
Developing the Tools Needed to Fight NTDs

Expanding the capacity for discovery

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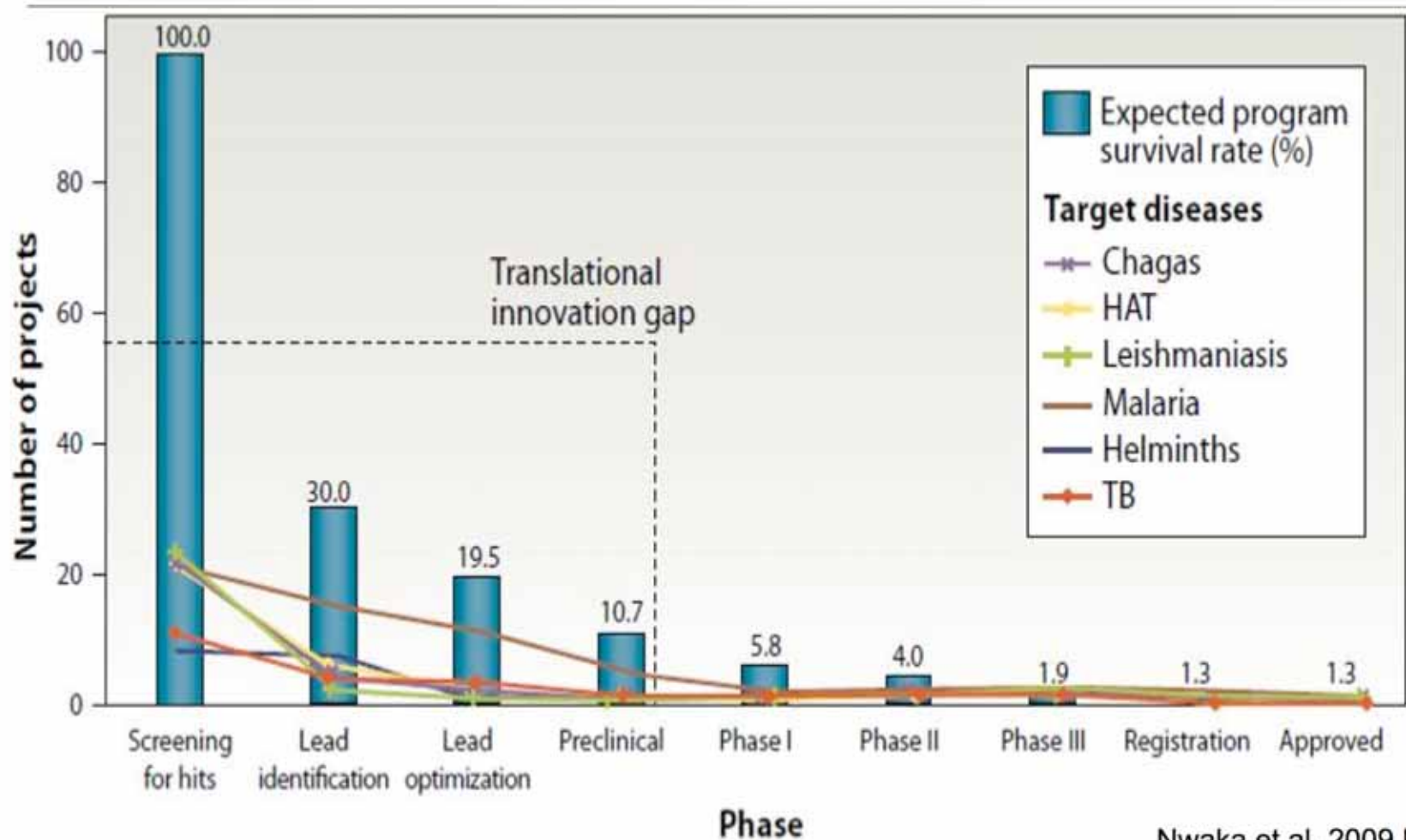
Outline of presentation

- Landscape for discovery for NTDs
- Gaps, challenges, opportunities
- Integrated discovery approaches
- ANDI – African Network for Drugs and Diagnostics Innovation

Product discovery landscape for NTDs

- PDPs, PPP and leveraged industry engagement
 - DNDi, MMV, FIND, iOWH: focus on one or few diseases
 - GSK Madrid, Novartis Singapore etc
 - SME activity in partnership
- Academia – screens, genomics, med chem/ADME
- Government & intergovernmental efforts
 - NIH, EC, other
 - TDR
- Emerging open source & open innovation approaches
- Funding from government, philanthropy

'Innovation gap' remain: e.g. drugs



Nwaka et al. 2009 PLoS NTDS

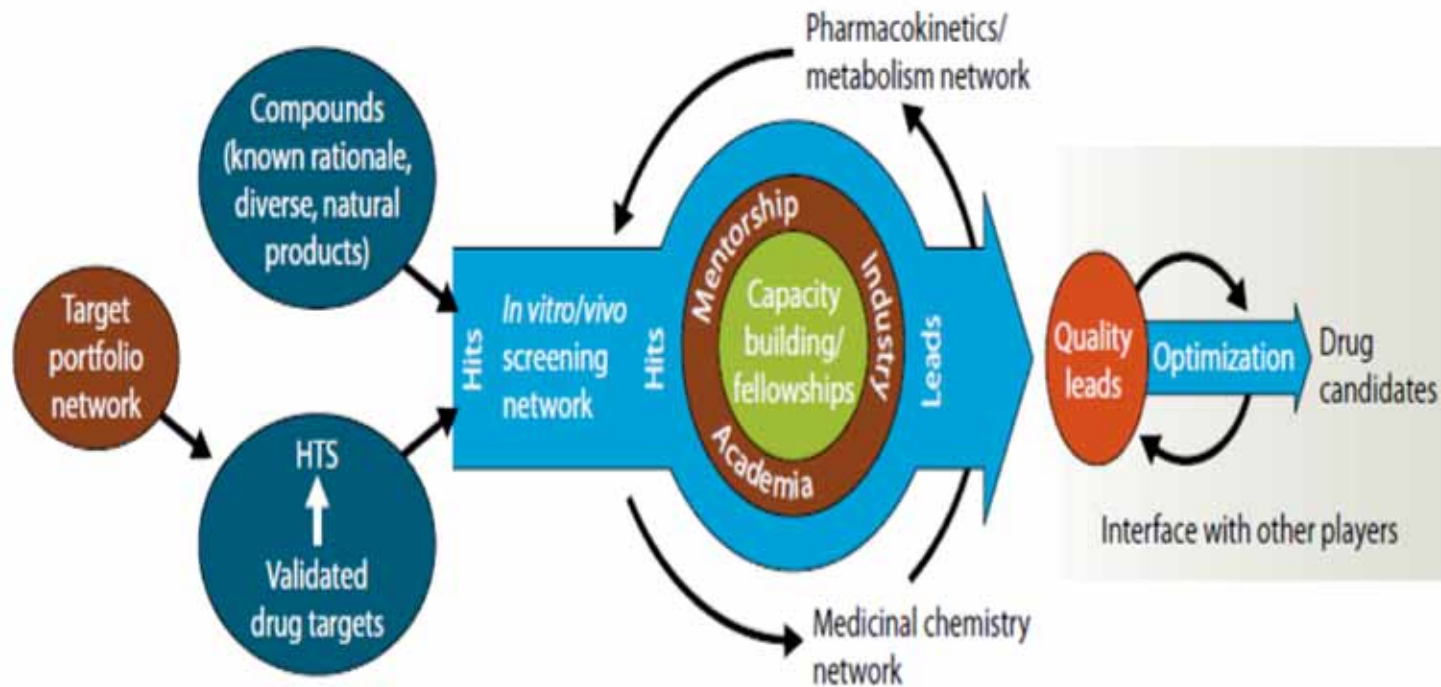
Other challenges

- Sustainability
 - Funding
 - Discovery techniques & technologies: screening models and other
 - Critical mass of researchers?
- Developing country involvement & leadership

A global framework for diseases that 'disproportionately affect developing countries'

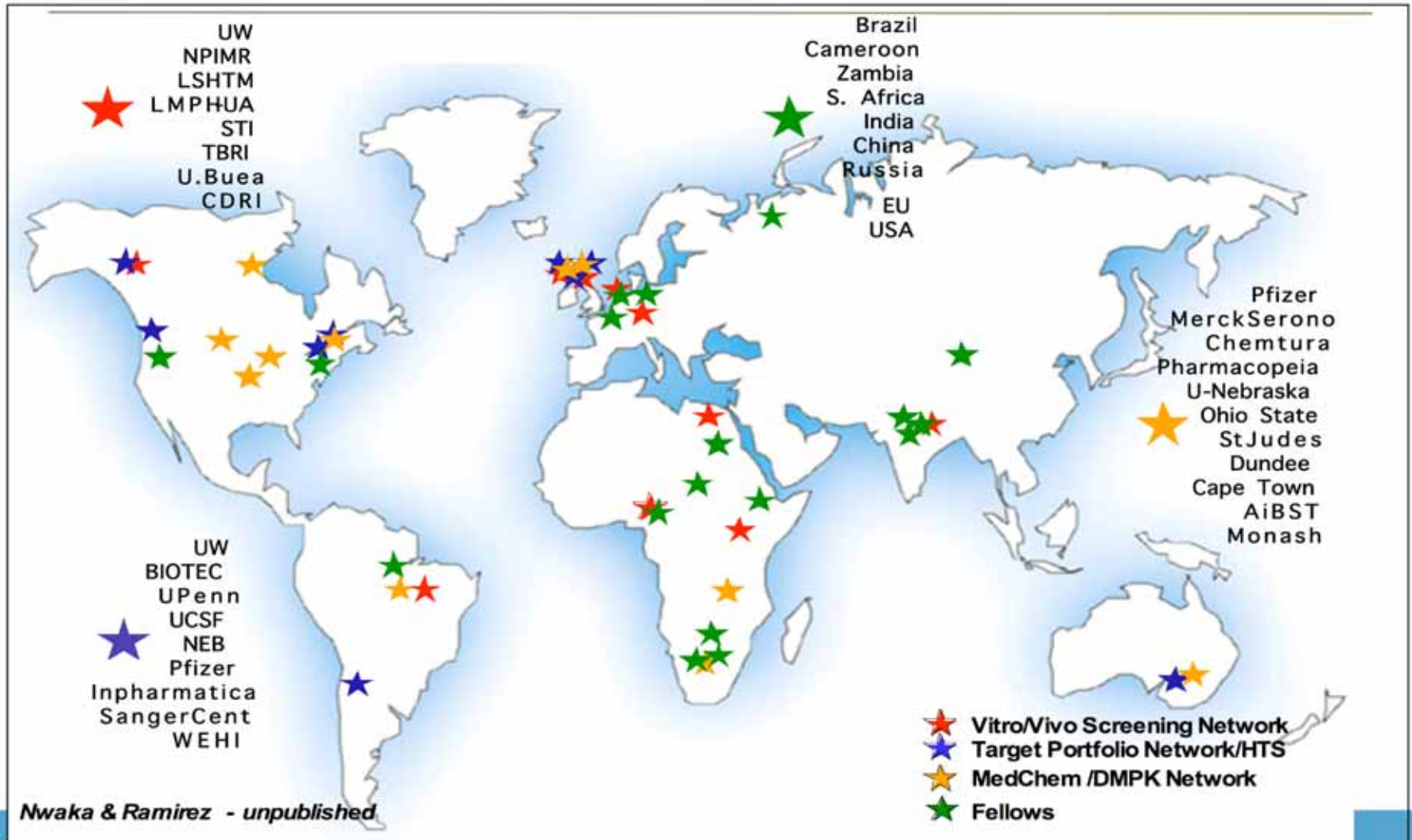
- Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property
 - Agreed by ALL countries in World Health Assembly Resolution 61.21
 - www.who.int/phi
- Designed to promote:
 - innovation
 - build capacity
 - improve access to innovation
 - mobilize resources

Integrated discovery networks can fill gap



Nwaka & Hudson, 2006

TDR North South discovery networks



Integrated target database www.tdrtarget.org

The TDR Targets Database v4

A chemogenomics resource for neglected tropical diseases

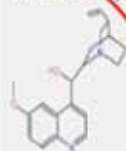
 Search

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New in this release

Chemical compounds



Example lists of compounds:

[GSK leads against malaria \(Gamo et al.\)](#)
[Novartis-GNF Malaria Box dataset](#)

Example lists of targets:

[Crowther et al. \(2010\)](#)
[H. tuberculosis](#)
[P. falciparum](#)
[T. brucei](#)
[T. cruzi](#)
[L. major](#)
[B. malayi \(Fama et al.\)](#)
[S. mansoni \(Callfrey et al.\)](#)

[View more at posted lists ...](#)

Disclaimer: these prioritized lists

Welcome!

The TDR Targets project seeks to exploit the availability of diverse datasets to facilitate the identification and prioritization of drugs and drug targets in neglected disease pathogens. This database functions both as a **website** where researchers can look for information on targets of interest, and as a **tool** for prioritization of targets in whole genomes. Using the TDRtargets database as a tool, researchers can quickly prioritize genes of interest by running simple queries (such as looking for small enzymes, or proteins with high quality structural models), assigning numerical weights to each query (in the history page), and combining these results to produce a ranked list of candidate targets.

Getting started

- Distinct forms are used to [search for targets](#), or [search for compounds](#).
- If you are a first time user and you want to leverage the full benefits of the database, you may want to browse our [slideshow tutorials](#).
- To examine and work with queries that you have previously run (for example to give scores to each query and then combine them to obtain a prioritized list of targets), click on [history](#).
- To examine and use queries that others have made publicly available, click on [posted lists of targets](#).
- To examine the entries in the TDR Targets Survey, click on [targets survey](#).

News

Identification of drug targets.

Posted: 24 Aug 2010

A paper describing the use of the TDR Targets database in the identification of attractive drug targets has been published in the [August 2010 issue of PLoS Neglected Tropical Diseases](#).

TDR Targets v4 release.

Posted: 10 Aug 2010

The fourth release of the TDR Targets database is out. This release includes new datasets (chemical compounds) and updated data across all areas of the database. Please check the [release notes](#) for additional details on the changes included in this release.
Enjoy!

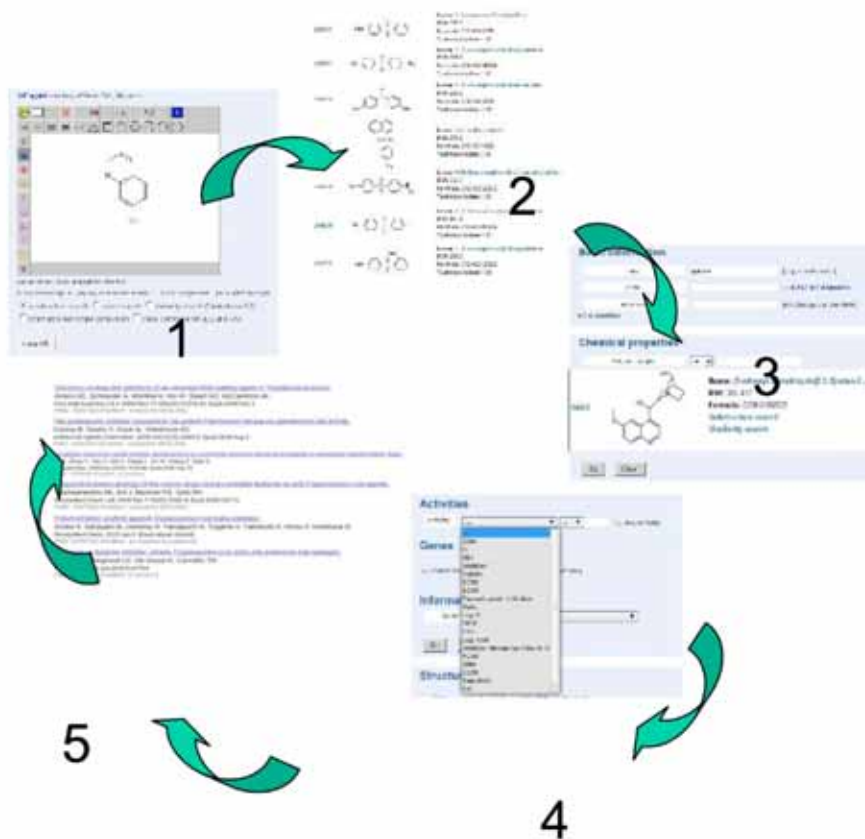
TDR Targets v3 release.

Posted: 24 Mar 2009

This is our third release, which brings increased data coverage for all genomes. Check the [release notes](#) for a detailed description of changes in this release.

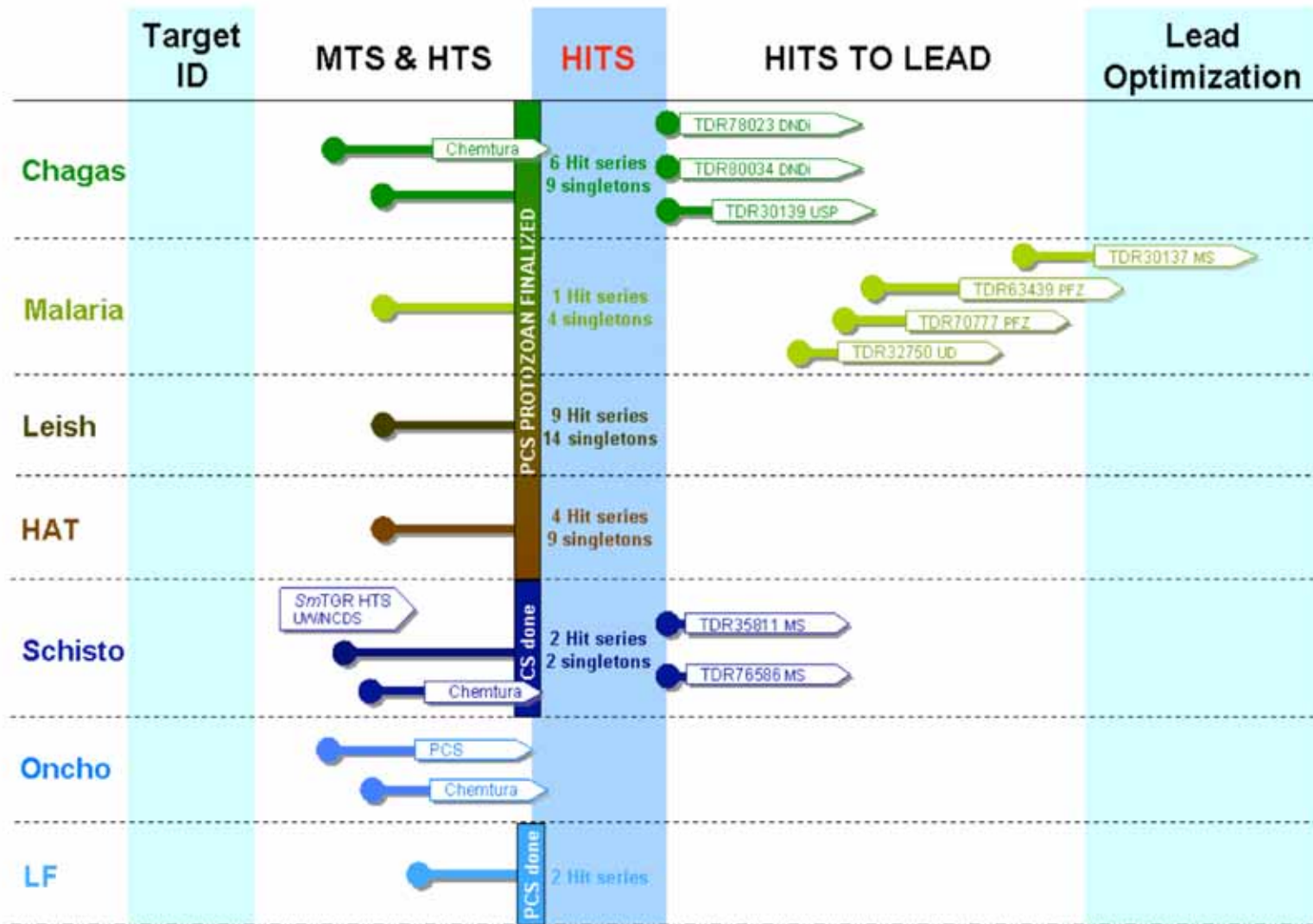
Supported by  For research on diseases of poverty
UNICEF • UNDP • World Bank • WHO

Integrated chemical & target searches



1. Substructure search
2. Similarity search
3. Text based search
4. Bioactivity data collect
5. Protein compound association

TDR drug discovery portfolio



DNDi=Drug for Neglected Diseases initiative, UD=University of Dundee, USP=University of Sao Paulo, MS=Merck Serono, PFZ=Pfizer, UW=University of Washington
 NCDS=National Center for Drug Screening, Shanghai, PCS=Purchase Compound Library, HTS=High Throughput Screening, SmTGR=S. mansoni thioredoxin glutathione reductase

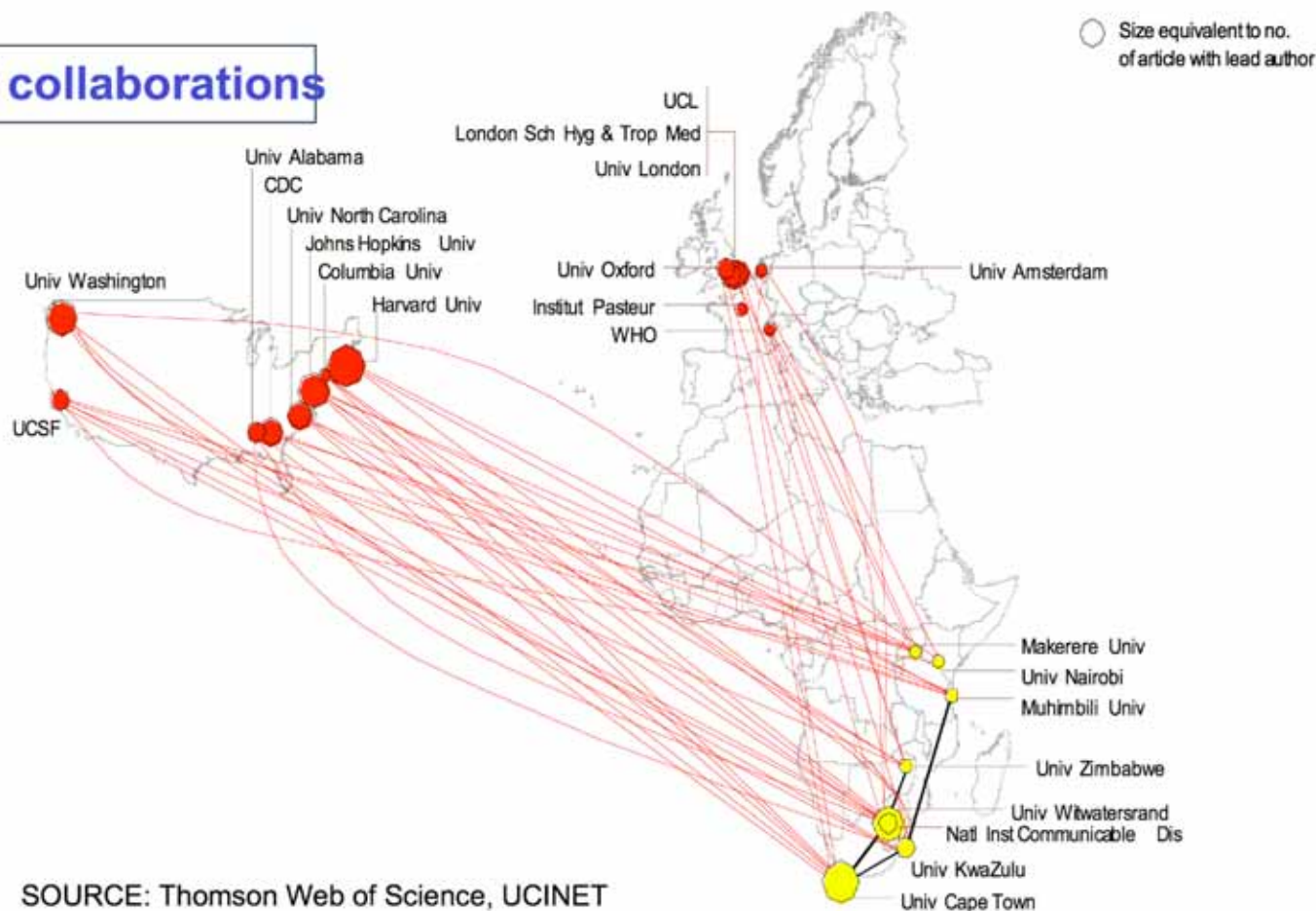
TDRs discovery network gave birth to regional innovation networks, exemplified by ANDI –African Network for Drugs and Diagnostics Innovation

a model that seeks to leverage existing capacity to build sustainable capacity in developing countries

But R&D collaborations biased externally

More internal collaboration required

HIV/AIDS collaborations



SOURCE: Thomson Web of Science, UCINET

ANDI mission & vision

Mission Statement



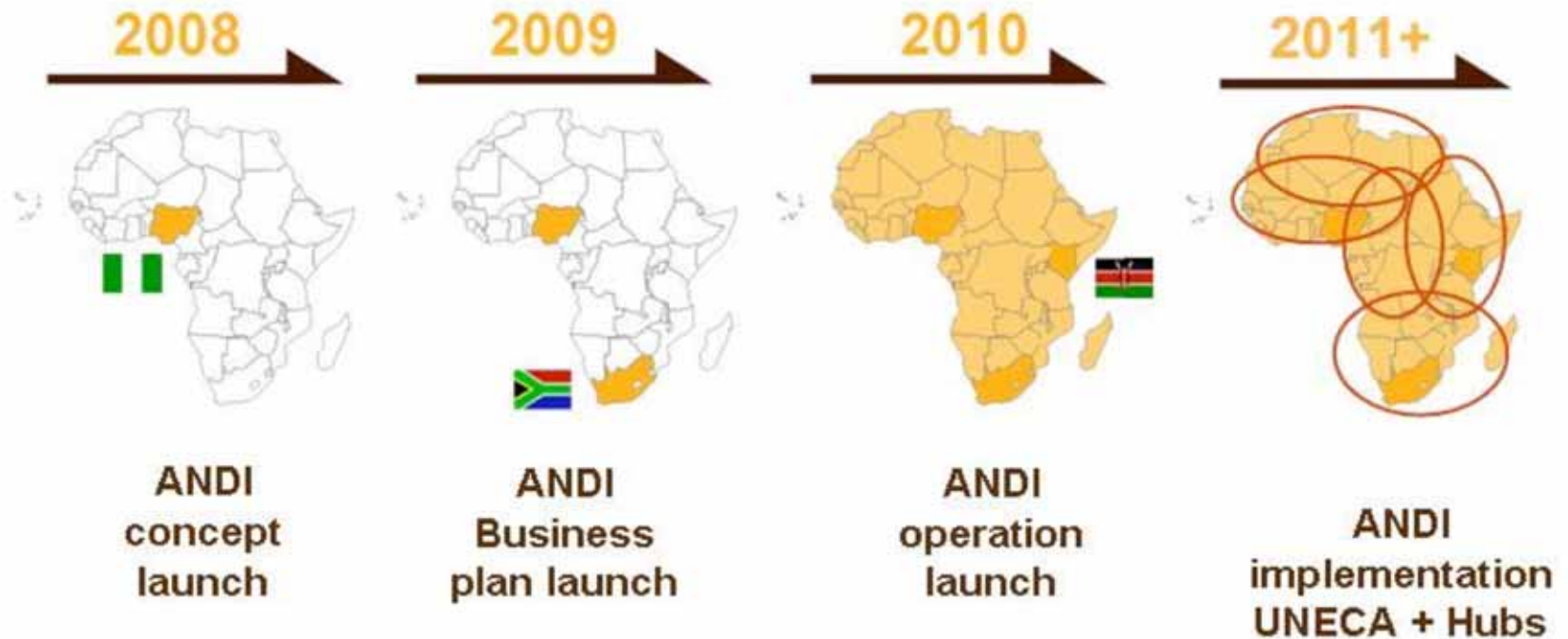
"To promote and sustain **African-led health product innovation** to address African public health needs through the assembly of **research networks**, and building of capacity to support **human and economic development**"

Vision



"Creating a **sustainable** platform for **R&D innovation** in Africa to address **Africa's own health needs**"

Evolution of ANDI



Evolution of ANDI

● WIDELY AVAILABLE

- Basic exploratory research
- Natural products/traditional medicine
- Hit identification
- Clinical studies
- Marketing

▲ AVAILABLE

- Lead identification and optimization
- Management of intellectual property
- Regulatory expertise
- Manufacturing
- Phase IV/Pharmacovigilance

■ LIMITED AVAILABILITY:

- Preclinical toxicology/safety pharmacology
- Raw material processing

ANDi
Health Innovation for Development

ANDi
Health Innovation for Development

**Strategic and business plan
for the African Network for
Drugs and Diagnostics
Innovation (ANDI)**

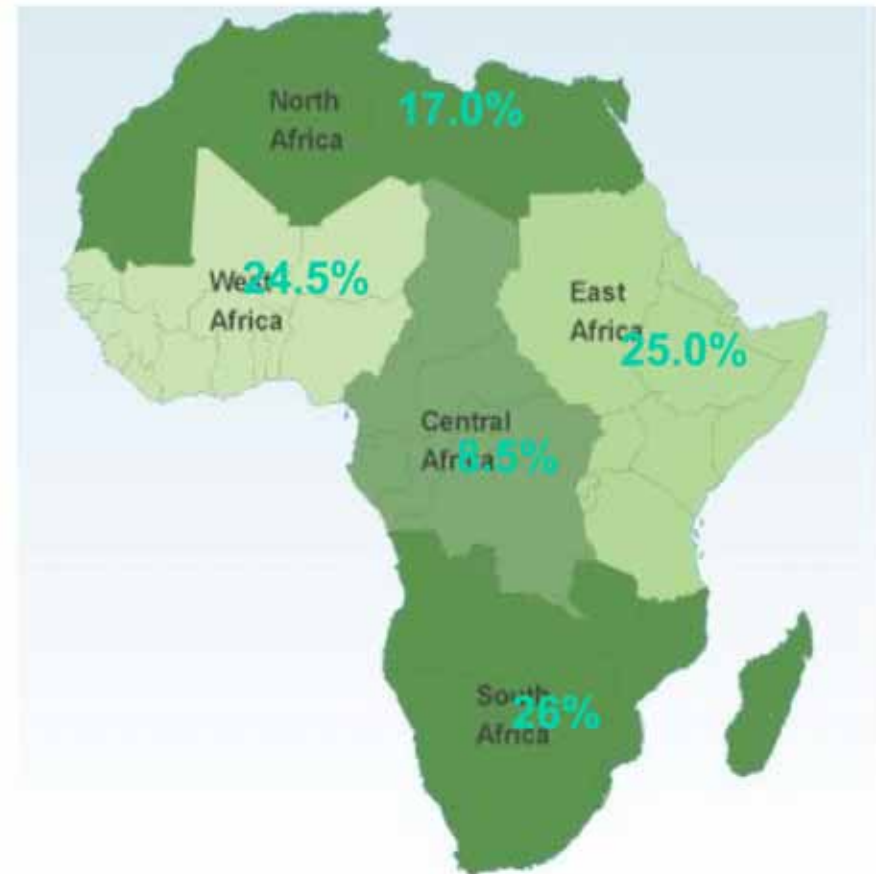
World Health Organization TDR For research on diseases of poverty

Technical progress to date

- Mapping of pan African Centers of Excellence in health innovation based on criteria
 - 117 applications received
 - Review of applications finalized
 - Outcome to be announced at ANDI meeting Oct 2011
- Call for projects
 - 207 applications received
 - 50 projects short-listed for full proposal
- ANDI knowledge database being developed

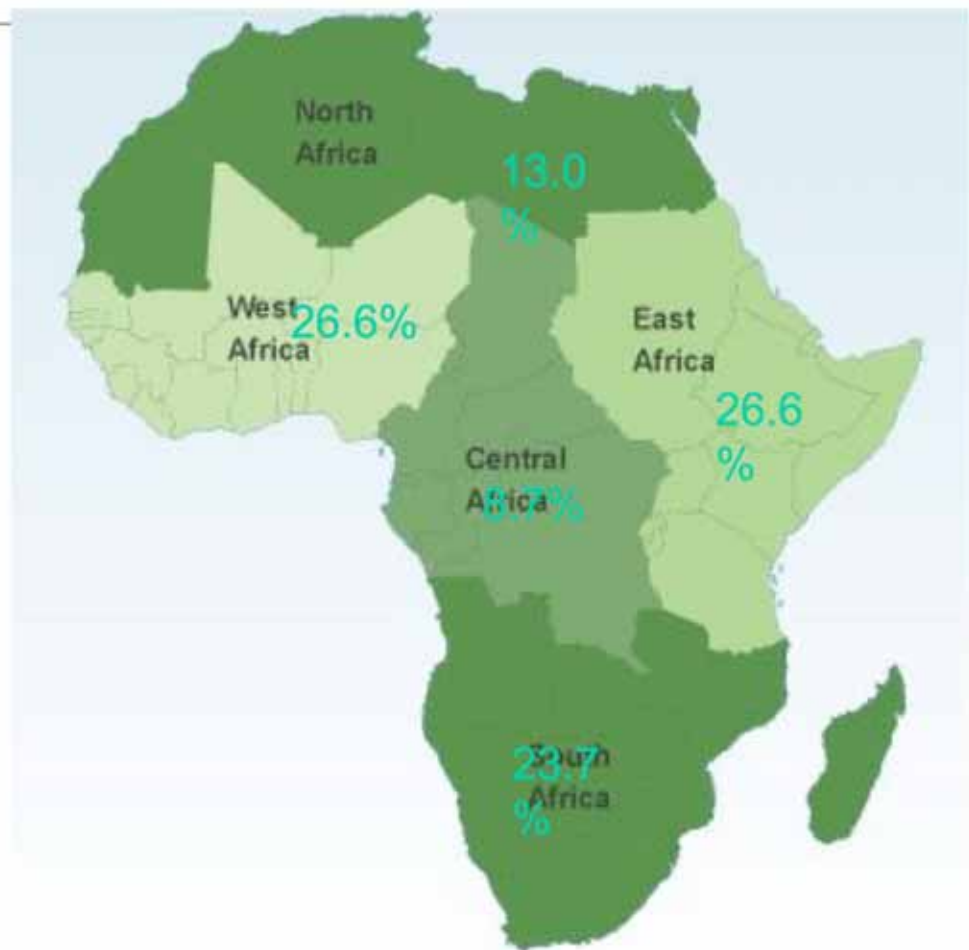
117 CoE applications received by region

- Applications from 26 countries
- R&D for drugs, vaccines, diagnostics, medical devices, technologies etc...
- Manufacturing & commercialization
- Public & private sectors
- Capacity for innovation exist in Africa

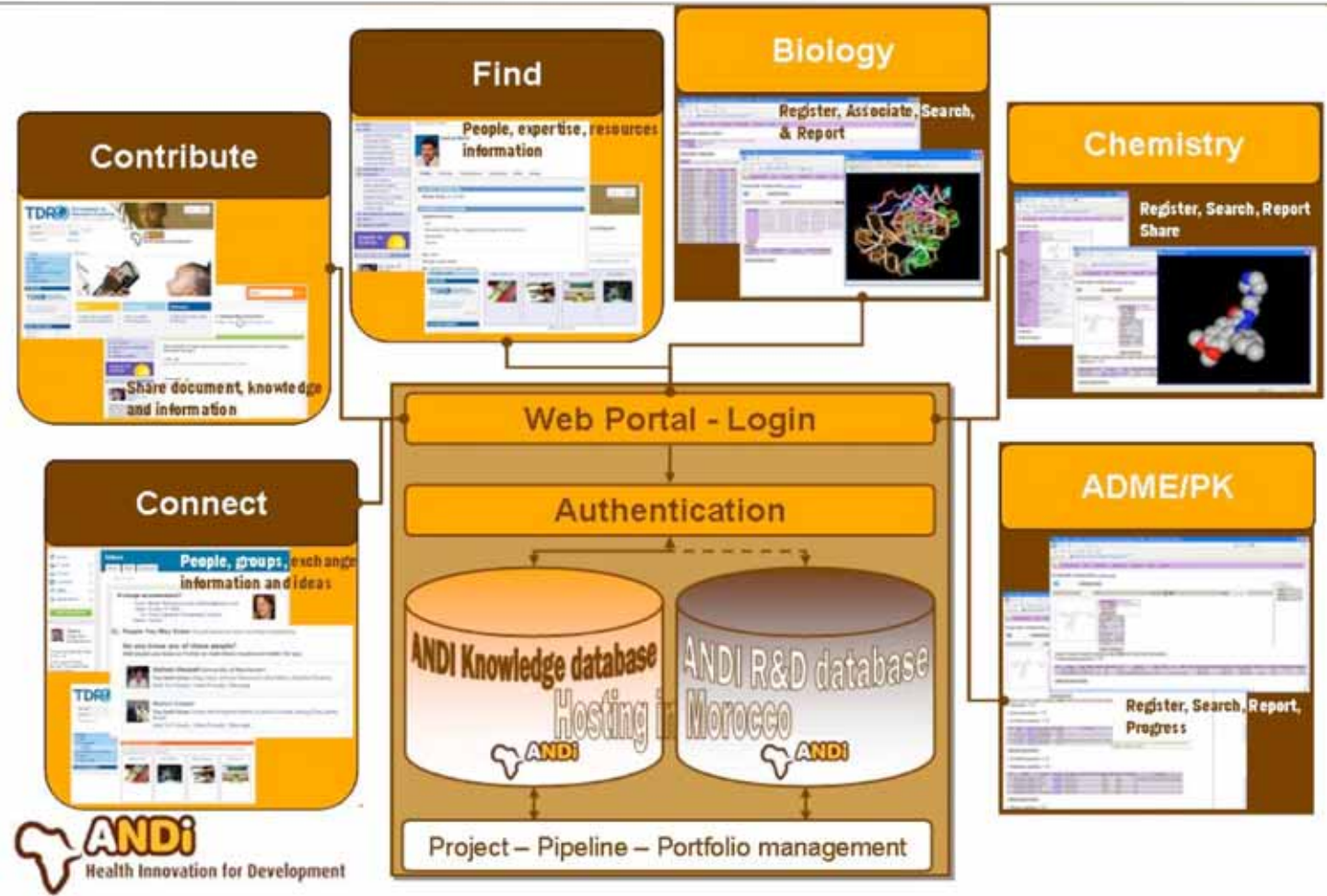


207 project applications received by region

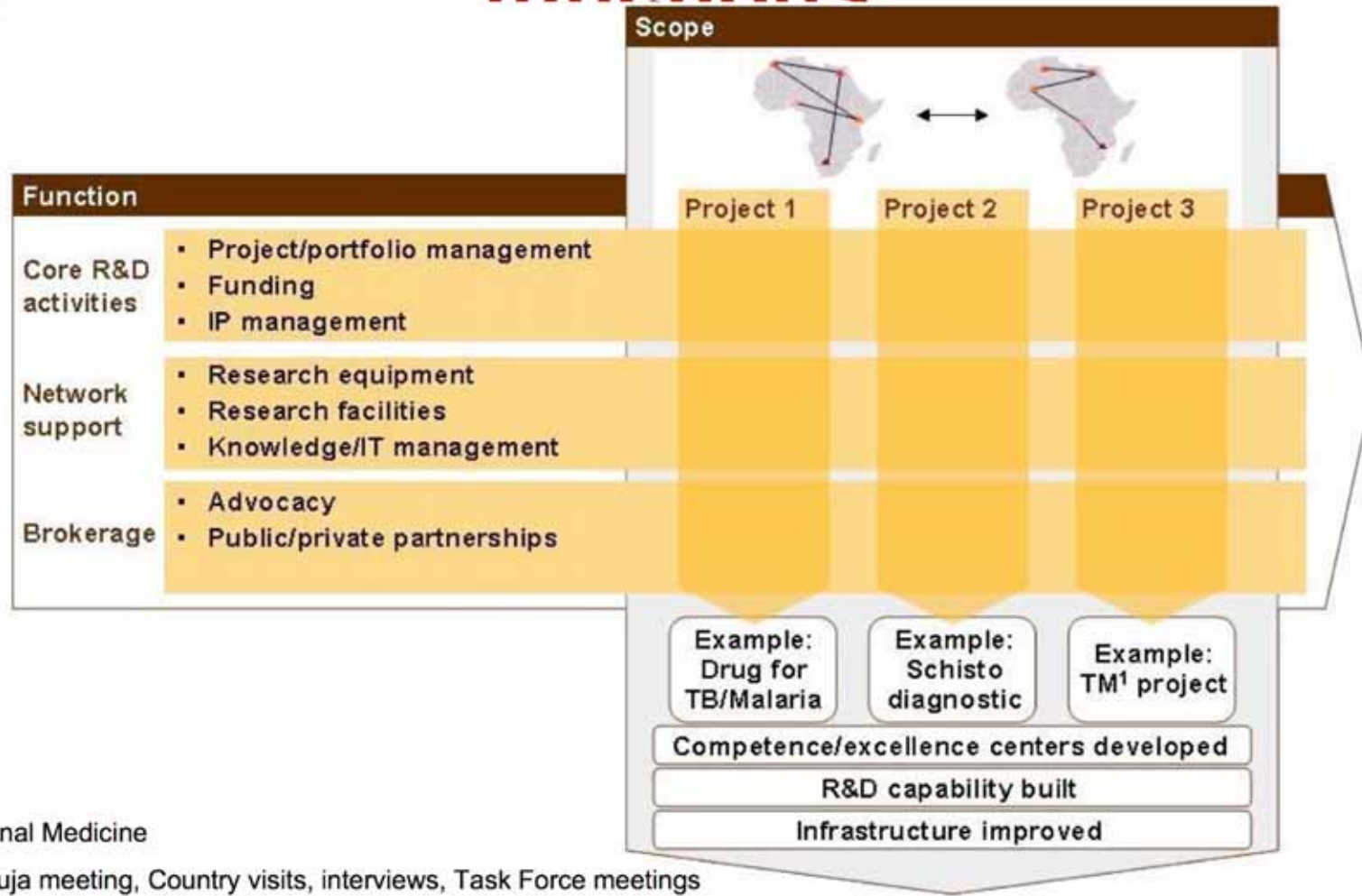
- Applications from 33 countries
- R&D for drugs, vaccines, diagnostics, medical devices, technologies etc
- Manufacturing & commercialization (Public & private sectors)
- Another evidence for existence of innovation capacity in Africa



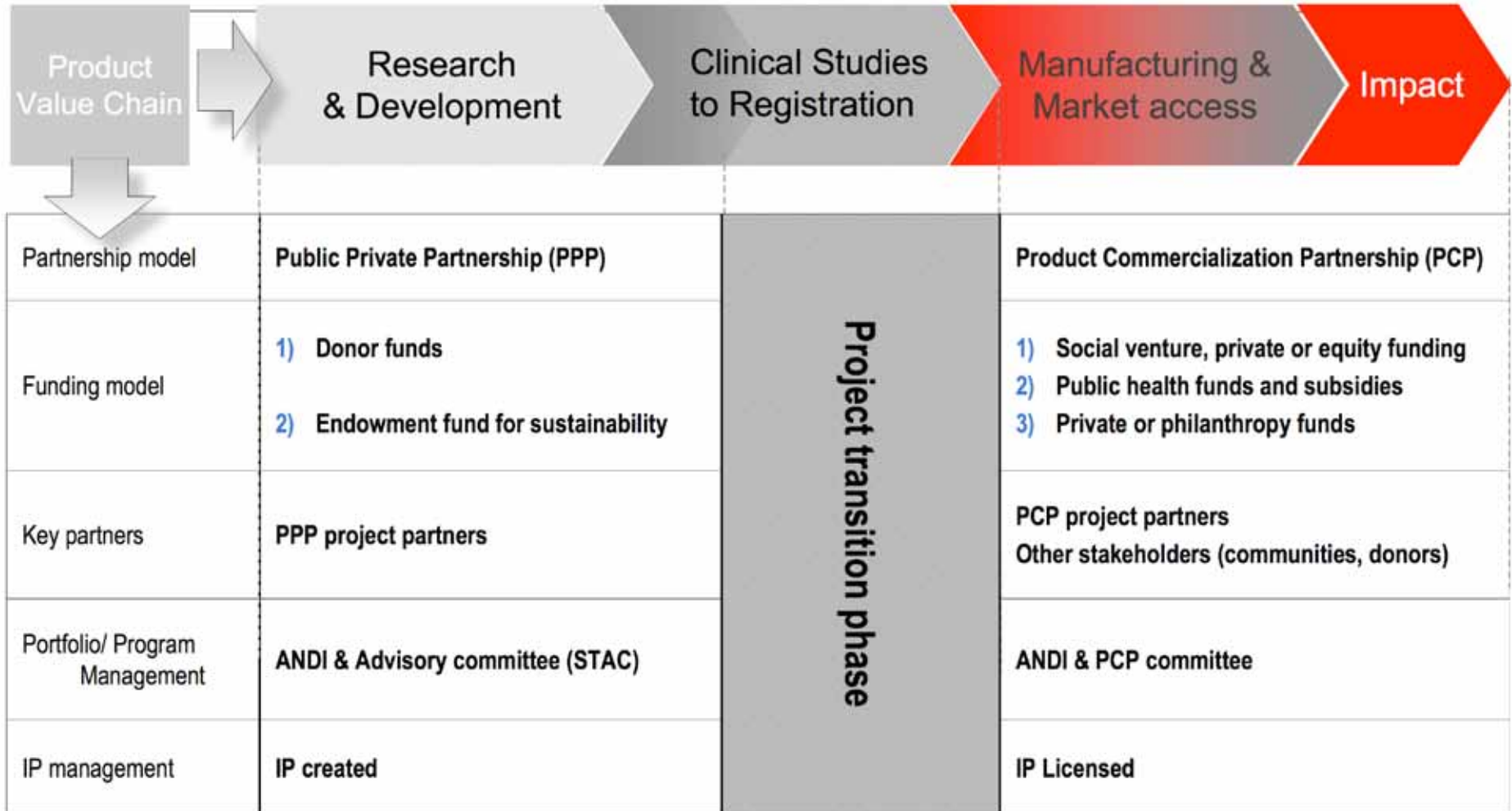
ANDI R&D and Knowledge databases



ANDI business model – core functions

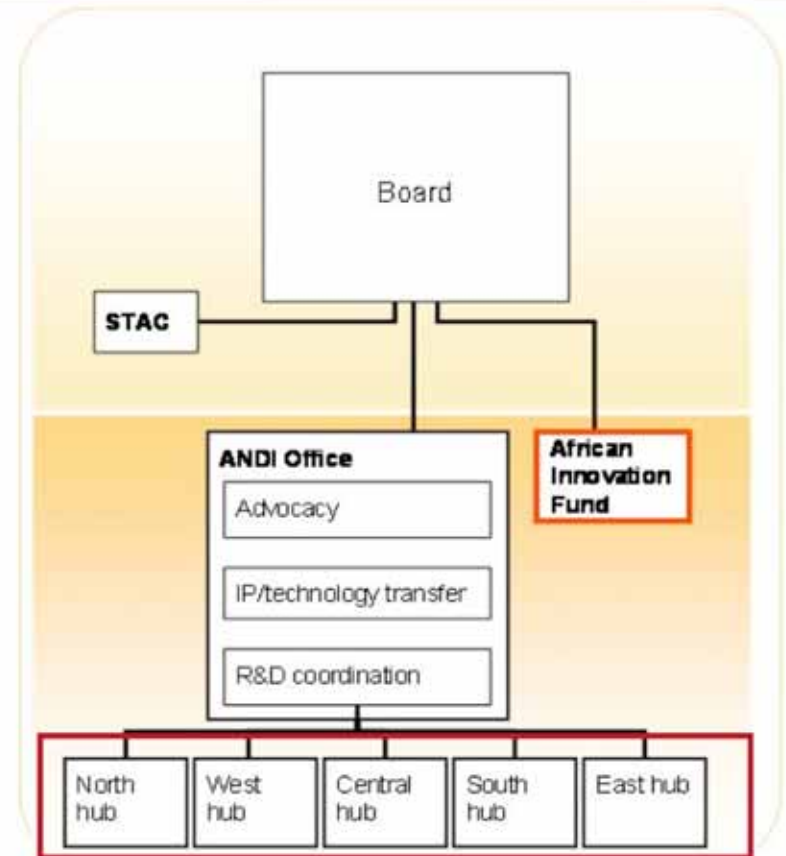


Proposed financing & coordination scheme links R&D to access



Governance

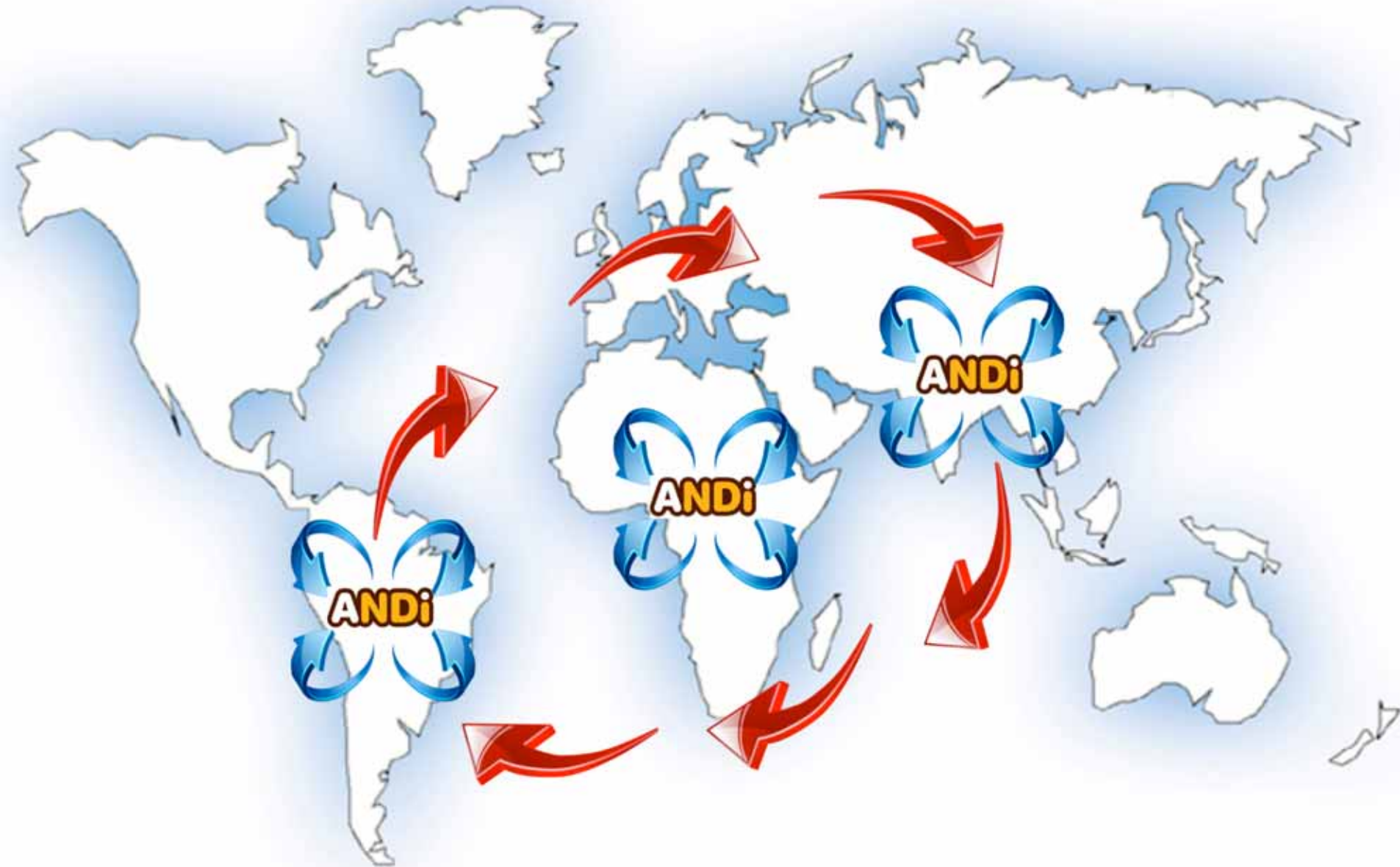
- Hosting Agency
 - UNECA
- Board
 - Co-Chaired by:
 - Minister Mugo of Kenya (Health)
 - Minister Pandor of South Africa (S&T)
 - 12 members with >75% from Africa
 - WHO, AfDB, UNECA
- Secretariat
 - Operates through regional hubs



Key challenge



Extending ANDi concept to other regions



Summary

- Advances of last decade have to be maintained
- Integrated and coordinated approaches that share resources & lessons across disease is critical for NTDs
- Regional networks such as ANDI are a mechanism to stimulate increased regional involvement, investment and sustainability
- Opportunities exist to link networks and translational research to other initiatives

Acknowledgement

- Institutions involved in TDR North South discovery network
- ANDI task force
- WHO incl. TDR, AFRO, EMRO
- Economic Commission for Africa (UNECA)
- African Development Bank (AfDB)
- European Community (EC)
- African Union (AU)
- African institutions & scientists
- Countries that have hosted ANDI stakeholders and task force meetings -
Nigeria, South Africa, Kenya, Egypt, Burkina Faso