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About

Dagmar Scheel-Toellner leads a research team that investigates the basic mechanism of joint inflammation in patients with rheumatoid arthritis. She initially trained as a pharmacist, and the translation of her research on autoimmunity into therapeutic strategies is still an important long-term aim in her work. She closely collaborates with her clinical colleagues within the Rheumatology Research Group in their investigation of the early stages of the development of rheumatoid arthritis and also more recently has begun to collaborate with scientists at the Dental School on an EU funded project investigating the link between periodontal inflammation and rheumatoid arthritis. Dagmar has published widely on the regulation of apoptosis and the cell-cytokine network in inflammatory disease. Currently, most of the work in her team is funded Arthritis Research UK, the MRC and the EU.

She actively contributes to the wider field of Rheumatology by reviewing for a range of journals such as Arthritis and Rheumatism and the Annals of Rheumatic Diseases and is reviewing grant applications for several funding bodies. She is a member of abstract selection panels for the British Society of Rheumatology and EULAR.

Qualifications

- Member of the Higher Education Academy, 2003
- PhD (Dr rer. nat.) in Immunology and Pharmaceutical Biology, Christian Albrechts University, Kiel,1994
- Degree in Pharmacy, (Equivalent of BSc.) Christian Albrechts University, Kiel, Germany, 1989

Biography

Dagmar Scheel-Toellner qualified as a pharmacist from the Christian-Albrechts University in Kiel, Germany in 1989. She went on to study for a PhD in the Department of Immunology and Cell Biology at the Research Centre Borstel with Professor Johannes Gerdes. In 1994 she was awarded the title Dr. rer. nat. (equivalent to PhD in Natural Sciences) by the Christian Albrechts University, Kiel for the thesis: “Investigation of the expression of CD26 in granulomatous tissue and normal peripheral blood.” with the grade *“summa cum laude”.* (Excellent)

In 1994 Dagmar moved to Birmingham to join the Department of Rheumatology as a post-doctoral research fellow with Mike Salmon and from 1996 also with Janet Lord.

She was awarded a Non-clinical Career Development Fellowship by the Arthritis Research Campaign (now renamed as Arthritis Research UK) in 2004. In the following years she established her research team and was promoted to Senior Research Fellow in 2007.

The Career Development Fellowship was followed by an Arthritis Research UK funded Career Progression Fellowship leading to a substantive post in the School of Immunity and Infection in 2010.

Teaching

Teaching Programmes

- **MBChB (/undergraduate/courses/med/medicine.aspx)**
- PhD

Postgraduate supervision

Dagmar is currently supervising several PhD students working on basic disease mechanisms in rheumatoid arthritis.

If you are interesting in studying any of these subject areas please contact Dagmar on the contact details above, or for any general doctoral research enquiries, please email: **dr@contacts.bham.ac.uk (mailto:dr@contacts.bham.ac.uk)** or call +44 (0)121 414 5005.

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Research

Joint damage in patients with rheumatoid arthritis (RA) is driven by a complex network of interactions between resident stromal cells and infiltrating inflammatory cells. Within this network, signals are exchanged via cell-surface interactions and soluble factors such as cytokines and hormones. Dagmar’s group, in collaboration with other members of the Rheumatology Research Group, uses a systematic approach to detect cytokine gene expression in isolated inflammatory cell populations to establish an

overview of the inflammatory network in the joint of patients with RA. More recently, within an EU funded consortium (**www.gumsandjoints.com (http://www.gumsandjoints.com/)**), she has also teamed up with staff at the Dental School to investigate the association between rheumatoid arthritis and periodontal disease.

Current projects within Dagmar's team include:

- Characterisation of cytokine profiles in synovial tissue and in sorted inflammatory cell populations from rheumatoid synovial fluid. (Lorraine Yeo, Banesa de Paz)
- Regulation of PKC theta in synovial T cells. (Nichola Adlard)
- Androgen metabolism in T cell autoimmunity. (Farrah Ali)
- The role of neutrophils in the link between periodontal disease and rheumatoid arthritis. (Božo Lugonja, Julia Spengler)

All of these projects are directed at the identification of new targets and strategies for the treatment of Rheumatoid Arthritis

Other activities

- Member of the Biomedical Research Panel of the Research Council of Norway.
- Member of abstract selection panels for the British Society of Rheumatology and EULAR.

Publications

Hidalgo, E, Essex, S.F., Yeo, L. Curnow, S.J., Filer, A., Thomas, A.M, McGettrick, H. M. Cooper, M. Buckley, C.D., Raza, K., Salmon M. and Scheel-Toellner D. (2011), The response of T cells to IL-6 is differentially regulated by the microenvironment of the rheumatoid synovial fluid and tissue. Arthritis Rheum. 63 (11):3284-93.

Yeo, L, Toellner, K-M, Salmon, M., Filer, A., Buckley, C.D., Raza, K., and Scheel-Toellner, D. (2011), Cytokine mRNA profiling identifies B cells as a major source of RANKL in rheumatoid arthritis. Ann Rheum Dis. 70:2022-2028 Recommended in F1000, Highlighted in Nature Reviews in Rheumatology. (September 2011 | doi:10.1038/nrrheum.2011.114)

Lee, W.Y. Hampson, P. Coulthard, L., Ali, F., Salmon M, Lord J. M. and Scheel-Toellner D. (2010) Novel Anti-Leukemic Compound Ingenol 3-Angelate Inhibits T cell Apoptosis by Activating PKCTHETA J. Biol. Chem. Jul 30;285(31):23889-98

Church, L. D., Filer, A. D., Hidalgo, E., Howlett, K. A., Thomas, A.M.C., Rapecki, S., Scheel-Toellner, D., Buckley, C. D. and Raza, K. (2010) Rheumatoid synovial fluid IL-17-producing CD4 T cells have abundant TNF alpha co-expression, but little IL-22 and IL-23R expression Arthritis Research & Therapy;12(5):R184

Filer, A., Bik, M. Parsonage, G.M. Fitton, J., Trebilcock, E., Howlett, K. Cook, M. Raza, K Simmons, D. L. Thomas A. M. C., Salmon M. Scheel-Toellner, D. Lord, J. M. Rabinovich, G. A. and Buckley, C.D.(2009) Galectin 3 Induces a Distinctive Pattern of Cytokine and Chemokine Production in Rheumatoid Synovial Fibroblasts via Selective Signaling Pathways. Arthritis Rheum. Jun;60(6):1604-14.

Wong, S.H., Francis N., Chahal, H. Raza, K. , Salmon, M., Scheel-Toellner D and Lord J. M. (2009) Lactoferrin-induced neutrophil survival: Potential Role in Rheumatoid Arthritis. Rheumatology. Jan;48(1):39-44.

Scheel-Toellner, D., Raza, K., Assi, L.K., Pilling, D., Ross, E. J., Lee, W. Y., Curnow, S. J., Buckley, C. D., Akbar, A. N. Lord J. M. and Salmon M. (2008) Differential regulation of nuclear and mitochondrial Bcl-2 in T cell apoptosis. Apoptosis. 13(1):109-17.

Assi, L. K., Wong, S. H., Ludwig A., Raza, K., Gordon, C., Salmon, M. Lord J. M. and. Scheel-Toellner D. (2007) TNF-α activates release of BlyS by neutrophils infiltrating the rheumatoid joint. Arthritis Rheum. 56(6):1776-86.