Abstract

Highly Sensitive Bioluminescence Imaging Models for Chagas Disease Drug Discovery †

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Chagas disease is caused by the insect-transmitted protozoan Trypanosoma cruzi, and is the most important parasitic infection in Latin America. As a result of migration, it is also emerging as a public health issue in non-endemic regions, particularly in the US and Europe. Infections with T. cruzi are life-long, and lead to cardiomyopathy in 20–30% of cases. A causal link between cardiac infection and pathology has been difficult to establish because of a lack of robust methods to detect scarce focally distributed parasites within tissues. By combining highly sensitive bioluminescence imaging and fluorescence technology, we have developed procedures which have allowed us to track infection dynamics, quantify tissue-specific parasite loads, and provide new insights into parasite biology in predictive murine models. These approaches have identified the gut as the major reservoir site during chronic infections. In this presentation, we review the parameters of the imaging systems and describe how these experimental models can be incorporated into drug-development programmes as a valuable tool for assessing efficacy against both acute and chronic T. cruzi infections.

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