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## **RESEARCH AREA**

Brown/beige adipocytes are mitochondria-rich cells, which can dissipate energy in the form of heat. The heat production of these thermogenic cells is mediated by the activity of uncoupling protein 1 (UCP1). The thermogenic activity of brown/beige adipocytes is potently activated by cold, which stimulates the uptake of metabolic substrates such as glucose, fatty acid, and amino acids (AA). My research mainly focuses on the solute carrier (SLC) transporters, which mediate the consumption of nutrients required for the efficient thermogenic response in human primary adipocytes. Our preliminary data showed that activated human adipocytes consumed higher amounts of several types of amino acids. In parallel, our global transcriptomic analysis showed that the expression of SLC transporters, which are responsible for the uptake of these amino acids, were also elevated during cAMP stimulation. We intend to investigate the significance of amino acids transporters on the adipocyte metabolism. The modulation of amino acid transporters may boost thermogenic activation in adipocytes, which may serve as effective therapeutic approaches for the treatment of obesity and obesity-related diseases.

## **TECHNIQUES AVAILABLE IN THE LAB**

Isolation of nucleic acids, reverse transcription coupled quantitative polymerase chain reaction, functional genomics analysis of RNA-sequencing data by Galaxy, gene set enrichment analysis (GSEA), immunoblotting, cultivation of cells, ELISA, functional cellular metabolic analysis (Seahorse XF96 extracellular flux assay), gene knockdown by small interference RNA (siRNA).

## SELECTED PUBLICATIONS

**Arianti, R.**, Vinnai, B. Á., Győry, F., Guba, A., Csősz, É., Kristóf, E., & Fésüs, L. (2023) Availability of abundant thiamine determines efficiency of thermogenic activation in human neck area derived adipocytes. **J Nutr Biochem 119:** 109385.

Vinnai, B. Á., **Arianti, R.**, Győry, F., Bacso, Z., Fésüs, L., & Kristóf, E. (2023) Extracellular thiamine concentration influences thermogenic competency of differentiating neck areaderived human adipocytes. **Front Nutr 10:** 1207394.

Vámos, A., **Arianti, R.,** Vinnai, B. Á., Alrifai, R., Shaw, A., Póliska, S., Guba, A., Csősz, É., Csomós, I., Mocsár, G., Lányi, C., Balajthy, Z., Fésüs, L., & Kristóf, E. (2023) Human abdominal subcutaneous-derived active beige adipocytes carrying FTO rs1421085 obesity-risk alleles exert lower thermogenic capacity. **Front Cell Dev Biol 11:** 1155673.

Huang, Z., Gu, C., Zhang, Z., **Arianti, R.**, Swaminathan, A., Tran, K., Battist, A., Kristóf, E., & Ruan, H. B. (2023) Supraclavicular brown adipocytes originate from Tbx1+ myoprogenitors. **PLoS Biol 12:** e3002413.

Arianti, R., Vinnai, B. Á., Tóth, B. B., Shaw, A., Csősz, É., Vámos, A., Győry, F., Fischer-Posovszky, P., Wabitsch, M., Kristóf, E., & Fésüs, L. (2021) ASC-1 transporter-dependent amino acid uptake is required for the efficient thermogenic response of human adipocytes to adrenergic stimulation. FEBS Lett 16: 2085-2098.

Tóth, B. B., **Arianti, R.**, Shaw, A., Vámos, A., Veréb, Z., Póliska, S., Győry, F., Bacso, Z., Fésüs, L., & Kristóf, E. (2020) FTO Intronic SNP Strongly Influences Human Neck Adipocyte Browning Determined by Tissue and PPARγ Specific Regulation: A Transcriptome Analysis. **Cells 4:** 987.