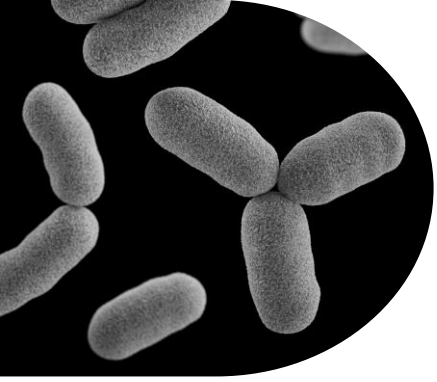


Elvitegravir repurposing for multidrug-resistant Gram-positive bacteria

ISGlobal Barcelona Institute for Global Health · Clínic Barcelona · Universitat de Barcelona · IrsiCaixa Institut de Recerca de la Sida · ciber Centro de Investigación Biomédica en Red

Unmet Medical Need

- Antimicrobial resistance (AMR) is responsible for significant mortality, with drug-resistant bacterial infections leading to an estimated **1.27 million deaths globally in 2019 alone**.
- Methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus faecium* (VRE*fm*) are considered **High Priority pathogens by the WHO**.
- There are very **few therapeutic options for MRSA and VRE*fm***. In 2023 there were **791,191 MRSA** cases across the 7 Major Markets (7MM).
- Bacteremia due to ***S. aureus*** has been reported to be associated with mortality rates of **15 % to 60 %**, and of **60 % to 70 %** for **VRE infections**.

Intellectual Property

- **ISGlobal** (49 %), **Barcelona Clinic Hospital** (29 %), **University of Barcelona** (12 %), **IRSICaixa** (5%), and **CIBER** (5 %) share joint ownership.
- **European patent application** submitted 17th of October 2023. **The PCT application was filed** in **October 2024**. No objections were raised in the EESR for the new use of elvitegravir as an antibacterial agent.

Competitive Advantage

- Elvitegravir (EVG) shows activity against multidrug-resistant Gram-positive bacteria, even those highly resistant to quinolone.
- EVG can be administered **orally**, facilitating patient follow-up and **reducing unnecessary hospital admissions** and **healthcare costs**.
- The repositioning strategy offers **less time to market**, less risk of failure, and **less investment** than traditional drug discovery.
- Very low selection of resistant mutants.

Technology

- **Potent Antibacterial**. Elvitegravir possesses low Minimal Inhibitory Concentration (MIC_{50} and MIC_{90}) values *in vitro*:

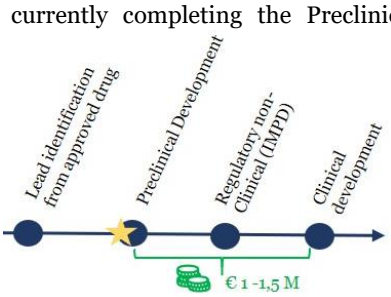
Microorganism (resistant strains)	MIC_{50}*	MIC_{90}*
Staphylococcus aureus (19 resistant strains, 10 MRSA, 5 resistant to quinolones)	8	8
Enterococcus faecium (22 resistant strains, 11 VRE)	4	16
Enterococcus faecalis (16 resistant strains)	4	16

*in µg/mL

- **In vitro Proof-of-Concept.** ELV has been tested against **clinically relevant** multidrug-resistant Gram-positive bacteria.
- Selection of resistant mutants has been investigated in both *S. aureus* and *Enterococcus* spp**.**
- Killing curves showed a bacteriostatic effect.

Development

- We are currently completing the Preclinical development stage**:**



- Currently performing ***in vivo* efficacy of ELV** combined with other known antibiotics in experimental endocarditis model against VR *E. faecium* and MRSA.
- **Studying the MoA** through molecular docking.
- **Investigating the activity against biofilm-producing bacteria.**
- **OUR ASK: CO-DEVELOPMENT, LICENSE AGREEMENT and/or INVESTMENT.**

Our Team

Jordi Vila
Research Professor
ISGlobal-Barcelona Clínic Hospital

Josep Maria Miró
Head of Infectious Diseases and AIDS
Barcelona Clínic Hospital

Elisabet Guiral
Project Manager
ISGlobal

Núria Martín
Predoctoral fellow
ISGlobal

Oscar Casado
Innovation Manager
ISGlobal

Get in touch: innovation@isglobal.org