Intravital Imaging in Zebrafish Shows How Neutrophils Block Candida Filaments from Invading the Mucosa

_Candida albicans_ is a ubiquitous opportunistic fungal pathogen found on human mucosal surfaces and controlled by innate immune responses. Using a state-of-the-art zebrafish mucosal infection model, Gratacap et al. (e00276-17) show that disease progression is exquisitely sensitive to neutrophil presence. Inhibition and enhancement of recruitment lead to opposite outcomes that demonstrate how neutrophils control invasion of fungal hyphae. Intravital imaging reveal that neutrophils are critical for controlling infection, production of extracellular DNA, and causing damage to fungal hyphae. This transparent vertebrate disease model now permits disease dynamics to be noninvasively dissected at high resolution over time.

Recombinant Listeria-Vectored Vaccine Is Highly Immunogenic and Boosts Mycobacterium bovis BCG Efficacy against Tuberculosis

Tuberculosis afflicts \( \sim 10.4 \) million and kills \( \sim 1.8 \) million people annually, and a vaccine is needed to boost the immunity of the \( \sim 5 \) billion people previously vaccinated with the partially effective _Mycobacterium bovis_ BCG vaccine. Jia et al. (e00245-17) constructed a live attenuated double-deletion (ΔactA ΔinlB) mutant of _Listeria monocytogenes_ that expresses the _Mycobacterium tuberculosis_ 30-kDa major secretory protein via a constitutively active prfA*(G155S) regulon. They show that, in BCG-immunized mice, the vaccine strain induces splenic and lung antigen-specific polyfunctional CD4\(^+\) T cells and interferon gamma-expressing CD8\(^+\) T cells. The vaccine strain also significantly enhances protection against aerosol challenge with virulent _M. tuberculosis_.

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