



## **“Generalists and specialists: a new view of how the MHC responds to infectious pathogens”**

**Professor Dr. Jim Kaufman, University of Edinburgh**

Thursday, 25 April 2024, 12:00 (s.t.)

Hörsaal Pathologie (building D2, ground floor)

Bio: Jim Kaufman has been working on various aspects of the major histocompatibility complex (MHC) for almost 50 years, much of that time trying to understand the evolution of the MHC by studying animals other than humans and mice, particularly chickens.

He has worked at Harvard University as a PhD student, the Basel Institute for Immunology as his first independent position, the Institute for Animal Health as the head of the Division of Immunology, the University of Cambridge as the Professor of Comparative Immunogenetics, and now the University of Edinburgh as a Professor of Immunology.

He and his group continue to work from genes, genetics and genomics to biochemistry and cell biology, cellular immunology, infection studies and now to population genetics, all to understand the structure, function and evolution of immunity. Recently, people in the group have been studying not only chickens but also passerine birds, Tasmanian devils, rabbits and bats, along with work on T cell receptors, on natural killer receptors and ligands, and on a low-tech high-throughput experimental approach to determining T cell epitopes.

### Some relatively recent and easy reviews from various perspectives

- Kaufman J (2018) Unfinished business: evolution of the adaptive immune system of jawed vertebrates. *Annu Rev Immunol* 36:383-409
- Kaufman J (2018) Generalists and specialists: a new view of how MHC class I molecules fight infectious pathogens. *Trends Immunol* 39:367-379 (cover article).
- Radwan J, Babik W, Kaufman J, Lenz TL, Winternitz J (2020) Advances in the evolutionary understanding of MHC polymorphism. *Trends Genet* 36: 298-311.
- Tregaskes CA, Kaufman J (2021) Chickens as a simple system for scientific discovery: The example of the MHC. *Mol Immunol* 135: 12-20.
- Martin RJ, Kaufman J (2022) Some thoughts on what non-mammalian jawed vertebrates are telling us about antigen processing and peptide-loading of MHC molecules. *Curr Opin Immunol* 77:102218.
- Tregaskes CA, Martin RJ, Huynh L, Rocos N, Kaufman J (2022) 600 alleles and 200 haplotypes identified for the chicken BF-BL region. In: Smith et al. Fourth Report on Chicken Genes and Chromosomes. *Cytogenet Genome Res* 162:405-528.
- Kaufman J (2022) The BF-BL and BG regions of the B locus differ in genome dynamics. In: Smith et al. Fourth Report on Chicken Genes and Chromosomes. *Cytogenet Genome Res* 162:405-528.

### Some relatively recent primary data papers

- Siddle HV, Kreiss A, Tovar C, Yuen CK, Cheng Y, Belov K, Swift K, Pearse A-M, Hamede R, Jones ME, Skjødt K, Woods GM and Kaufman J (2013) Reversible epigenetic down-regulation of MHC molecules by Devil Facial Tumour Disease illustrates immune escape by a contagious cancer, *Proc Natl Acad Sci USA* 110: 5103-8.
- Salomonsen J, Chattaway JA, Chan ACY, Parker A, Huguet S, Marston DA, Rogers SL, Wu Z, Smith AL, Staines K, Butter C, Riegert P, Vainio O, Nielsen L, Kaspers B, Griffin DK, Yang F, Zoorob R, Guillemot F, Auffray C, Beck S, Skjødt K and Kaufman J (2014) Sequence of a complete chicken BG haplotype shows dynamic expansion and contraction of two gene lineages with particular expression patterns. *PLoS Genetics* 10: e1004417.
- Chappell P, Meziane EK, Harrison M, Magiera Ł, Hermann C, Mears L, Wrobel AG, Durant C, Nielsen LL, Buus S, Ternette N, Mwangi W, Butter C, Nair V, Ahjee T, Duggleby R, Madrigal A, Roversi P, Lea SM and Kaufman J (2015) Expression levels of MHC class I molecules are inversely correlated with promiscuity of peptide binding. *eLIFE* 4: e05345.
- Tregaskes CA, Harrison M, Sowa AK, van Hateren A, Hunt LG, Vainio O and Kaufman J (2016) Surface expression, peptide repertoire and thermostability of chicken class I molecules correlate with peptide transporter specificity. *Proc Natl Acad Sci USA*
- Halabi S, Ghosh M, Stevanović S, Rammensee H-G, Bertzbach LD, Kaufer BB, Moncrieffe MC, Kaspers B, Härtle S, Kaufman J (2021) The dominantly-expressed class II molecule from a resistant MHC haplotype presents only a few Marek's disease virus peptides by using an unprecedented binding motif. *PLoS Biol* 19: e3001057
- Rocos NIE, Coulter FJ, Tan TCJ, Kaufman J (2023) The minor chicken class I gene BF1 is deleted between short imperfect direct repeats in the B14 and typical B15 major histocompatibility complex (MHC) haplotypes. *Immunogenetics* 75: 455-464.

Any questions? Contact:

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