

BILL & MELINDA
GATES *foundation*

Demystifying BMGF

Chris Karp, M.D.

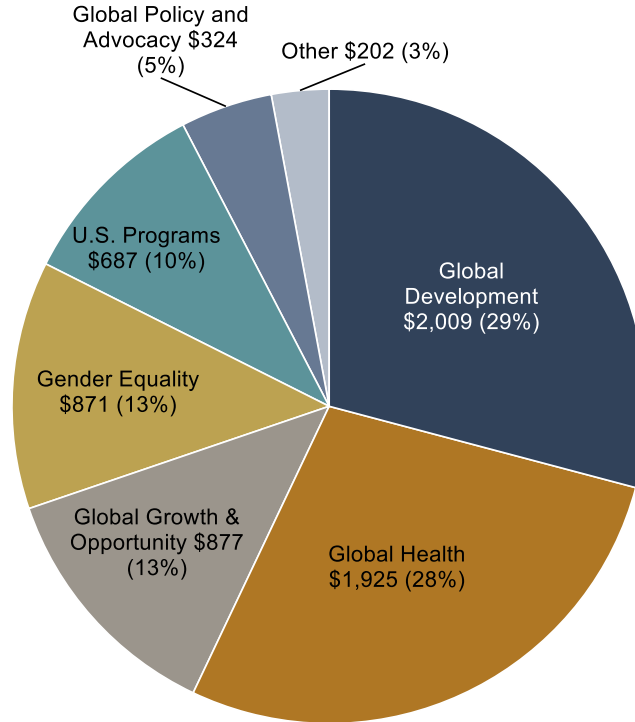
Director, Discovery & Translational Sciences

GATES FOUNDATION COMPARATIVE ADVANTAGES

- Transformational innovation focus
- Risk capital
 - agility
 - long time horizons
- Convening power and voice
- Technical expertise
 - partnership networks
 - privileged place in data and information flow

Foundation spending totaled \$7.8B in 2023

2023 CHARITABLE SPENDING (\$M)



BMGF GLOBAL PROGRAMS

Strategic focus

Goal

Polio

Malaria

HIV

TB

Pneumonia (Pandemic Prep)

Enteric & Diarrheal Diseases

Neglected Tropical Diseases

Maternal, Neonatal Child Nutrition & Health

Women's Health Innovations

Family Planning

Water, Sanitation & Hygiene

Agriculture

Nutrition

Inclusive Financial Systems

Eradicate

Accelerate the decrease in transmission rates in high burden geographies

Reduce disease burden (specific pathogens)

Pathogen-specific: Eradicate / Eliminate / Reduce Burden

Maximize maternal and neonatal health, and developmental potential

Reduce the burden of preventable reproductive and sexual diseases

Ensure all women can make and act on an informed choice about contraceptive use

Enable universal access to sustainable sanitation services

Reduce poverty for farming families by increasing agricultural productivity

Ensure that all have the nutrition needed to live a healthy and productive life

Build sustainable futures through digitally-based financial tools & services

Malaria 'pathway to eradication' strategy is based on a set of key principles

These principles outline an agenda for eradication and provide a rubric for prioritization, preservation, and acceleration each year



To achieve and maintain local elimination, any setting needs:

- Sufficient **transmission prevention**
- Good coverage of **case management**
- **Low importation**

Although these may not be sufficient for fast elimination in some places



Accurate, timely, and geo-localized **surveillance** tells us:

- How we are performing
- What is needed where and when
- About local vs. imported transmission (molecular surveillance)



For vector control and case management to remain effective, we need constant discovery and product development

- Given numbers, time, and pressure, evolution will win and produce **resistance** ('Red Queen')



New **transformational tools** are required, since even full ramp up of existing tools is insufficient in the toughest places



How long the endgame will take will determines total cost; '**Eradication Backbone**' countries, like Nigeria and DRC, will be the hardest and last to eliminate, and they need:

- Not just transformational tools, but also improved **surveillance, data use, supply chains**, and more
- **Early investment in this lengthy work** to be ready for the endgame, which will also drive down burden now



Rapid mortality declines and ultimately eradication will need:

- **Increased resources** from donors and countries alike
- **Improved effectiveness** of existing tools and resource envelope
- **Coordinated partnerships** at the global and regional levels
- **Empowered leadership** from endemic countries
- **Maintained political will** in elimination settings

Investment portfolio

Antimalarial interventions

Vector control

Surveillance, data, and epidemiology

Strategic partnerships & country engagement

Global policy and advocacy

Digital health for malaria eradication

% 2023 budget¹

29%

23%

18%

17%

7%²

6%

Total: 100%

¹ Based on 2023 PST budget of \$301.2M; ² Net of \$2.2M budget transfer for PAC Pooled Health Fund;

THE OVERARCHING HIV PROGRAM STRATEGY

Strategic vision: Accelerate the reduction in the incidence of HIV infection in high-burden geographies and populations with the goal of achieving sustained epidemic control

Prevent new HIV infections through primary prevention

Reduce onwards transmission by supporting people living with HIV to achieve and maintain viral suppression

R&D

Product Launch

Delivery

Develop **long-acting, high-efficacy PrEP** interventions, including bnAbs

Develop efficacious **vaccines** that provide durable protection

Drive **timely introduction and effective use** of new PrEP interventions and enable access to market in existing and new channels

Promote effective **testing services** to urgently and efficiently find people at highest HIV risk **and link** to effective treatment and prevention

Identify HIV risk & design and promote **differentiated HIV prevention** approaches

Maximally and sustainably suppress population viral load and decrease morbidity and mortality by **maintaining lifelong antiviral therapy**

Sustain HIV response, drive efficient HIV services & effective financial plans

Understand **evolving HIV epidemics** and develop scalable tools and methods to enable **targeted service delivery**

Global Functions

Global Health

Trevor Mundel, President

DTS Chris Karp

Vax Development Katey Owen

Int. Development Dan Hartman

Biotech Accel. Dan Wattendorf

IDM¹ Philip Welkhoff

SPM² Toni Hoover

Gender Equality

Anita Zaidi, President

Gender Impact Accel. (Janet Zhou)

Strategic Investment Fund
(Natalie Revelle)

Global PSTs

TB & HIV Nina Russell, Yogan Pillay

Malaria Philip Welkhoff

NTDs Katey Owen

EDGE Cherry Kang

Pneumo, Pandemic Prep Keith Klugman

MNCNH³ Rasa Izadnegahdar

Family Planning [Aparajita Ramakrishnan]

Women's Health Innovations Ru-Fong Chen

Women's Econ. Empowerment Greta Bull

Polio Jay Wenger

Primary Health Care Tracey McNeill

Nutrition (Carol Welch)

Agriculture Development Enoch Chikava

Water, Sanitation & Hygiene Brian Arbogast

Inclusive Financial Systems Michael Wiegand

Global Functions/Offices

Global Development

Chris Elias, President

Immunization Violaine Mitchell

GHAgenies/Funds Kieran Daly

Africa Country Offices Paulin Basinga

India Country Office Hari Menon

Global Growth & Opportunity

Rodger Voorhies, President

Global Policy & Advocacy

Gargee Gosh, President

Philanthropic Partnerships Rob Rosen

Program Adv. Comm (?)

China Country Office Zhi-Jie Zheng

North America Office Rob Nabors

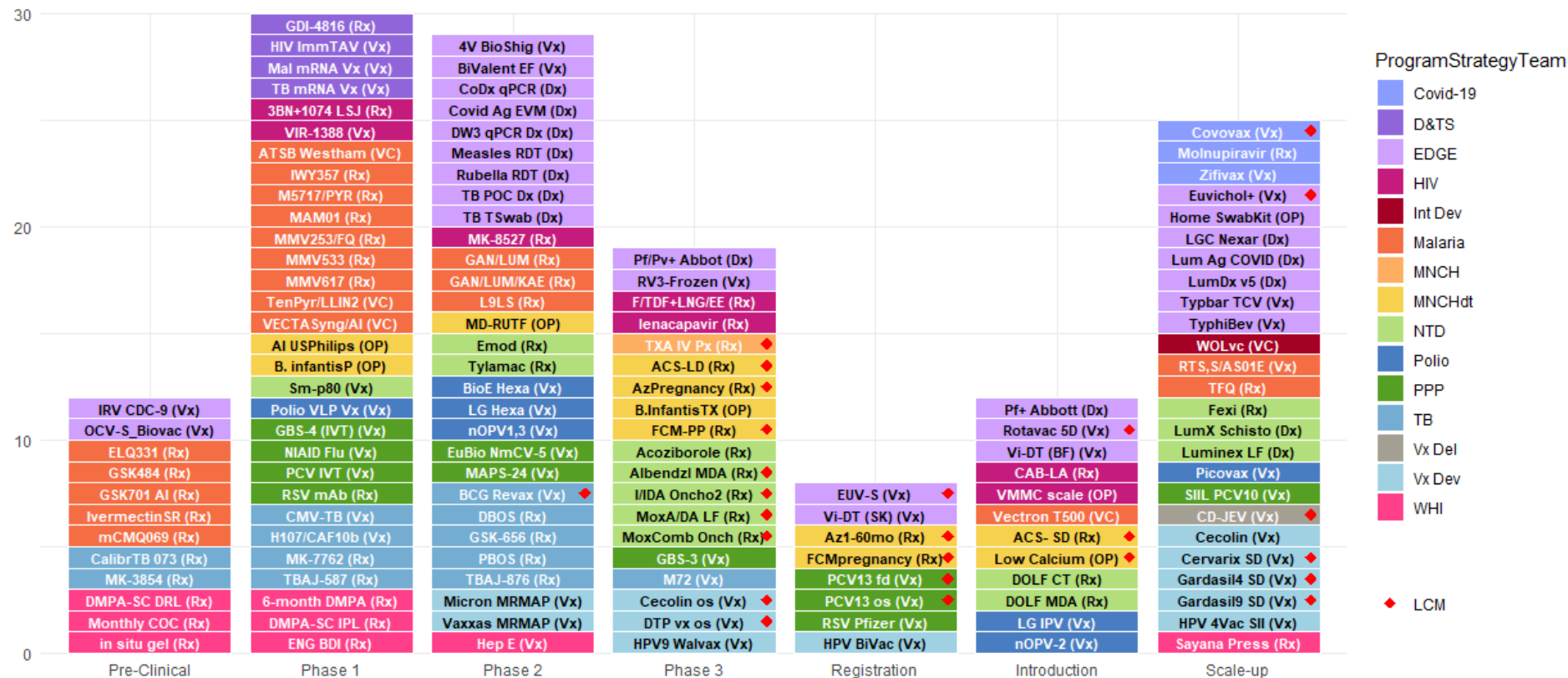
Europe, ME, E. Asia Joe Cerrell

Dev. Policy & Finance Kalpana Kochlar

¹Institute for Disease Modeling ²Strategy, Planning & Management ³Maternal, Neonatal & Child Nutrition & Health

GH Development portfolio (as at 2024-01-19)

Total Development and Delivery product portfolio



DISCOVERY & TRANSLATIONAL SCIENCES

Mission: To catalyze innovation for the discovery and translation of transformative solutions to global health and development inequity

Comparative advantages: Those of the foundation (transformational innovation focus, risk capital, technical expertise, convening power and voice)— with extra license on risk

Funding:

- Discovery and translation of the pipeline of transformational products needed for the PSTs to achieve their strategic goals
- State-of-art, cross-cutting platforms to support product discovery and translation
- De-risking of novel technologies, both for unprecedented product types and for underlying platforms
- Key underlying areas of biological ignorance

	Drugs <i>Ken Duncan</i>		Vaccines & Biologics <i>Hedda Wardemann</i>		Reproductive Health Technologies <i>Sharon Achilles</i>
	GH Discovery Collaboratory <i>Karen Makar</i>		Global Partnerships & Grand Challenges <i>Kedest Tesfagiorgis</i>		Translational Sciences <i>Fran Berlioz-Seux</i>

D&TS DRUG DISCOVERY PRIORITIES

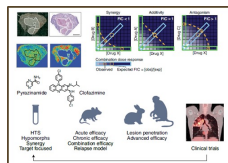
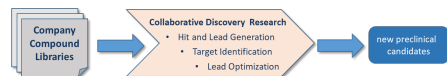
Goal: Support state-of-the-art drug discovery capabilities, develop new tools and generate portfolio of candidates for the following indications:

Tuberculosis

Goal: Generate new drug candidates that contribute to a pan-active, treatment-shortening TB regimen

TB Drug Accelerator

How it works...

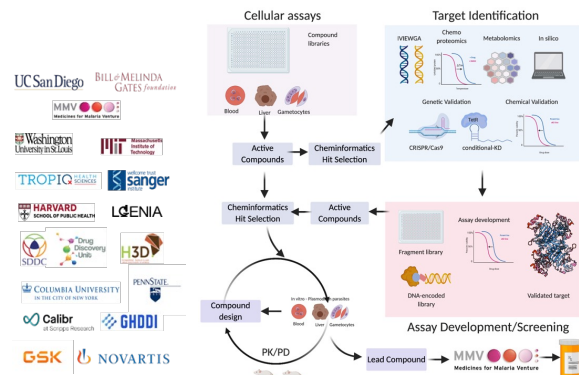


- Cutting-edge science
- Integration of tools
- To date, 12 drug candidates have entered development



Malaria

Goal: Identify and validate targets in *Plasmodium*, generate lead compounds and clinical candidates



Antivirals/Pandemic preparedness

Goal: Establish a set of clinic-ready therapeutic candidates that can be deployed in new epidemic/pandemic

Address viral families with highest potential of causing next pandemic: **Coronaviruses**, **Orthomyxoviruses** (Influenza) and **Paramyxoviruses** (Nipah, Hendra)

Coordinate with other initiatives such as NIH AVIDD centers



Henipavirus



Coronavirus

- Mpro candidates (Calibr, GHDI, Novartis)

Influenza

- Under review

Non-hormonal contraceptives

Goal: Generate NHC leads and drug candidates acting through novel mechanisms

Reproductive Biology and Target Identification



Follicle Maturation/Ovulation



Spermatogenesis/Sperm Function



Gamete Interaction/Fertilization



Drug discovery partnerships

Target-enabling packages



Structure-guided lead design



AI-based lead design



Integrated drug discovery



Platforms and drug discovery capacity

D&TS supports capacity for drug discovery that can be deployed on any indication, as well as testing and putting into practice technology platforms, and seeking new sources of chemical diversity to augment Pharma libraries

Capacity



Platforms



Chemical Diversity



Vaccines and Biologics

From fundamental biology to translation for GH priority diseases

PST priorities	HIV	TB	Malaria	EDD	PPP	Reproductive health	Animal health	NTDs	Other
	<ul style="list-style-type: none">▪ Anti-infection vaccines that drive bNAbs, mucosal immunity, T cell responses▪ HIV cure▪ bnAbs▪ Multabodies for prevention or functional cure	<ul style="list-style-type: none">▪ Novel approaches to TB vaccines▪ Immune Correlates of Protection▪ TB human biology and biomarker discovery	<ul style="list-style-type: none">▪ Vx for elimination, including anti-infection and transmission blocking▪ mAbs to protect from infection, disease and transmission	<ul style="list-style-type: none">▪ Higher efficacy rotavirus vxs▪ Shigella▪ NTS▪ Combination vx for enteric pathogens	<ul style="list-style-type: none">▪ RSV mAb▪ RSV vx to protect infants via maternal immunization▪ Pneumococcal vx▪ Broadly protective beta-coronavirus vx▪ Rapid RNA vx for pandemic prep	<ul style="list-style-type: none">▪ HPV therapeutic and cervical cancer preventative vx▪ Syphilis vaccine biology	<ul style="list-style-type: none">▪ Vaccines to protect against livestock diseases, including foot and mouth disease, east coast fever, and rift valley fever	<ul style="list-style-type: none">▪ Schisto vx	<ul style="list-style-type: none">▪ Maternal immunization▪ Vaccine Duration▪ Vaccine hyporesponsiveness

Bold: deep engagement and driving role

AN ENABLING NETWORK FOR GLOBAL HEALTH SCIENCE R&D

Collaboratory mission

- Enable grantee access to best-in-class **technologies** and platforms to accelerate discovery through translation for global health interventions
- Foster a **collaborative network** of centers of excellence, technology platforms, grantees, and partners all working to translate new discoveries into global health products and interventions
- To ensure data is **FAIR** (findable, accessible, interpretable, reusable) to enable knowledge generation and support iterative learning

Programs across 3 workstreams

GH Priority Programs



Collaboratory
Platforms

New tools, technologies,
& capabilities

Robust network of partners and capabilities

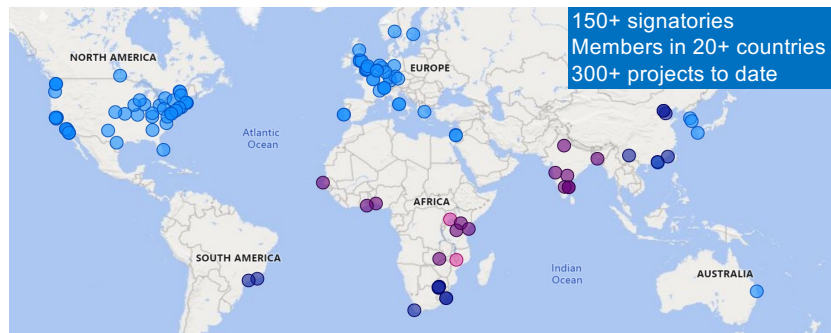
Collaboratory Platforms



Discovery Hubs



Global Collaborators



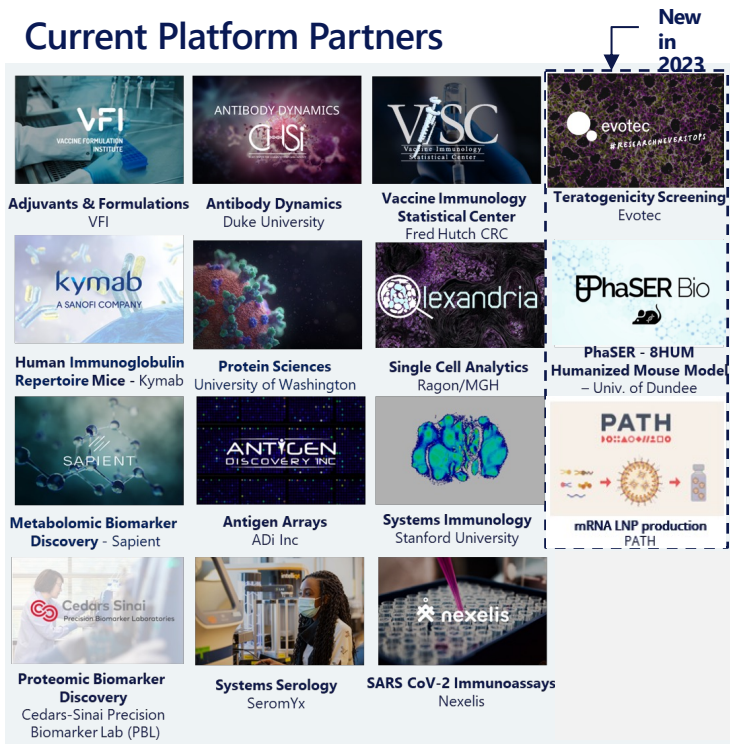
Collaboratory Platforms

Provide early access to state-of-the-art tools, technologies, and expertise for grantee members

Guiding principles

- **Rigor** - track record of delivering high quality data with guidance on interpretation
- **Unique** - technologies that are generally underutilized or inaccessible for global health investigators
- **Collaborative** - able and willing to directly support grantees in designing, executing, and analyzing studies
- **Excellence** - proven best-in-class technology
- **Broad applicability** - relevant to multiple global health disease areas

Current Platform Partners



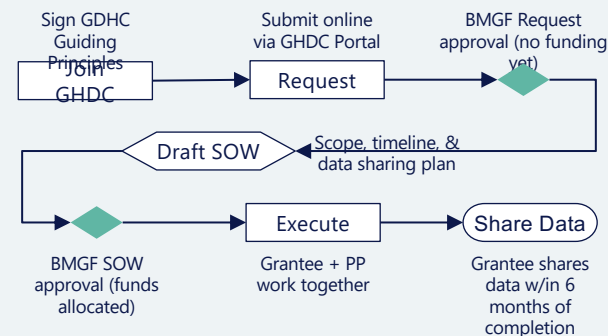
Colleen Woods (PO, D&TS)
Collaboratory Platforms Manager

Aims

- Expand beyond Vx (**added Rx** discovery PPs)
- Support active tech. diffusion among GH scientists, esp. in LMICs

How it works

- BMGF grantees can request to work with PPs on collaborative projects:



REPRODUCTIVE HEALTH TECHNOLOGIES

Goal | Source and drive the translation of transformational technologies to support the sexual and reproductive health of women and girls globally

Major Initiatives



Vaginal
Microbiome
Interventions



HPV Therapeutic
Vaccine



Non-hormonal
Contraceptives



Syphilis
Vaccine



Menstrual
Health
Products



HPV therapeutics
(small molecule,
biologic)

Exploratory Initiatives

Translational Sciences:

Accelerating translation of scientific discoveries to practical solutions that address global health inequity

Domain Area 1

ACCELERATION OF PRECEDENTED INTERVENTIONS

Reach earlier POC with higher quality clinical candidates, and enable faster decision-making process and learning cycles.

Domain Area 2

INNOVATIVE APPROACHES FOR UNPRECEDENTED INTERVENTIONS

Create new development paths to rapidly deliver innovative and high-quality solutions to patients we serve.

Domain Area 3

BESPOKE CLINICAL AND PRECLINICAL SOLUTIONS

Catalyze the development of bespoke clinical and preclinical solutions to enable accelerated and innovative translational approaches

To optimizing our investments for greater impact, we are

sunsetting our investments in **pharmacogenomic** and **COVID**-related projects.

reducing the risk associated with risky investments by introducing key go/no-go criteria for **early exit**.

realigning our investments in **NTD biomarkers** to match our new strategic goals and prevent duplication with other funders.



Catalyzing Innovation and Enabling Critical Partnerships to Drive Impact

GC Innovation Platforms

- GC RFPs:
 - Seek and seed innovation
 - Landscape & engage researchers in new fields of investigation
- Support extraordinary LMIC science leaders

GC Annual Meeting

- Accelerate scientific collaboration
- Align scientific thought-leaders, decision-makers, and funders
- Enable strategic advocacy for GH investment

Knowledge & Network Integration

- Serve as integrator/communicator of GH LMIC R&D capacity strengthening work
- Make targeted investments to advance an enabling environment for R&D and foundation goals.

Partnerships

- Leverage the GC Network movement to galvanize South-South and South-North collaborations
- Orchestrate joint initiatives with global, regional and national scientific thought leaders, science enablers and funders
- Connect siloed networks to catalyze collaboration

FUNDING/PARTNERSHIP MODELS

**IF YOU WANT TO GO FAST,
GO ALONE.**

**IF YOU WANT TO GO FAR,
GO TOGETHER.**

— African proverb



Grand Challenges, Grand Challenges Explorations

Closed RFPs

Targeted investments in focused areas

Program-related Investments

Engagement with the Gates Medical Research Institute

Engagement with PDPs

Work with Pharma

Work with Multilaterals

Work with Co-Funders

Fund platform technologies
