

BALÁZS PAPP



Biological Research Centre
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RESEARCH AREA

Metabolism is central to life as it provides the building blocks and energy for all biological processes. While its fundamental tasks are highly conserved across all life forms, there are substantial differences in the details of how metabolism works across species and individuals. Humans are no exception. Any two of us show large metabolic differences and many diseases are known to involve changes in metabolism. However, not all metabolic differences are harmful and identifying those that impact human health is of paramount importance for medicine. Our laboratory uses computational approaches to study the variation of metabolism both within human populations and between different species. Our goal is to uncover the signatures of natural selection acting on human metabolism and thereby increase our understanding of healthy and diseased states.

For more details, see www.brc.hu/sysbiol/.

TECHNIQUES AVAILABLE IN THE LAB

Basic bioinformatics and chemoinformatics methods, phylogenetics and comparative genomics methods, computational metabolomics, experimental metabolomics, R statistical programming language, Matlab programming language, Perl programming language, statistical methods, machine learning.

SELECTED PUBLICATIONS

Zampieri, M.*, Szappanos, B.*, Buchieri, M.V., Trauner, A., Piazza, I., Picotti, P., Gagneux, S., Borrell, S., Gicquel, B., Lelievre, J., **Papp, B.**, Sauer, U. (2018) High-throughput metabolomic analysis predicts mode of action of uncharacterized antimicrobial compounds. **Science Translational Medicine** **10**: eaal3973.

Notebaart, R.A., Szappanos, B., Kintsjes, B., Pál, F., Györkei, A., Bogos, B., Lázár, V., Spohn, R., Csörgő, B., Wagner, A., Ruppin, E., Pál, C., **Papp, B.** (2014) Network-level architecture and the evolutionary potential of underground metabolism. **Proc Natl Acad Sci U S A** **111**: 11762-11767.

Szappanos, B., Kovács, K., Szamecz, B., Honti, F., Costanzo, F., Baryshnikova, A., Gelius-Dietrich, G., Lercher, M.J., Jelasity, M., Myers, C.L., Andrews, B.J., Boone, C., Oliver, S.G., Pál, C., **Papp, B.** (2011) An integrated approach to characterize genetic interaction networks in yeast metabolism. **Nature Genetics** **43**: 656-62.

Papp, B., Pál, C., Hurst, L.D. (2004) Metabolic network analysis of the causes and evolution of enzyme dispensability in yeast. **Nature** **429**: 661-4.