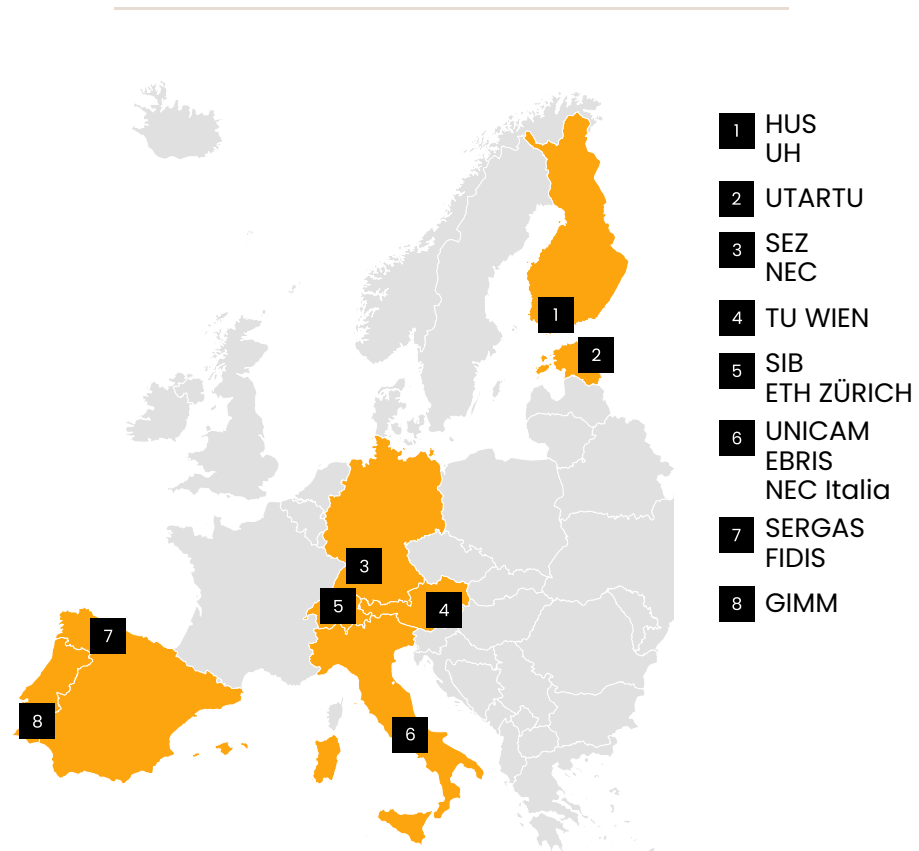


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ENDOTARGET

Systemic Endotoxemia as the driver of chronic inflammation – Biomarkers and novel therapeutic targets for Arthritis

PUBLICATIONS

Formononetin, a Beer Polyphenol with Catabolic Effects on Chondrocytes. doi: 10.3390/nu15132959

β boswellic acid blocks articular innate immune responses: an in silico and in vitro approach to traditional medicine. doi: 10.3390/antiox12020371

Beyond Seasoning—The Role of Herbs and Spices in RDs. doi: 10.3390/nu15122812

The hepatokine RBP4 links metabolic diseases to articular inflammation. doi: 10.3390/antiox13010124

The collagenase-induced osteoarthritis (CIOA) model: Where mechanical damage meets inflammation. doi: 10.1016/j.ocarto.2024.100539

Increased intestinal mucosal permeability and metabolic endotoxemia predict the risk of cardiovascular mortality. doi: 10.1016/j.atherosclerosis.2025.119220

Sensor-integrated gut-on-a-chip for monitoring senescence-mediated changes in the intestinal barrier. doi: 10.1039/d4lc00896k

TASTY trial: protocol for a study on the triad of nutrition, intestinal microbiota and RA. doi: 10.1186/s12937-025-01089-6

Evaluating the role of LPS in the joint: fibronectin as a novel protective mechanism. doi: 10.1136/rmdopen-2025-005622

Odoribacter splanchnicus lipooligosaccharide: an uncommon structure with weak immunostimulatory activity. doi: 10.1039/d5sc08335d

Regulation of inflammation and osteogenic–adipogenic balance on titanium surfaces: a systematic evaluation of LIPSS. doi: 10.1016/j.apsadv.2026.100962

Enrichment of HLA-DR+ neutrophils in osteoarthritic infrapatellar fat pad. doi: 10.1016/j.isci.2026.115214

LPS Drive Proinflammatory Extracellular Vesicle Secretion in Coronary Artery Endothelial Cells via Noncanonical Inflammasome Activation. doi: 10.1007/s00018-025-06006-y

Baclofen Promotes Osteochondrogenic Commitment of Mesenchymal Stem Cells: Implications for Heterotropic Ossification Risk. doi: 10.3390/ijms27062783

KEY RESULTS

- 

We explored the **relationship between gut permeability and metabolic endotoxemia** in RA, OA, and SpA patients. Findings from different scientific approaches provide new insights into their role in chronic inflammation and disease development.
- 

We improved our understanding of the **inflammatory effects of LPS and bacteria-derived elements** on joint tissue (*in vitro*, *in vivo*) and intestinal epithelium tissue (*in vitro*), showing that different bacterial species and strains possess distinct inflammatory capacities and effects on joint inflammation and tissue degeneration.
- 

We identified different **compounds that modulate the innate immune response** elicited by LPS, representing promising starting points for the development of novel preventive and therapeutic approaches.



The **effect of a Mediterranean diet** on RA was investigated in the TASTY study. Preliminary results show that diet has a positive effect on patient-reported outcomes. The trial’s main results will be included in **new learning & education materials**, in **considerations for clinical practice** and a **validated protocol** for future diet trials.



A novel **organ-on-a-chip platform** was developed to study the synergistic and regenerative effects of tissue movement on inflammation, enabling more physiologically relevant modelling of inflammatory processes and reducing the need for animal experiments.



The project generated **datasets** combining clinical, genomic, metabolomic, metagenomic and lifestyle data, enabling **statistical models** linking microbiota composition, systemic endotoxemia and intestinal permeability with age and the risk of developing RDs.



We are working on a **web-based feedback portal** on the risk of knee OA for Estonian Biobank participants, which is planned to combine genetic & environmental factors to provide personalised risk prediction scores. This result serves as a model potentially transferable to other biobanks.



The consortium is working towards a **rheumatic disease prediction tool** integrating clinical, demographic and microbiome data with AI models to identify individuals at risk of developing RDs before clinical symptoms occur.