Partnering to tackle Neglected Tropical Diseases

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NEGLECTED TROPICAL DISEASES

The most important diseases you’ve never heard of
NEGLECTED TROPICAL DISEASES

Dengue  Chagas Disease  Onchocerciasis
Leprosy  STH  Leishmaniasis
Yaws  Buruli Ulcer  Schistosomiasis
Rabies  Trachoma  Lymphatic Filariasis
Trachoma  Echinococcosis  Taeniasis / Cysticercosis
HAT  Dracunculiasis  Foodborne Trematodiasis

Photo credits: WHO/TDR, APOC

http://www.who.int/neglected_diseases/diseases/en/
1 billion people worldwide currently suffer from at least one NTD.

An additional 2 billion people are at risk.
THE LONDON DECLARATION

By 2020:

• **Eradicate** guinea worm

• **Eliminate** lymphatic filariasis, leprosy, sleeping sickness, and blinding trachoma

• **Control** schistosomiasis, STH, Chagas disease, visceral leishmaniasis, and onchocerciasis
PATH drives transformative innovation

PUBLIC

PRIVATE

IMPACT

CIVIL

SOCIETY

COMMUNITY-BASED INTERVENTIONS

DEVICES

DIAGNOSTICS

DRUGS

VACCINES

OUR 5 PLATFORMS
Full spectrum of technology development and introduction

- Research/Design
- Develop/Validate
- Approve/Recommend
- Introduce/Optimize
- Scale up/Apply
Task at hand

Challenge

How can we meet the London Declaration goals for 2020?

Opportunity

Build the right coalition for development and deployment of new technology.

Photo credit: www.thequists.com
Identify endemic communities

Deliver

Reducing intervention frequency

Monitoring impact

Achieve public health success

Rx

Picture credit: End7 Campaign
Identify endemic communities

1. Identify endemic communities
2. Develop
3. Deliver
4. Achieve public health success

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Monitoring impact

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Achieve public health success

Rx

Endemic

Campaign

Picture credit: End7 Campaign
CASE STUDY: ONCHOCERCIASIS
Nangodi, Northern Ghana
1966
“The river eats your eyes”

Photos courtesy of Tom Nutman, NIAID, NIH
1978: Could ivermectin work against onchocerciasis?

Dr. William Campbell
1987: Mectizan® will be made available for as long as needed.

Dr. Roy Vagelos
37 million infected

300,000 blind

Second leading infectious cause of blindness

180 million at risk

Photo credits (left to right): T. de los Santos, BMGF, Voice of America, Helen Keller International
Mectizan Donation Program

Over 2 billion tablets donated

140 million tablets annually

Photo credit: Sightsavers, www.mectizan.org
July 2013: Colombia declares elimination of onchocerciasis
Endemic communities

Drugs

Delivery Partners (NGO’s)

Donors

Diagnostics

Mectizan Donation Program
Challenges of controlling the disease in Africa

- Geographic coverage
- Human and fly migration
- Vector efficiency
- Co-endemicity with *Loa loa* infections
- Political unrest and post-conflict areas
Marching toward elimination

When is it safe to stop mass drug administration?

How to monitor for possible re-emergence of infection?
Features of the Ov16 Rapid test

- Easy to use and field friendly
- Rapid results (20 minutes)
- Uses finger stick as sample (5 – 30 uL).
- Long read window / end point stability (>4 weeks)
- Robust and stable
  - >1 year at 45 C
  - >3 weeks at cycling temperatures
- Does not need to be timed with treatment
- Can easily be integrated with other NTD surveillance efforts
What is the Ov16 rapid test?

- It is a serology-based rapid test
- Detects human IgG4 antibodies to the *Onchocerca volvulus* antigen Ov16

**Assay Principle:**

- Detects exposure to infection (antibody)
- Does **not** detect parasites (antigen)
Activities and outputs at Concept Phase

- Identification and engagement of key stakeholders
- User needs assessment
- Market research
- User and Market Requirements Document
- Target Product Profile
Activities and outputs at R&D Phase

- Development of working prototypes
- SOPs
- Failure Mode and Effects Analysis
- Commercialization Strategy
- Partner search
Prototype Evolution

- Investigated several form factors

1. Closed assembly
2. Open assembly
3. Removed filter

Diagram:
- Direction of flow: T, C
- BC: Behind conjugate
- NC: on Nitrocellulose
- OC: On conjugate

Graph:
- Line intensity versus sample placement and fold dilution
- Test line
- Control line

Images:
- Various prototypes and assembly configurations

[Image of prototype evolution and assembly configurations]
Activities and outputs at Field Studies Phase

- Evaluation of beta prototypes
- Initiation of technology transfer
- Production of small scale validation lots
- Validated assay performance and SOPs
- Executed commercialization agreement
PATH Ov16 Prototypes: Field Evaluation in Togo
Current Status

- All field-based data collection completed

- Completing reference testing in Togo laboratory

- Will begin analysis and integration of data in November 2013
Diagnostics Group Product Portfolio

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**Portfolio Key**
- Malaria
- Neglected Tropical Disease
- TB
- HIV/STD
- Non-communicable
- Other

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**CONFIDENTIAL**
Onchocerciasis team

Tala de los Santos – Project lead

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Health within reach for everyone

Thank you!