

Laboratory Capacity: a Global Analysis



John Ridderhof, DrPH

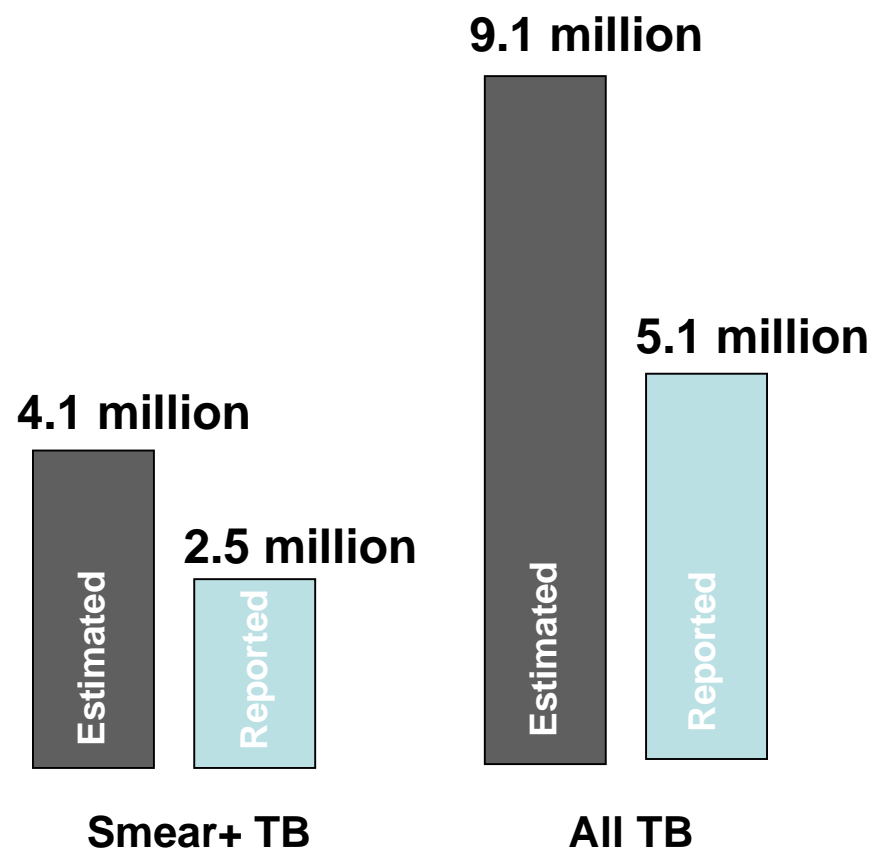
**Associate Director for Laboratory Science
National Center for Preparedness, Detection and Control
of Infectious Diseases**

IOM

**November 5, 2008
Washington DC**

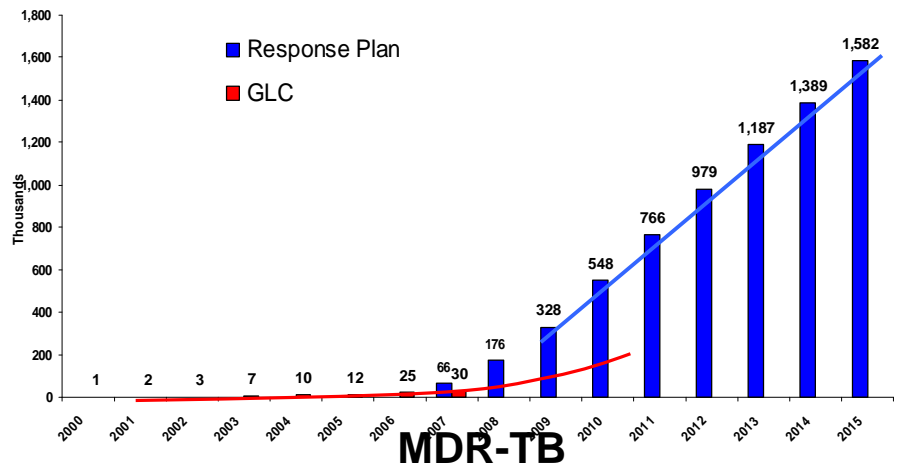


Diagnostic gaps & needs



Source: WHO – Global TB Report 2008

- More laboratories
- Better technology
- More staff
- Quality assurance
- Reliable systems



HBC laboratory capacity 2006

(Source: WHO Global Report 2008)



		National Reference Laboratory	# culture laboratories per 5 million population	# DST laboratories per 10 million population
1	India	Yes	0.03	0.07
2	China	Yes	1.4	2.7
3	Indonesia	No	0.9	1.8
4	South Africa	Yes	1.3	2.7
5	Nigeria	No	0.0	0.0
6	Bangladesh	Yes	0.1	0.2
7	Ethiopia	Yes	0.1	0.1
8	Pakistan	No	0.1	0.2
9	Phillipines	Yes	0.2	0.3
10	DR Congo	Yes	0.1	0.2
11	Russian Federation	No	34	68
12	Viet Nam	Yes	1.0	2.1
13	Kenya	Yes	0.3	0.5
14	UR Tanzania	Yes	0.4	0.8
15	Uganda	Yes	0.5	1.0
16	Brazil	Yes	5.1	10
17	Mozambique	Yes	0.2	0.5
18	Thailand	Yes	5.1	10
19	Myanmar	Yes	0.2	0.4
20	Zimbabwe	Yes	0.4	0.8
21	Cambodia	Yes	1.1	2.1
22	Afghanistan	No	0.2	0.4

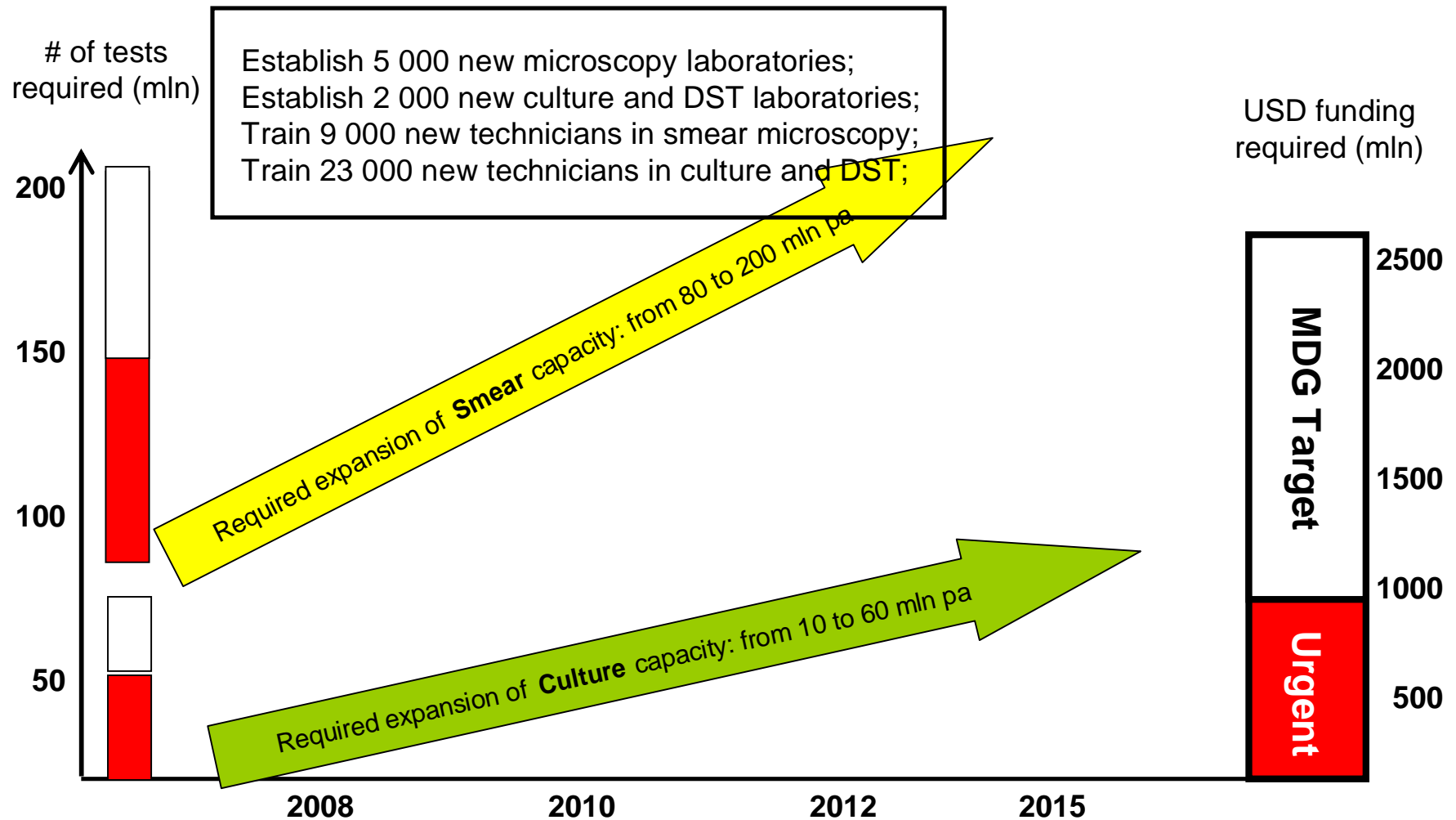
Technical proficiency on process from primary isolation to DST

(1997-2005)

Case	S(+) cultured	TB obtained (primary culture)	Sub-culturing	DST done
1P	1413 (100)	1169 (82.7)	1126 (79.7)	1126 (79.7)
2C	319 (100)	289 (90.6)	255 (79.9)	255 (79.7)
3Y	790 (100)	610 (77.2)	?? (under process)	?? (under process)
4J	4298 (100)	4052 (94.3)	4052 (94.3)	4052 (94.3)

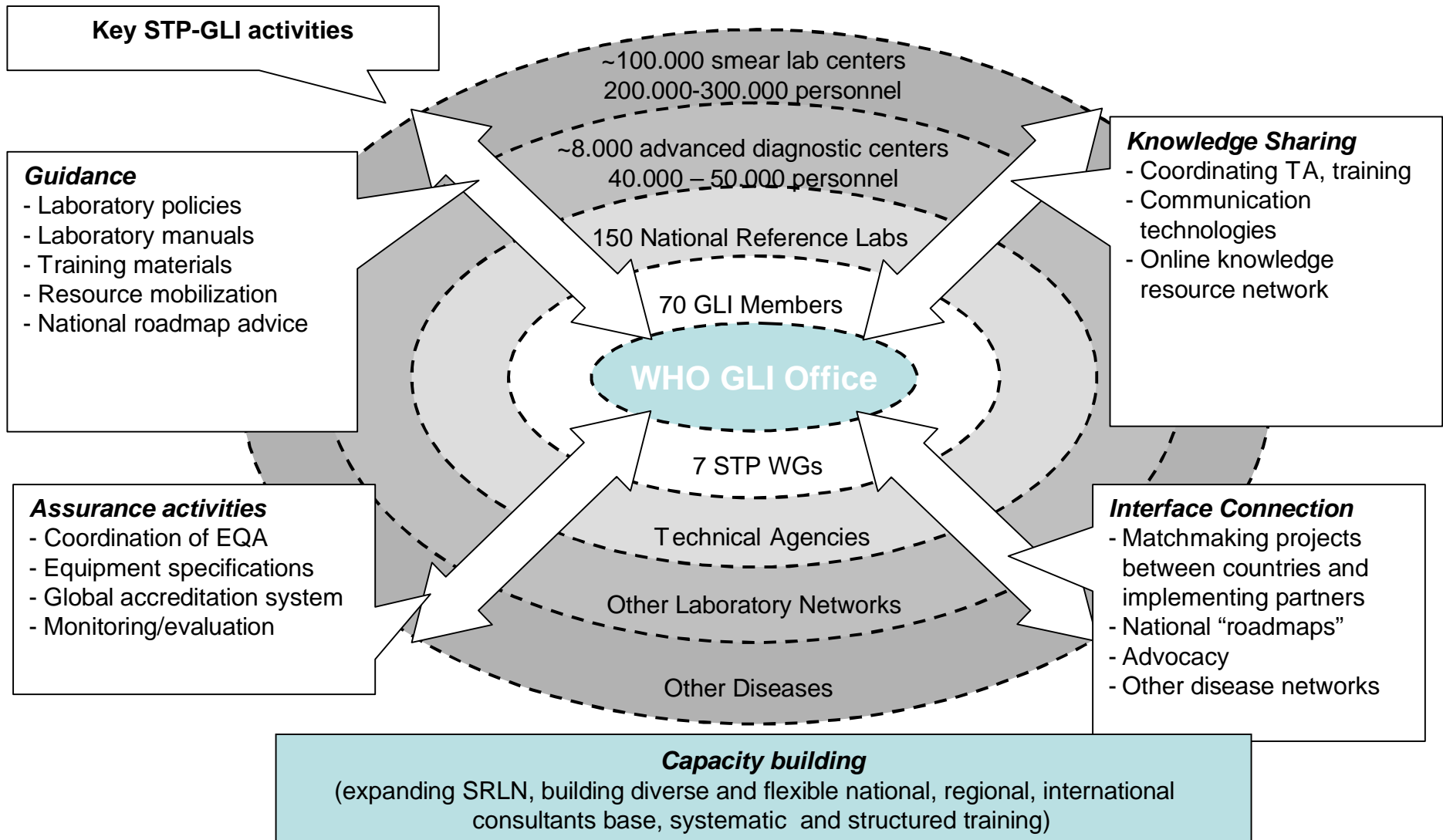
Ref: A. Fujiki, RIT

To reach MDG targets, a global capacity need of **120 million smears**, **60 million cultures** and **6 million DST investigations** must be met by 2015, requiring at least **1 billion USD** investment in laboratory infrastructure and annual variable cost





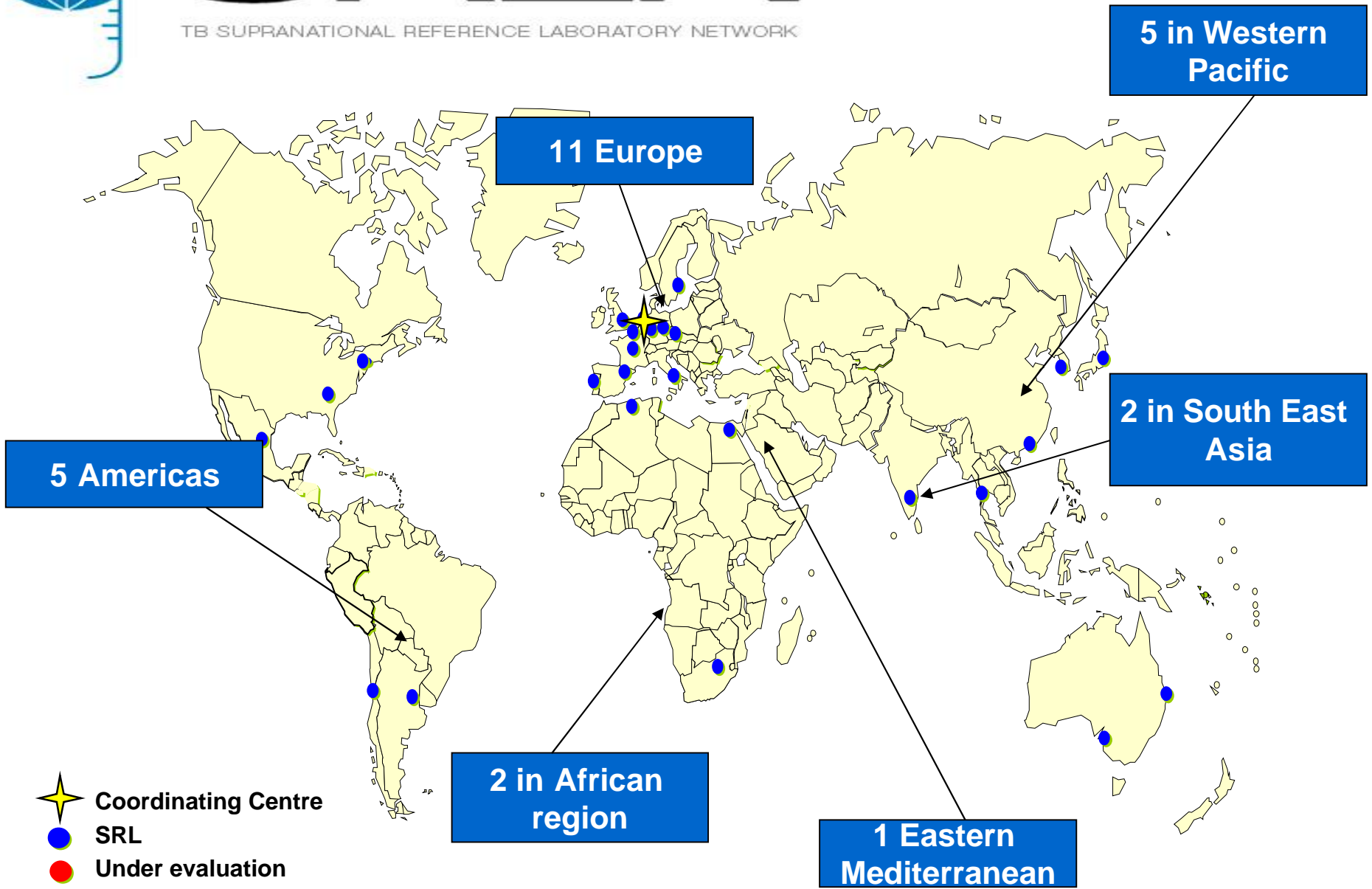
StopTB Partnership-Global Laboratory Initiative





SRLN

TB SUPRANATIONAL REFERENCE LABORATORY NETWORK



The New Global Health

Private foundations

BILL & MELINDA
GATES foundation

google.org

FORD FOUNDATION



welcome trust



International organizations



Other governments



Academia

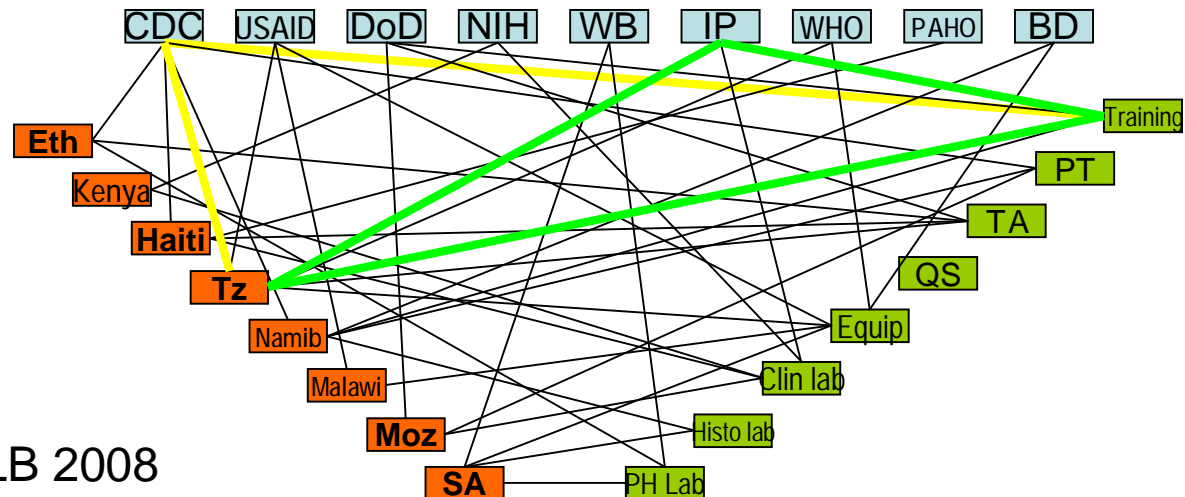


US Government



Are These Efforts Coordinated?

- Do the efforts overlap?
- Do they duplicate each other?
- Are they synergistic?
- Are there opportunities to leverage new partners?
- How many such relationships are there?



Ref: Rand Corp, CDC GLB 2008

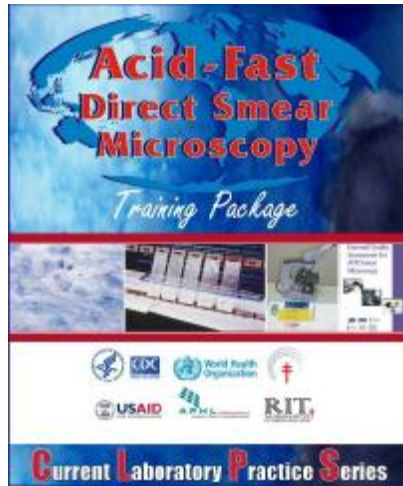
GLI strategic priorities

- Establishing GLI partnership projects
- Developing a template for country-specific roadmaps for laboratory strengthening
- Developing human resource strategies, including consultant training, training of different laboratory technical cadres, career development and retention
- Developing appropriate and adequate laboratory biosafety norms and standards, strategies and documents
- Developing a TB laboratory accreditation system
- Moving new diagnostics into countries





GLI Guidance, Tools, Programs



SRLN

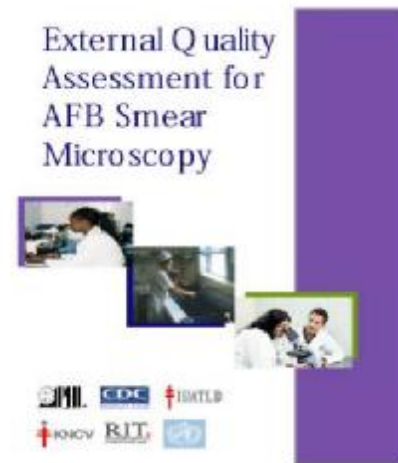
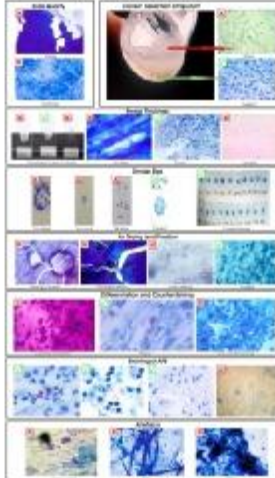
TB SUPRANATIONAL REFERENCE LABORATORY NETWORK

External Quality Assessment for AFB Smear Microscopy



Quality Issues of AFB Smear Preparation and Staining Technique

- 1. Identify and grade quality issues, according to region, laboratory data.
- 2. Diagnose and define root-cause(s) to poor smears, staining procedures.
- 3. Write reports and monitor the results.
- 4. Share with others, emphasize responsibility and solutions under common leadership.
- 5. Encourage appreciation, motivate colleagues, share success.



WHO Guidance on Line Probe Assays for MDRTB



**MOLECULAR LINE PROBE ASSAYS FOR RAPID SCREENING OF
PATIENTS AT RISK OF MULTIDRUG-RESISTANT TUBERCULOSIS
(MDR-TB)**

POLICY STATEMENT

27 June 2008

UNITAID GLI/FIND/GDF project

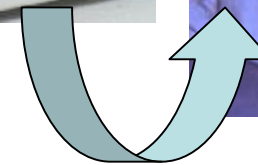


Stop TB Partnership



74 000 MDR-TB patients diagnosed
(and provided with treatment)

- 15% of global MDR-TB burden
- At least 3-fold increase over current situation





Biosafety Initiatives

- CDC/WHO Technical consultation, Atlanta, Sept 08
- Guidance on process, design principles and ventilation for laboratory construction and renovation (funding proposal)
- Recommendations and guidance for simple “fan boxes” for smear microscopy (funding proposal)
- Guidance and training on TB laboratory biosafety (TBCAP)



Acknowledgements



- **STB/THD Laboratory Strengthening Team**

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- **GLI Core Group**

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- Chris Gilpin
- Case Gordon
- Moses Joloba
- Kai Man Kam
- John Ridderhof (Chair)
- Rick O'Brien
- Tom Shinnick
- Armand van Deun

- **GLI Partners**

- American Society for Microbiology (ASM)
- Association of Public Health Laboratories (APHL)
- Bill & Melinda Gates Foundation
- Centers for Disease Control and Prevention (CDC)
- CDC Global AIDS Programme (GAP)
- Fondation Merieux
- Foundation for Innovative New Diagnostics (FIND)
- International Union Against TB and Lung Disease
- PEPFAR
- USAID
- KNCV
- Merieux Alliance
- Management Sciences for Health (MSH)
- Medecins Sans Frontiers
- Stop TB Partnership Working Groups (New Diagnostics, MDR-TB, Retooling Task Force, DOTS Expansion)
- National TB Programmes
- WHO
- World Bank
- Global Fund
- and growing...

The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention

