

EXPERIMENTAL RHEUMATOLOGY

Title

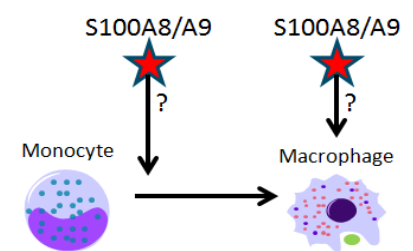
How do the alarmins S100A8 and S100A9 affect differentiation and activation of innate immune cells?

Clinical Relevance

Rheumatoid arthritis (RA) and osteoarthritis (OA) are two inflammatory arthritic diseases that affect millions of people worldwide. Both diseases are characterized by destruction of the joint, which includes breakdown of the articular cartilage, altered turnover/breakdown of the bone and inflammation in the synovium (the tissue that lines the joint cavity). Patients suffer from severe pain and an impaired mobility of the affected joints. However, the underlying molecular mechanisms remain largely elusive, which urges more research into the mechanisms that cause these complaints.

Background

Inflammation of the synovium has been shown to be crucially involved in the development of many rheumatic diseases, where particularly cells from the myeloid lineage (monocytes, macrophages, osteoclasts, neutrophils) play an important role. Two proteins that are made in very high levels during RA and OA (and other inflammatory diseases) are the damage-associated molecular patterns (DAMPs) S100A8 and S100A9. These proteins belong to the family of alarmins, that “alarm” cells from the immune system and therefore lie on the basis of myeloid cell activation via toll-like receptor 4 (TLR4).



Goals

In this project, you will analyze the effects of the S100A8 and S100A9 proteins on the differentiation and activation of myeloid cells. You will study the effects of S100A8 and S100A9 on the differentiation from monocytes to macrophages, cells that are central regulators in the inflammatory process. This will be compared to the stimulation of mature macrophages, on which these S100 proteins are known to have a pro-inflammatory function.

We Offer

We are working in a state of the art laboratory that is internationally renowned for its research that combines therapeutic strategies with diagnostics in OA and RA. You will participate in an interesting project that includes a broad spectrum of techniques including, amongst others, histology, cell culture, FACS, qPCR, Luminex protein analysis and cell viability assays. You will be able to improve your laboratory skills, develop your scientific thinking and expand your knowledge on molecular processes and immunology.

Continuing Your Internship Abroad?

We have a long-lasting collaboration with the lab of Johannes Roth at the Institute of Immunology at the University of Münster, Germany. This is a world leading lab in the field of innate immunology, which focuses on S100A8 and S100A9 biology. Would you like to continue working on the S100A8 and S100A9 proteins afterwards? That might be possible at the lab of Johannes Roth.

Contact

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