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Mycobacterium bovis **at the Animal-Human Interface**

International Meeting on Emerging Diseases and Surveillance

9-12 November 2018

Vienna, Austria



WORLD ORGANISATION FOR ANIMAL HEALTH *Protecting animals, preserving our future*

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History of the OIE

An intergovernmental technical and science-based Organisation



Creation of the Office
International des
Épizooties (OIE)

Creation of the United
Nations

New name:
World Organisation for
Animal Health (OIE)

1
Headquarters
in Paris (France)

5
Regional
Representations

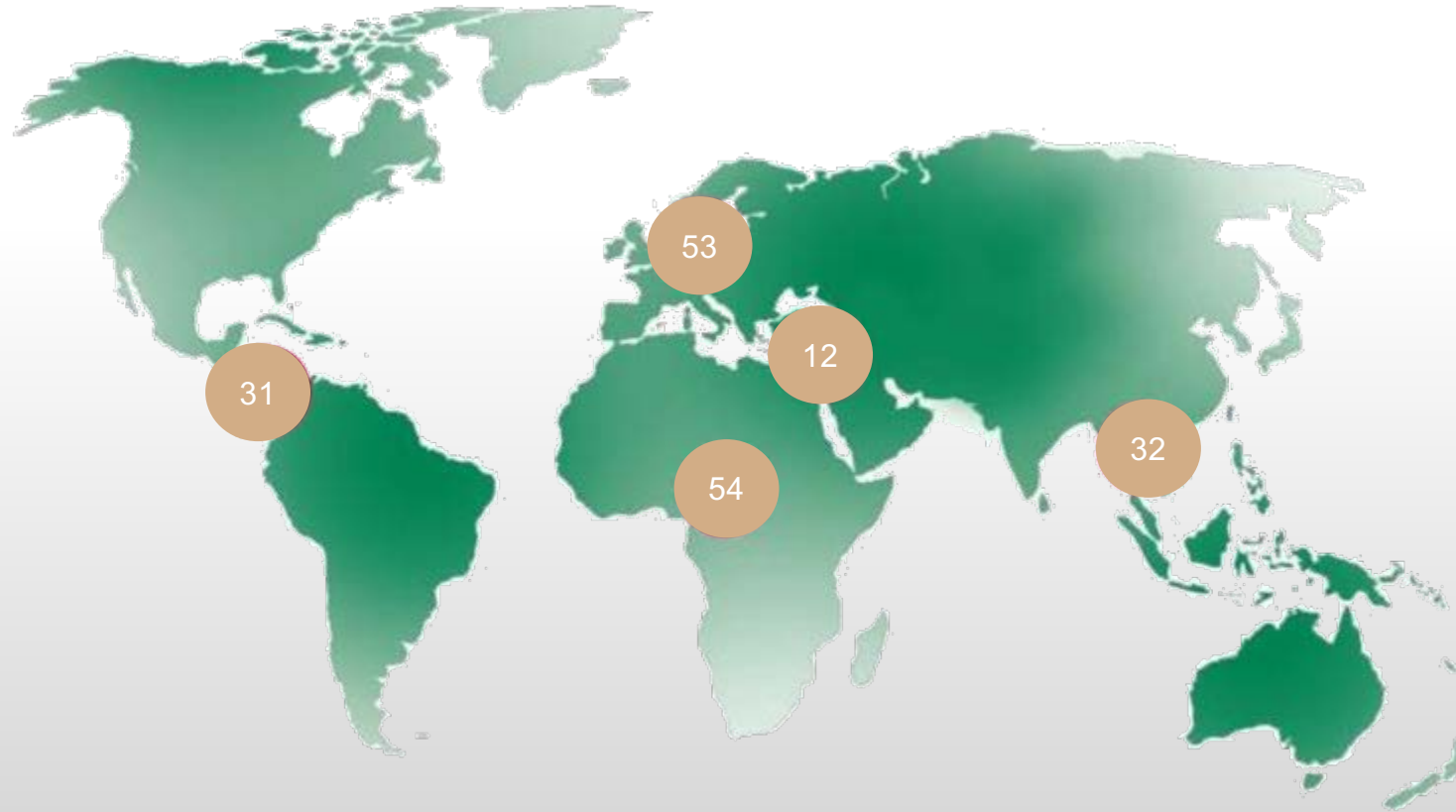
7
Sub-Regional Representations
& Offices

Who we are today...

Improving animal health and welfare worldwide



2018: 182 Member Countries



12 Regional and Sub-Regional Representations

History of TB and bTB

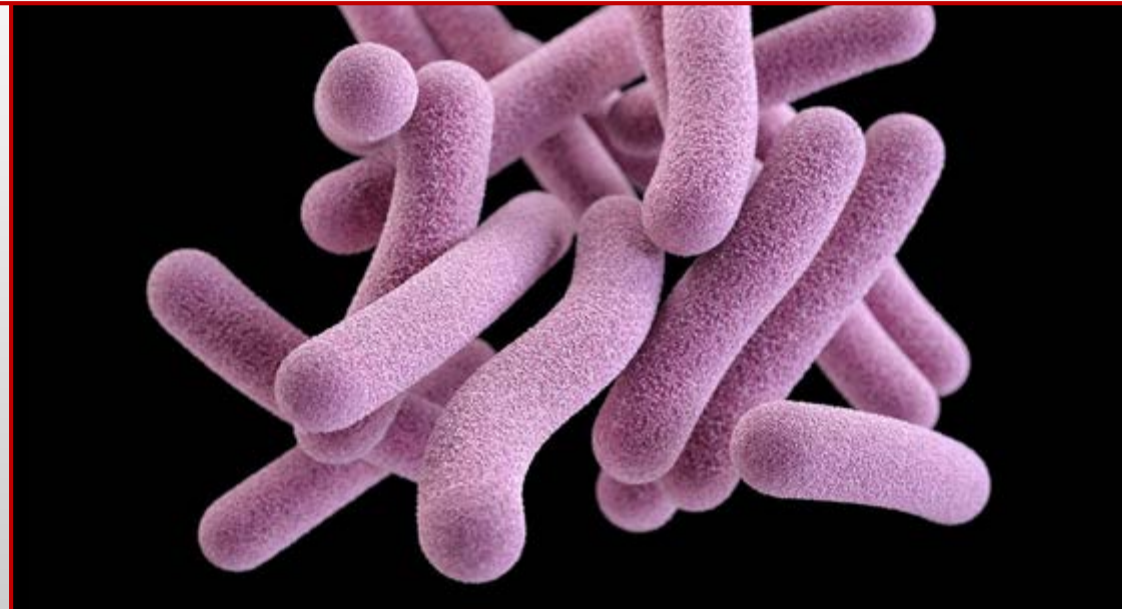
1882

Robert Koch announced his discovery of the tubercle bacillus as the cause of human tuberculosis (TB)

1898

Theobald Smith demonstrated the causative bacteria to be two different organisms that are now known as *Mycobacterium tuberculosis* and *Mycobacterium bovis*

Mycobacterium bovis infects cattle where it causes **bovine tuberculosis (bTB)**, but it can also infect humans where it is known as **zoonotic tuberculosis**. Other members of the *Mycobacterium tuberculosis* complex are also relevant (*M. caprae*) for animals



Disease situation

In the 19th century, the estimated death rates of TB was 800-1,000 per 100,000 in humans in European cities

Up to 10% of all TB human cases may be due to *Mycobacterium bovis*



bTB in developed and developing countries

Developed countries

Disease virtually eradicated in humans, under control in animals:

- Eradication in livestock is possible (test and cull)
- Control in wildlife is complex: badgers, white-tailed deer, brushtail possums

Also the introduction of meat inspection, milk pasteurisation and hygiene measures allowed to disrupt the transmission to humans

Developing countries

bTB remains a problem for animal and human health



Ongoing international commitment

- In September 2018, the **UN** held a High Level Meeting on combatting Tuberculosis (TB).
- The meeting concluded with adoption of a **declaration** to outline global strategies for **control and eradication of TB worldwide**.
- While focusing on human tuberculosis caused by *Mycobacterium tuberculosis*, the declaration also **acknowledged** the need to combat also **bTB** in animals and zoonotic tuberculosis in people



OIE initiatives to tackle bTB

Since *Mycobacterium bovis* is a threat to multiple species including humans, a broadly-based **One Health approach** is required to combat this problem:

1. Technical standards and scientific network
2. Data collection and reporting
3. The Tripartite (FAO,OIE,WHO)
4. Replacement of the international standard tuberculin
5. Liaison with regulators, industry and researchers
6. Networks and coordination



Article 8.11.4.

Country or zone free from infection with M. tuberculosis complex in bovids

Article 8.11.6.

Herd free from infection with M. tuberculosis complex in bovids or cervids

Last update 2017

http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_bovine_tuberculosis.htm

Access online: OIE - Wo X + -

www.oie.int/index.php?id=169&L=0&htmfile=chapitre_bovine_tuberculosis.htm

Pour afficher les Favoris ici, sélectionnez ☆ puis ☆, et faites glisser vers le dossier Barre des favoris. Sinon, importez-les depuis un autre navigateur. Importer les Favoris

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Standard Setting

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- > Terrestrial Manual
- > Aquatic Code
- > Aquatic Manual
- > Specialists commissions & working & ad hoc Groups
- > Implications of private standards

Terrestrial Animal Health Code Contents | Index PDF

CHAPTER 8.11.

INFECTION WITH MYCOBACTERIUM TUBERCULOSIS COMPLEX

Article 8.11.1.

General provisions

The recommendations in this chapter are intended to manage the human and animal health risks associated with infection of animals with a member of the *Mycobacterium tuberculosis* (M. tuberculosis) complex.

For the purposes of the *Terrestrial Code*, M. tuberculosis complex comprises *M. bovis*, *M. caprae* and *M. tuberculosis*, but excludes vaccine strains.

Many different domestic and wild animal species belonging to diverse mammalian taxa are known to be susceptible to infection with M. tuberculosis complex. Their epidemiological significance depends on the degree of susceptibility, the husbandry system, the density, spatial distribution and ecology of populations as well as the pathogenesis and transmission pathways. In some geographical regions, certain wild animal species can act as reservoirs.

For the purposes of this chapter, 'animals' means domestic and captive wild animal populations of the following categories:

1. bovids: this term means bovines (*Bos taurus*, *B. indicus*, *B. frontalis*, *B. javanicus* and *B. grunniens*), water buffaloes (*Bubalus bubalis*), and bison (*Bison bison* and *B. bonasus*);
2. cervids: this term means red deer (*Cervus elaphus elaphus*), wapiti/elk (*C. elaphus canadensis*), sika (*C. nippon*), sambar (*C. unicolorunicolor*), rusa (*C. timorensis*), roe deer (*Capreolus capreolus*), fallow deer (*Dama dama*), white-tailed, black-tailed and mule deer (*Odocoileus* spp.) and reindeer/caribou (*Rangifer tarandus*);
3. goats (*Capra hircus*);
4. New World camelids: this term means alpacas (*Lama guanicoe pacos*) and llamas (*Lama guanicoe glama*).

The chapter deals not only with the occurrence of clinical signs caused by infection with M. tuberculosis complex, but also with the presence of infection with M. tuberculosis complex in the absence of clinical signs.

For the purposes of the *Terrestrial Code*, the following defines the occurrence of infection with M. tuberculosis complex:

- + a member of M. tuberculosis complex has been identified in a sample from an animal or a product derived from that animal.

OR

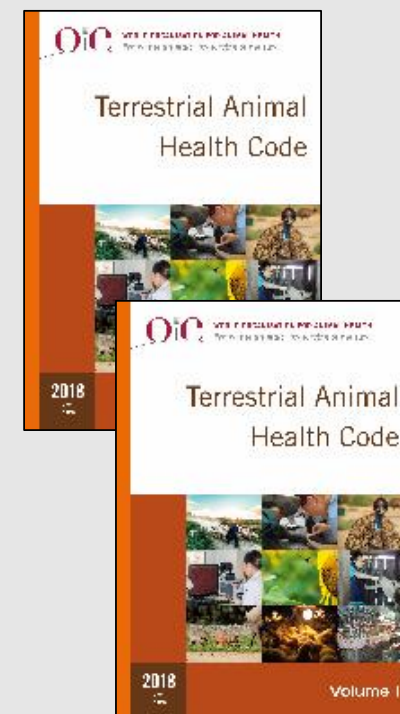
- + positive results to a diagnostic test have been obtained and there is an epidemiological link to a case of infection with M. tuberculosis complex or there is other reason to suspect infection with M. tuberculosis complex.

When authorising import or transit of commodities listed in this chapter, with the exception of those listed in Article 8.11.2, Veterinary Authorities should require the conditions prescribed in this chapter relevant to the M. tuberculosis complex infection status of the animal population of the country, zone or herd of origin.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

Article 8.11.2.

Safe commodities



bTB data collection and reporting to the OIE

Member Countries are obliged to report the disease situation of OIE-listed diseases to the OIE

Since 2004, online submission through **WAHIS**, currently being renovated into **WAHIS+**

bTB is mostly notified through **six monthly reports**. In 2017, **179** out of 182 Member Countries report the disease status to the OIE (presence/absence) in the territory. **Almost half of these countries** report the presence of the disease in animals

- Strengths: data are official, consistent and validated,
- Drawbacks: data for some countries are incomplete or missing

The image shows the text 'WAHIS+' in large, white, bold, sans-serif capital letters. The background is a dark, blurred image of computer code in various colors (green, yellow, red) on a black background, suggesting a digital or data-related theme.

WAHIS+

Tripartite One Health Collaboration: 2010 - 2018

International partnership to address human-animal-environment health risks gets a boost



Standing from left to right: Dr Tedros Adhanom Ghebreyesus, Director-General of WHO, Dr Monique Eloit, Director General of the OIE and Mr Jose Graziano da Silva, FAO Director General after signature of the MOU
© OIE/C Bertrand-Ferrandis



Global leader for
food and
agriculture



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animal health
and welfare
standards



Global leader for
human health



■ MOU and tripartite workplan 2018 - 2020

Roadmap for Zoonotic Tuberculosis

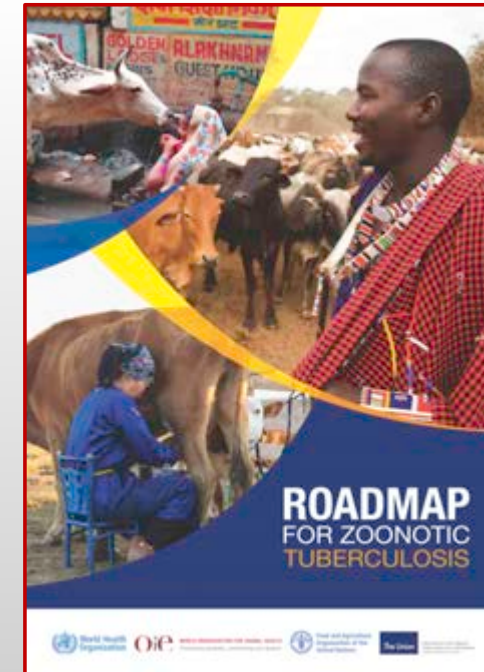


International Union Against
Tuberculosis and Lung Disease
Health solutions for the poor

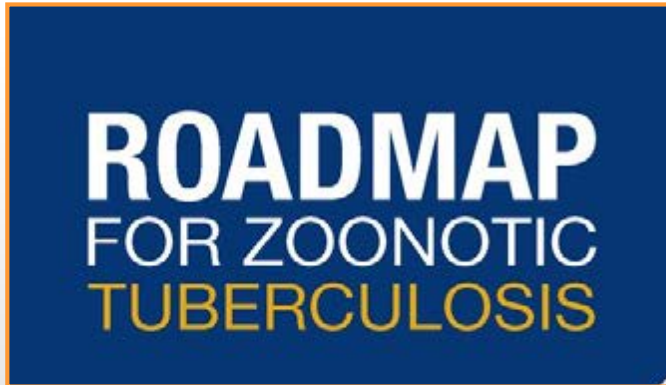
The Roadmap was developed in collaboration with the International Union Against Tuberculosis and Lung Disease (**The Union**) and published in 2017

Objectives include the development of coordinated strategies for combatting **zoonotic tuberculosis**

The 10 key priorities and strategies for tackling zoonotic tuberculosis are outlined in the recently published **Roadmap for Zoonotic Tuberculosis**



Roadmap for Zoonotic Tuberculosis, rationale



Zoonotic tuberculosis has long been neglected

United Nations Sustainable Development Goals, goal 3 includes a target for ending the global TB epidemic

WHO launched the End TB Strategy for ending TB epidemic in humans by 2030

The Stop TB Partnership plan, which includes for the first time people at risk of zoonotic TB as a neglected population deserving greater attention

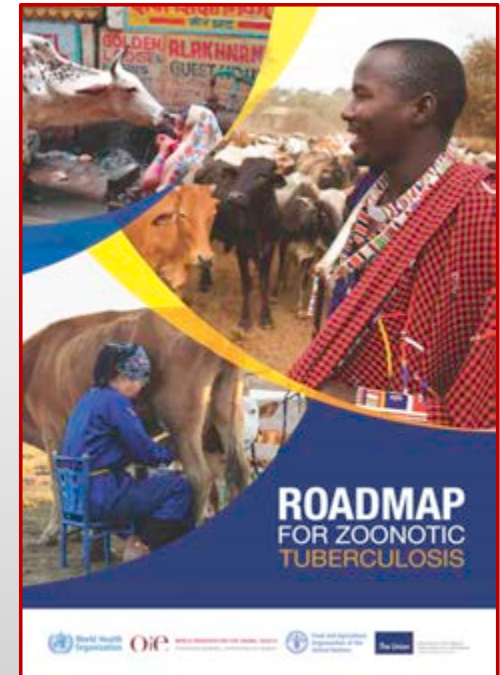
Declaration made in 2017 by leaders of the G20 forum to foster research and development for TB

Therefore, the time is right for a concerted effort to address the impact of bTB on the health and well-being of people and animals

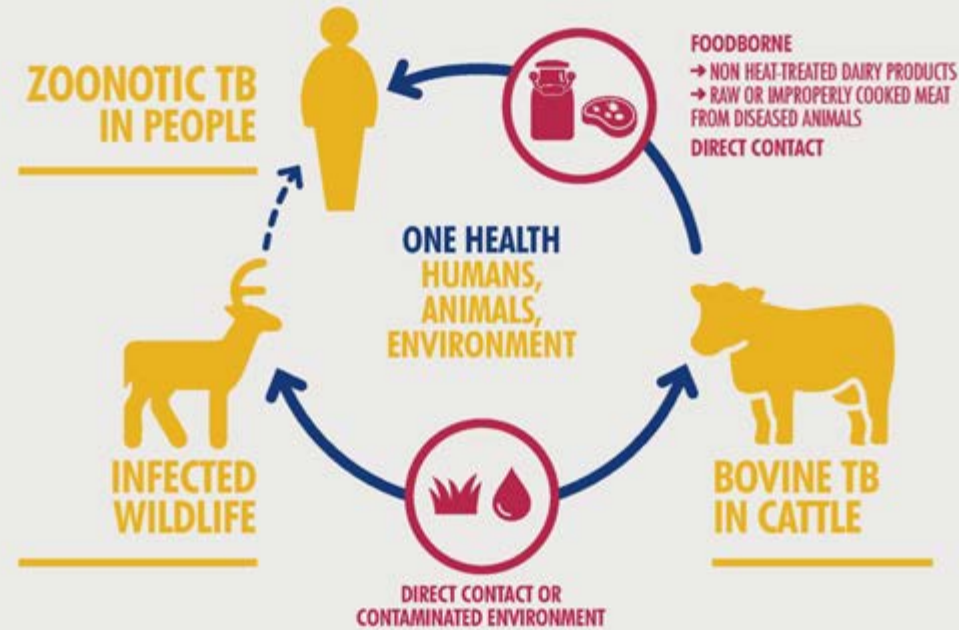
Roadmap for Zoonotic Tuberculosis

The 10 key priorities to address zoonotic TB

1. Collect and report more complete and **accurate data** from human and animal populations
2. Improve **diagnosis** in people
3. Address **research** gaps
4. Ensure **safer food**
5. Improve **animal health**
6. **Reduce** the **risk** to people
7. Increase **awareness**, engagement and collaboration
8. Develop **policies and guidelines**
9. Implement joint **interventions**
10. Advocate for **investment**



BREAKING THE CHAIN OF TRANSMISSION STOPPING ZOO NOTIC AND BOVINE TUBERCULOSIS IN THEIR TRACKS



ACT NOW TO SAVE LIVES AND SECURE LIVELIHOODS



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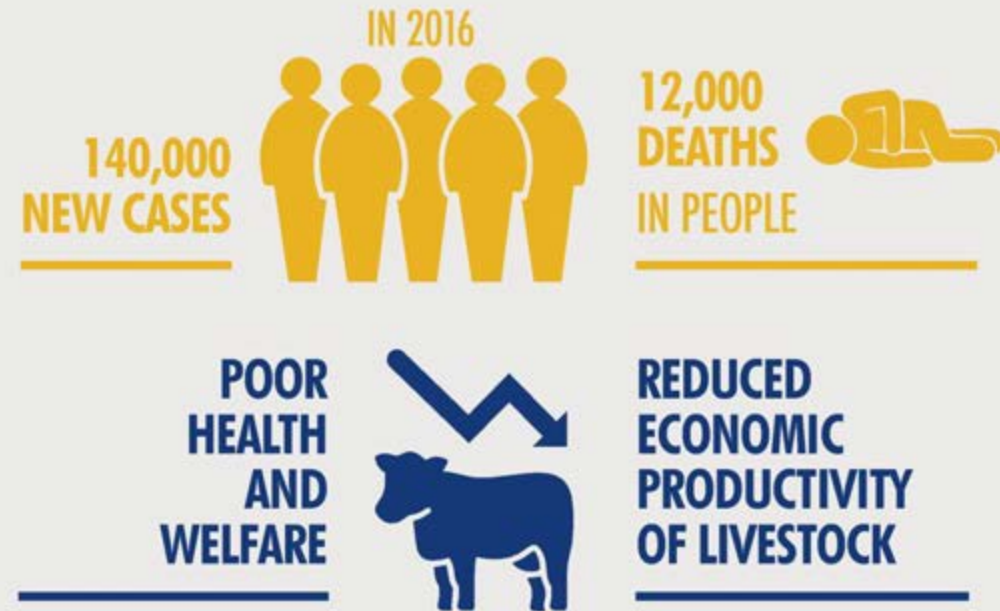


Food and Agriculture
Organization of the
United Nations



International Union Against
Tuberculosis and Lung Disease
Health solutions for the world

ZOONOTIC TUBERCULOSIS IS A MAJOR PUBLIC HEALTH THREAT



ACT NOW TO SAVE LIVES AND SECURE LIVELIHOODS



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Food and Agriculture
Organization of the
United Nations



International Union Against
Tuberculosis and Lung Disease
Health solutions for the poor

Publications

THE LANCET

Zoonotic tuberculosis in human beings caused by *Mycobacterium bovis* – a call for action

(2017) The Lancet Infectious Diseases 17, 21-25.

It's time to act to accurately diagnose and treat tuberculosis caused by *Mycobacterium bovis* in human beings

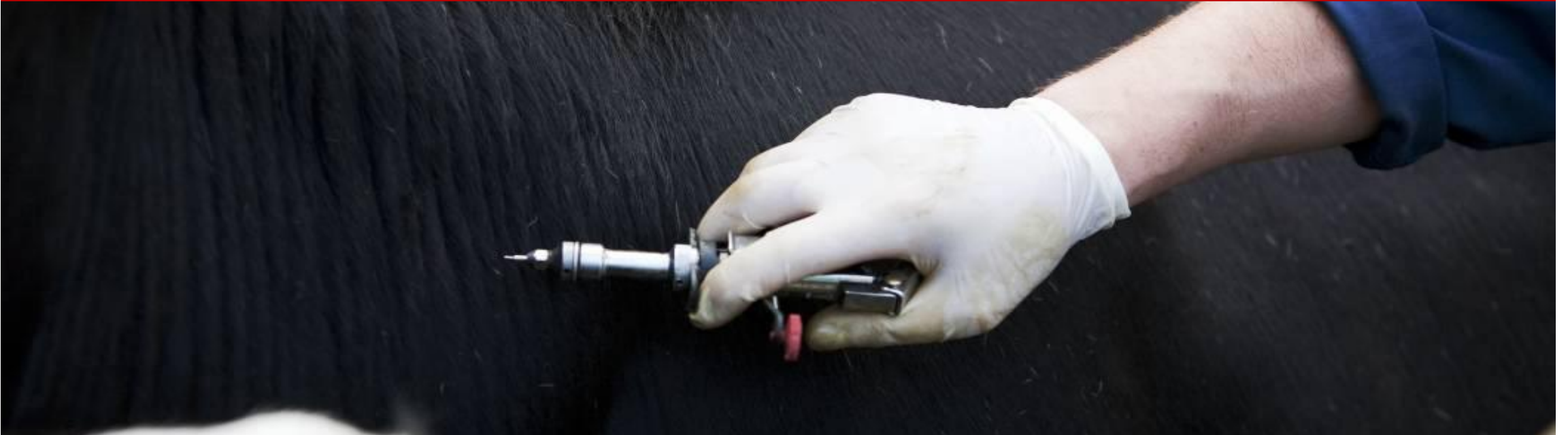
Replacement of the ISBT

The current international standard bovine tuberculin (ISBT) was developed in 1986 and it has become depleted

The OIE is leading a project to replace the ISBT

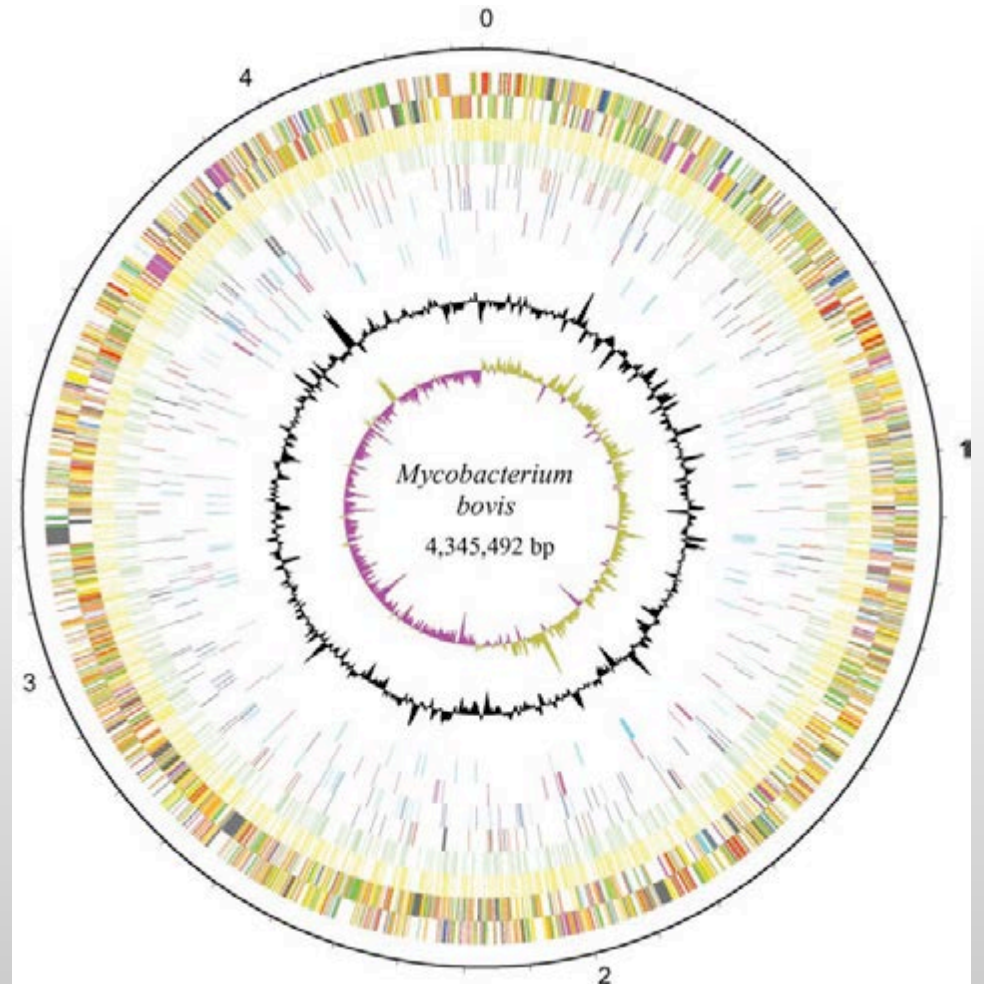
Ad hoc Group

Preliminary Evaluation and International Collaborative Study



Liaison with regulators, industry and researchers

The **Global Research Alliance for bovine Tuberculosis** (GRAbTB) coordinates global research alliance enabling improved understanding and control of bTB.



Liaison with regulators, industry and researchers

Global **Strategic Alliances** for the Coordination of **Research** on the Major **Infectious Diseases** of **Animals** and **Zoonoses**

The **STAR-IDAZ** International Research Consortium (**IRC**) is a group of research funders and programme owners aiming to maximise funding for coordinated animal health research

The STAR-IDAZ IRC **Bovine Tuberculosis Working Group** and the Global Research Alliance for bovine Tuberculosis (**GRAbTB**) have jointly developed a **Roadmap for Development of a Candidate Vaccine for bTB**



Networks and Coordination at the Animal-Human Interface

- Need for better data and understanding of transmission pathways
- Amount of *M. bovis* cases in humans and role of *M. tuberculosis* in animals
- Better understanding on the role of wildlife
- Development of common research (including diagnostics and vaccines)



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Thank you for your attention

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