BRN SEMINARS

Scientific workshops to foster collaborative research

Organized by: Barcelona Respiratory Network Collaborative research

Barcelona Respiratory Network Collaborative research

Tuberculosi:
Recerca a Catalunya i la seva internacionalització

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Gener 2018

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InstitutCataládelaSalut

UAB Universitat Autònoma de Barcelona

IGTP Germans Trias i Pujol Research Institute

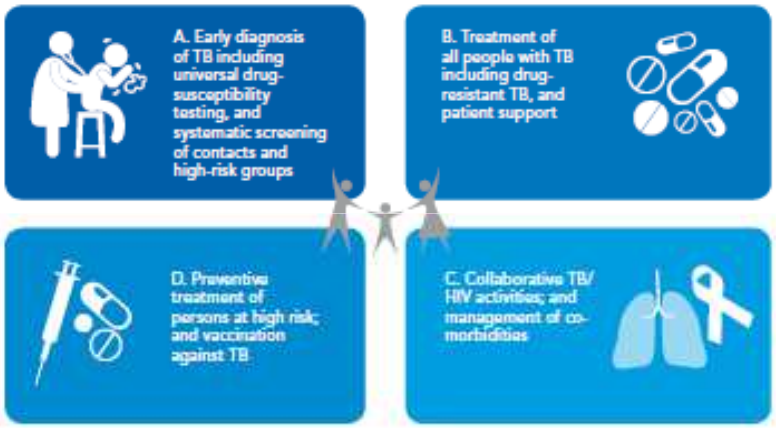
ciberes Centro de Investigación Biomédica en Red Enfermedades Respiratorias

Sumari

1. **Reptes en el maneig**
2. **Treball en xarxa**
3. **Canvis epidemiològics**
4. **Canvis tecnològics**
5. **Conèixer les diferents realitats**

INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

How pillar 1 works : Key actions

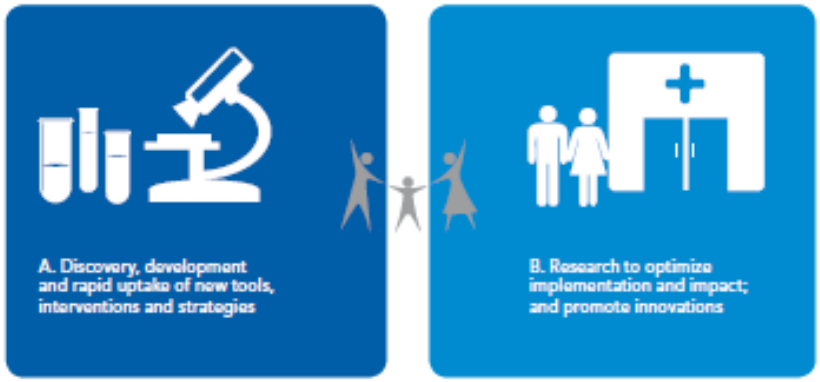


BOLD POLICIES AND SUPPORTIVE SYSTEMS

How pillar 2 works : Key actions

INTENSIFIED RESEARCH AND INNOVATION

How pillar 3 works : Key actions



WE WILL END TB

END TB

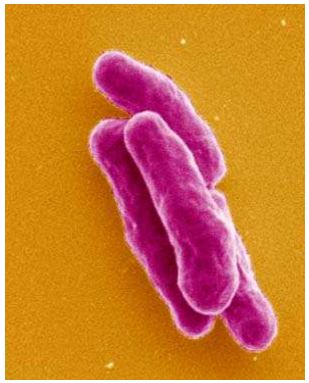
World Health Organization

- Els reptes pel control de la tuberculosi són igual a tot arreu?

Odessa, Ucraïna

Hawassa, Ethiopia

Bathalapalli, India



Reptes en recerca en tuberculosi

Diagnòstic ràpid dels casos de **tuberculosi activa**

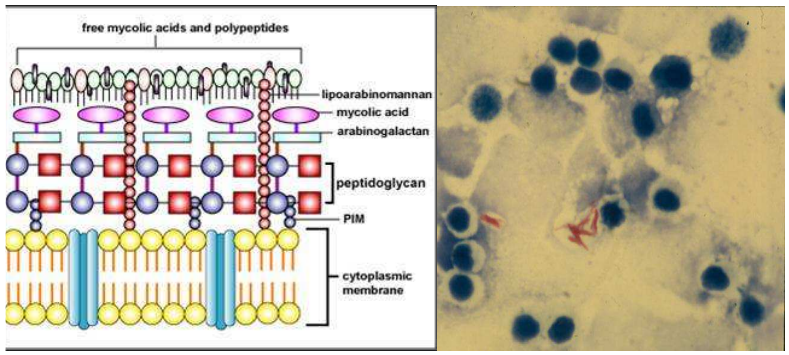
Detecció ràpida de la **resistència** als fàrmacs

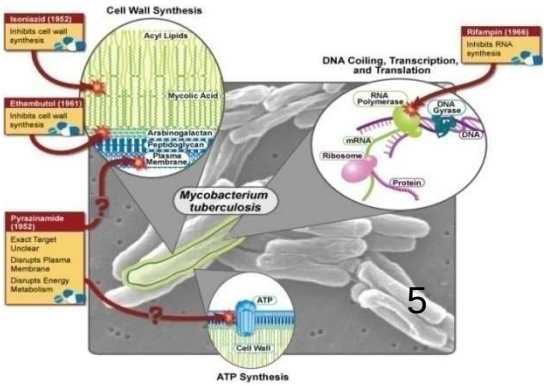
Monitorització de la resposta al tractament

Millorar el coneixement dels estadis de la **infecció tuberculosa latent**

Millorar la **prevenció** de la infecció

Millorar i simplificar la vigilància epidemiològica molecular





Tasca assistencial en xarxa

Agència de Salut Pública de Catalunya

Serveis Clínics

Recerca i formació en xarxa

XXI Taller Internacional sobre Tuberculosis UITB-2017

uitb

FONDO EUROPEO DE DESARROLLO REGIONAL
Una manera de hacer Europa
FONDO SOCIAL EUROPEO
El FSE invierte en tu futuro
Unión Europea

Consorcis nacionals i internacionals

UTE

ciberes
Centro de Investigación Biomédica en Red
Enfermedades Respiratorias

MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD

Instituto de Salud Carlos III

FONDO EUROPEO DE DESARROLLO REGIONAL
Una manera de hacer Europa

FONDO SOCIAL EUROPEO
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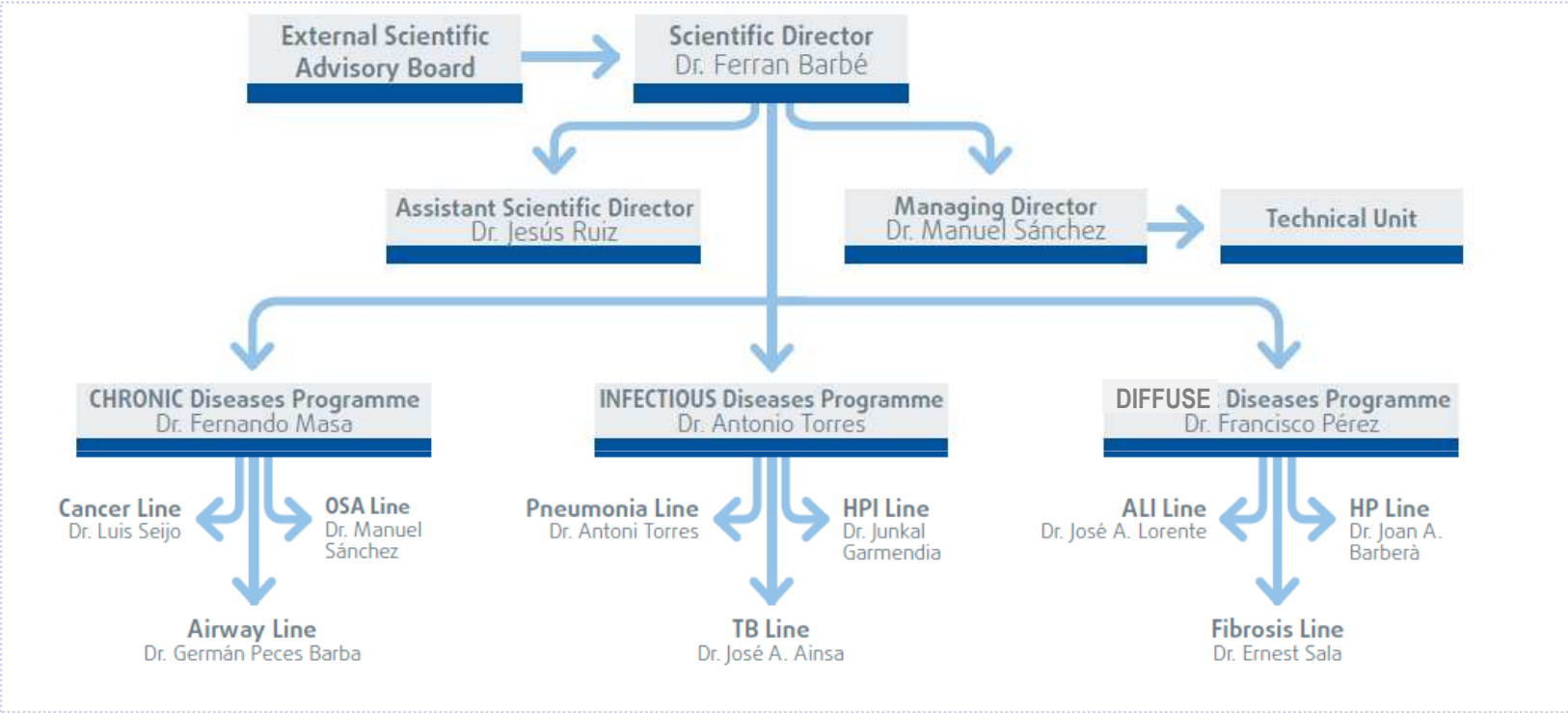
Unión Europea

CORPORATIVE RESEARCH PROGRAMMES (CRP) AND RESEARCH LINES (RL)



Programas Transversales y Plataformas

Programa Internacionalización

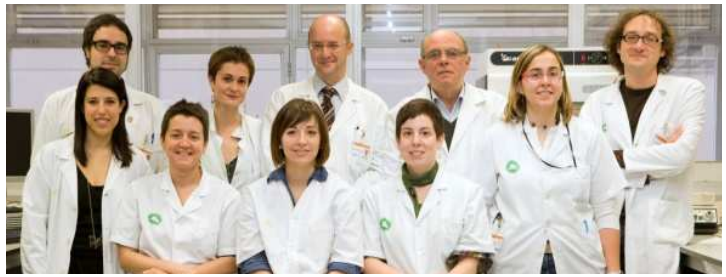
Programa de Formación

Plataforma Biobanco Pulmonar

ciberes

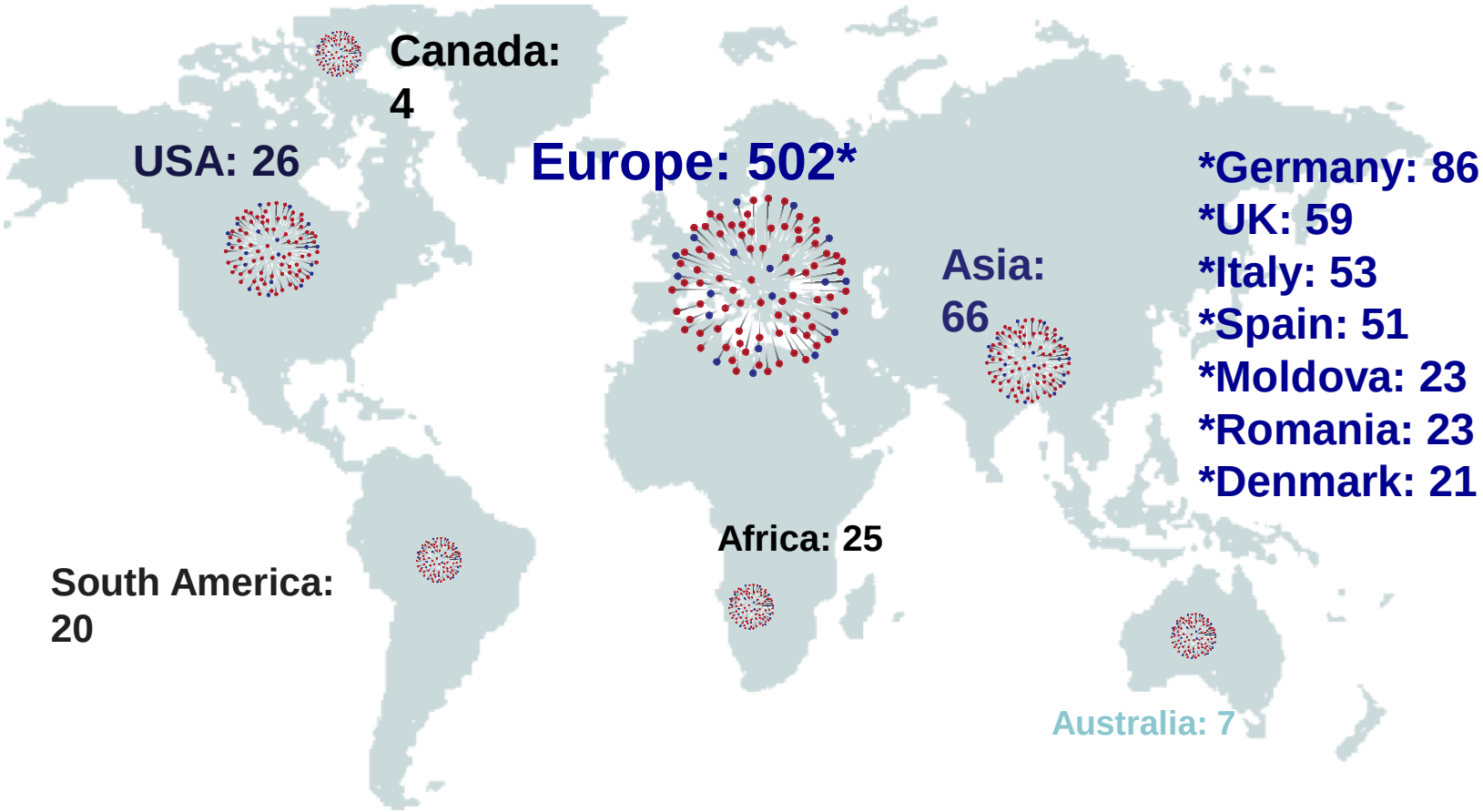
Centro de Investigación Biomédica en Red

Enfermedades Respiratorias



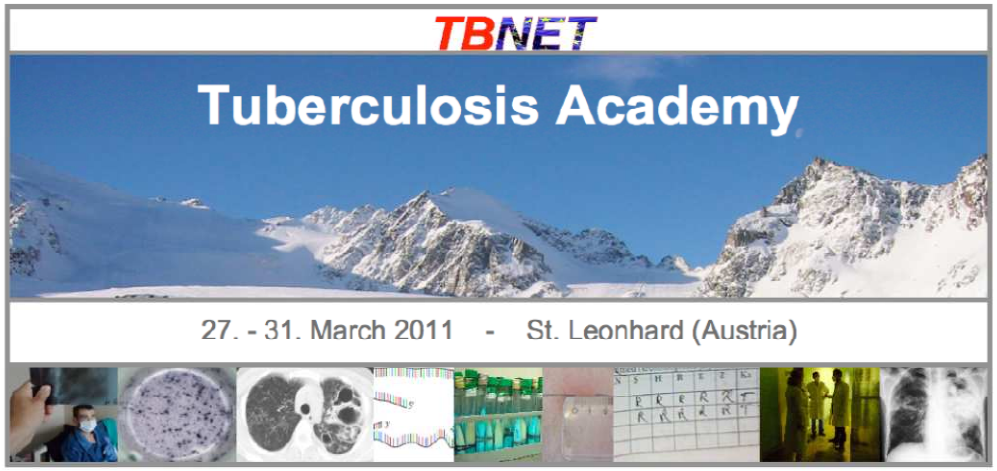
TBNET is a network of research oriented clinicians, microbiologists, and epidemiologists interested in the field of tuberculosis and mycobacterial diseases.

The goal of the TBNET is to promote clinically oriented research in the field of tuberculosis in Europe by sharing and developing ideas and research protocols among the members of the network



650

TBnet Academy encourages the participation of young scientist-clinicians in the TB clinical research and has a mentoring program.



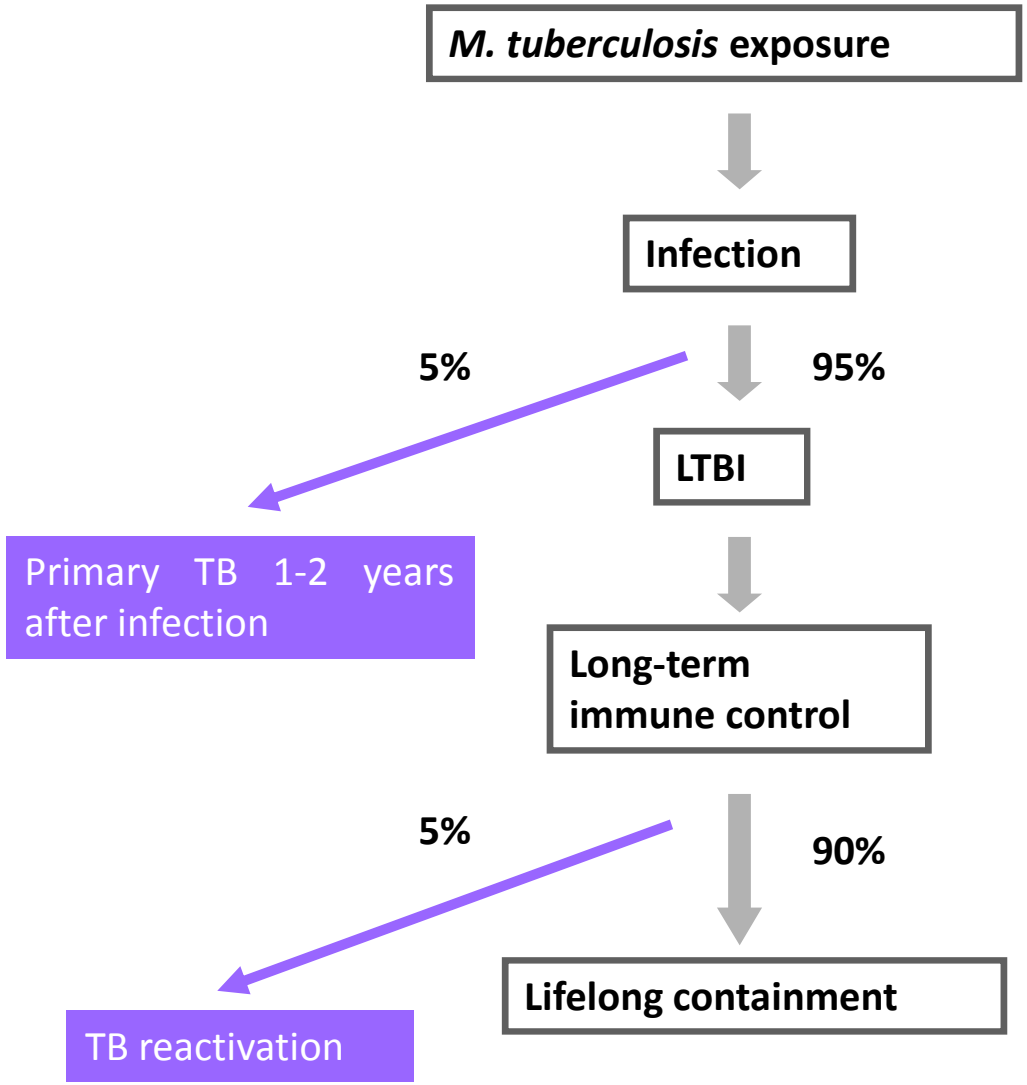
TB net Academy 2016
Odessa Ukraine

Història natural

Factors promoting progression to active TB

Recent infection
Contacts of TB cases

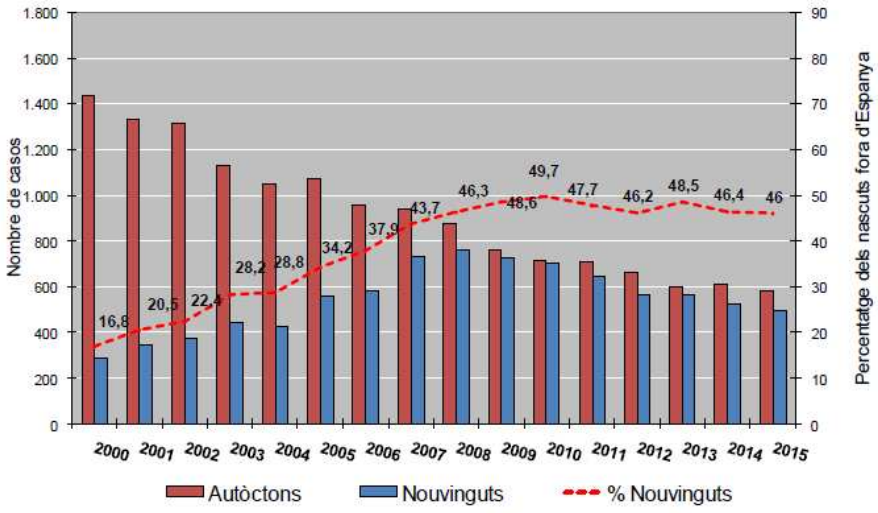
Impaired cellular immunity
HIV
Children <5 years old
Concomitant illnesses
Renal failure, diabetes, etc
Iatrogenic immunosuppression
Steroids, organ transplants, methotrexate, anti-TNF



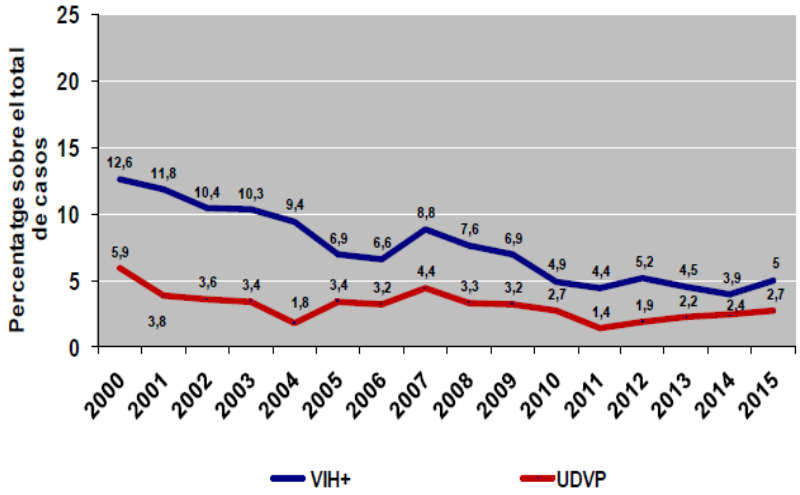
Canvis epidemiològics

- Efectes de HAART (*highly active antiretroviral therapy*), bon control VIH
- Inici tractaments “biològics” amb anti-TNF (i més) nou grup de risc
- Crisi econòmica: canvis en l’onada migratòria, empitjorament condicions socio-econòmiques en alguns nivells
- Micobactèries ambientals emergents
- Influència de malalties no comunicables, també en països baixa renda

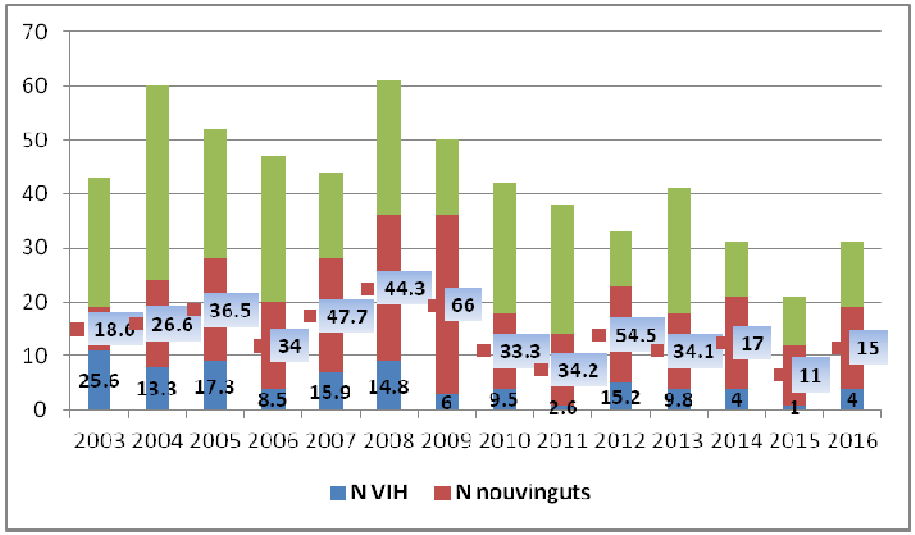
Figura 4. Evolució del nombre de casos de tuberculosi segons el lloc de naixement dels malalts (2000-2015)



a 16. Evolució del percentatge de casos de TBC en pacients infectats pel VIH i en nts usuaris de drogues per via parenteral (2000-2015)

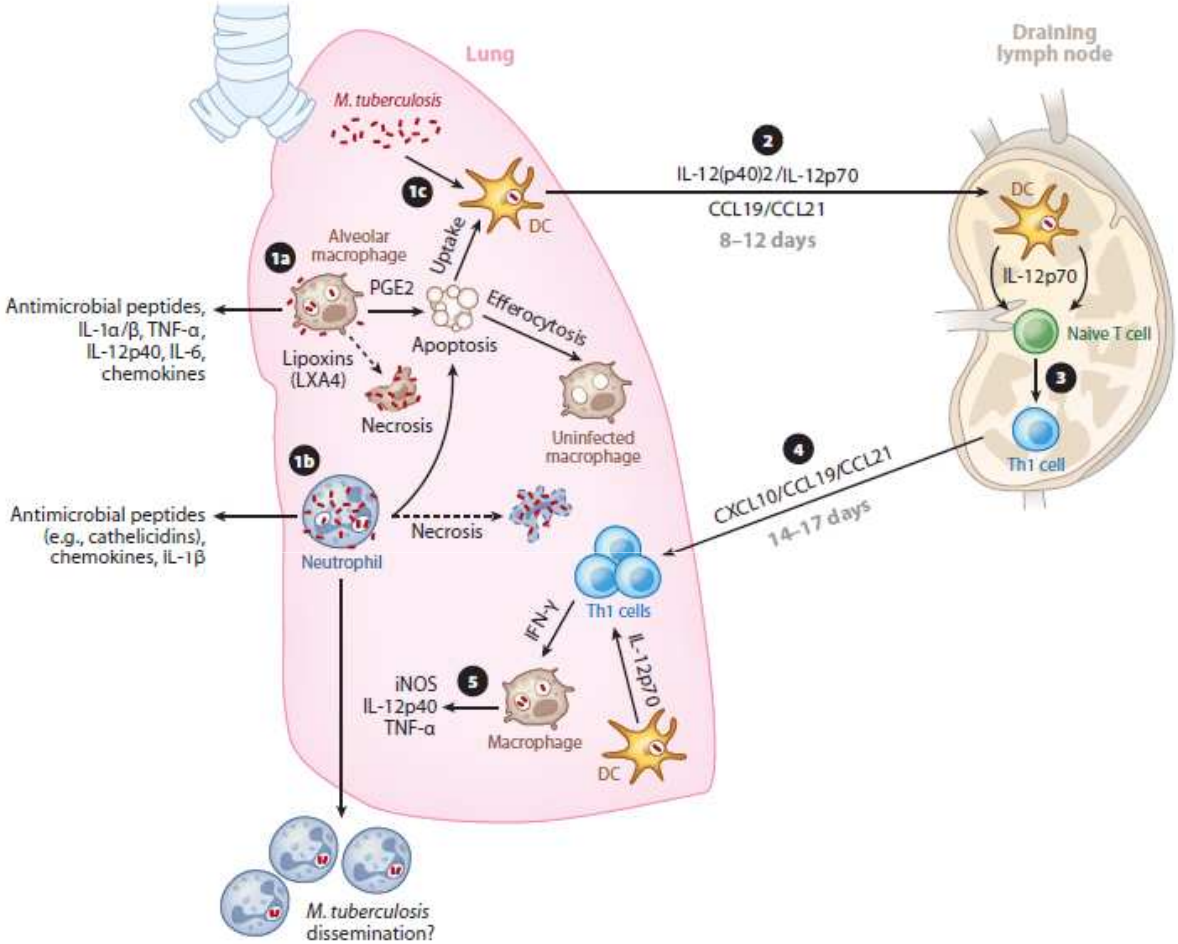


Grups de risc



Germans Trias i Pujol Hospital
InstitutCataladelaSalut

Grups de risc

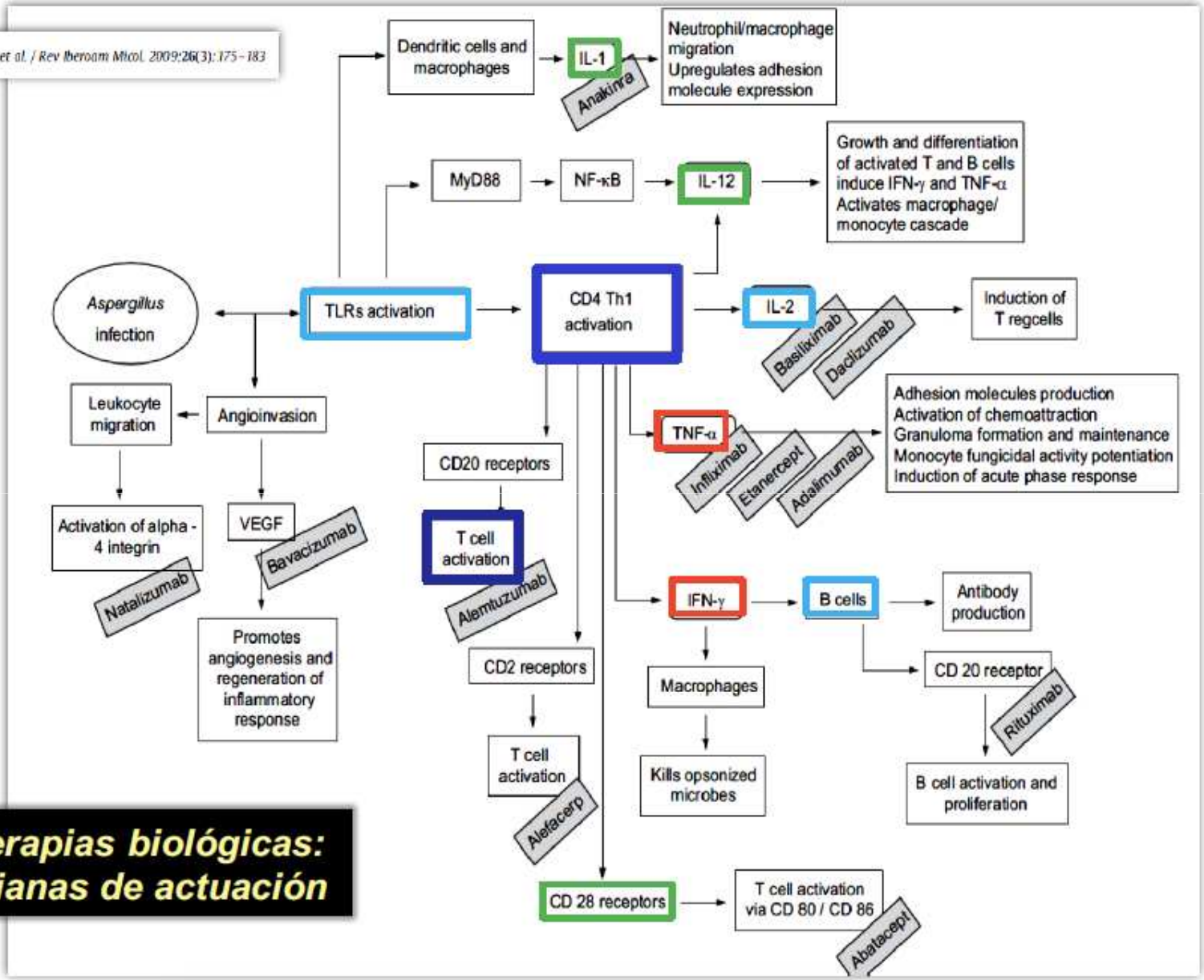


The Immune Response in Tuberculosis

Anne O'Garra,[1,3] Paul S. Redford,[1]
Finlay W. McNab,[1] Chloe I. Bloom,[1]
Robert J. Wilkinson,[1,2,3,4] and Matthew P.R. Berry[1,5]

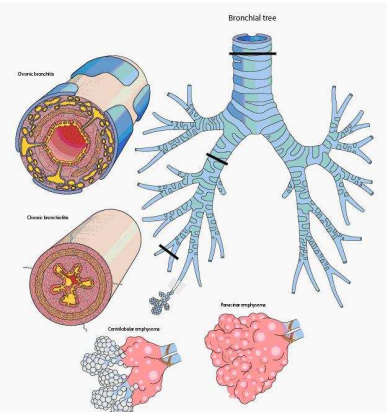
Annu Rev Immunol 2013, 31:475-527

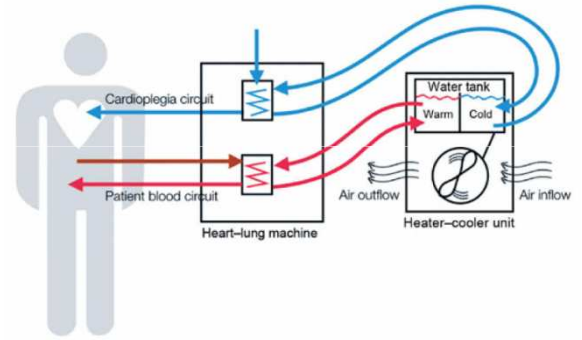
W.L. Nedel et al. / Rev Iberoam Micol. 2009;26(3):175–183



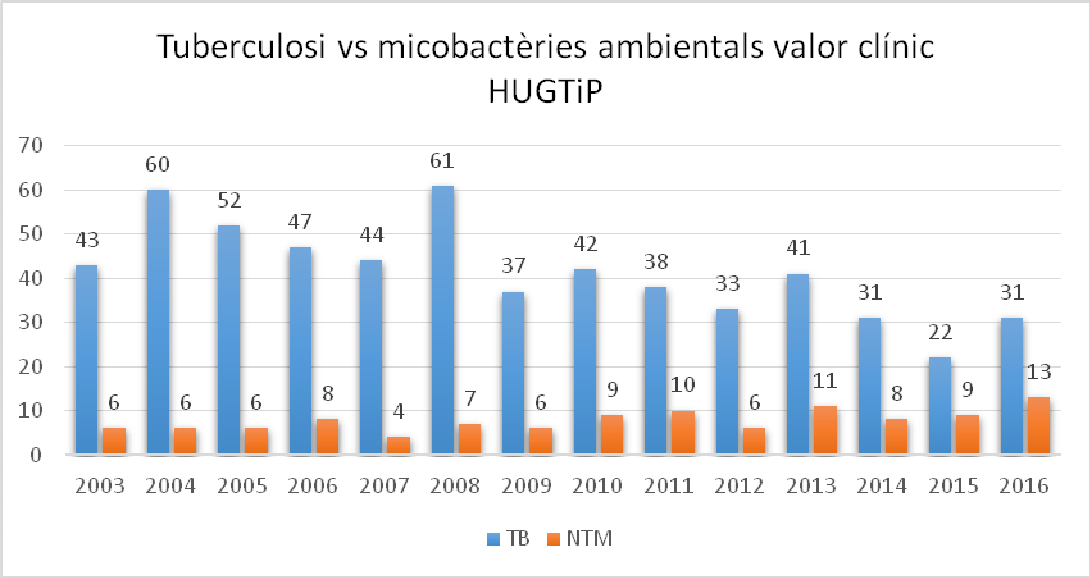
Terapias biológicas: dianas de actuación

Micobacteriosis emergents

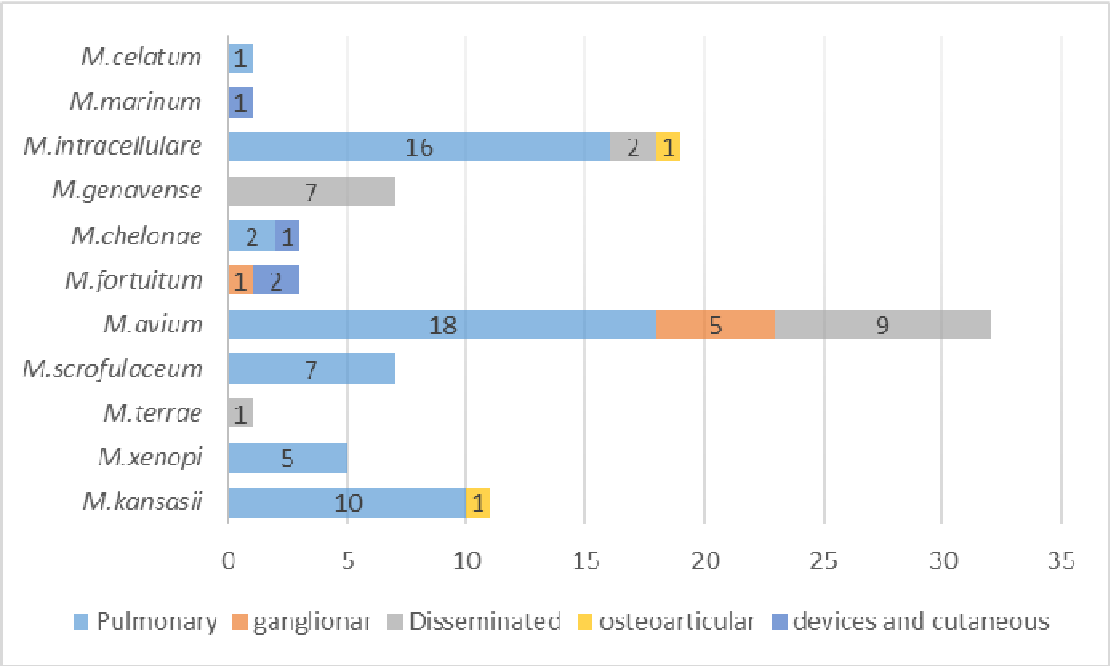




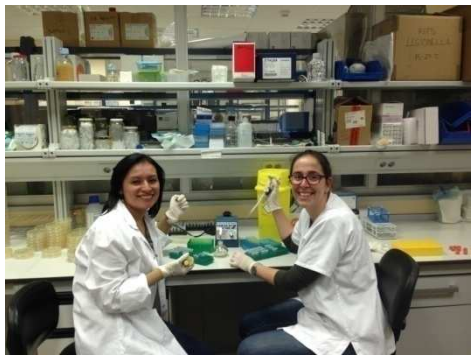
Mycobacterium chimaera

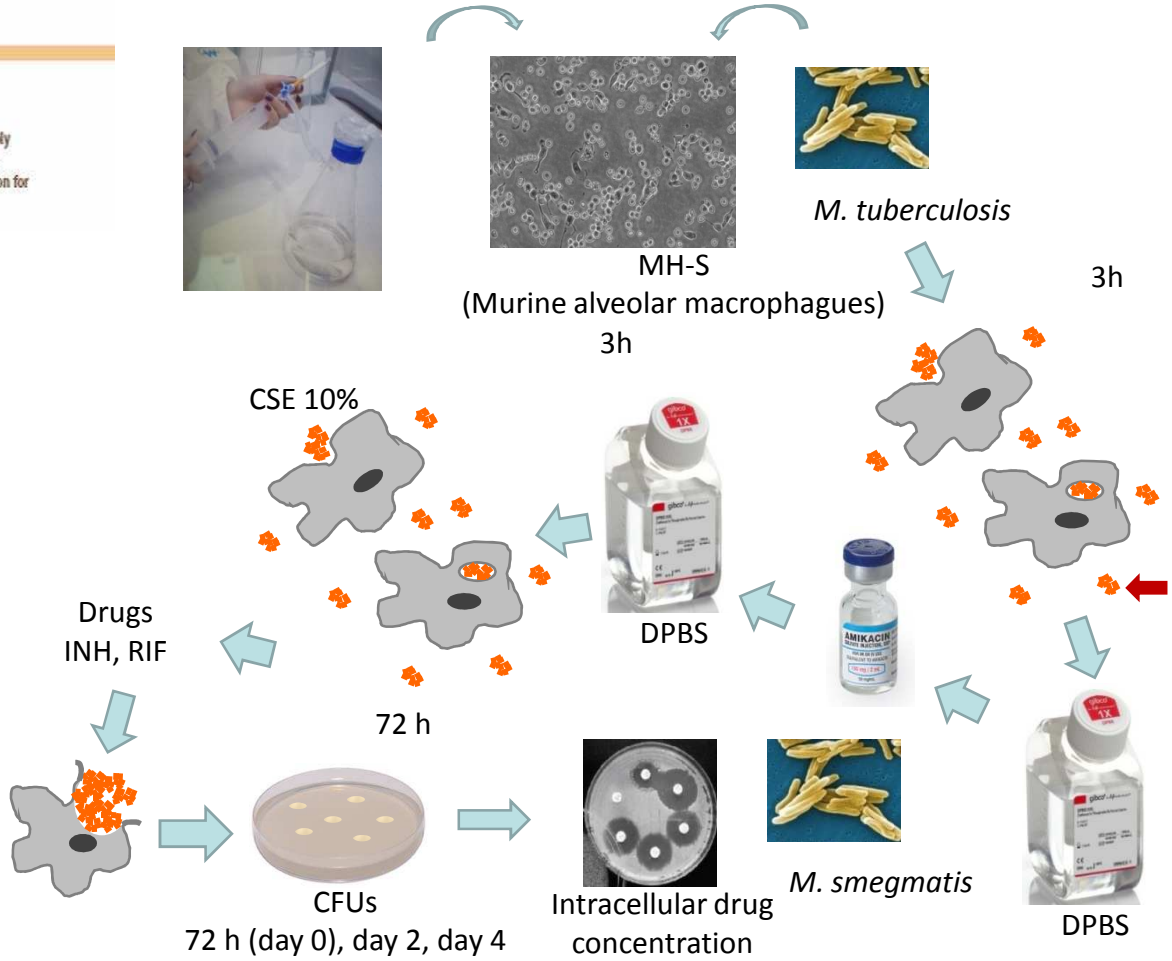


15-20% micobactèries amb valor clínic són micobactèries ambientals



Impacte malalties no comunicables





Clinical, radiological, microbiological, molecular, immunological and metabolomical characterization of the smoking activity impact in the TB. (SEPAR)

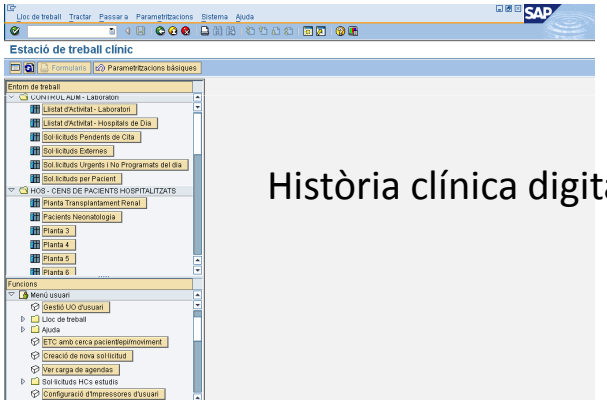
Canvis tecnològics

- Sistemes de comunicació
- Radiologia intervencionista
- Noves eines processament, diagnòstic i detecció resistències
- IGRAs
- NGS, *next generation sequencing*

Adequada comunicació entre els professionals

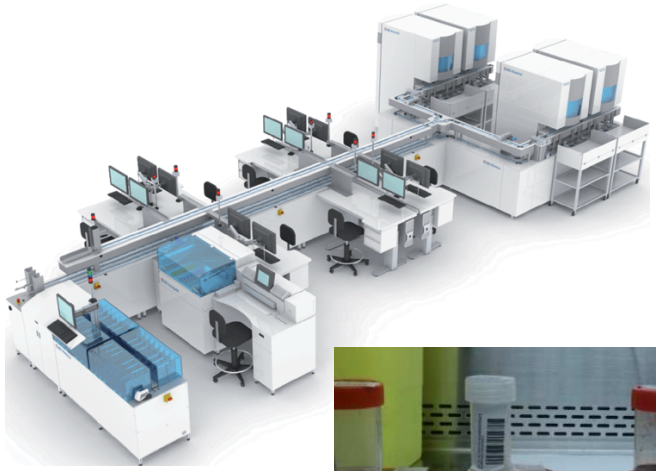
Notificació *on line* Salut Pública

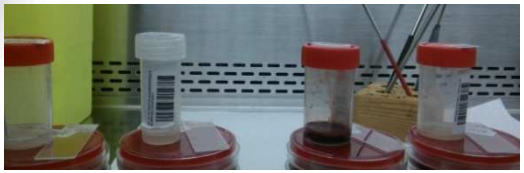
Sistemes de comunicació



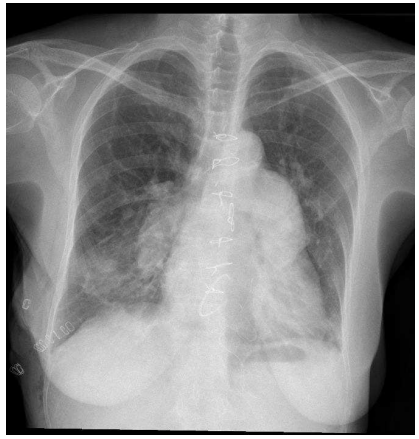
Història clínica digitalitzada

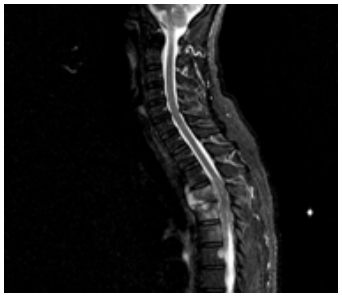
Centralització i automatització dels laboratoris:

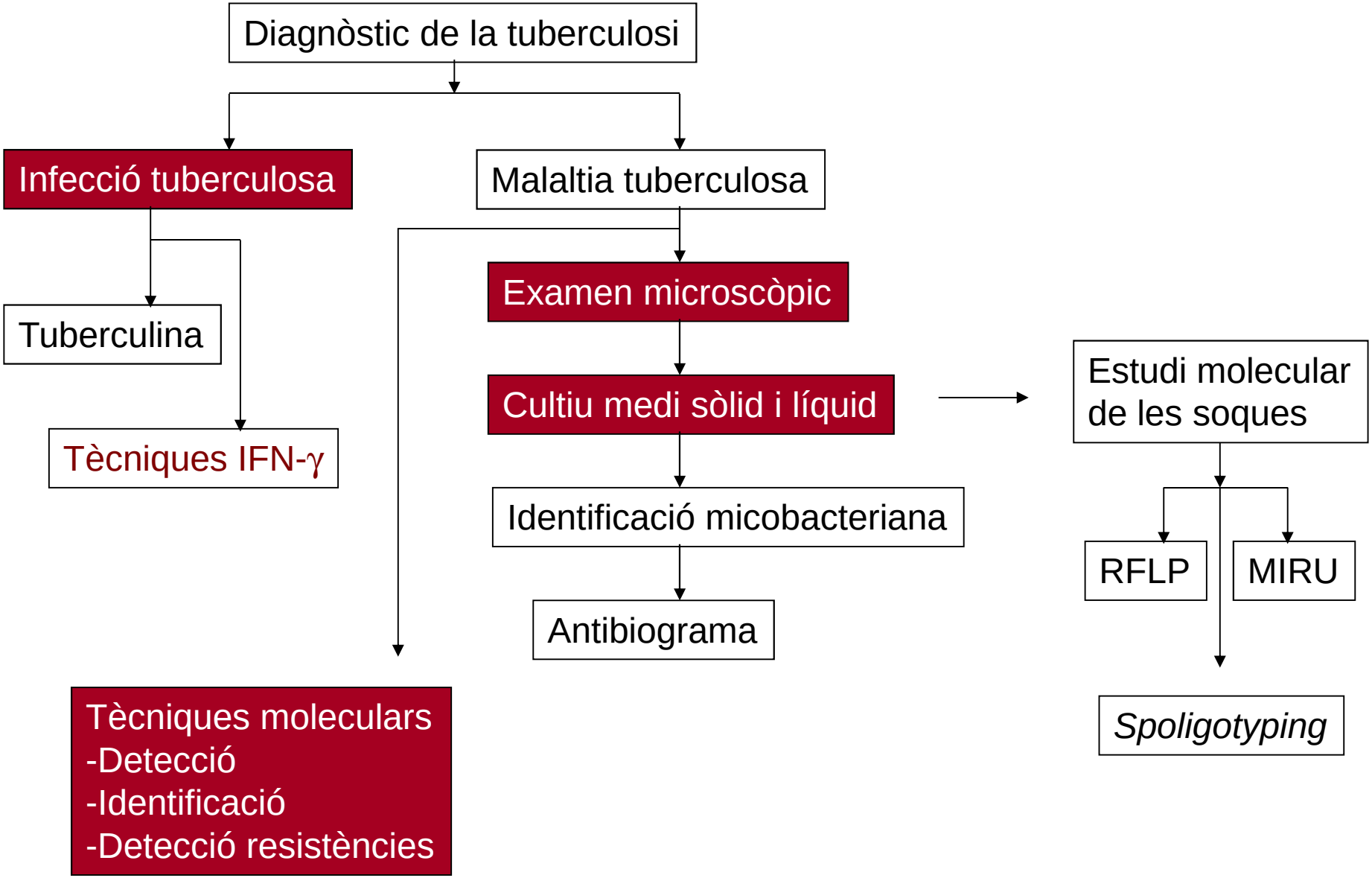




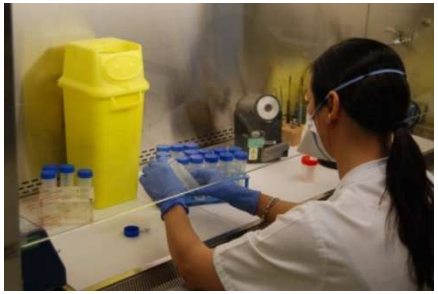
- Millora de les tècniques de diagnòstic per imatge
- Radiologia intervencionista (ex. punció guiada per tomografia)
- Ecofibrobroncoscòpia





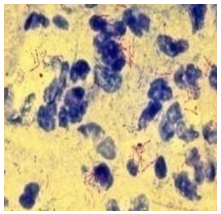

Diagnòstic de la tuberculosi
Infecció tuberculosa
Malaltia tuberculosa
Tuberculina
Tècniques IFN-γ
Examen microscòpic
Cultiu medi sòlid i líquid
Identificació micobacteriana
Antibiograma
Estudi molecular de les soques
RFLP
MIRU
Spoligotyping
Tècniques moleculars
-Detecció
-Identificació
-Detecció resistències

Noves eines processament, identificació, detecció resistències



Descontaminació

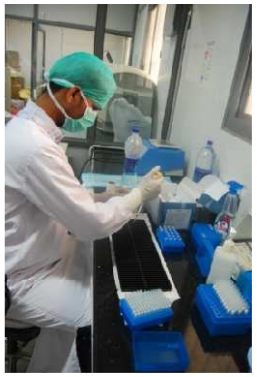
Examen microscòpic

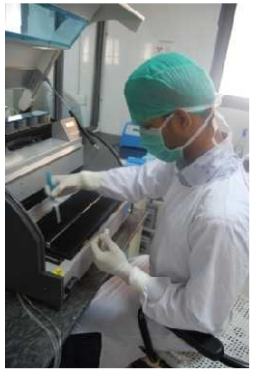


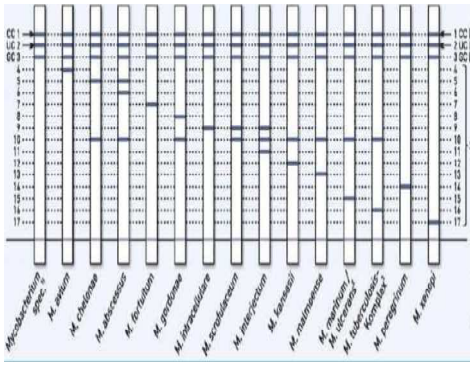
Cultiu

Detecció MPT64:
M.tuberculosis complex

Plataformes per **detecció** i estudi de **resistències**





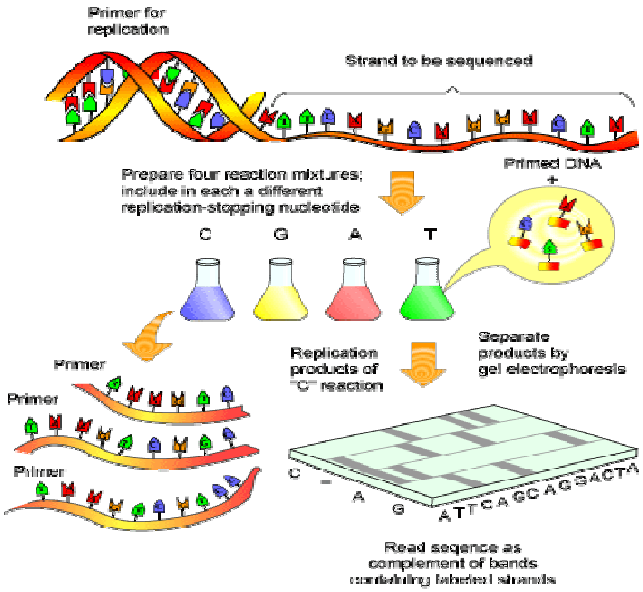


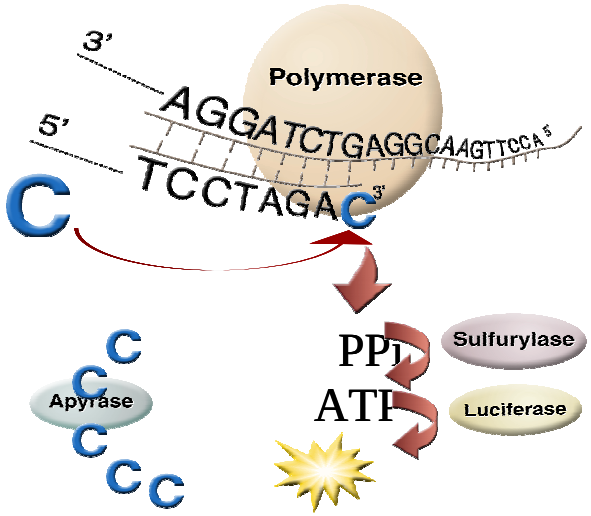
Bathalapalli, India

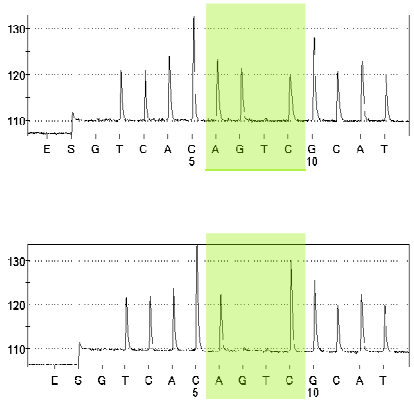
Addis Ababa, Ethiopia

Odessa, Ukraine

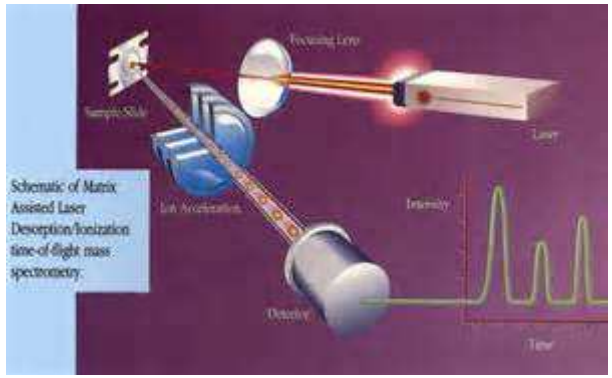
Seqüenciació



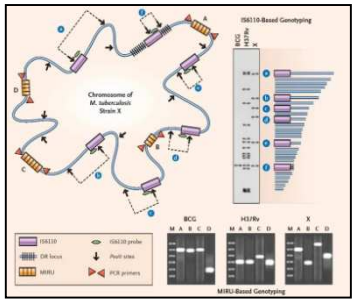


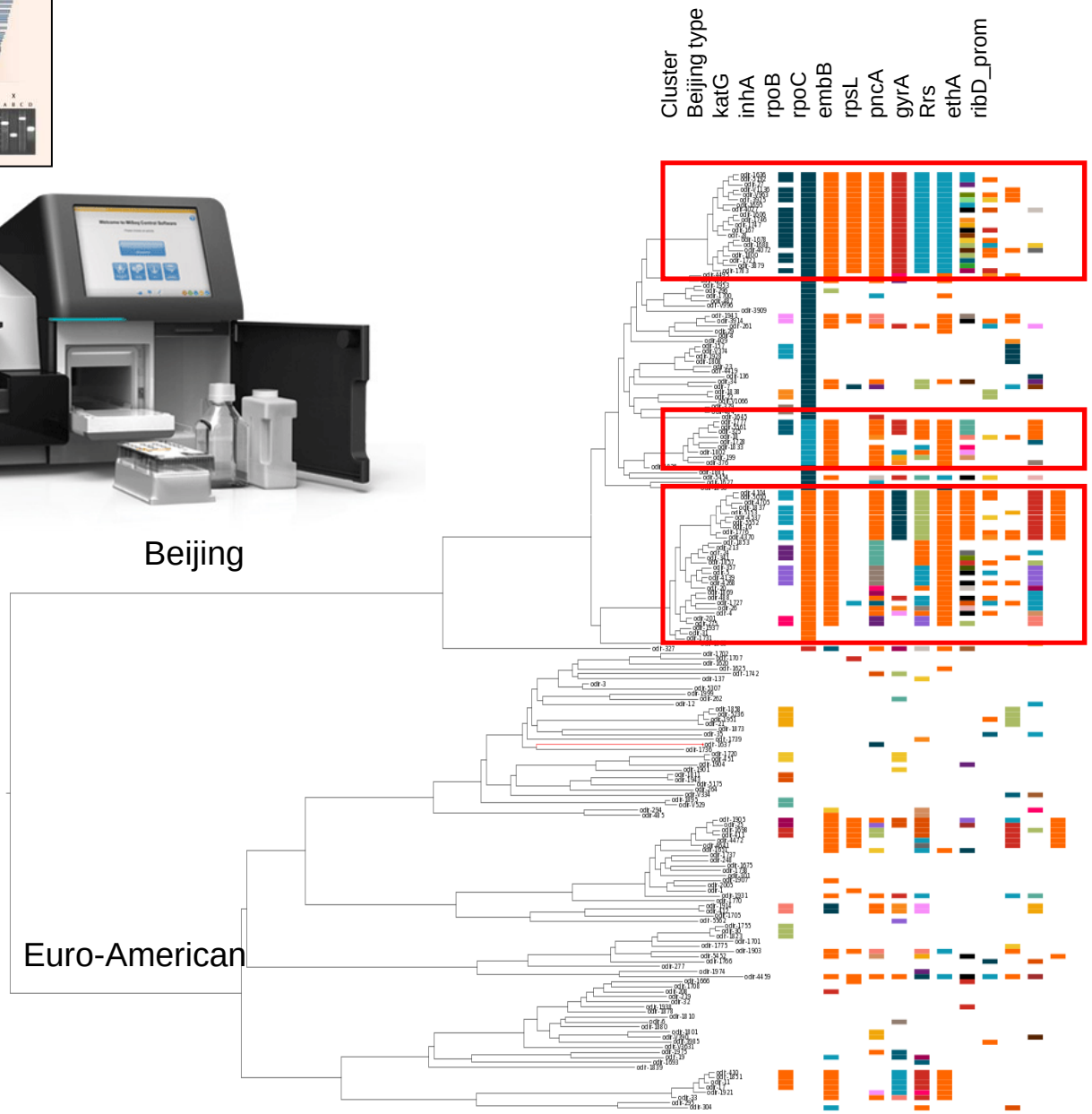


Espectrometria de masses

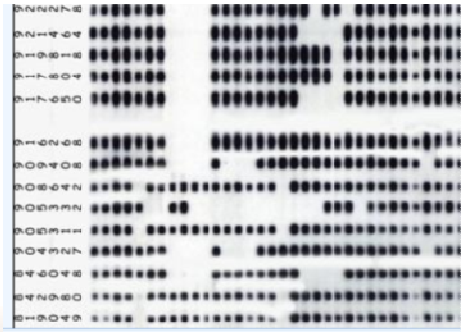


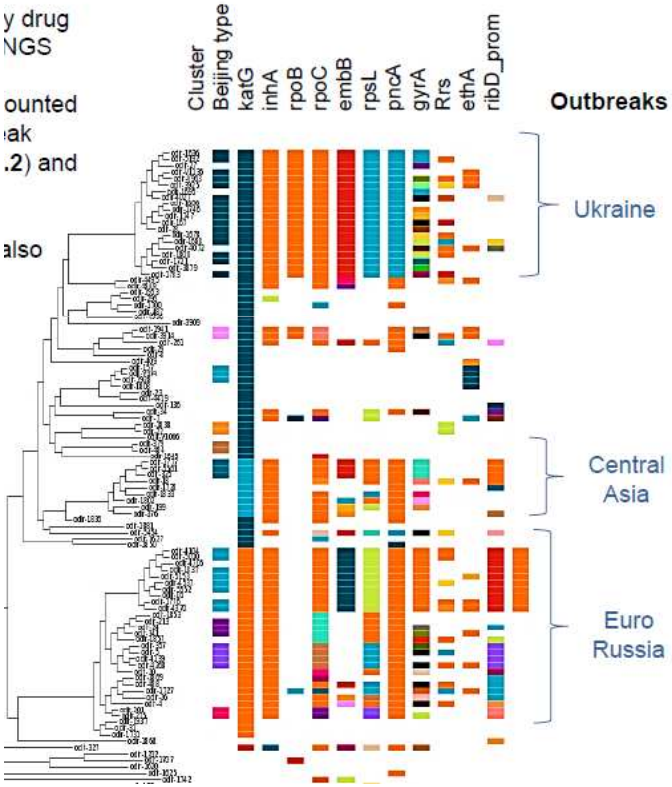
Next generation sequencing (NGS)

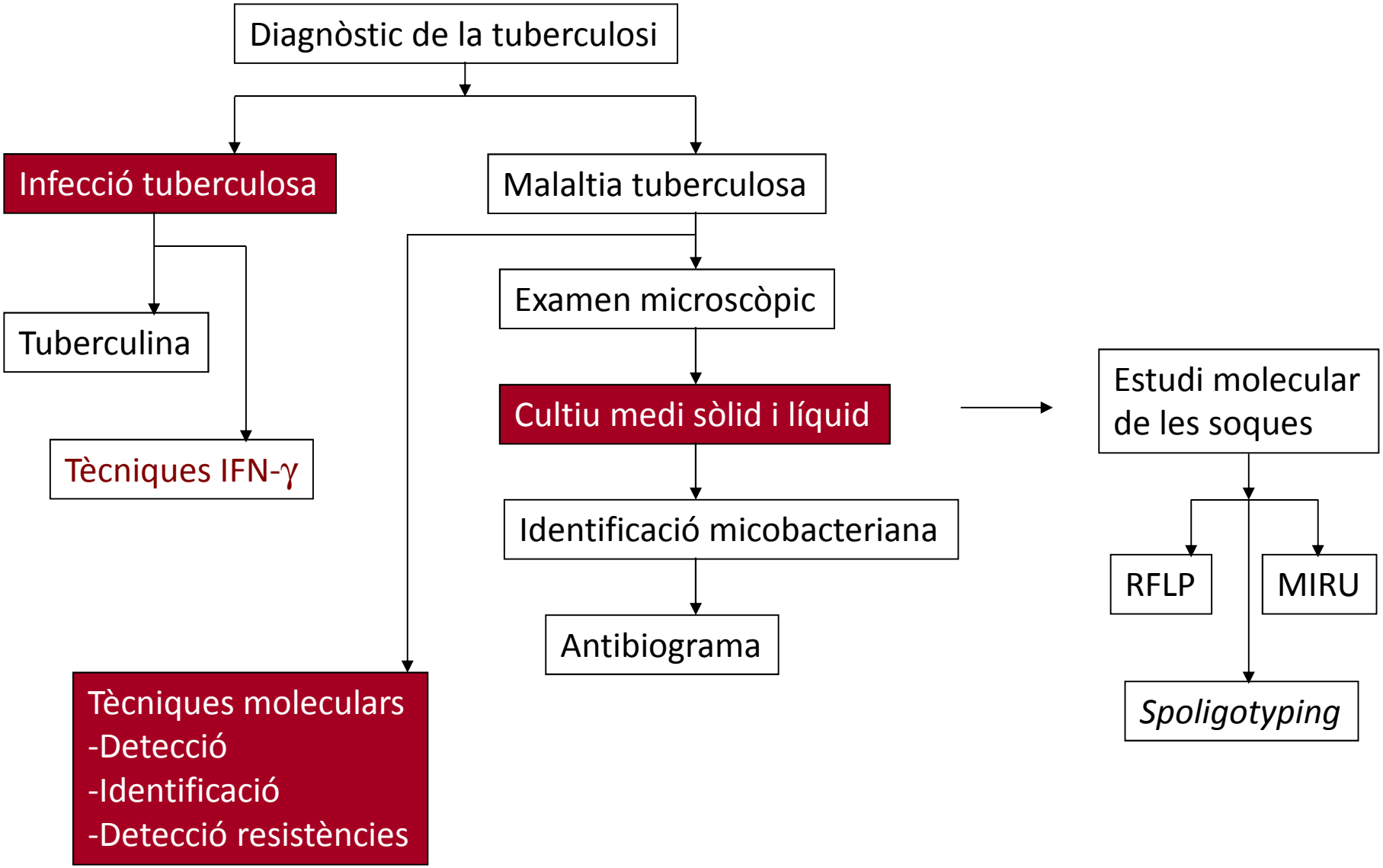




DNA extraction Odessa TB clinic, *Spoligotyping* in Badalona. WGS in Borstel, Germany.



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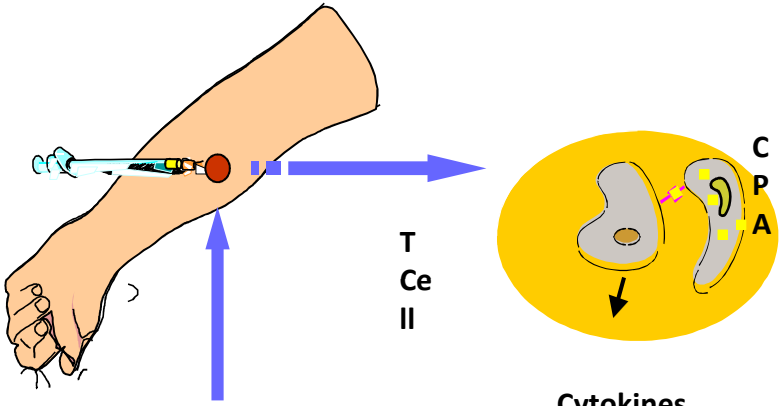
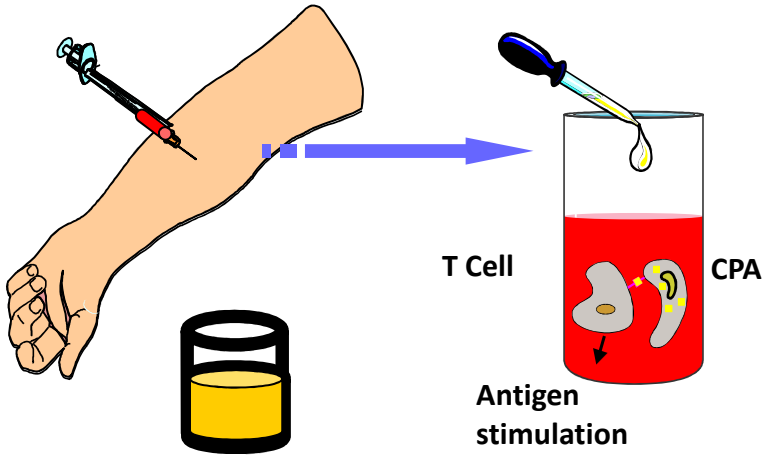


Cytokines release

Induration

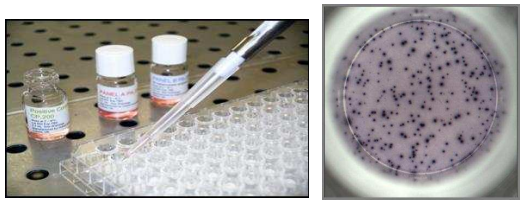
Inflammatory response



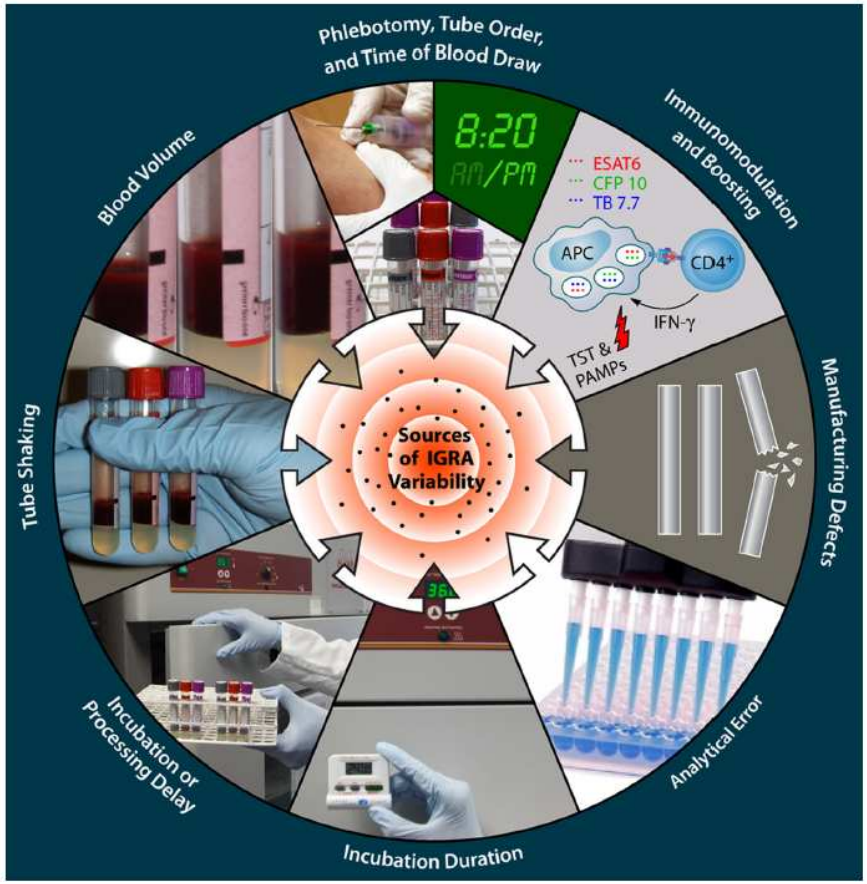
Antigen stimulation

IFN-γ detection

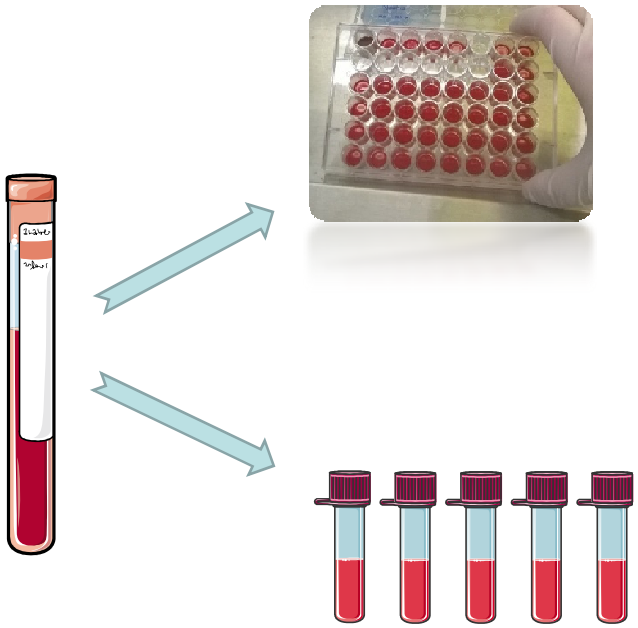
IFN-γ release



IGRAs nova generació

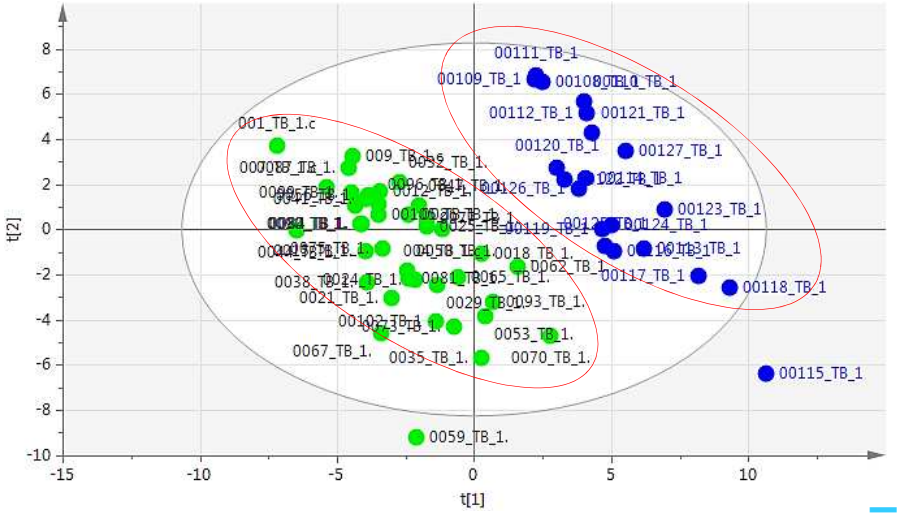


Banaei N, JCM 2016

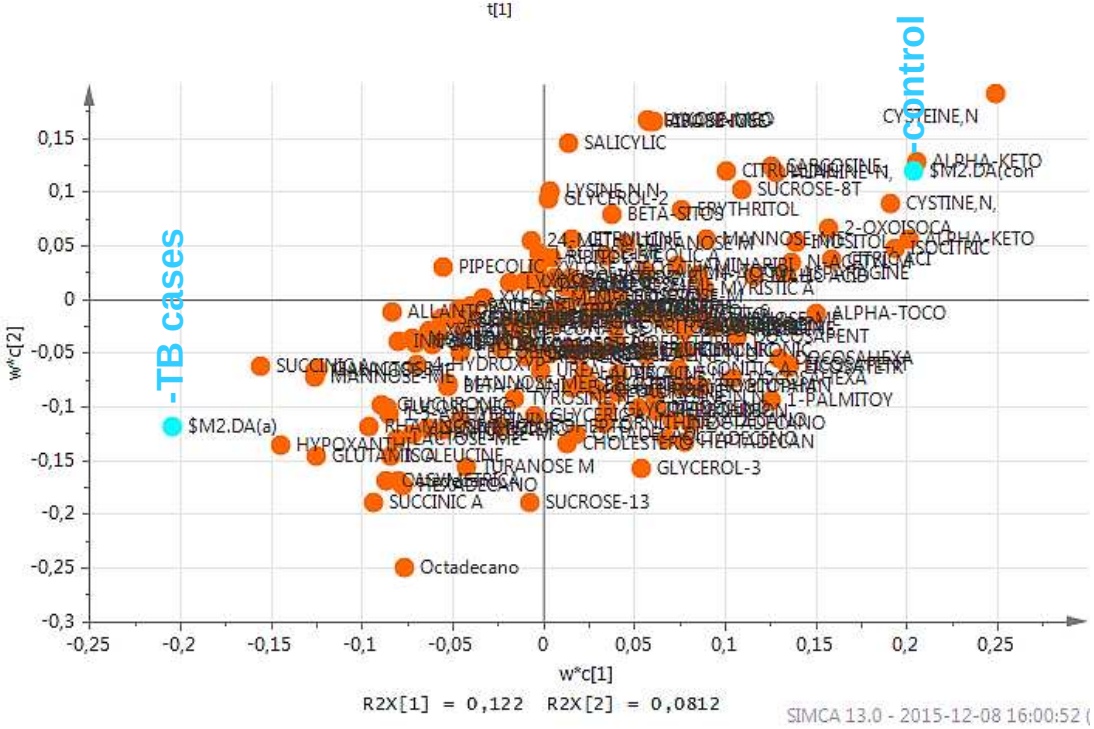


Nous antigens

Interacció hostatger microorganisme. Cerca de biomarcadors

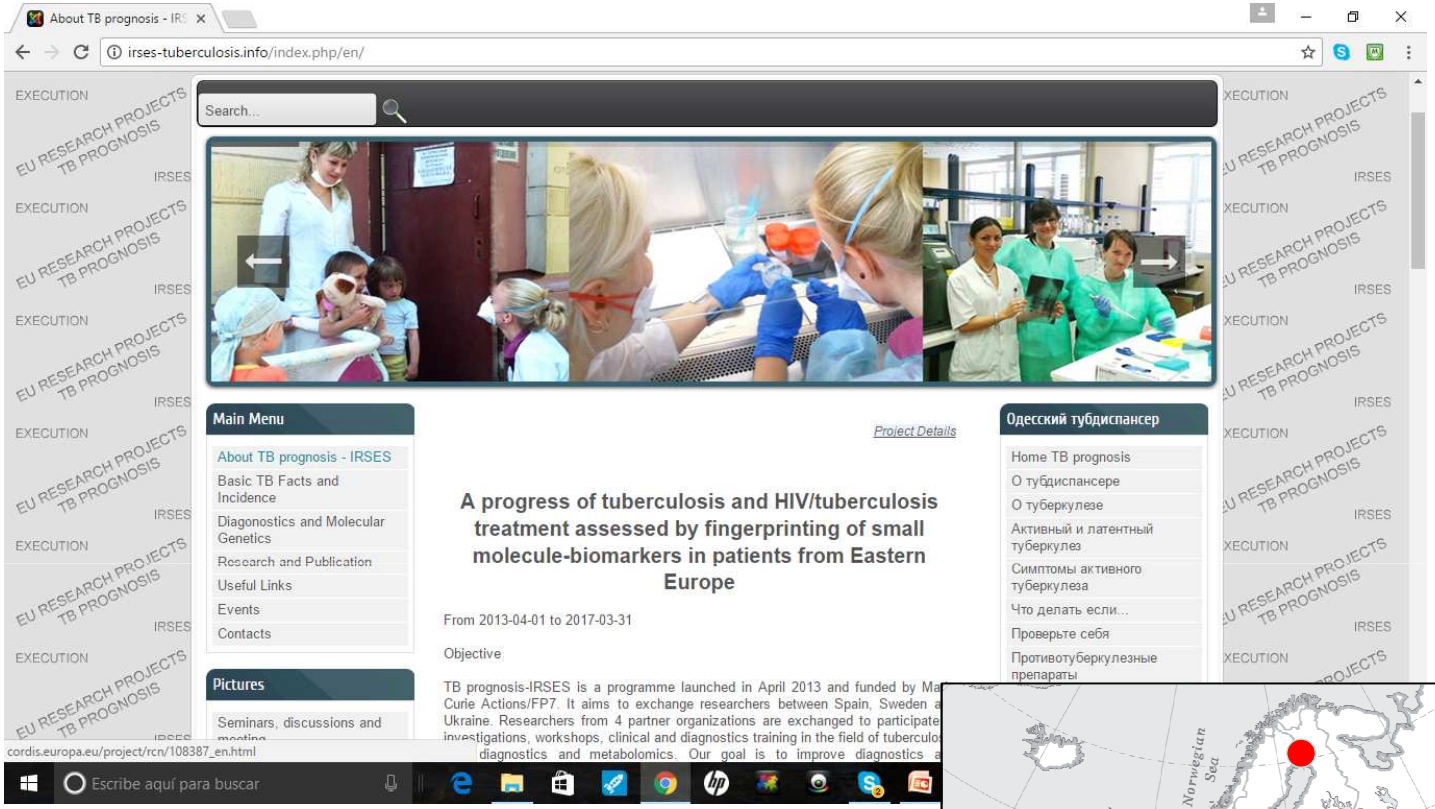


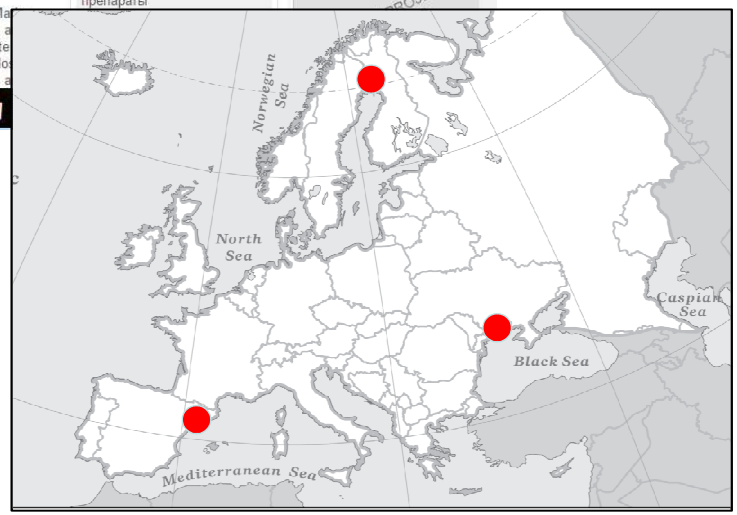
- TB cases, first time point
- control



- metabolites
- type of sample

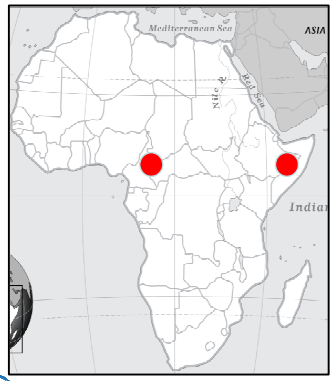
Conèixer altres realitats





TB clinic Odessa, Ukraine

EDCTP project
Hawassa
Ethiopia



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Gràcies!

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