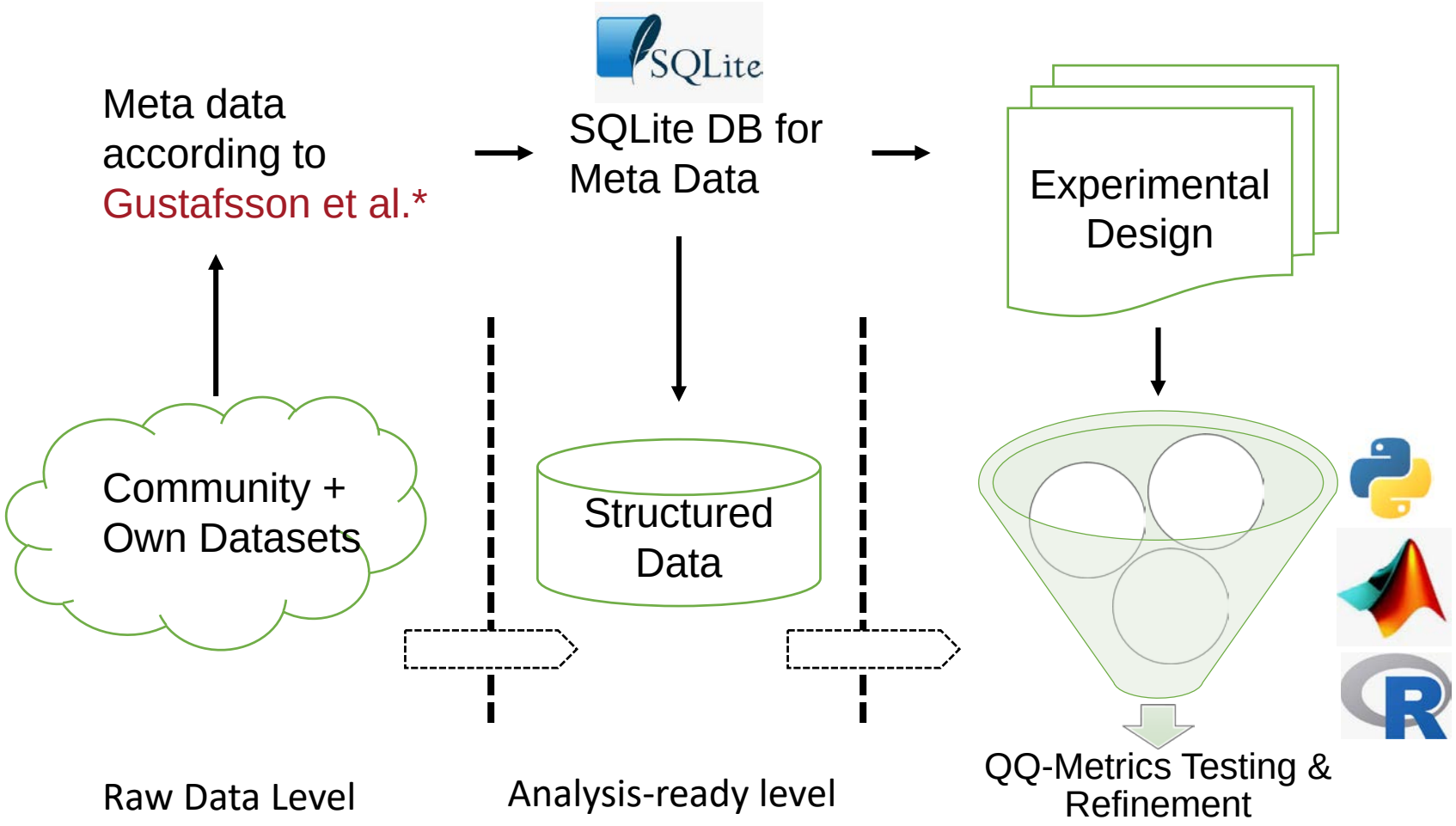
Collaboration with MSI-community



Collaboration with MSI-community



Experimental Workflow



*Gustafsson et al. GigaScience, 7, 2018, 1-13

Thank you for your attention

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KTS

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