Dr William Jenkinson PhD

Lecturer

School of Immunity and Infection

Contact details

Telephone +44 (0)121 414 3634 (tel:+44 121 414 3634)

Email w.e.jenkinson@bham.ac.uk (mailto:w.e.jenkinson@bham.ac.uk)

School of Immunity and Infection
MRC Centre for Immune Regulation
College of Medical and Dental Sciences
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK

About

Will Jenkinson is a lecturer in the School of Immunity and Infection.

Will's research interests span aspects of thymus development, with a focus on both thymocyte and thymic epithelial cell biology. He has received research funding from the Medical Research Council and The Leverhulme Trust.

Qualifications

- PhD Immunology 2003
- MPhil (MRes) Immunology 2000
- BSc (Hons) Anatomy 1999

Biography

Will Jenkinson qualified with a BSc (Hons) in Anatomy from the University of Liverpool in 1999. He went on to study for an MPhil in Immunology and Oncology, followed by a PhD in Immunology at the University of Birmingham. Will continued to pursue his interest in Immunology and thymus biology at the University of Birmingham, initially as a post-doctoral fellow and subsequently as a Leverhulme Trust Early Career Fellow. He was appointed as a lecturer within the School of Immunity and Infection in 2007, and has subsequently continued to pursue research interests related to thymus development and function with research funding support provided by the Medical Research Council.

Teaching

- **Medical Science BMedSc (/undergraduate/courses/med/medical-sci.aspx)**

Postgraduate supervision

Will is interested in supervising doctoral research students in the following areas:

- Development of functional thymic microenvironments and thymus regulation of T-cell maturation.

If you are interesting in studying any of these subject areas please contact Will 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

RESEARCH THEMES
Thymus and T-cell development, T-cell biology

RESEARCH ACTIVITY

The focus of Will's research has been on the biology of thymic microenvironments. In particular, Will has developed a research emphasis on the investigation of mechanisms regulating the development of specialized epithelial cells within the thymus. Critically, thymic epithelial cells play a highly unique role in nurturing the development of mature T-cells pivotal to the efficient functioning of the adaptive immune system. Investigation of how thymic microenvironments are both initially established and maintained provide important insights into the processes regulating the efficiency of T-cell development and associated T-cell mediated immuno-protection.

Key areas of research:

• **Thymic epithelial proliferation and thymus growth.**
Expansion of thymic epithelial cells within the embryonic thymus relies on interactions with a specialized population of thymic neural crest-derived mesenchyme. Will's research has played a key role in developing an understanding of how such interactions operate in the generation of mature thymic microenvironments capable of supporting a normal programme of T-cell development.

• **Inter-relationship of thymic epithelial cell availability and efficiency of T-cell development.**
Critically, investigation of the mechanisms regulating thymic epithelial growth is pivotal to understanding how the efficiency of T-cell development is regulated. Will is interested in determining how thymic epithelial growth and maintenance controls the number and diversity of T-cells generated throughout life.

• **Identifying thymic epithelial progenitor populations.**
Several organs and structures within the body arise and are maintained by unique populations of stem and immature progenitor populations. Ongoing research aims to identify such progenitor populations within the thymus and determine their contribution to initial thymus organogenesis and maintenance of thymic epithelial compartments essential for self-tolerant T-cell production. Ultimately, the identification and potential manipulation of thymic epithelial progenitor populations may provide a route to influence T-cell development and immune function.

• **Regulation of T-cell development and thymus colonization.**
Haematopoietic cells colonizing the thymus interact with thymic epithelial cells and receive essential signals that direct their progressive development into functionally mature, self-tolerant T-cells. Research interests include both how haematopoietic cells are first attracted to the thymus and how intra-thymic mechanisms direct the maturation of T-cells in a highly regulated fashion.

Will enjoys close collaborative research links with several research groups within the School of Immunity and Infection, including Prof Graham Anderson and Prof Peter Lane.

Publications

Jenkinson W, Jenkinson E, Anderson G. (2011) Thymocyte Development, in Molina-Paris C; Lythe G (Eds.) Mathematical Models and Immune Cell Biology. Springer, 1-24.

Desanti GE, Jenkinson WE, Parnell SM, Boudil A, Gautreau-Rolland L, Eksteen B, Ezine, S, Lane PJ, Jenkinson EJ, Anderson G. (2011) Clonal analysis reveals uniformity in the molecular profile and lineage potential of CCR9+ and CCR9- thymus-settling progenitors. J. Immunol. 186:5227-35.

White AJ, Nakamura K, Jenkinson WE, Saini M, Sinclair C, Seddon B, Narendaran P, Pfeffer K, Nitta T, Takahama Y, Caamano JH, Lane PJ, Jenkinson EJ, Anderson G. (2010) Lymphotoxin signals from positively selected thymocytes regulate the terminal differentiation of medullary thymic epithelial cells. J. Immunol.185:4769-76.

Roberts NA, Desanti GE, Withers DR, Scott HR, Jenkinson WE, Lane PJL, Jenkinson EJ, Anderson G. (2009) Absence of thymus crosstalk in the fetus does not preclude haematopoietic induction of a functional thymus in the adult. Eur. J. Immunol. 39:2395-402

Shakib S, Desanti GE, Jenkinson WE, Parnell SM, Lane PJ, Jenkinson EJ, Anderson G. (2009) Checkpoints in the development of thymic cortical epithelial cells. J. Immunol. 182:130-7.

Jenkinson W, Jenkinson E, Anderson G. (2008) Preparation of 2-dGuo-treated thymus organ cultures. J. Vis. Exp. Aug 28;(18). Pii:906. doi:10.3791/906.

Jenkinson WE, Bacon A, White AJ, Anderson G and Jenkinson EJ. (2008) An epithelial progenitor pool regulates thymus growth. J. Immunol. 181 (9): 6101-8.

Withers DR, Kim MY, Bekiaris V, Rossi SW, Jenkinson WE, Gaspal F, McConnell F, Caamano JH, Anderson G, Lane PJ. (2007) The role of lymphoid tissue inducer cells in splenic white pulp development. Eur. J. Immunol. 37 (11): 3240-5.

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