

# MoSAIC: Modular Shared Analyses Infrastructure Center

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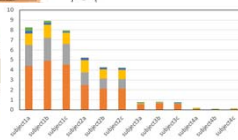
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## Introduction

The aim of this study was to develop infrastructure for joint interdisciplinary support of research and education at University of Ljubljana and its external collaborating partners, that would enable access to high-throughput analyses of samples relevant for (i) human physiology, (ii) human microbiome responses (intestinal tract, lung, mouth, etc.), (iii) laboratory animal (mice microbiome), and (iv) environment (air-con systems, biogas reactors).

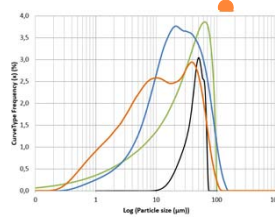
## Analyses of samples



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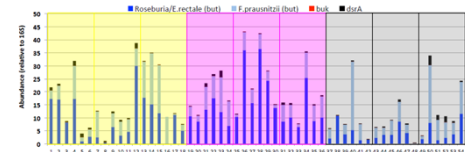
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Supporting software development and implementation

Data integration



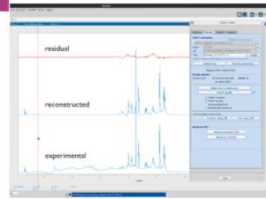
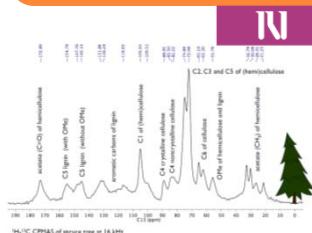
High-throughput measurements of short chain fatty acids (C1-C6) from anaerobic ecosystems with gas chromatography



Laser particle size analysis

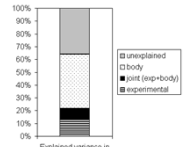
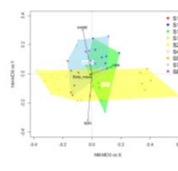
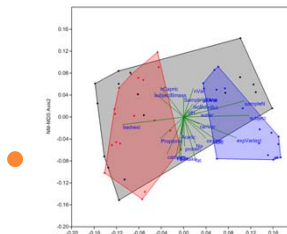


Liquid-state and solid-state NMR National Institute of Chemistry



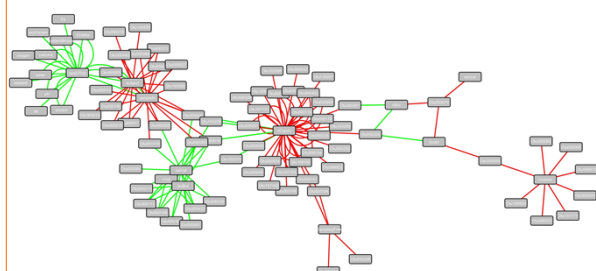
CRAFT analysis - Complete Reduction to Amplitude-Frequency Table: 13C NMR spectrum of 13C with addition of standard fatty acids. 18% D<sub>2</sub>O at 298 K.

Grid-computing Jožef Stefan Institute & ARNES



Multivariate analyses

Variance partitioning



Microbial metabolic networks

54 samples



3500 Microbial OTU  
Microbial species distribution

The establishment of MoSAIC enabled high through-put analyses of short chain fatty acids as metabolites present in intestinal tract of test subjects involved in EU FP7 PlanHab Project (<http://www.planhab.com/>) in response to three-week normoxic or hypoxic bedrest. Liquid-state NMR of water soluble extracts are being analyzed using 1s-NMR for relative identification of a more numerous set of watersoluble organic compounds in the same samples (<http://www.nmr.ki.si/>). Bioinformatic grid computing supports computationally intensive analyses of next generation sequencing of microbiome samples from PlanHab Project. **Future: Collaborative analyses of samples collected from human subjects, laboratory animals, natural and human made environments.**