



## Fungal host-pathogen interactions: Trojan horses, zombie fish and exfoliation

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*Candida albicans* is a dimorphic fungus that lives benignly on mucosal surfaces of most individuals. Unfortunately, it can become a serious pathogen in immunocompromised patients, causing a disseminated disease which leads to devastating organ damage and patient mortality. We have shown using intravital imaging that fungal-innate immune interactions and dynamics in the live host can differ significantly from expectations based on in vitro challenges. One important aspect of disease that is especially difficult to follow in murine infection models and in vitro is the dissemination of a localized infection through the bloodstream, so we have exploited the transparent zebrafish as a model vertebrate host to characterize fungal and host determinants of infection spread. Quantitative intravital imaging, together with multiple genetic and non-genetic manipulations, revealed that different fungal morphologies have distinct and specialized roles in infection, with yeast driving dissemination. Using non-invasive imaging while blocking specific host mechanisms, we found that phagocytes are used in “Trojan Horse” dissemination of yeast and also uncovered phagocyte-independent extracellular spread. These divergent strategies represent redundant mechanisms utilized by *C. albicans* to travel to distant areas of the host and create new infection foci. Thus, while the host can aid in the dissemination of yeast through immune responses and barrier disruption, this is only one component of a complex process utilized by a versatile fungal pathogen.

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**Host:** Dr. Leah Cowen

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