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## BOOK OF **ABSTRACTS**

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## **P3.40 - IMPLEMENTATION OF A GALLERIA MELLONELLA INFECTION MODEL AT GHTM/IHMT-NOVA**

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### **ABSTRACT**

*Galleria mellonella* represents a sustainable invertebrate infection model that is gaining increasing interest, particularly for pathogenicity and infection assays, host-pathogen interaction studies, and pharmaco-toxicological studies.

This work describes the implementation of a *G. mellonella* colony at GHTM/IHMT-NOVA to provide standardized larvae for the research community. Infection protocols for relevant bacterial pathogens were optimized.

*G. mellonella* at the last larval stage were acquired from a commercial house specialized in exotic animals and the species confirmed by PCR. The larvae were reared, in the dark, at 27-28 °C and 60-80% relative humidity with a high protein diet. Infection assays were optimized with reference strains *Staphylococcus aureus* ATCC25923, *Pseudomonas aeruginosa* ATCC27583, *Neisseria gonorrhoeae* ATCC49226 and *Escherichia coli* ATCC25922.

A *G. mellonella* colony was established with parameters such as diet and routine maintenance tested. In-house reared *G. mellonella* presented a life cycle between 31 to 34 days (from egg to adult). Each female laid on average > 1,500 eggs with a rate of egg hatching of ≈34%. Compared to the commercially acquired, in-house reared larvae were healthier and more resistant to infection by *S. aureus* ATCC25923. The optimization of infection assays included pre-incubation conditions and bacterial inoculum size, among other parameters. By applying the optimized infection assays, at equivalent inoculums, the four bacterial pathogens tested could be differentiated and ranked according to their virulence potential, as follows: *P. aeruginosa* >> *S. aureus* ≈ *E. coli* >> *N. gonorrhoeae*.

This work represents a build-up on the animal infection models available at GHTM/IHMT-NOVA for collaborators and the research community. Ongoing work focus on expanding this model to fungal and parasite pathogens, as well as additional functional assays, such as pharmaco-toxicological studies.

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