

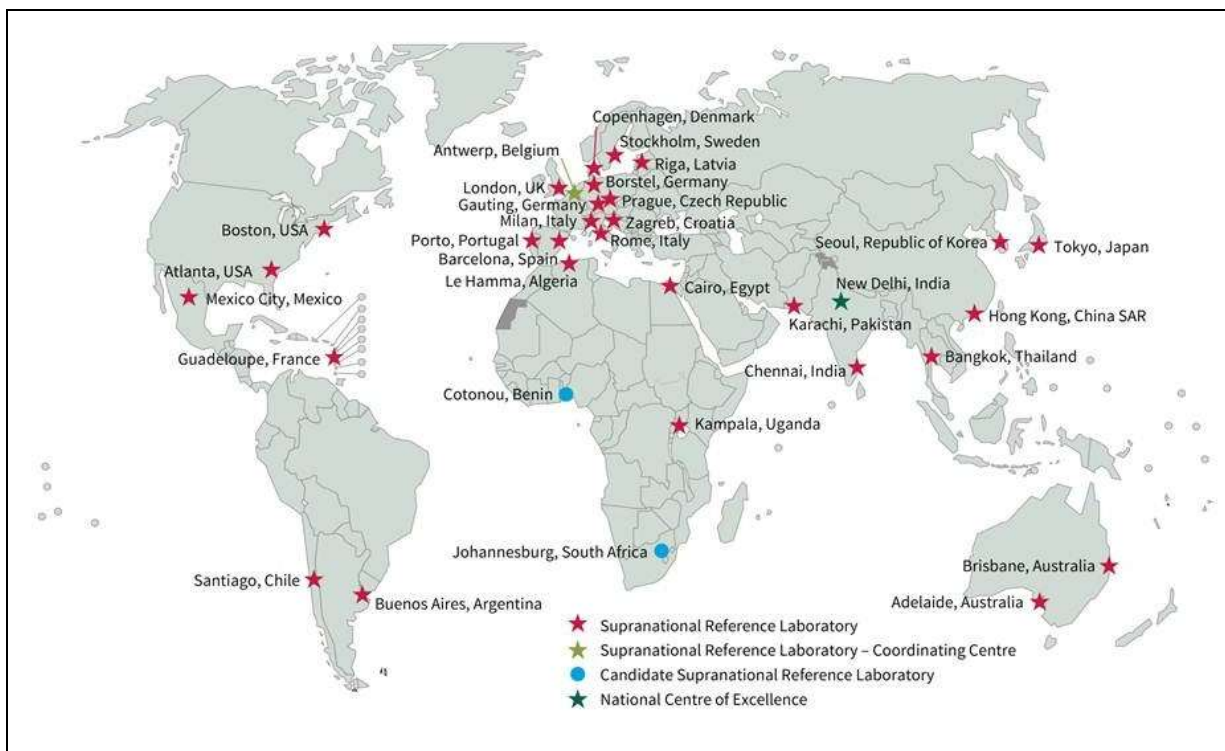
## Report on the activities of the WHO TB Supranational Reference Laboratories in 6 regions: 2012-2013

### Background

Lack of diagnostic capacity is a crucial barrier preventing from an effective response to the challenges of TB-HIV and drug-resistant TB (DR-TB), with less than 8% of the estimated burden of DR-TB patients currently being detected. Therefore, an effective response to the diagnostic challenges requires urgent and massive scale-up of laboratory services. Towards these aims, the TB Supranational Reference Laboratory Network (SRLN) was created in 1994 as a sub-group of the WHO in order to support the WHO/IUATLD Global Project on TB drug resistance surveillance and with the objectives to estimate the magnitude of drug resistance globally and provide data to inform WHO policy decisions.

Since 1994 the SRLN continues to be a key technical resource in support to the strengthening of the laboratory capacity in countries. Between 1994 and 2013, under WHO coordination and support, the SRLN network has expanded from initial 14 to actual 33 TB Laboratories including 2 Candidate-SRLs, and one national Centre of Excellence. Since 2010, new terms of reference as well as new eligibility and inclusion criteria for the SRLN have been developed. Formal collaboration agreements have been established between the SRLs and the National Health Authority or Ministry of Health acting as TB Reference Laboratory at National level (NRL): each SRL is linked to at least two NRLs and hence represents the preferred technical partner for laboratory scale-up and capacity development in countries, playing a critical role in strengthening national laboratory networks as a well as surveillance systems to monitor drug resistance.

Improved co-ordination of technical assistance provided by the SRLs remains a key priority for the network. To this aim, a global repository of technical reports from the SRLs and collaborative partners has been established and is publicly available, which should constitute a key instrument for the coordination and continuous monitoring of SRLN activities globally. Comprehensive information about the SRLN is available at <http://www.stoptb.org/wg/gli/srln.asp>



## **Main activities**

1. Assist National Reference Laboratories (NRLs) and National TB Programmes (NTPs) implementing WHO policy guidance on TB diagnostics, diagnostic algorithms, and laboratory norms and standards using GLI-endorsed recording and reporting systems and other laboratory tools;
2. Disseminate WHO guidance on biosafety requirements and quality management systems for national level TB reference laboratories and laboratory networks;
3. Facilitate sharing of standardized technical reports from all technical assistance missions to countries with in-country partners and among the SRLs;
4. Provide standardized quality assessment for microscopy, culture, first- and second-line drug susceptibility testing of *M. tuberculosis*, and molecular methods as needed;
5. Co-ordinate comparative evaluations of diagnostic tests among individual SRLs and define priorities for evaluation of different tests as needed;
6. Oversee the pathway for the development and implementation of standardized protocols to test susceptibility against new and existing anti-tuberculosis drugs;
7. Advocate with National TB Programmes to help ensure capacities for the diagnosis and treatment of TB and drug resistant TB are aligned;
8. To overall improve and expand TB lab networks (covering all techniques), which are the cornerstone for country-wide and continued management of TB, drug-resistant as well as drug-sensitive;
9. To assist countries in writing the National and Laboratory Strategic Plans and Concept Notes.

One or two on-site visits were conducted by the Heads or a member of the SRL. Technical mission reports are available at WHO website <http://www.stoptb.org/wg/gli/assets/documents/map/3/atlas.html>

### **SRL Antwerp (Belgium)**

#### **1. Collaboration agreement**

Formal collaboration agreement was established with the following countries: Benin, Burundi, Cameroon, DR Congo, Mali, Rwanda and Tanzania (recently handed over to SRL Kampala), Zimbabwe (handed over to SRL Copenhagen), Senegal, Togo (handed over to Candidate SRL Cotonou), Taiwan, Central African Republic, Georgia and Bangladesh. Furthermore, an agreement to function as the mentor SRL was signed with the candidate SRL in Karachi, Pakistan.

#### **2. In country technical assistance**

The countries listed above were supported by the SRL Antwerp. For all the countries visited, individual mission reports were submitted to WHO Laboratories, Diagnostics and Drug Resistance (LDR) unit by SRL including also data from the Proficiency Testing. Other countries were visited to introduce candidate new SRL, or as specified by agreement with WHO (Senegal). Visits to Burundi, Equatorial Guinea, Niger and Togo served to introduce the Candidate SRL of Cotonou as a potential new SRL, with prospects to take gradually over from SRL Antwerp. The SRL Kampala was mentored to support Kenya, South Sudan, Tanzania, Zambia and Rwanda. Furthermore, the SRL Antwerp was made responsible for governance of the Kampala SRL funds, while it continued to mentor this new SRL. The candidate SRL in Karachi could not be visited but received distance mentoring on request.

#### **3. Training/Workshop on diagnostics**

- a. At country level: Burundi, Georgia (on- the-job training during visits)
- b. At SRL level: ad hoc of short duration according to the needs of the country, for one or few staff from the NRL or other institution (Benin, Uganda, Pakistan, Bangladesh, various West and Central African countries)

#### **4. Drug Susceptibility and Proficiency Testing**

The SRL Antwerp prepared strains and sent them to all SRLN and non SRL (NRLs and some regional laboratories) in the following countries: Bangladesh, Burundi, Cameroon, Cambodia, Central African Republic, DRC, Ethiopia, Georgia, Kenya, Lesotho, Niger, Malawi, Madagascar, Malaysia, Mozambique, Namibia, Oman, Pakistan, Peru, Rwanda, Senegal, Slovakia, South Africa, Sri Lanka, Swaziland, Taiwan, Tanzania, Togo and Zimbabwe). Antwerp assisted WHO with development of protocols for drug resistance surveys in Zimbabwe, Senegal and Cameroon. Antwerp participated also to the project on molecular surveillance of resistance to fluoroquinolones and pyrazinamide on the strains from Bangladesh and Pakistan.

The SRL provided support to nation-wide drug resistance surveys in Bangladesh and Pakistan, including protocol writing, preparation and monitoring on-site visits, rechecking of strains and resolving discordances and problems by means of fingerprinting or DNA sequencing of drug resistance loci. Routine quality assurance by means of rechecking of strains was also performed for NRL or regional laboratories in Bangladesh, Benin, Cameroon, DRC, Niger and Senegal. The SRL (temporarily) assisted few countries or regions with inadequate capacity

for the (rapid) diagnosis of MDR-TB: Burundi, Niger and Nigeria. More countries received assistance for confirmation and/or extensive resistance testing of pre-XDR- or XDR-TB cases (Bangladesh, Cameroon, DRC, Niger, Nigeria, Zimbabwe).

Measuring flow and integrity of biosafety cabinets using own, calibrated equipment. Support arranging certification and repairs by specialist company. Ad hoc assistance to NRLs: emergency provision of drug powders for DST or other reagent, provision of DST control strains, etc.

#### SRL Kampala (Uganda), designated as fully SRL in April 2013

##### 1. Collaboration agreement

Formal collaboration agreement was established with Zambia, South Sudan, Tanzania, Eritrea, Lesotho, Swaziland, Somalia and Rwanda.

2. In-country technical assistance: all countries listed above have been assisted and visited either with the head of the SRL or the junior consultant. Mission reports were submitted for the visited countries
3. Training/Workshop on diagnostics
  - a. At country level: South Sudan, Somalia, Zambia and Kenya (under TBCARE)
  - b. At SRL level: None
4. Drug susceptibility and Proficiency Testing: Uganda was involved in DRS protocol design of Rwanda and testing strains. The SRL was also involved in annual proficiency testing coordinated by SRL Antwerp

#### SRL Milan (Italy)

##### 1. Collaboration agreement

Formal collaboration agreement has been established with Burkina Faso, Cote d'Ivoire, Djibouti, Nigeria, Zanzibar, Ethiopia, Tunisia and Mozambique. The SRL submitted the form to Turkey very recently for renewal

2. In-country technical assistance: all countries listed above have been assisted including Albania, Bulgaria, Turkey, Romania and Kosovo. Mission reports were submitted for some countries. SRL has taken part on review mission to additional Countries: Pakistan and Bosnia
3. Training/Workshop on diagnostics
  - a. At country level: Nigeria, Mozambique, Zanzibar and Burkina Faso
  - b. At SRL level: participants from Nigeria, Kosovo, Turkey, Romania and Tunisia
4. Drug susceptibility and Proficiency Testing: Milan was involved in DRS protocol design of Cote d'Ivoire and testing strains from Mozambique and Burkina Faso. SRL prepared and sent PT to Mozambique, Nigeria, Tunisia, Cote d'Ivoire, Burkina Faso and Djibouti. Milan participated to the project on molecular surveillance of resistance to fluoroquinolones and pyrazinamide on the strains from Bangladesh and Pakistan.

#### SRL Borstel (Germany)

##### 1. Collaboration agreement

Formal collaboration agreement has been established with Ghana, Sierra Leone, Moldova, Kazakhstan, Armenia, Serbia, Bosnia-Herzegovina, Croatia and Azerbaijan.

2. In-country technical assistance: all countries listed have been assisted by the SRL. Mission reports were submitted for Ghana, Sierra Leone, Moldova, Azerbaijan and Kazakhstan.
3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: None

4. Drug susceptibility and Proficiency Testing: Borstel prepared and shipped strains for DST to Azerbaijan (MoH and MoJ), Armenia, Austria, Bosnia-Herzegovina, Ghana, Kazakhstan, Moldova, Slovenia and Serbia. The SRL was also involved in DRS for Azerbaijan and in DST for the following countries: Cyprus, Kyrgyzstan (in coordination with MSF/ICRC), Pakistan (specimens from NGO), Serbia, Gabon (in coordination with Tropical Institute, Tübingen, Germany) and Armenia. SRL participated to the FQ and PZA project using the strains from Azerbaijan.

#### SRL Gauting (Germany)

1. Collaboration agreement

Formal collaboration agreement has been established with Kyrgyzstan, Uzbekistan, Turkmenistan, Tajikistan and Nepal.

2. In-country technical assistance: all countries listed have been assisted either with the head of the SRL or the consultant from the SRL. Mission reports were submitted. National TB laboratory plan has been developed for Kyrgyzstan and finally endorsed by MoH in 2014. National TB laboratory strategy for Uzbekistan is on development stage (in cooperation with national working group). TB laboratory quality manual has been developed for Uzbekistan. Following the final review by the MoH it will be endorsed in 2015. National TB Programme of Tajikistan was assisted with development of GF Concept Note in 2014.

3. Training/Workshop on diagnostics

- a. At country level: Kyrgyzstan, Uzbekistan, Turkmenistan and Tajikistan
- b. At SRL level: participants from Kyrgyzstan, Uzbekistan, Turkmenistan and Tajikistan

4. Drug susceptibility and Proficiency Testing: Panel strains were prepared and shipped by SRL to countries mentioned above (NRLs and some regional labs) including also Bolivia regional lab of Santa Cruz de la Sierra.

#### SRL Stockholm (Sweden)

1. Collaboration agreement

Formal collaboration agreement has been established with Belarus, Romania and Sudan.

2. In-country technical assistance: all countries listed above have been visited either with the head of the SRL or the consultant from the SRL. Mission reports were submitted.

3. Training/Workshop on diagnostics

- a. At country level: Belarus, Romania and Sudan
- b. At SRL level: None

4. Drug susceptibility and Proficiency Testing: SRL was involved in activity related to the PZA/Mox resistance project based on the examination of around 200 strains isolated during DRS in Minsk, shipped to SRL to be examined phenotypically and genotypically. SRL participated to the plan for DRS in Romania and sent panel to Belarus and Sudan.

#### SRL Roma (Italy)

1. Collaboration agreement: No formal collaboration agreement nor mission reports have been shared

2. In-country technical assistance: None

3. Training/Workshop on diagnostics

- a. At country level: second-line drug susceptibility testing (Bulgaria, 2012)
- b. At SRL level: None

4. Drug susceptibility and Proficiency Testing: SRL was involved in preparation and shipment of strains. Overall, SRL performed 5 proficiency testings (PT) (2002-03, 2005-06, 2007-08, 2010, 2013-14) in the 8 countries (Albania, Turkey, Kosovo, Macedonia, Bulgaria, Qatar, Oman and Bahrain) and one PT in 2012-2013. In 2014-2015, the SRL Antwerp will be sending panels to the 8 countries listed above and the SRL Roma will only deal with analysis of the data.

#### SRL Zagreb (Croatia)

1. Collaboration agreement has been established with Montenegro

In-country technical assistance: Montenegro

- In June 2012, NTP manager, head of laboratory and one lab technician from NRL Montenegro visited SRL in Zagreb (guidance on TB diagnostics, diagnostic algorithms and other laboratory tools)
2. Training/Workshop on diagnostics
    - a. At country level: two
    - b. At SRL level: participants from Serbia and Montenegro
  3. Drug susceptibility and Proficiency Testing: SRL was involved in preparation and shipment of strains to NRL and 5 subnational laboratories of Montenegro. Confirmation of drug resistance was done by phenotypic and genotypic methods of *M. tuberculosis* strains isolated in Montenegro and Croatia; SLD testing was done for all drug resistant strains including identification of molecular mechanisms of resistance. MIRU VNTR genotyping was performed for more than 30 strains of *M. tuberculosis* isolated in years 2012 and 2013. Identification of nontuberculous mycobacteria (NTM) was provided for isolates of *M. avium*, *M. intracellulare* and *M. malmoense* from Croatia and Montenegro

#### SRL Riga (Latvia)

1. Formal collaboration agreement: formal collaboration agreement has been established with Ukraine.
2. In-country technical assistance: to Ukraine, there were 2 missions in 2012-2013 - both related to prepare DRS. No mission report has been shared
3. Training/Workshop on diagnostics
  - a. At country level: NRL Ukraine and different levels of laboratories
  - b. At SRL level: 10 participants from Ukraine were trained in SRL
4. Drug susceptibility and Proficiency Testing: SRL was involved in preparation and shipment of strains to NRL Ukraine and different oblasts (regional labs).

#### SRL Karachi (Pakistan), nominated as fully SRL in April 2014

1. Formal collaboration agreement: Pakistan and Afghanistan
2. In-country technical assistance: visits to Pakistan and Afghanistan. Individual country mission reports submitted
3. Training/Workshop on diagnostics
  - a. In-country: Training/Workshop on QMS and biosafety for participants from Pakistan and Afghanistan conducted by SRL in collaboration with NRL Pakistan
  - b. At SRL level: Training in diagnostics/DST for participants from Pakistan and Afghanistan
4. Drug susceptibility and Proficiency Testing: SRL was involved in molecular surveillance of resistance to fluoroquinolones and pyrazinamide on the strains from Pakistan. The SRL provided DST on strains from NRL Afghanistan

#### SRL Cairo (Egypt)

1. Formal collaboration agreement has been established with Yemen and Iraq
2. In-country technical assistance to: Amman, Jordan and Iraq. Individual country mission reports were not shared
3. Training/Workshop on diagnostics
  - a. At country level: None

- b. At SRL level: participants from Iraq and Yemen
- 4. Drug susceptibility and Proficiency Testing: involved in DRS planning and PT for Iraq

#### SRL Chennai (India)

- 1. Formal collaboration agreement has been established with Timor Leste and Sri Lanka (in process) outside of India
- 2. In-country technical assistance to India labs. Individual mission reports were shared
- 3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: participants from India (different labs) attended the training at Chennai
- 4. Drug susceptibility and Proficiency Testing: involved in annual panel testing for 5 National TB labs of India. DRS in Gujarat and Tamil Nadu

#### SRL Bangkok (Thailand)

- 1. Formal collaboration agreement has been established with Myanmar and Bhutan
- 2. In-country technical assistance to Myanmar and Bhutan. Technical reports were shared
- 3. Training/Workshop on diagnostics
  - a. At country level: Myanmar and Bhutan
  - b. At SRL level: participants from Thailand, Myanmar and Bhutan
- 4. Drug susceptibility and Proficiency Testing: preparation and distribution of panels to Myanmar and Bhutan

#### SRL Brisbane (Australia)

- 1. Formal collaboration agreement: established with Kenya, PNG, Fiji, Vanuatu and Malaysia
- 2. In-country technical assistance: to countries listed above. Only mission reports from Kenya were shared
- 3. Training/Workshop on diagnostics
  - a. At country level: Kenya
  - b. At SRL level: none
- 4. Drug susceptibility and Proficiency Testing: involved in DRS conducted in PNG

#### SRL Adelaide (Australia)

- 1. Formal collaboration agreement: established and shared for 2 countries so far (Vietnam and Solomon Islands) but in addition, the SRL supports Kiribati, Timor Leste (now handed over to SRL Chennai) and Indonesia. Successful completion of Collaboration Agreements with Indonesia and Kiribati pending approval which has been given verbally.
- 2. In-country technical assistance: to countries listed above. 15 on-site visits were conducted by the SRL (6 in Indonesia, 5 in Viet Nam, 3 in Kiribati and 1 in Timor Leste). No technical reports were shared. The SRL has contracts with KNCV (Indonesia), and SPC (Kiribati) that specifically include confidentiality agreements.
- 3. Training/Workshop on diagnostics; safe working practices
  - a. At country level: Kiribati, Vietnam, Solomon Islands and Indonesia
  - b. At SRL level: Indonesia, Kiribati (2 technicians trained for 4 weeks for liquid culture and GeneXpert), Vietnam, and Solomon Islands.

Indeed, 2 Malaysian pathologists have each spent 9 months in SRL receiving training in all aspects of TB diagnostics using latest technologies).

4. Drug susceptibility and Proficiency Testing: involved in DRS and PT conducted in Vietnam, Indonesia and Solomon Islands

#### SRL Hong Kong (China)

1. Collaboration agreement: No formal collaboration agreement has been shared. The SRL currently supports Democratic People's Republic of Korea (DPRK) and China.
2. In-country technical assistance: to countries listed above. Technical mission report to DPRK in May 2014 was shared
3. Training/Workshop on diagnostics
  - a. At country level: China
  - b. At SRL level: technical staff from PHL of Macau, China were trained
4. Drug susceptibility and Proficiency Testing: The SRL participated to PT round 19 and 20, involvement in DST of isolates from DPRK. SRL prepared and sent regularly panels to DPRK NRL and to China (Beijing NRL, Nanjing and Macau)

#### SRL Korea (Korea)

1. Formal collaboration agreement: established and shared for Lao PDR. No technical reports have been shared
2. Training/Workshop on diagnostics
  - a. At country level: Lao
  - b. At SRL level: annual training of lab staff from NRL Lao
3. Drug susceptibility and Proficiency Testing: For the first time in 2012, SRL sent the DST EQA panel strains to NRL. SRL performed DST with isolates referred from Lao. DST being unavailable in Lao, Lao NTP refers the isolates from MDR-TB suspects to KIT for 1st and 2nd line DST. SRL prepared and sent panels to Tropical Disease Foundation, the Philippines (TDF)

#### SRL Massachusetts (USA)

1. Formal collaboration agreement: this SRL has a formal collaboration agreement with Haiti, Ecuador, Suriname and Liberia
2. In-country technical assistance: Massachusetts has been supporting Peru (since 2000) and also Suriname (since 2011). SRL assisted also NRL Port-au-Prince, Haiti. Only mission reports for Haiti have been shared
3. Training/Workshop on diagnostics
  - a. At country level: Haiti and Ecuador
  - b. At SRL level: None
4. Drug susceptibility and Proficiency Testing: Panels sent to Haiti, Ecuador and Peru

#### SRL Mexico (Mexico)

1. Formal collaboration agreement: No formal collaboration agreements have been shared so far.
2. In-country technical assistance: SRL Mexico is informally supporting Nicaragua, El Salvador, Honduras, Panama, Costa Rica, Guatemala. No individual country reports were shared.
3. Training/Workshop on diagnostics
  - a. At country level: Nicaragua, El Salvador and other countries upon request
  - b. At SRL level: El Salvador, Honduras and upon request by the other countries

4. Drug susceptibility and Proficiency Testing: shipment and analysis of DST panel for all countries supported. SRL Mexico was used to collect strains from countries listed above and sent them to SRL Argentine for quality control (1<sup>st</sup> line DST). Involvement in EQA for culture media (El Salvador and Guatemala).

#### SRL Buenos Aires (Argentina)

1. Formal collaboration agreement: SRL shared collaboration agreements among countries to which they provide technical assistance, but at the stage of this report, only a formal collaboration agreement has been signed with Paraguay.
2. In-country technical assistance: SRL Argentine informally supports Uruguay, Paraguay, Brazil, Venezuela and Cuba. SRL collaborated with Colombia, Bolivia, and Peru for assessment of their network. No individual country reports were shared. SRL Argentina has some collaboration with SRL Chile.
3. Training/Workshop on diagnostics
  - a. At country level: Nicaragua, El Salvador and other countries upon request
  - b. At SRL level: Lab technicians from Colombia and Chile were trained at SRL
4. Drug susceptibility and Proficiency Testing: SRL Argentine was involved in the analysis and report to PAHO of the DST PT results from Paraguay, Uruguay, Venezuela, Cuba, Brazil and Argentine. The SRL led the consensus on the Xpert EQA protocol for Latin-America SRLs, and also prepared and shipped panels for validation of Xpert to the NRLs (Brazil, and Venezuela).

#### SRL Santiago (Chile)

1. Formal collaboration agreement: No formal collaboration agreements have been shared.
2. In-country technical assistance: SRL Chile is informally supporting Bolivia, Colombia, Dominican Republic, Honduras, Costa Rica, Peru and Equator. No individual country reports were shared.
3. Training/Workshop on diagnostics
  - a. At country level: Bolivia, Colombia, Dominican Republic, Peru and Equator
  - b. At SRL level: Lab technicians from Colombia and Chile were trained at SRL
4. Drug susceptibility and Proficiency Testing: Preparation/shipment of panel strains for DST PT (Bolivia including DRS, Colombia, Dominican Republic), Survey of Biosecurity and workload for susceptibility testing (Chile, Bolivia, Dominican Republic, Colombia) and the implementation of 2<sup>nd</sup> line DST in Bolivia.

#### SRL Guadeloupe

1. Formal collaboration agreement: No formal collaboration agreements nor mission reports have been shared.
2. In-country technical assistance: The SRL-Guadeloupe is also a TB diagnostics & reference laboratory for the 3 French departments of the Americas (Guadeloupe, Martinique, Guiana). The SRL collaborates informally with Haiti and Chile.
3. Training/Workshop on diagnostics
  - a. At country level: Haiti, Guadeloupe, Martinique, Guiana
  - b. At SRL level: Guadeloupe, Martinique, Guiana
4. Drug susceptibility and Proficiency Testing: EQA for: i) Les centres GHESKIO – Haiti and ii) Public Health Institute of Chile. SRL joined EQA programme through proficiency testing for 1<sup>st</sup> and 2<sup>nd</sup> line DST coordinated by the SRL Antwerp and participated to round 19 and 20.

#### SRL Atlanta CDC (USA)

1. Formal collaboration agreement: 2 formal collaboration agreements have been shared for Palau and Micronesia.
2. In-country technical assistance: CDC provided technical assistance for in-country capacity building, training, or assessments in Bangladesh, Botswana, Cambodia, Cote d'Ivoire, Dominican Republic, Democratic Republic of Congo, Ethiopia, Guatemala, Haiti,



Kenya, Lesotho, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Tanzania, Thailand, South Africa, Uganda, Vietnam, Zambia, American Samoa, Republic of the Marshall Islands, Federated States of Micronesia, Federated States of Micronesia, Republic of Palau, Guam, Commonwealth of Northern Mariana Islands. No individual country mission reports were shared.

3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: None
4. Drug susceptibility and Proficiency Testing: None

#### SRL Alger (Algeria)

1. Formal collaboration agreement: established with Mauritania, Madagascar (Institut Pasteur) and Morocco.
2. In-country technical assistance: Mauritania, Madagascar and Morocco. No mission reports were shared.
3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: participants from countries listed above, and some selected French speaking countries (annually)
4. Drug susceptibility and Proficiency Testing: SRL Alger assisted Morocco (institut National d 'Hygiene), Madagascar (Institut Pasteur) and Mauritania (Institut National de Recherche en Santé Publique) in EQA by sending the Panels for 1<sup>st</sup> line DST and also sent consultants to Morocco to assist the country in writing the protocol on DRS.

#### Candidate SRL (c-SRL) Cotonou (Benin)

1. Formal collaboration agreement: c-SRL Cotonou has formal collaboration agreement with Niger and Togo and is seeking to sign one with Burundi, handed over by Antwerp.
2. In-country technical assistance: Burundi, Madagascar, Equatorial Guinea. Meeting report was shared for Burundi only
3. Training/Workshop on diagnostics
  - a. At country level: Senegal, Madagascar, Nigeria
  - b. At SRL level: Burkina Faso, Cameroun, Central African Republic, Chad, Côte d'Ivoire, DRC, Guinea, Ghana, The Gambia, Mali and Rwanda
4. Drug susceptibility and Proficiency Testing: None

#### Candidate SRL (c-SRL) Johannesburg (South Africa)

1. Formal collaboration agreement: Currently, the formal collaboration agreements has been established with Malawi and Namibia.
2. In-country technical assistance: Malawi and Namibia. Mission reports were shared
3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: None
4. Drug susceptibility and Proficiency Testing: Joburg was also involved in FQ and PZA resistance project.

#### SRL Porto (Portugal)

1. Formal collaboration agreement: the formal collaboration agreements have been established with Guinea-Bissau and Angola.
2. In-country technical assistance: in countries listed above. No mission reports were shared
3. Training/Workshop on diagnostics
  - a. At country level: Guinea-Bissau
  - b. At SRL level: Participants from Portuguese speaking countries: Mozambique, Sao Tome and Principe, Angola and Guinea-Bissau.
4. Drug susceptibility and Proficiency Testing: SRL Porto participated to annual PT organised by SRL Antwerp.

Also the SRL is participating in the work group of Tuberculosis Control Programme for the North of Portugal

#### SRL Copenhagen (Denmark), formally nominated as SRL in April 2014

1. Formal collaboration agreement: the formal collaboration agreement has been established with Iceland and Zimbabwe.
2. In-country technical assistance: in countries listed above. Mission reports were shared for Zimbabwe
3. Training/Workshop on diagnostics
  - a. At country level: Zimbabwe and Iceland
  - b. At SRL level: visitors from Greenland
4. Drug susceptibility and Proficiency Testing: DST for Iceland, Greenland and The Faroes Islands

#### SRL Tokyo (Japan)

1. Formal collaboration agreement: the SRL has a bilateral MoU with Philippines, Cambodia and Mongolia. No formal collaboration agreement was shared
2. In-country technical assistance: in countries listed above. No mission reports were shared
3. Training/Workshop on diagnostics
  - a. At country level: None
  - b. At SRL level: None
4. Drug susceptibility and Proficiency Testing: QA for prevalence survey in Cambodia. SRL is preparing and sending strains on annual basis to the countries listed above

**SRL London (UK):** no formal collaboration agreements and no report of the activities has been submitted

**SRL Barcelona (Spain):** no formal collaboration agreements and no report of the activities has been submitted

**SRL Prague (Czech Republic):** no formal collaboration agreements and no report of the activities has been submitted