Medicines for Malaria Venture (MMV) at a glance

• A nonprofit organization with a mission to Discover Develop Deliver safe and effective antimalarials

• First product development partnership to be established (1999)

• Operating model: Effective public-private partnerships

• Diversified funding base:
  • Government agencies, private and corporate foundations, international organizations, corporations,

• Largest-ever pipeline of antimalarial drugs
  • Over 30 projects ranging from discovery stage to Phase III
MMV Portfolio 1st Q 2007

**Exploratory**
- PSAC antagonists
- Pf enoyl-ACP reductase (Fab I)
- Immucillins
- Natural Products Whole-Cell HTS
- TDR22093 Series

**Discovery**
- Novel Liver Stage Antimalarials
- Dihydrofolate reductase (DHFR)
- 4(1H)-pyridones Back ups
- Falcipain (cysteine protease)
- Novel Macrolides

**Preclinical**
- Next Generation OZ
- Isoquine (an improved aminoquinoline)
- 4(1H)-pyridone GSK-932121
- MK-4815

**Development**
- Coartem® Dispersible Tablet
- Dihydroartemisinin-piperaquine DHA + PQP
- Pyronaridine – Artesunate PYRAMAX®

**Regulatory**
- Chlorproguanil - dapsone (Lapdap™) - artesunate (CDA)
- Intravenous Artesunate

**Project Success Rates at each Phase**
- 30%
- 65%
- 55%
- 55%
- 70%
- 50%
- 65%
- 95%

- Project in the GSK mini-portfolio
- Projects under contract negotiation
- Unfunded approved projects
Pipeline productivity goal depends on attrition and sustained investment:

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<tbody>
<tr>
<td>POS</td>
<td>30%</td>
<td>40%</td>
<td>55%</td>
<td>70%</td>
<td>90%</td>
<td>50%</td>
<td>65%</td>
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<tr>
<td>Cum POS</td>
<td>30%</td>
<td>12%</td>
<td>7%</td>
<td>5%</td>
<td>4%</td>
<td>2%</td>
<td>1,5%</td>
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<td>Phase length (quarters)</td>
<td>8</td>
<td>20</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>1</td>
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<td>Phase cost (k USD)</td>
<td>250-500</td>
<td>1,00</td>
<td>2,000</td>
<td>1,5-2.0</td>
<td>6,00-9.00</td>
<td>6,000/drug</td>
<td>12,000</td>
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Cumulative probability of completing pipeline is 1.3 %

Source: MMV
MMV’s, largest ever malaria drug R&D portfolio

1 USA Albert Einstein College of Medicine, New York / Immtech, Vernon Hills / International GSK, Philadelphia / National Institutes of Health (NIH), Bethesda / Texas A&M / University of California, San Francisco / University of Iowa, Iowa City / University of Mississippi, Oxford / University of Nebraska Medical Center, Omaha / University of North Carolina, Chapel Hill / University of Tulane, New Orleans / World Bank, Washington / WRAIR, Silver Spring / Yale University, New Haven
2 United Kingdom GlaxoSmithKline, Brentford /Liverpool School of Tropical Medicine / University of Liverpool / London School of Hygiene and Tropical Medicine / Oxford University / York University
3 Belgium ITM, Antwerp
4 Switzerland Hoffmann-La Roche, Novartis Pharma, STI, Basel / WHO (TDR), Geneva
5 Spain GSK, Tres Cantos
6 Italy Sigma-Tau Industrie Farmaceutiche, Roma
7 Senegal Service de Parasitologie, Faculté de Médecine, Dakar
8 Gambia MRC Labs, Farafenni / MRC Labs, Fajara
9 Mali Malaria Research and Training Center, University of Bamako
10 Burkina Faso Centre Muraz, Bobo-Dioulasso / Centre National de Recherche et de Formation sur le Paludisme, Ouagadougou / Nanaro Medical Centre
11 Ghana Kintampo Health Research Centre / Komfo Anokye Teaching Hospital, Kumasi
12 Nigeria OAUTHC, Ile-Ife / University of Ibadan / University of Nigeria, Enugu
13 Cameroon Cameroon Medical Research Centre, Douala / University of BUEA, Yaounde
14 Gabon Hopital Louis Schweitzer, Lambarene
15 Democratic Republic of the Congo Internal Medicine and Infectious Diseases, Kinshasa
16 Uganda MSF Epicentre, Mbarara
17 Kenya African Centre for Clinical Trials, Kisumu / KEMRI, Kilifi / Malaria Public Health &
The value chain needs to go to Health Impact

Source: WHO/TDR
Nature Medicine 2004, 10, 1-4
Why did MMV get involved in Access?

• Four products supported by MMV likely to enter the market in next few years

- Coartem dispersible
- DHA PIP
- Pyronaridine Artesunate
- Lapdap Artesunate

• But the market often fails to deliver drugs to the poor

• Our products will only achieve health impact if available
  • Immediately when needed
  • At the right price
  • At the right place
  • With the right information
All MMV supported products are being developed to ICH standards: (unlike some!)

MMV’s DHA-Piperaquine Global Trial awarded « Clinical Research Programme which Best Promoted Access to Medicine »

Pivotal Phase III Randomised Comparative Trial

• 2,650 patients
• Strict adherence to GCP and ICH standards
• EMEA ‘fast track’ via Orphan drug legislation
What is our mission?

- To increase speed and reach of MMV product adoption and use to achieve health impact

Our target population