

Pandemic Preparedness: Accelerating Drug Discovery through Open Science

Paul Willis Senior Director Drug Discovery

30th August 2022

WHO: Scientific strategies from recent outbreaks to
help us prepare for *Pathogen X*

MMV: Partnerships for health impact

Our vision is a world in which affordable drugs will help eliminate the devastating effects of malaria and help protect billions of people at risk. Through successful public-private **partnerships**, Medicines for Malaria Venture discovers, develops and delivers safe and effective antimalarial drugs appropriate **for** the neediest population. With the largest-ever portfolio in development, MMV ensures that antimalarial drugs are delivered as “public goods” and ultimate **health impact** is made in disease endemic countries. As a nonprofit organization leveraging public sector financial resources, MMV improves the economic prospects of new drug innovation by attracting, funding and partnering with pharmaceutical companies, academic and other research institutions.

Discover, develop
and deliver safe,
effective and
affordable
antimalarial
medicines

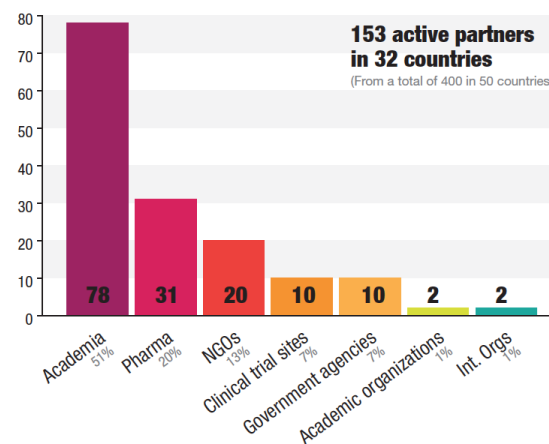


MMV Drug Discovery

- Expertise in Drug Discovery: 29 Malaria Drug Candidates between 2010-2022
- Complex Compound Logistics Capabilities



Virtual Pharmaceutical Platform:
1.8 million compounds from 25 centres into 20 assays

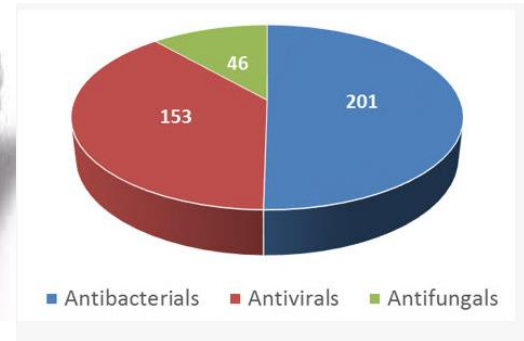


MMV *open*: enabling access to interesting compounds

Stimulating Neglected Disease Research



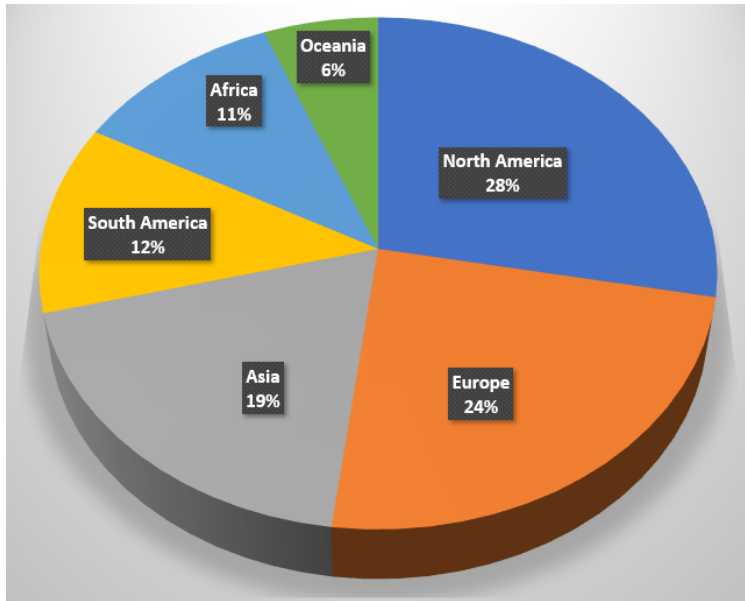
MMVopen: Pandemic Response Box



Launched January 2019
Open Source Drug Discovery

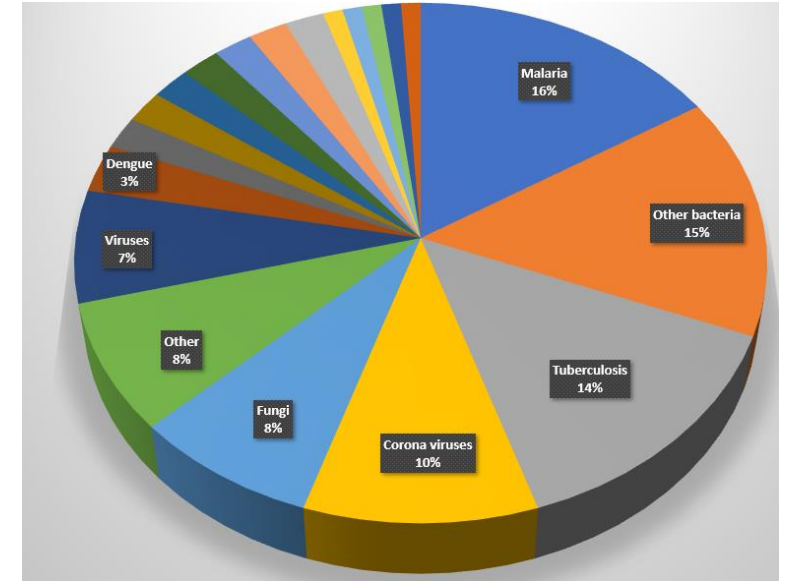
- 400 compounds: Antibacterial, Antifungal, Antiviral Activity
 - Selected with input from global experts
- Available to order for free www.mmv.org/mmv-open
- Potential Starting Points for drug discovery programs vs pandemic pathogens
- MMV scientists provide drug discovery advice and data to recipients
- Recipients agree to make results publicly available

Pandemic Response Box Successes



- Global distribution
- >150 copies shipped
- Screened vs key pathogens

Interesting Hits Identified



Discovery of an imidazonaphthyridine and a riminophenazine as potent anti-Zika virus agents through a replicon-based high-throughput screening

Rafaela Sachetto Fernandes ^a, Andre Schutzer de Godoy ^a, Igor Andrade Santos ^b, Gabriela Dias Noske ^a, Kettlyn Irene Zagato de Oliveira ^a, Victor Oliveira Gawriljuk ^a, Ana Carolina Gomes Jardim ^b, Glaucius Oliva ^a

[Show more](#)

EXPERT OPINION ON DRUG DISCOVERY
2022, VOL. 17, NO. 6, 641–659
<https://doi.org/10.1080/17460441.2022.2080195>



REVIEW

OPEN ACCESS [Check for updates](#)

Identifying novel drugs with new modes of action for neglected tropical fungal skin diseases (fungal skinNTDs) using an Open Source Drug discovery approach

Wilson Lim ^a, Annelies Verbon ^a and Wendy van de Sande ^a

Department of Microbiology and Infectious Diseases, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands

Article

A Screening of the MMV Pandemic Response Box Reveals Epetraborole as A New Potent Inhibitor against *Mycobacterium abscessus*

Taeho Kim ¹, Bui-Thi-Bich Hanh ¹, Boeun Heo ², Nguyenthao Quang ², Yujin Park ², Jihyeon Shin ², Seunghyeon Jeon ³, June-Woo Park ^{4,5}, Kirandeep Samby ⁶ and Jichan Jang ^{2,*}

Article

Discovery of Anti-Amoebic Inhibitors from Screening the MMV Pandemic Response Box on *Balamuthia mandrillaris*, *Naegleria fowleri*, and *Acanthamoeba castellanii*

Christopher A. Rice ^{1,2,*}, Emma V. Troth ^{2,3}, A. Cassiopeia Russell ^{2,3} and Dennis E. Kyle ^{1,2,3}

Screening the Pathogen Box for Identification of *Candida albicans* Biofilm Inhibitors

Talssa Vila, Jose L. Lopez-Ribot

Department of Biology and The South Texas Center for Emerging Infectious Diseases, The University of Texas at San Antonio, San Antonio, Texas, USA

Catalyzing neglected diseases drug discovery

THE PATHOGEN BOX



- 400 compounds active vs. neglected diseases
- Distributed free on request: 2015-2019: 280 Boxes sent to 39 countries, >60 Publications

Key Challenge: help investigators progress research / support funding applications

- In drug discovery: Test related compounds, initial structure activity relationships

WHO CEWG Candidate Demonstration Project funding: Exploiting the Pathogen Box

- Scientists in Brazil, Ghana and India synthesised analogues of Pathogen Box compounds
- MMV provided these compounds and drug discovery advice to Pathogen Box recipients

Bridging funding gaps: supporting researchers to progress their findings



- Launched June 20
- Rapid Response to SARS-COV-2 Pandemic
- Accelerating open research on coronaviruses
- Improving pandemic preparedness by sharing data



- NEW Launched World Mosquito Day Aug 22
- Free to order at www.mmv.org/mmv-open
- 80 compounds confirmed activity against drug resistant malaria
- 80 compounds selected from a compound library donated by Bristol-Myers Squibb
- 80 compounds selected with IVCC: new compounds for vector control and transmission-blocking medicines





Over 4 million compounds shipped

*Bringing New partners into Global Health
Disease R&D*

*Supported Establishment of New R&D programs
against Key Pathogens*

Committed funders



BILL & MELINDA
GATES foundation

