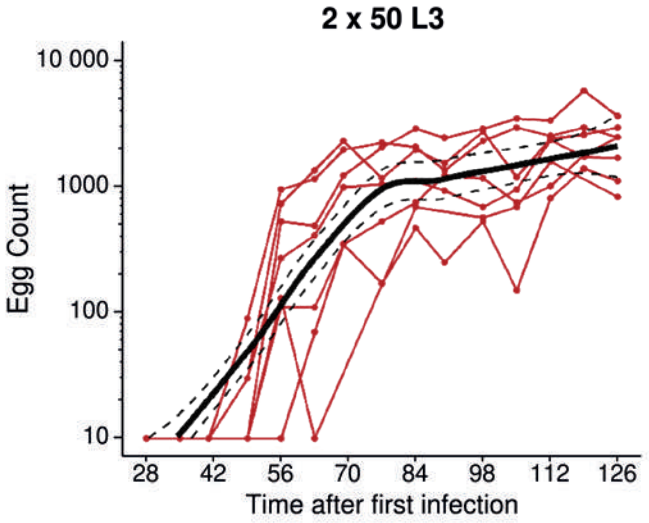
Hookworm CHIM

Outpatient Controlled Human Infection Model

Our Controlled Human Infection Model for Hookworm

Our CHIM model was established by infecting healthy volunteers with 50 *Necator americanus* infective larvae (50L3). Infection was well tolerated, with mild transient symptoms, and egg excretion rose to a stable plateau of ~1,000 eggs/g feces by week 13, with low same-day but higher day-to-day variability. Spreading of the dose reduced skin adverse events. The model was further developed to reduce variability by multiple dosing and it was concluded that a 2×50 larvae regimen best balances safety, field-comparable egg output, and reduced variability in egg excretion particularly when analyzing multiple samples over the plateau phase of egg excretion. Extensive power calculations have been performed to ensure consistent data and proper sample size. In addition, the model demonstrated its value in an immunization study with short-term infection, showing protective efficacy with reduced egg output in partially protected individuals.

These analyses pave the way for the CHIM model to accelerate drug and vaccine efficacy studies.



Strain	Participants	Infection rate
Necator americanus	**59**	**100%**

Benefits for your development program

Overall, CHIM offers a scalable, controlled alternative to large, costly field efficacy trials, accelerating early-stage testing of hookworm vaccines and anthelmintic drugs before advancing to expensive field studies. The model also permits detailed study of immune responses (eosinophilia, IgG1/IgE dynamics) alongside parasitological outcomes, helping link protection or symptoms to underlying immunology.

INFECTA CHALLENGING INFECTIOUS DISEASES

In collaboration with

Alex Loukas laboratory, JCU, Australia

Background

With over 700 million people infected worldwide, hookworm is one of the most common and the most important parasitic infection of humans. Unfortunately, mass drug administration and WASH interventions, the cornerstone of hookworm control programs, have not succeeded in achieving eradication, due to high reinfection rates and persistent shedding in the community. Novel anthelminthic drugs and vaccines are urgently needed to add to the hookworm control tools. Because there is no animal model for human hookworm infection, human studies are indispensable to screen novel drugs and vaccines for efficacy. Controlled Human Infection Models (CHIMs) for hookworm are further instrumental in understanding immunological responses, targets for drugs and vaccines and can accelerate development of novel vaccines and drugs for hookworm infection. There is considerable experience with controlled human hookworm infections and the safety of such studies has been established. The model shows consistently high infection rates and good tolerability.

What we deliver

Early-phase expertise

First-in-human safety and immunogenicity testing using advanced study designs (including SAD/MAD, dose-finding) identifies optimal therapy/vaccine candidates before expensive Phase II/III trials.

Controlled Human Infection Models (CHIMs)

CHIMs and early-phase expertise enable you to progress from concept to market faster, reducing overall development costs.

Full-service approach

Study design, regulatory support, data management, biostatistics, and BSL-3 laboratory services.

Why INFECTA?

INFECTA is a not-for-profit, full-service clinical research organization dedicated to early-phase clinical research in infectious diseases.
We are based at the Leiden Bio Science Park. Building on decades of experience, we have supported the development of innovative therapies and vaccines with a focus on quality, ethics and care.

Ready to accelerate your hookworm product development?

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