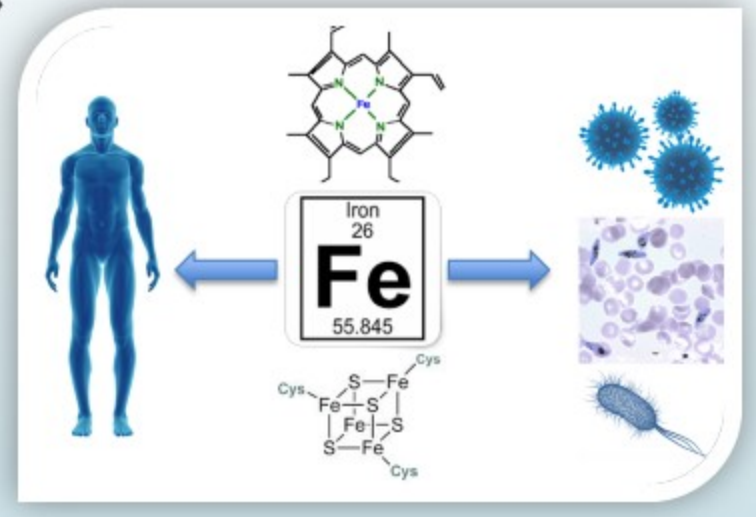
SFR-BMT
STRUCTURE FÉDÉRATIVE DE RECHERCHE BIO-MÉDICALE DE TOULOUSE

Hal Drakesmith

Associate professor of immunology
University of Oxford, UK
Drakesmith Group: Iron and Immunity

UNIVERSITY OF OXFORD

« Iron powers adaptive immunity »



Vendredi 21 Juin
à **10h30**

Amphithéâtre Baudot, PURPAN

CAS

SÉMINAIRE IRSD

Contact : Delphine Meynard / Léon Kautz

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https://www.imm.ox.ac.uk/research/units-and-centres/mrc-human-immunology-unit/research-groups/drakesmith-group-iron-and-immunity

***Links** https://www.medsci.ox.ac.uk/study/graduateschool/supervisors/alexander-drakesmith*

https://www.researchgate.net/profile/Hal_Drakesmith

Drakesmith Group: Iron and Immunity

We are investigating how iron and anaemia influence immunity and infectious diseases. Our research inspires treatments that control iron physiology to benefit the host at the expense of pathogens.

Iron is critical for life: too little can halt DNA synthesis and energy metabolism; too much can generate toxic reactive oxygen species. Furthermore, iron is essential for the growth of pathogens, but also for the immune system that fights infections. For example, during infection the host sequesters iron to deprive pathogens as part of the innate immune response, while T cells and B cells need iron for their function to clear the infection.

Iron levels in the body are controlled by a hormone called hepcidin, which acts analogously to how insulin controls glucose. Through collaborators in Europe, the US, Africa and Sri Lanka we have made significant contributions to how hepcidin and iron are controlled in health and disease, including anaemia, HIV, HCV and typhoid fever. We utilise experimental models of key diseases, including malaria, to manipulate hepcidin during infection and understand how iron affects immunity and the outcome of infection.

KEYNOTE LECTURE

« Iron powers adaptive immunity »

Selected publication

Antiviral activity of bone morphogenetic proteins and activins.

Eddowes LA, Al-Hourani K, Ramamurthy N, Frankish J, Baddock HT, Sandor C, Ryan JD, Fusco DN, Arezes J, Giannoulatou E, Boninsegna S, Chevaliez S, Owens BMJ, Sun CC, Fabris P, Giordani MT, Martines D, Vukicevic S, Crowe J, Lin HY, Rehwinkel J, McHugh PJ, Binder M, Babitt JL, Chung RT, Lawless MW, Armitage AE, Webber C, Klenerman P, **Drakesmith** H.

Nat Microbiol. 2019 Feb;4(2):339-351. doi: 10.1038/s41564-018-0301-9. Epub 2018 Dec 3.

Erythroferrone inhibits the induction of **hepcidin** by BMP6.

Arezes J, Foy N, McHugh K, Sawant A, Quinkert D, Terraube V, Brinth A, Tam M, LaVallie ER, Taylor S, Armitage AE, Pasricha SR, Cunningham O, Lambert M, Draper SJ, Jasuja R, **Drakesmith** H.

Blood. 2018 Oct 4;132(14):1473-1477. doi: 10.1182/blood-2018-06-857995. Epub 2018 Aug 10.

Role of Activins in **Hepcidin** Regulation during Malaria.

Spottiswoode N, Armitage AE, Williams AR, Fyfe AJ, Biswas S, Hodgson SH, Llewellyn D, Choudhary P, Draper SJ, Duffy PE, **Drakesmith** H.

Infect Immun. 2017 Nov 17;85(12). pii: e00191-17. doi: 10.1128/IAI.00191-17. Print 2017 Dec.

Hepcidin is regulated by promoter-associated histone acetylation and HDAC3.

Pasricha SR, Lim PJ, Duarte TL, Casu C, Oosterhuis D, Mleczko-Sanecka K, Suciu M, Da Silva AR, Al-Hourani K, Arezes J, McHugh K, Gooding S, Frost JN, Wray K, Santos A, Porto G, Repapi E, Gray N, Draper SJ, Ashley N, Soilleux E, Olinga P, Muckenthaler MU, Hughes JR, Rivella S, Milne TA, Armitage AE, **Drakesmith** H.

Nat Commun. 2017 Sep 1;8(1):403. doi: 10.1038/s41467-017-00500-z.

Induced Disruption of the Iron-Regulatory Hormone **Hepcidin** Inhibits Acute Inflammatory Hypoferraemia.

Armitage AE, Lim PJ, Frost JN, Pasricha SR, Soilleux EJ, Evans E, Morovat A, Santos A, Diaz R, Biggs D, Davies B, Gileadi U, Robbins PA, Lakhal-Littleton S, **Drakesmith** H.

J Innate Immun. 2016;8(5):517-28. doi: 10.1159/000447713. Epub 2016 Jul 16.