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Real-time *in vivo* multimodal imaging approach to study fungal infections development and therapy evaluation

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BACKGROUND

- Mold (Aspergillus spp.) and yeasts (Candida spp., Cryptococcus spp.) fungal infections are an increasing concern particularly in immunocompromised or critically ill patients¹⁻³.
- Treatment options are limited and resistance has been reported in several of these fungi^{4,5}.
- Novel treatment strategies are urgently needed.
- Non-invasive imaging techniques are powerful research instruments to study fungal diseases.

OBJECTIVE

- To establish non-invasive longitudinal preclinical *in vivo* imaging approaches that provide dynamic visual and quantitative information to better characterize fungal infections.
 - Insight in disease development
 - Identification of novel therapeutic targets
 - Evaluation of antifungal efficacy.

APPROACH

- Multi-modal imaging-compatible *in vivo* mouse models to follow onset, disease progression and antifungal treatment effects for three different fungal infections⁶⁻¹², complemented with standard endpoint readouts.
 - Invasive aspergillosis ^{8-10,14}
 - Pulmonary and cerebral cryptococcosis ¹⁴⁻¹⁶
 - Catheter or mucosal-related candida spp. biofilms ¹¹⁻¹³





CONCLUSION

Our innovative longitudinal non-invasive imaging approach reduces the number of animals needed and variability by following the same animal over time using multiple imaging techniques (micro-CT, MRI, magnetic resonance spectroscopy (MRS), bioluminescence, FCFM) with high power, accurate and reliable quantifications.