

# In vivo infections using the greater wax moth, *Galleria mellonella*

*Commonly used acronym: Galleria infections*

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## Organisation

**Name of the organisation** Vrije Universiteit Brussel (VUB)

**Department** Bio-engineering Sciences

**Country** Belgium

**Geographical Area** Brussels Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Animal health, Environment, Human health
<b>The Method is situated in</b>	Basic Research, Translational - Applied Research
<b>Type of method</b>	In vivo
<b>Used species</b>	The greater wax moth, <i>Galleria mellonella</i>
<b>Targeted organ system or type of research</b>	Virulence assays, pathogenicity and drug discovery

## DESCRIPTION

### Method keywords

*Galleria mellonella*

in vivo

Innate immune system

drug screening

Virulence assays

Systemic infections

professional phagocytes

cytotoxicity assay

Needle and bacterial inoculum

host-pathogen interactions

### **Scientific area keywords**

drug screening

Virulence potential

Pathogenicity

Host-pathogen interactions

Infection models

### **Method description**

A calculated number of bacteria is injected through the pro-legs of the larvae. As several entry points are present, this allows to inject virulent bacteria and potential antimicrobial compounds within the same host. The survival of the larvae is scored over time (days post inoculation) until about 10 days. The intoxicated larvae die and become black, rendering the observed lethality obvious.

### **Lab equipment**

- Needles and syringes,
- Glass petri plates,
- Basic microbiology equipment to cultivate the bug of interest.

### **Method status**

Internally validated

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

## Advantages

- Cheap,
- Flexible,
- Easy,
- *In vivo*,
- Medium to high throughput,
- No ethical issues,
- Innate immune system close to human,
- Possibility of several injections (bacteria and compound),
- Adapted for drug screening *in vivo*,
- Excellent cytotoxicity assay for novel compounds,
- No need to feed/water them,
- Calibrated larvae, antibiotic free, are easy to order and can be kept 2 weeks at 15°C.

## Challenges

- Still an infection model,
- Absence of the adaptive immune system.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

VIRULENCE; 2016, VOL. 7, NO. 3, 214–229;

<http://dx.doi.org/10.1080/21505594.2015.1135289> Galleria mellonella infection models for the study of bacterial diseases and for antimicrobial drug testing

Catherine Jia-Yun Tsaia, Jacelyn Mei San Loha, and Thomas Profta

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