TBVI: paradigm shifts for new TB vaccines

Dr. Joris Vandeputte

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Foundation to facilitate European efforts towards the global development of new TB vaccines

www.tbvi.eu
Tuberculosis: figures to remember

- Almost 2 million deaths/year
- Cost of 0.52% to global GNI = important poverty factor
- 9 million new cases per year
- Steady increase of MDR/XDR
- 2 Billion people carrier or latently infected
- A global problem: developed, emerging and LDC’s
New candidates

- reduce the persistent bacterial load
- prevent re-activation of latent Mtb

- Containment (>90%)

- Spontaneous Healing (?)

- BCG

- Crosspriming

- Acute TB (HIV Infection)

10% TB risk within year of double infection (>100-fold increase)

Reactivation
10% TB risk lifelong

Dissemination Transmission

Reinfection

Courtesy of S.H.E. Kaufmann
Potential impact of vaccination on TB control (D. Young & C. Dye, Cell, 124, 2006)
New TB vaccine candidates: a success story from the last decade

• Globally 14 vaccine candidates in clinical trials
• EU framework programmes DELIVERED:
  – 39 vaccine candidates = TBVI portfolio
  – 9, all superior to BCG in early trials, in various stages of clinical development
• Urgent funding needed to select & finalise translation into globally accessible and innovative vaccines
• Time frame to deliver 2 vaccines: second half to end of this decade
TBVI pre-exposure vaccine candidates as backbone for post exposure

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<tr>
<th>Discovery/Preclinical</th>
<th>Pre-phase I</th>
<th>Phase I</th>
<th>Phase IIa</th>
<th>Phase IIb</th>
<th>Phase III</th>
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<td>Current 13*+17*</td>
<td>Current 3:</td>
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<td>Native HBHA</td>
<td>H56 IC31</td>
<td>M72/AS01b</td>
<td>MVA/85A</td>
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<td>H1CAF01</td>
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2011-2020: 5+5

Current 3: M72/AS01b H1IC31 VPM1002

select

select

select

select

select

* Boosting on BCG or BCG replacement; *: BCG replacement
TB: Combined vaccination strategies?

**Priming:**
- Comp1: rBCG or attMtba: VPM1002, MTBVAC
- Comp2: second generation rBCG, att-Mtb

**Comp. 1:** current Ag: Ag85A/B, ESAT6; M72

**Comp. 2:** Latency Ag
Rv2660(H56); HBHA; Rv3407

**Comp. 3:** Subdominant Ag; Peptidome Ag

**Comp. 4:** Glycolipid Ag, e.g. AC2SGL

**Boosting-components**

Courtesy of P.H. Lambert
Innovative funding model for two globally accessible vaccines by 2020:

• Translate candidates into 2 innovative vaccines: needed investment = 560 million €

• Innovative funding:
  – Paradigm is investment, despite financial crisis
  – Allow TBVI to raise needed investment over 10 years 560 million from EIB
  – Create financial guarantee
  – Pay back the investment through Royalties on sold vaccines
  – Minimise risk for governments
Innovative funding model:

- Step-wise investment on project/project
- Independent selection
- Stability of funding in time
- Quick start of translation and safeguard of done investments
- Governments: no cash, pay back foreseen through royalties, minimal risk
- Societal benefits: health, wealth, poverty reduction
- Strengthening North/South, South/North South/South collaborations