# Polyomics Metabolomics Project Form

## Contact details

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| --- | --- | --- | --- |
| Name |  | Email |  |
| PI |  | Date |  |

Project details

## Project Details

|  |  |
| --- | --- |
| Project title |  |
| Services required |  |
| Project summary | Yes No |
| Funding |  |
| Total number of samples (inc. replicates) |  |
| Number of replicates |  |

## Samples

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Organism | |  | |  | | |  |
| **Analysis type** | | | | | | | |
| **LC-MS method** | | | | **Metabolomics experiment type** | | | |
|  | General metabolism including polyamines (ZIC-HILIC) | | |  | Case vs control | | |
|  | General metabolism including phosphosugars and organic acids (ZIC-pHILIC) | | |  | Biomarker discovery  (by discussion only) | | |
|  | Steroid analysis  (by discussion only) | | |  | Stable isotope labeling | | |
|  | Sugar/sugar phosphate separation (by discussion only) | | |  | Timecourse | | |
|  | Other  (by discussion only) | | |  | Other  (by discussion only) | | |
| Sample due date | |  | | | | | |
| Sample preparation method | | | |  | | | |
| Delivery method | |  | Internal mail |  | Post/Courier |  | Personal |
| Estimated LC-MS analysis date (internal) | | | |  | | | |

## Analysis

|  |  |
| --- | --- |
| **Deliverables** | |
|  | |
| Analysis time |  |

## Additional information

|  |  |
| --- | --- |
| Quote |  |
| Budget code or PO number |  |
| Authorship | Yes No |

## Notes

## Information

We generally recommend a targeted analysis based around ZIC-pHILIC-MS, due to its capacity to detect and separate the organic acids and phosphosugars that are key to central metabolism and especially energy metabolism.

Oxidation and measurement of oxidative stress are extremely challenging using mass spectrometry, due to the presence of an oxidizing atmosphere at all times during storage and sample analysis. Generally, biochemistry kits are more cost effective and useful for this purpose.

Due to the between ionization efficiency and matrix effects, we are currently unable to provide absolute quantitation for our panel of metabolites.

We do take on projects that require substantial methods development, subject to approval, but these must include provision of a fully costed, dedicated post-doctoral researcher with metabolomics experience. This person would be embedded within Polyomics, but under the joint management of the PI and head of metabolomics. The post-doc would be responsible for delivering the new methodology, and any results required.

## Starting material

Liquid 5µl

Solid extraction 5µl pellet

If these amounts are difficult to get we have various protocols for low input LC-MS.

## Data analysis (optional)

The basic data analysis will provide:

1. Processed data in the form of a peak report for each targeted compound.
2. Measurement (in counts) of the relative concentration of each metabolite per sample.
3. Further work – statistical analysis, generation of figures, expansion of the dataset to include putative compounds and verification of identity using fragmentation data MUST be costed additionally as per untargeted metabolomics below.

For untargeted metabolomics, data analysis is complex and challenging. Analysis of an untargeted dataset is essentially a short project of its own and consists of:

* Consultation and guidance on experimental design
* Scheduling and development of project milestones and deadlines
* Supervision of LC-MS runs
* QC and data quality analysis
* Data processing through in-house pipelines
* Regular contact with collaborator via Skype/meetings with sample generator/PI
* Identification of lead compounds
* Evaluation of lead compounds by peak evaluation, metabolic pathway analysis, fragmentation searching, together with generation of written and verbal report of results
* Assistance with paper writing, generation of figures/tables with appropriate terminology and guidance on publication requirements

Due to the significant intellectual input required for these projects, we would expect authorship for the informatician involved and, in some cases, the head of metabolomics.