

The D²AMR group

Discovery and development of Antimicrobials & Mechanisms of drug Resistance

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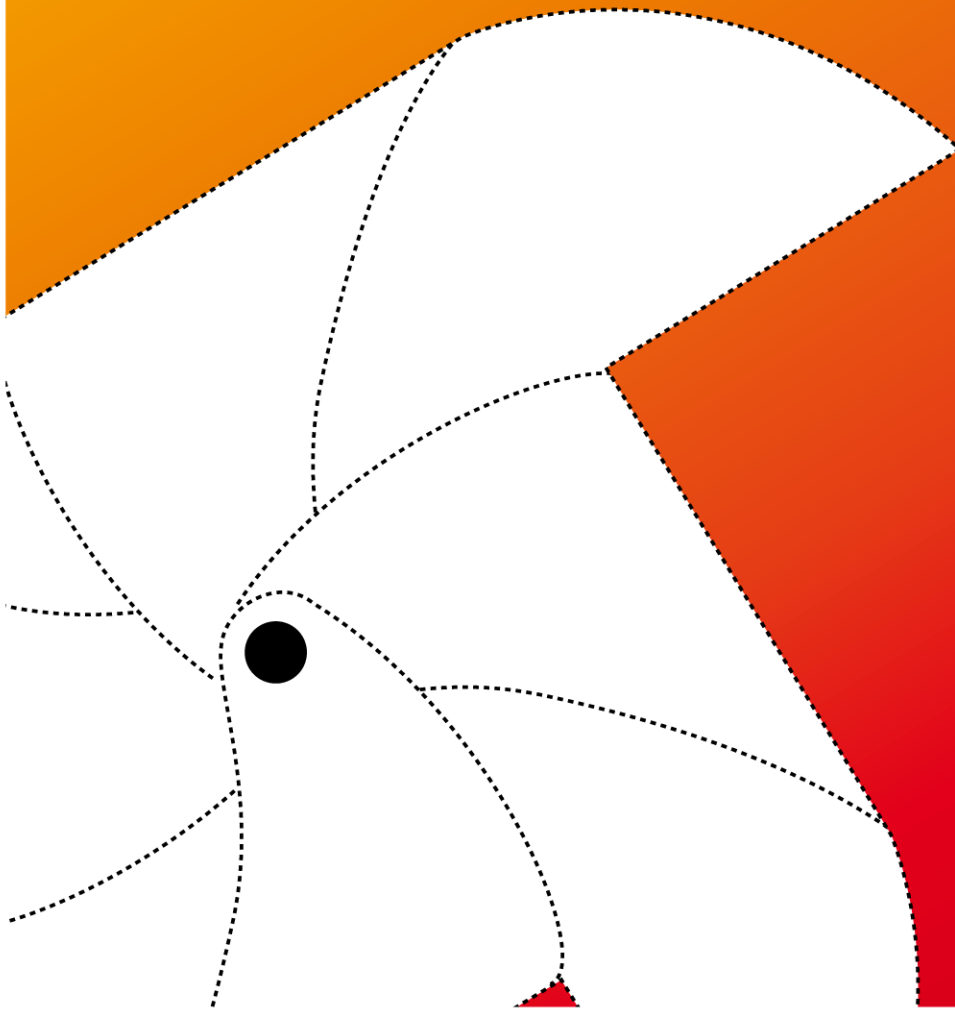
Dept. Microbiology, Preventive Medicine & Public Health

**SINO – SPAIN BIOMEDICAL AND
PHARMACEUTICAL CONFERENCE**

Zaragoza, CaixaForum

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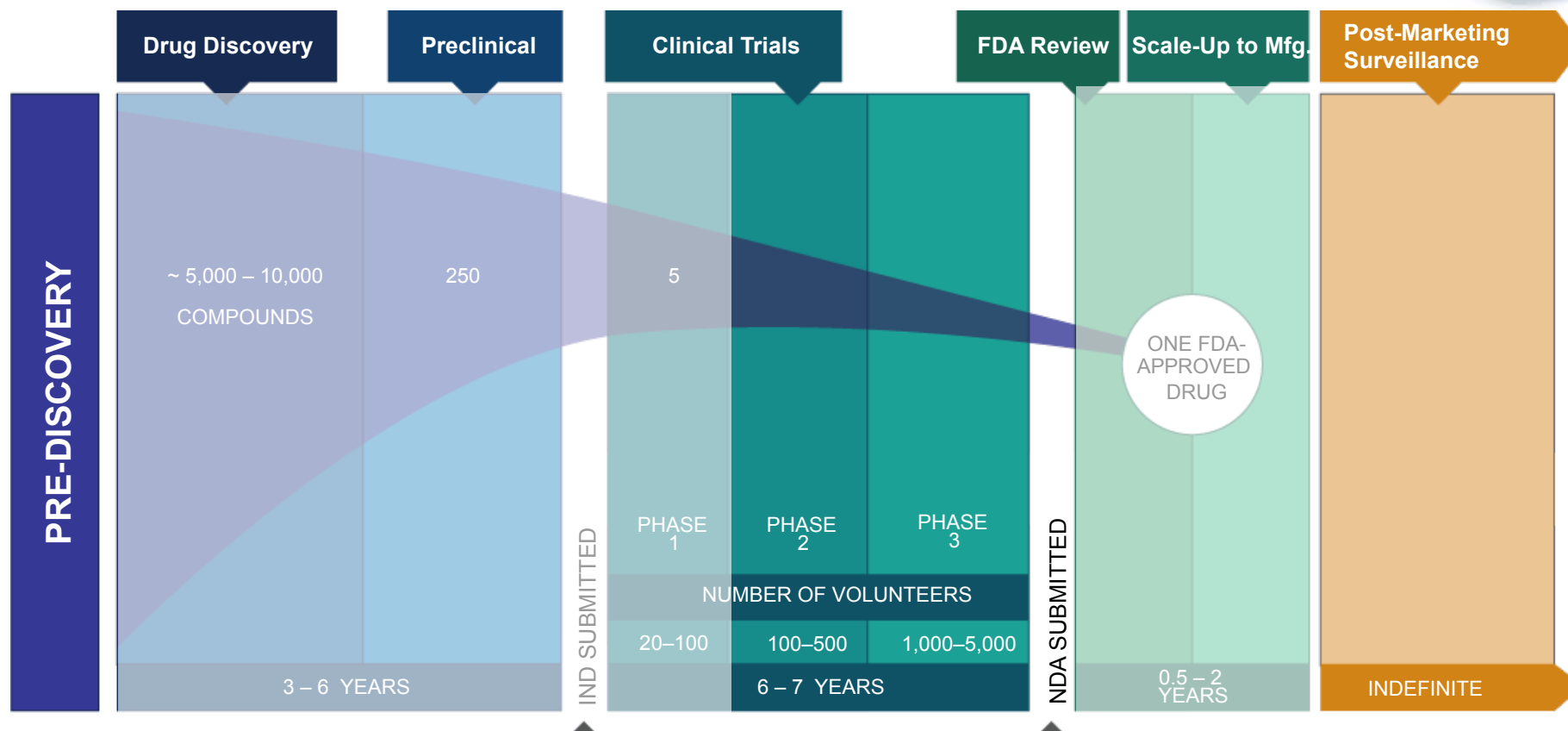
Global Context: the problem (I)

- **Antimicrobial resistance**
 - **Gram-positive & Gram-negative**
 - **10 million deaths by 2050**
- **Tuberculosis**
 - **10.4 million newly infected and 1.8 million died from TB**
 - **1/3 of the world population infected**
- **Cystic Fibrosis**
 - **Non-tuberculosis mycobacteria**
 - **No current cure**



Global Context: the problem (II)

- Lack of new drugs or alternative therapies
- Long and costly process from bench to bed side
- Drug Repurposing





D²AMR Research Programs

Drug Discovery & Development of Antimicrobials

- **Screening campaigns (chemical biology)**
- **Mode of action elucidation (genetics & biochemistry)**
- **Pre-clinical development (in vitro & in vivo)**
- **PKPD modelling (dosing optimization)**

Target diseases

- **Tuberculosis / Buruli ulcer / Yaws (neglected diseases)**
- **Cystic Fibrosis (non-tuberculosis mycobacterias)**
- **Antimicrobial resistance (WHO priority List)**

Therapeutic strategies

- **Synergy & repurposing**
- **Medicinal Chemistry campaigns**
- **De novo screening from natural sources**
- **Nanotechnology for co-delivery of synergistic partners**



On-going projects

- **The silent phenotype in Mycobacterium tuberculosis: persistence** (Spanish Government- MINECO)
- **Role of Pseudomonas aeruginosa biofilms in exacerbations in patients with bronchiectasis with and without Chronic Obstructive Pulmonary Disease** (Spanish Government – CIBERES)
- **NAREB: Nanoparticles for Antibiotic Resistant Emerging Bacteria Pathogens.** (FP7 / European Commission).
- **BLMs4TB: Predicting optimal partners, combinatorial dosing schedules and clinical outcomes of beta-lactams using PKPD and mechanistic in vitro models.** (TCOLF/ GSK/H2020).
- **SynCF: Novel drug repositioning strategies for difficult to treat CF infections.** (ESCMID).
- **Discovery and development of novel anti-bacterial drugs.** (CDRD/UBC).
- **Discovery and development of tigecycline enhancer in Klebsiella pneumoniae** (Shenzhen People's Hospital).
- **Avermectins and milbemycins as anti-mycobacterial agents.** (US 9,308,215 B2).



Strategic Partners

- Tres Cantos Open Lab Foundation (TCOLF)
- GlaxoSmithKline (GSK) I+D, SL – DDW campus
- University of British Columbia (UBC)
- Center for Drug Research & Development (CDRD)
- Shenzhen People's Hospital
- Ramon y Cajal Hospital, Madrid



Funding

- European Commission
- Spanish Government
- Government of Aragon
- European Society for Clinical Microbiology and Infectious Diseases
- TCOLF / GSK





FUNDACIÓN AGENCIA ARAGONESA
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