

# DELIVERING **INTEGRATED SOLUTIONS FOR HUMAN INFECTIONS**



infection innovation consortium



#### ANCHORING ACTIVITY IN NORTH WEST ENGLAND





6 physical platforms

2 virtual platforms

Interface with Material Innovation, AI, Machine Learning, Digital and Sensor Technology



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## **iiCON** objectives



### COMBATING AMR

#### Develop a massive Natural Products library (already enhanced for activity against AMR pathogens) into a high throughput screening format

Develop

#### Establish

Establish a Hits to

Leads programme

to work with SMEs

to take interestina

hits rapidly to the

establish if these

represent viable

leads

point where we can

#### Provide

Provide new (humanised) organoid high throughput screening models for assessing and refining the toxicology profiles of promising new drug leads against AMR pathogens

#### and mouse models for screening promising drug leads against AMR pathogens for Pharmacokinetic and Pharmacodynamic

evaluation

# Provide new rabbit

Provide

#### Provide

Provide novel human challenge models providing a rapid, safe and cost effective 'first into man' step for specific AMR pathogens

#### Define

Define the way that AMR pathogens are distributed through populations in different economic settings

#### Model

Model this movement of AMR pathoaens in a format that helps to define and optimise product need, market size and optimal product placement to maximise beneficial health impacts







## iiCON; Natural Product Library Screening Platform

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Editorial

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Uniloson

Swab and Send: a citizen science, antibiotic discovery project

#### Adam P Roberts\*.10

<sup>1</sup> Centre for Drugs and Diagnostics & Department of Tropical Disease Biology, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool, L3 SQA, UK \*Author for correspondence: Adam Roberts@fstmed.ac.uk

<sup>66</sup>In order to expand initial antimicrobial discovery activity beyond soil microbes and to circumvent the absence of funding and create a dynamic, long-term, public-engagement activity, the citizen science project 'Swab and Send' was launched in early 2015<sup>39</sup>

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Antimicrobial resistance is one of the greatest global healthcare challenges of our time. It is an anthropogenically amplified natural response by bacteria and fungi to the selective pressure provided by extensive and excessive use of antimicrobials. The scale of use of antimicrobial compounds is truly astonishing and underpins their position as cornerstones of both developing and developed national-scale healthcare and food production systems.

https://doi.org/10.2144/fsoa-2020-0053



10s of 1000s of isolates from diverse sources (sampled by the public).

Expansion of isolate library, cell free supernatants and fractions of cell free supernatants.

Modular library; e.g. soil, skin, home isolates so screening can be selective and the entire library does not need to be screened.

Compound ID via mass spec.

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# 3D MODELS

iPSC derived basal-like cells of high purity from a mixed population of lung progenitors.

They form functional basal cells, goblet cells, club cells and ciliated cells by immunohistochemistry and an apical mucus layer with beating cilia with bright field microscopy.





# IN VITRO MODEL OF SARS-CoV-2 INFECTION



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## HUMAN CHALLENGE MODEL PLATFORM

TO EXPAND HUMAN CHALLENGE MODELS AND ASSOCIATED CLINICAL FACILITIES TO A COMMERCIAL SCALE AND TO INCREASE THE PORTFOLIO OF HUMAN CHALLENGE MODELS THAT BE USED FOR PRODUCT TESTING WITHIN THIS FACILITY

#### PNEUMOCOCCUS, FLU AND COVID

Accelerator Research Clinic expansion 5 to 18 bed facility

Set up the Accelerator Pharmacy for dispensing of drugs on site







Liverpool was the top recruiting site for the Oxford Covid Vaccine trial – 1000 participants vaccinated





