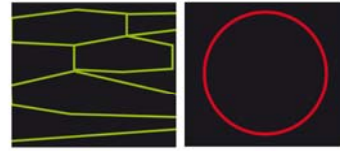




**UNIKLINIK
KÖLN**

CRC 670



CELL-AUTONOMOUS IMMUNITY

Seminar

Tuesday, August 25th, 2014, 3 p.m.

Dr. Vidya Velagapudi

Metabolomics Department at the Institute for Molecular Medicine, Helsinki, Finland

Clinical applications of metabolomics biomarker – a case study

Host:

Dr. Nirmal Robinson, Institute for Medical Microbiology, Immunology and Hygiene,
University Hospital Cologne

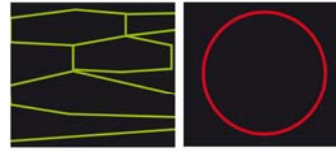
Venue:

CECAD Research Center, Joseph-Stelzmann-Str. 26, 50931 Köln
Lecture hall ground floor



UNIKLINIK
KÖLN

CRC 670



CELL-AUTONOMOUS IMMUNITY

Dr. Vidya Velagapudi,
Ph.D, Adjunct Professor

Clinical applications of metabolomics biomarker – a case study

Abstract

Both maternal and offspring-derived factors contribute to lifelong growth and bone mass accrual, although the specific role of maternal deficiencies in the growth and bone mass of offspring is poorly understood. In the present study, we have shown that vitamin B12 (B12) deficiency in a murine genetic model results in severe post-weaning growth retardation and osteoporosis, and the severity and time of onset of this phenotype in the offspring depends on the maternal genotype. Using integrated physiological and metabolomic analysis, we determined that B12 deficiency in the offspring decreases liver taurine production and associates with abrogation of a growth hormone/insulin-like growth factor 1 (GH/IGF1) axis. Taurine increased GH-dependent IGF1 synthesis in the liver, which subsequently enhanced osteoblast function, and in B12-deficient offspring, oral administration of taurine rescued their growth retardation and osteoporosis phenotypes. We have also shown that B₁₂ status correlates with taurine and the bone formation marker, osteocalcin during early postnatal life and aging in humans. These results identify B12 as an essential vitamin that positively regulates postweaning growth and bone formation through taurine synthesis and suggests potential therapies to increase bone mass.

Affiliation

Head of Metabolomics Unit,
Institute for Molecular Medicine Finland FIMM,
Nordic EMBL Partnership for Molecular Medicine,
Biomedicum Helsinki 2U, Tukholmankatu 8,
P.O Box-20, Helsinki-00014, Finland

<https://www.fimm.fi/en/services/technology-centre/metabolomics>

Date & Venue

25th August 2014

CECAD, Cologne, Germany