

S100 proteins as biomarkers – scale up and validations



ESR5 – David Popp, Muenster, Germany

Personal Background

▶ Education

- ▶ 2005 Biology at the University of Vienna
- ▶ 2007 Genetics/Microbiology at the University of Vienna
- ▶ 2009 Immunology at the University of Vienna
- ▶ 2010 Microbiology, Virology and Medical Parasitology at the University of California, Riverside, CA
- ▶ 2010 Practical course at the Institute of Animal Breeding and Genetics, University of Veterinary Medicine, Vienna
- ▶ 2011 Diploma Thesis in the laboratory of Univ. Prof. Dr. Mathias Müller at the University of Veterinary Medicine, Vienna
 - ▶ Title: "Cell type-specific functions of TYK2 in the antiviral defense against MCMV"
- ▶ Since 2012 EUTRAIN
PhD Thesis at the Institute of Immunology Muenster, Germany (Univ. Prof. Dr. Johannes Roth)
Accepted at the CiM/IMPRS Graduate School (Cluster of Excellence), Muenster, Germany

▶ Teaching

- ▶ Teaching Assistant for "Molecular Cell Biology II" at the University of Veterinary Medicine, Vienna
- ▶ Teaching Assistant for "Practical Course in Immunology" (Part Steinborn) at the University of Vienna

▶ Publications

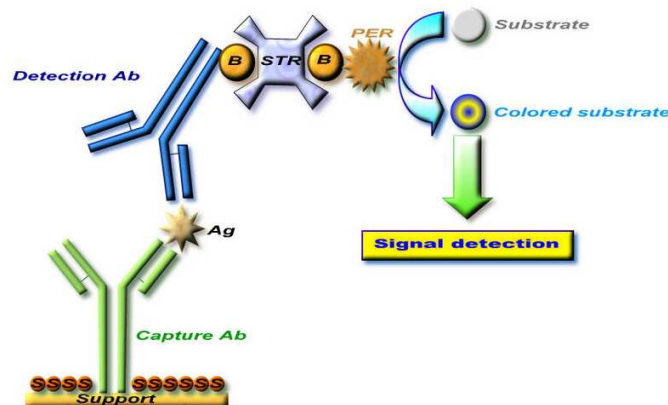
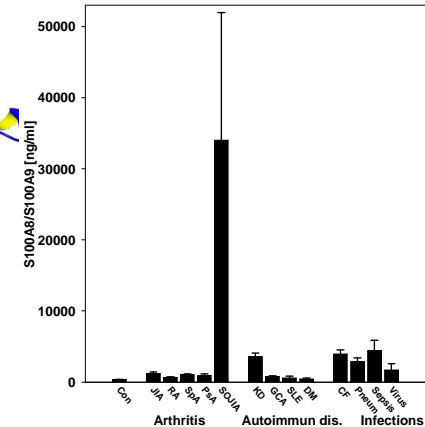
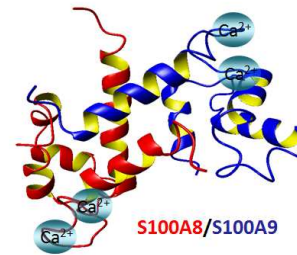
- ▶ Rita Stiefvater, Raimund M. Vielnascher, Elisabeth Hofmann, Ursula Reichart, Thomas Kolbe, Wilhelm Gerner, David Popp, Claus Vogl, Marina Karaghiosoff, Mathias Müller, Birgit Strobl
Conditional knockout of tyrosine kinase 2 (Tyk2): dissecting cell type-specific functions in innate IL-17 production
Cytokine, Volume 56, Issue 1, October 2011, Page 90



Project Outline

▶ S100A8/S100A9

- ▶ two calcium binding sites
- ▶ Synonyms: MRP8, MRP14, calprotectin, calgranulin
- ▶ expression in neutrophils and early differentiation stages of macrophages
- ▶ specific secretion and extracellular functions
- ▶ reliable biomarkers in inflammatory disorders especially in systemic and non-systemic forms of JIA

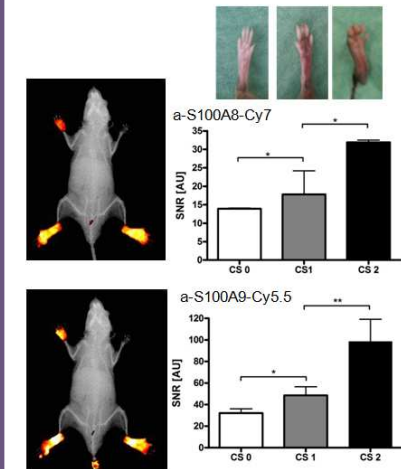
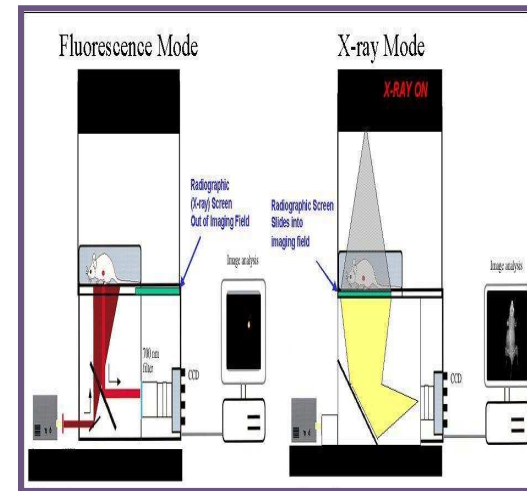
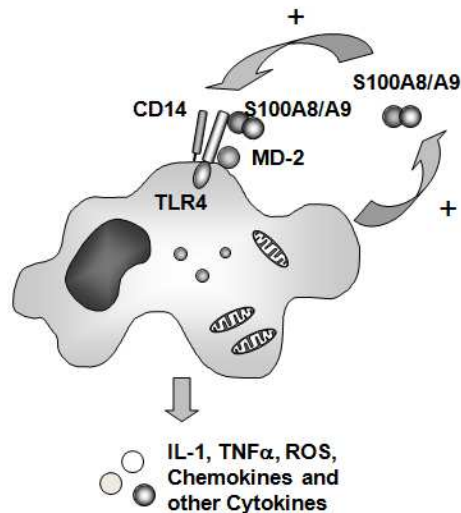


▶ Assays for S100A8/S100A9 quantification

- ▶ ELISA assay
- ▶ polyclonal antibodies available
- ▶ monoclonal antibodies (mice already immunised)

Project Outline

- ▶ Expression of S100A8/S100A9 in inflammation sites
 - ▶ in cooperation with ESR7 (M.Kumar, M.Schäfers, EIMI, WWU)
 - ▶ S100 proteins as target for optical imaging



▶ Immune-modulation by S100 proteins

- ▶ pro- and anti-inflammatory mechanisms of mononuclear phagocytes
- ▶ focus on dendritic cells
- ▶ dual-role in allergic contact dermatitis (ACD)

Planning For Next Year

▶ Project

- ▶ establish ELISA assay using monoclonal antibodies against S100A8/S100A9
- ▶ in vitro and in vivo studies of inflammatory mechanisms controlled by S100 protein
- ▶ focus of WP2 (Biomarkers of disease) with close links to ESR 6, ESR7, ESR9, and ESR13

▶ Training

▶ EUtrain

- ▶ Review Meetings
- ▶ Eureka Meeting

▶ Graduate School

- ▶ weekly progress reports
- ▶ seminars in imaging, statistics, useful software, good scientific practice, soft skills,...
- ▶ organizing international Graduate School Meetings (moderator for 2014)

▶ Lab Environment

- ▶ weekly group meetings and progress reports
 - ▶ weekly journal club
 - ▶ attending national and international conferences
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