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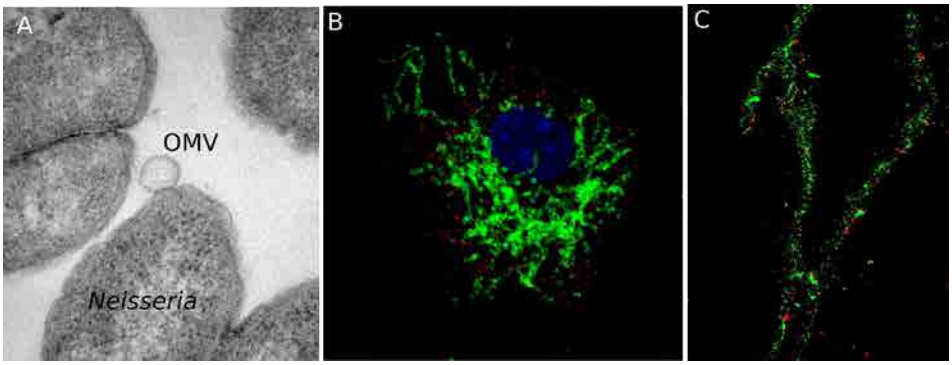
Our research focuses on microbial pathogens that cause a number of important human diseases. These include inflammatory pneumonia, systemic candidiasis and Gonorrhoea. There is a need to develop novel anti-microbial compounds due to the lack of vaccines, inadequate treatments and the emergence of multi-drug resistant strains.

To identify novel drug-targets we aim to better understand the biology of the host-pathogen interactions, as these determine disease outcome. We utilize molecular and biochemical approaches to identify novel interactions and test their role during disease by using cellular and animal infection models.

Research Projects

1. The role of macrophage cell death signalling in Legionella infections



Imaging pathogenmacrophage interactions: (A) Electron microscopy shows that many bacterial pathogens, including Neisseria, the causative agent of Meningitis and Gonorrhoea, produce outer membrane vesicles (OMV). (B) These vesicles (stained red) contain several virulence factors that are targeted to various organelles in macrophages, including mitochondria (stained in green). (C) By using superresolution microscopy, genetic and biochemical assays we have now identified how bacteria hijack host cell death pathways to evade innate immunity.

Selected significant publications:

1. Speir M, Lawlor KE, Glaser SP, Abraham G, Chow S, Vogrin A, Schulze KE, Schuelein R, O'Reilly LA, Mason K, Hartland EL, Lithgow T, Strasser A, Lessene G, Huang DC, Vince JE and **Naderer T**. 2016. Eliminating *Legionella* by inhibiting BCL-XL to induce macrophage apoptosis. *Nat Microb* 1: 15034.

2. **Naderer T**, Heng J, Saunders EC, Kloehn J, Rupasinghe TW, Brown TJ, McConville MJ. 2015. Intracellular Survival of *Leishmania major* Depends on Uptake and Degradation of Extracellular Matrix Glycosaminoglycans by Macrophages. *PLoS Pathog*. 11(9): e1005136.

3. Uwamahoro N, Vermau-Gaur J, Shen HH, Qu Y, Lewis R, Lu J, Bambery K, Masters SL, Vince JE, **Naderer T***, Traven A*. 2014. The pathogen *Candida albicans* hijacks macrophages pyroptosis for escape from macrophages. *mBio*. 5(2): e00003-14.

4. Heng J, Saunders EC, Gooley PR, McConville MJ, **Naderer T***, Tull D*. 2013. Membrane targeting of the small myristoylated protein 2 (SMP-2) in *Leishmania major. Mol Biochem Parasitol*. 190(1):1-5.

5. **Naderer T**#, Heng J#, McConville MJ. 2010. Evidence that intracellular stages of *Leishmania major* utilize amino sugars as a major carbon source. *PLoS Pathog*. 6(12): e1001245.

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