

Quantitative (metabonomics in) medicine



Wed, Dec 7th 2011, Tehnomeedikum, Akadeemia 1, Tallinn

17.00 Introduction

Marko Piirsoo: TUT and medical research

Margus Viigimaa: Cardiology and metabolic markers

Ago Samoson: NMR and other methods

17.15 Main presentations

Mika Ala-Korpela

18.00 Coffee

18.15 MinJi Shin

19-9 (+1) Discussion, dinner

Info: +372 5063036

Registration (!) until Dec 5th: www.nmri.ttu.ee, nmr.institute@gmail.com



High-Throughput Serum NMR Metabonomes

— The New Era of Metabolic Phenotyping in Epidemiology & Genetics

代谢表型鉴定应用于流行病学与遗传学领域的新时代

Mika Ala-Korpela 基于核磁共振的高通量血清代谢物组

Professor in Computational Medicine

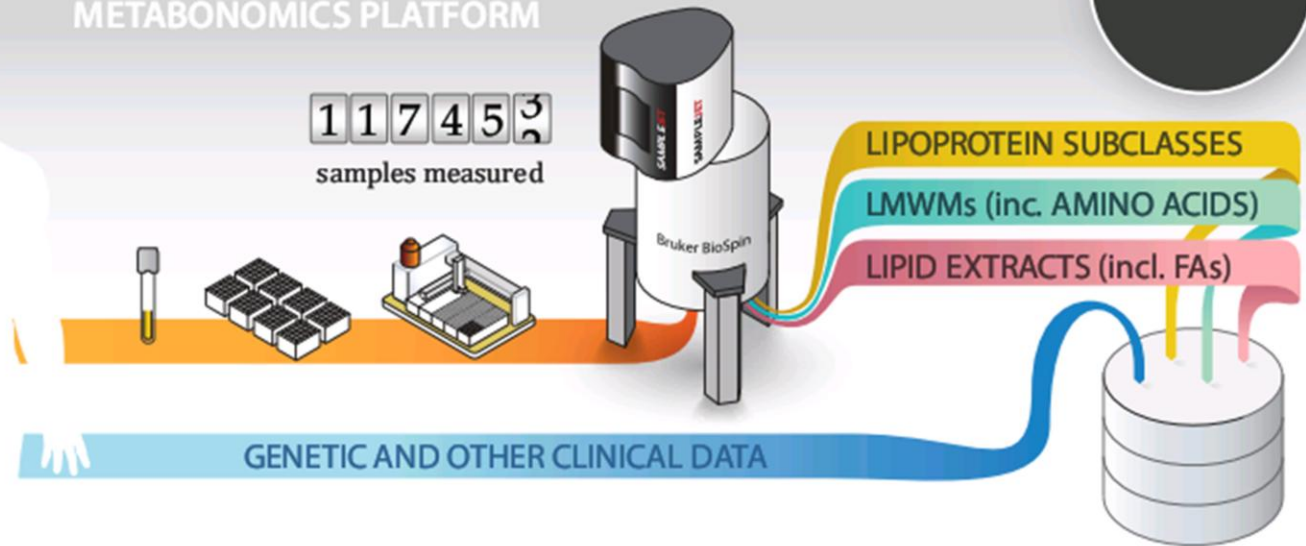
Visiting Professor in Omics Sciences

Computational Medicine Research Group
University of Oulu & Biocenter Oulu,
Faculty of Medicine
Institute of Clinical Medicine, Oulu, Finland

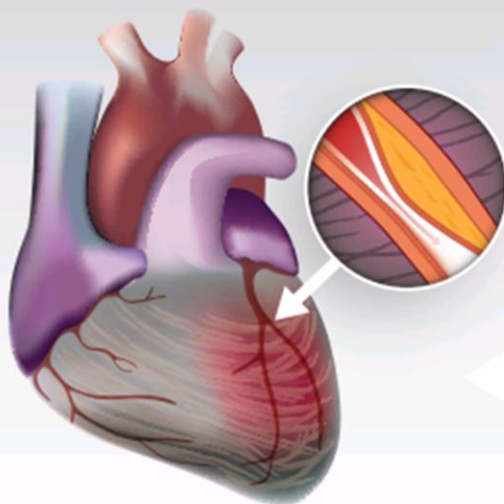
Central South University
College of Chemistry and Chemical Engineering
Changsha, Hunan Province, China



METABONOMICS PLATFORM



CARDIOVASCULAR PROBLEMS



COMPUTATIONAL ANALYSES, DISCOVERY, RISK PROFILING, VISUALIZATION



RECENT PUBLICATION HIGHLIGHTS

P. Soininen et al.

High-throughput serum NMR metabonomics for cost-effective holistic studies on systemic metabolism.

Analyst

134,1781-1785, 2009

J. C. Chambers et al.

Genome-wide association study identifies loci influencing concentrations of liver enzymes in plasma.

nature genetics

43,1131-1138, 2011

Ala-Korpela et al.

Genome-wide association studies and systems biology: Together at last.

Trends in Genetics

27, 493-498, 2011

NMR metabonome of diabetes

당뇨병에 관한 메타볼로믹스 엔엠알 연구

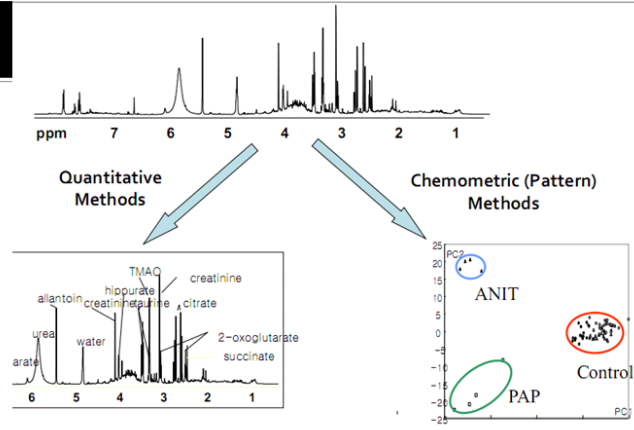
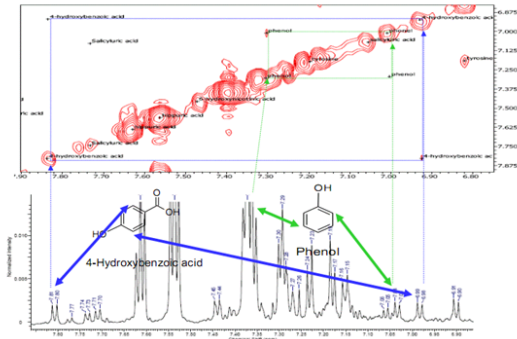


Min-Ji Shin
Tallinn University of Technology

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|----------------------|------------------|-----------------|-----------------|
| 2-Aminobutyrate | Butyrate | Histidine | Proline |
| 2-Hydroxybutyrate | Carnitine | Hypoxanthine | Polylene glycol |
| 2-Hydroxyisovalerate | Choline | Isobutyrate | Pyruvate |
| 2-Hydroxyglutarate | Citrate | Isoleucine | Serine |
| 2-Oxobutyrate | Creatine | Isopropanol | Succinate |
| 2-Oxoproate | Creatinine | Isovalerate | succinylacetone |
| 2-Phenylpropionate | Dimethyl amine | Lactate | Taurine |
| 3-Hydroxybutyrate | Dimethyl sulfone | Leucine | trimethylamine |
| Acetate | Ethanol | Lysine | Threonine |
| Acetoacetate | Formate | Malonate | Tyrosine |
| Acetone | Fumarate | Maltose | Urea |
| Alanine | Fructose | Methanol | Valerate |
| Allantoin | Glucose | Methionine | Valine |
| Alloisoleucine | Glutamate | Methylguanidine | 2-Oxisovalerate |
| Arginine | Glutamine | Methylsuccinate | Pyruvatoxime |
| Asparagine | Glycerol | Myo-inositol | Threitol |
| Aspartate | Glycine | Ornithine | 2,3-Butanediol |
| Betaine | | Phenylalanine | |

Two Routes to Metabolomics

Example of assignment



..and our results

