

WHAT IS INNOVATION?

A new tool or approach to either:

- achieve a new outcome we cannot achieve today;
- or
- achieve an existing outcome faster, better and/or with fewer resources



WHAT IS GRAND CHALLENGES?

A family of initiatives & network of partners seeking to:

- Engage the world's most creative minds from across sectors, organizations and geographies
- Support high-risk, high-reward innovations on the most difficult and pressing issues
- Bring innovation to scale for the benefit of the world's poor

Grand Challenges Sources Innovations and Collaborates to Accelerate Innovations to Impact



WHAT IS GRAND CHALLENGES? INNOVATORS AND INNOVATIONS



SUPPRESSING MOSQUITO REPRODUCTION

Project: Distorting the sex ratio of malaria-transmitting mosquitoes using "selfish genes"

Researcher: Austin Hart, Imperial College London, UK
Program: Grand Challenges in Global Health



ELIMINATING DENGUE FEVER

Project: Blocking dengue virus transmission by mosquitoes using Wolbachia bacteria

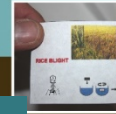
Researcher: Scott O'Neill, University of Queensland, Australia
Program: Grand Challenges in Global Health



NANOEMULSIONS FOR NASAL VACCINES

Project: Using nanoemulsions as adjuvants to boost needle-free vaccine efficacy

Researcher: James R. Baker, University of Michigan
Program: Grand Challenges in Global Health



ANTIBACTERIAL BUSINESS CARDS

Project: Treating infected crop plants using biocontrol business cards incorporated with viruses that kill harmful agricultural pests

Researcher: Peter Steiner, University of California, Davis
Program: Grand Challenges in Global Health



HOW MILK DOES A JOEY GOOD

Project: Studying how eucalypt milk helps joeys grow faster to help increase scale of birth in order to grow a more resilient and diverse nation from sheepfarms of undergrowth

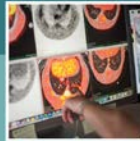
Researcher: David Hoskins, Commonwealth Scientific and Industrial Research Organisation
Program: Grand Challenges in Global Health



AN INVISIBLE BEDNET

Project: Using infrared light—the kind that comes from TV remote controls—to repel malaria-transmitting mosquitoes

Researcher: David Horsfield, Imperial College London
Program: Grand Challenges in Global Health



ELIMINATING TB WHERE IT HIDES

Project: Imaging tuberculosis infections in situ to help guide drug design

Researcher: Douglas Young, Imperial College London
Program: Grand Challenges in Global Health

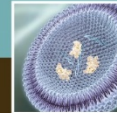
Funders: Wellcome, FNIH, Wellcome Trust, Bill & Melinda Gates Foundation



DRONES FOR VACCINES

Project: Developing unmanned aerial vehicles that can be deployed by cell phone to deliver vaccines to rural locations

Researcher: Christopher Peterson, University of California, Berkeley
Program: Grand Challenges in Global Health



POLIOVIRUS IN A BUBBLE

Project: Making a new kind of polio vaccine by enclosing bits of virus in tiny spheres made of fat molecules

Researcher: David Brown, University of Cambridge
Program: Grand Challenges in Global Health



RALLYING THE IMMUNE SYSTEM

Project: Boosting malaria vaccines to trigger both arms of the immune system

Researcher: Adrian Hill, University of Oxford, UK
Program: Grand Challenges in Global Health



MICRONEEDLES FOR VACCINES

Project: Developing a microneedle patch to more simply and efficiently deliver vaccines

Researcher: Mark P. Callan, University of Cambridge
Program: Grand Challenges in Global Health



STINKY SOCKS, NO MALARIA

Project: Using the odor of smelly socks to repel and kill malaria-transmitting mosquitoes

Researcher: Christopher Hill, University of Cambridge
Program: Grand Challenges in Global Health



CONFUSING THE MOSQUITO NOSE

Project: Deciphering how malaria-transmitting mosquitoes sense humans

Researcher: Deborah Auld (Pratt), Stanford Columbia University, USA & Leslie Vosshall, The Rockefeller University, USA
Program: Grand Challenges in Global Health

Funders: Wellcome, FNIH, Wellcome Trust, Bill & Melinda Gates Foundation



MAKING SANITARY PADS AFFORDABLE

Project: Manufacturing inexpensive but high-quality sanitary pads in Kenya out of locally available agricultural byproducts

Researcher: Megan Murray, Zanzelema Group, Tanzania
Program: Grand Challenges Explorations

Funder: Bill & Melinda Gates Foundation



UNDERSTANDING MALNUTRITION

Project: Using optical brain imaging technology to study cognitive function in malnourished children

Researcher: Clare Davis, University College London, UK
Program: Grand Challenges Explorations

Funder: Bill & Melinda Gates Foundation

~70K Applications from 190 Countries
>2000 Awards in 87 Countries

WHAT IS GRAND CHALLENGES? A NETWORK OF PARTNERS

Network Promoting Global Health Innovation through a Grand Challenges Approach

2003
Bill & Melinda
Gates Foundation

2011
USAID

2013
India

2015
Japan,
Thailand,
China,
Africa,
Ethiopia

2010
Grand
Challenges
Canada

2012
Brazil

2014
Israel,
Peru,
South Africa

2016
South Korea

- Anchor Partner
- ▲ Country Partner
- Other Funding Partner

- Seed Innovation Initiatives**
1. Bill & Melinda Gates Foundation Grand Challenges
 2. Grand Challenges Canada
 3. Grand Challenges India
 4. Grand Challenges Japan
 5. Grand Challenges Korea
 6. Grand Challenges Thailand
 7. Grand Challenges Africa
 8. Grand Challenges Ethiopia
 9. Grand Challenges Brazil
 10. Grand Challenges Israel
 11. Grand Challenges Peru
 12. Grand Challenges South Africa

- Saving Lives at Birth**
13. Bill & Melinda Gates Foundation
 14. Grand Challenges Canada
 15. Grand Challenges India
 16. Grand Challenges Japan
 17. Grand Challenges Korea
 18. Grand Challenges Thailand
 19. Grand Challenges Africa
 20. Grand Challenges Ethiopia
 21. Grand Challenges Brazil
 22. Grand Challenges Israel
 23. Grand Challenges Peru
 24. Grand Challenges South Africa

- Saving Brains**
25. Bill & Melinda Gates Foundation
 26. Grand Challenges Canada
 27. Grand Challenges India
 28. Grand Challenges Japan
 29. Grand Challenges Korea
 30. Grand Challenges Thailand
 31. Grand Challenges Africa
 32. Grand Challenges Ethiopia
 33. Grand Challenges Brazil
 34. Grand Challenges Israel
 35. Grand Challenges Peru
 36. Grand Challenges South Africa

- Promoting Protein Birth**
37. Grand Challenges India
 38. Grand Challenges Japan
 39. Grand Challenges Korea
 40. Grand Challenges Thailand
 41. Grand Challenges Africa
 42. Grand Challenges Ethiopia
 43. Grand Challenges Brazil
 44. Grand Challenges Israel
 45. Grand Challenges Peru
 46. Grand Challenges South Africa



WHAT DOES IT TAKE FOR AN ORGANIZATION TO BE GOOD AT GRAND CHALLENGES?

- An **Appetite for Risk** and a **Tolerance for Failure**
- **Patience** – a willingness to bet on **Long Time Lines**
- Being involved with a **Global Network** that Provides:
 - **Deeper understanding of problems** that need to be solved
 - Understanding of **landscape of opportunity space of solutions**
- A **Trusted Brand** that **Attracts New Talent**
 - And is Trusted as a Partner to Create **Unusual New Collaborations**
- Engagement downstream (e.g. GAVI, AMCs) adding a “**Prize Element**” for success (and to accelerate impact)
- **Human Capital, Financial Resources, Operational Flexibility**

HOW DO WE SCORE GRAND CHALLENGES?

Primary Metric

Projects progressed to Clinical Testing

+ Strategic Learning & Landscaping

+ Scientific Knowledge

+ Capacity Development

+ Good ideas funded by others

+ Good ideas funded by others

+ Increased awareness of our issues

+ Strengthen Foundation brand

Secondary Metrics

ROI =

Project Funding

+

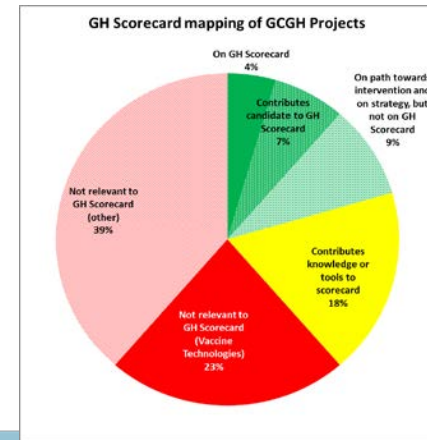
Programmatic & Business operating costs

+

Opportunity costs

ROI Shortcomings

- Grand Challenge evolution includes increased breadth of project types
 - Clinical testing not always good intermediate benchmark
- What is good?
 - What are appropriate denominators?
 - What are appropriate benchmarks?



HOW DO WE CELEBRATE 10 YEARS OF GCE?

Grand Challenges | EXPLORATIONS

ONE GREAT IDEA

TWO PAGES TO FILL OUT.
\$100,000 TO PROVE IT.

GREAT IDEAS CAN COME FROM ANYWHERE. ALL CAN APPLY.

Thank You



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BILL & MELINDA
GATES *foundation*