

Neglected Diseases Selected for OSDD India

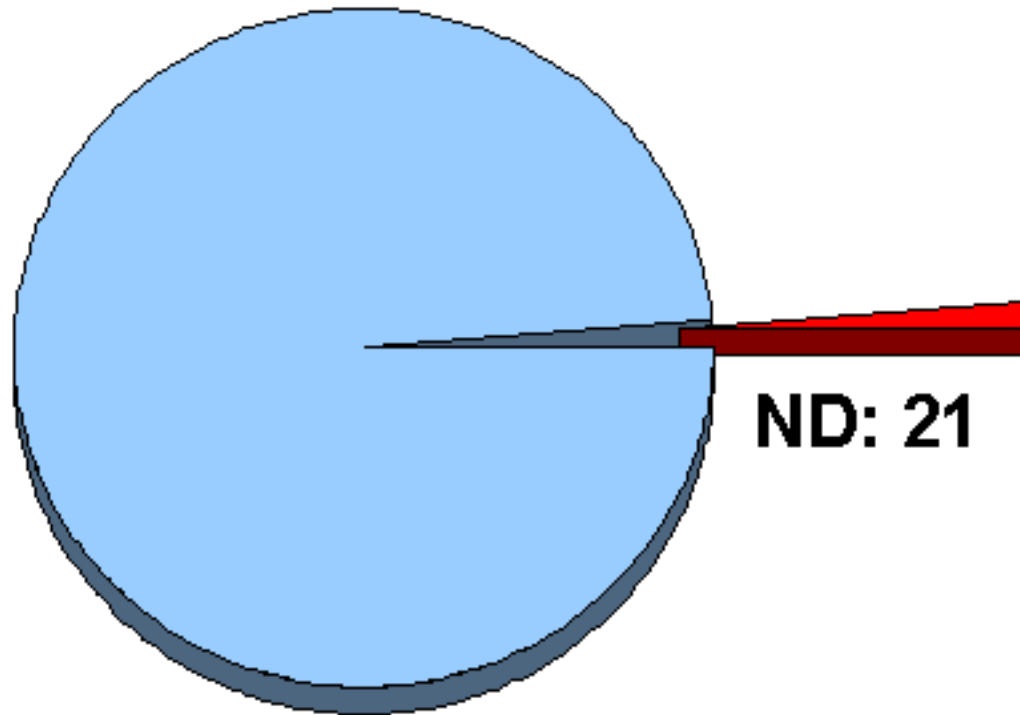
Tuberculosis

Leishmania

Malaria

Filaria

Total number of new drugs developed from 1975-2004: 1,556

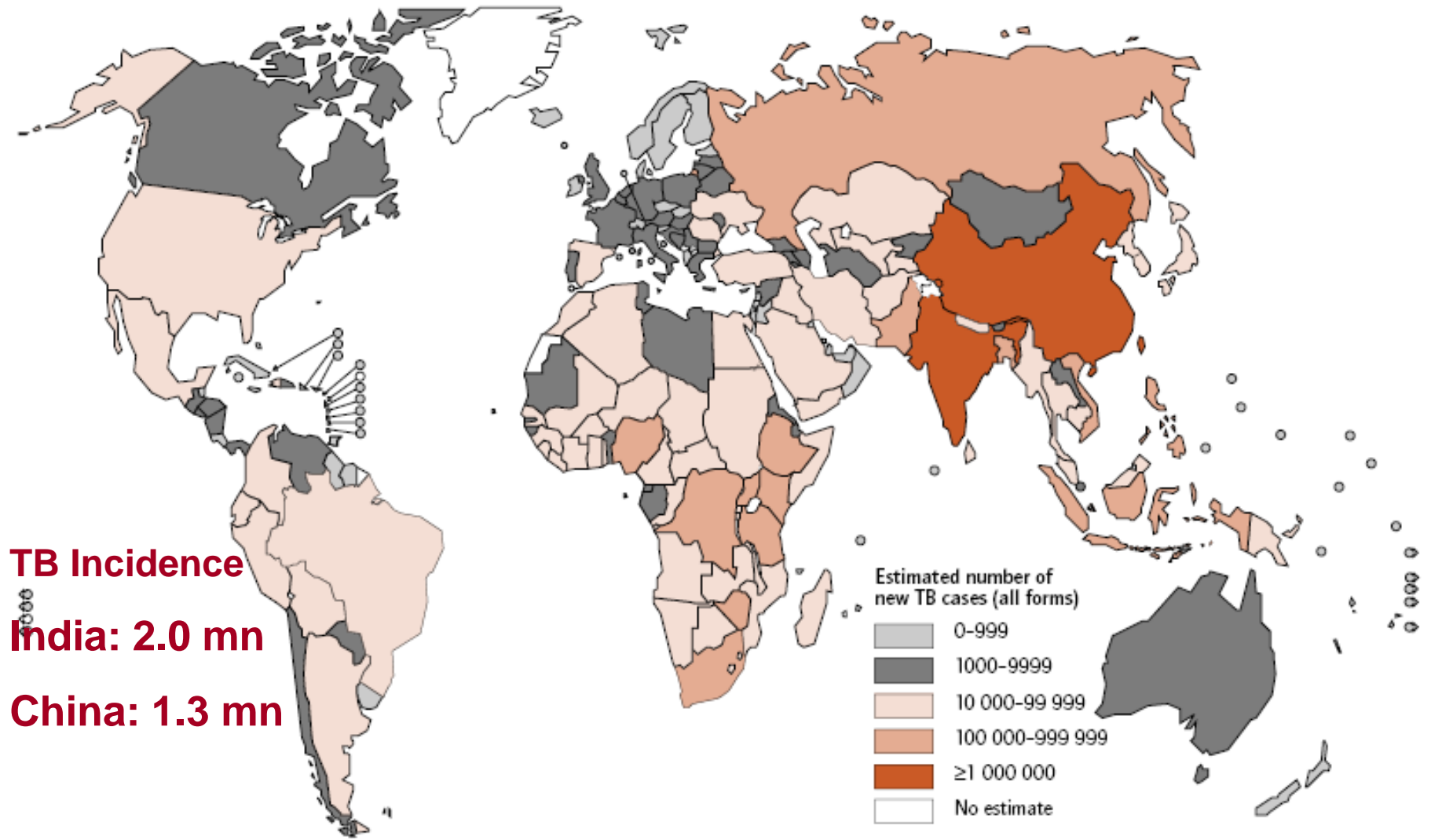


Tropical diseases and tuberculosis account for **12%** of the global disease burden but only **1.3%** of new drugs developed.

Source: Chirac P, Torreale E, et al. *Lancet*. In press.

ND: Neglected Diseases

Estimated number of new TB cases, 2007

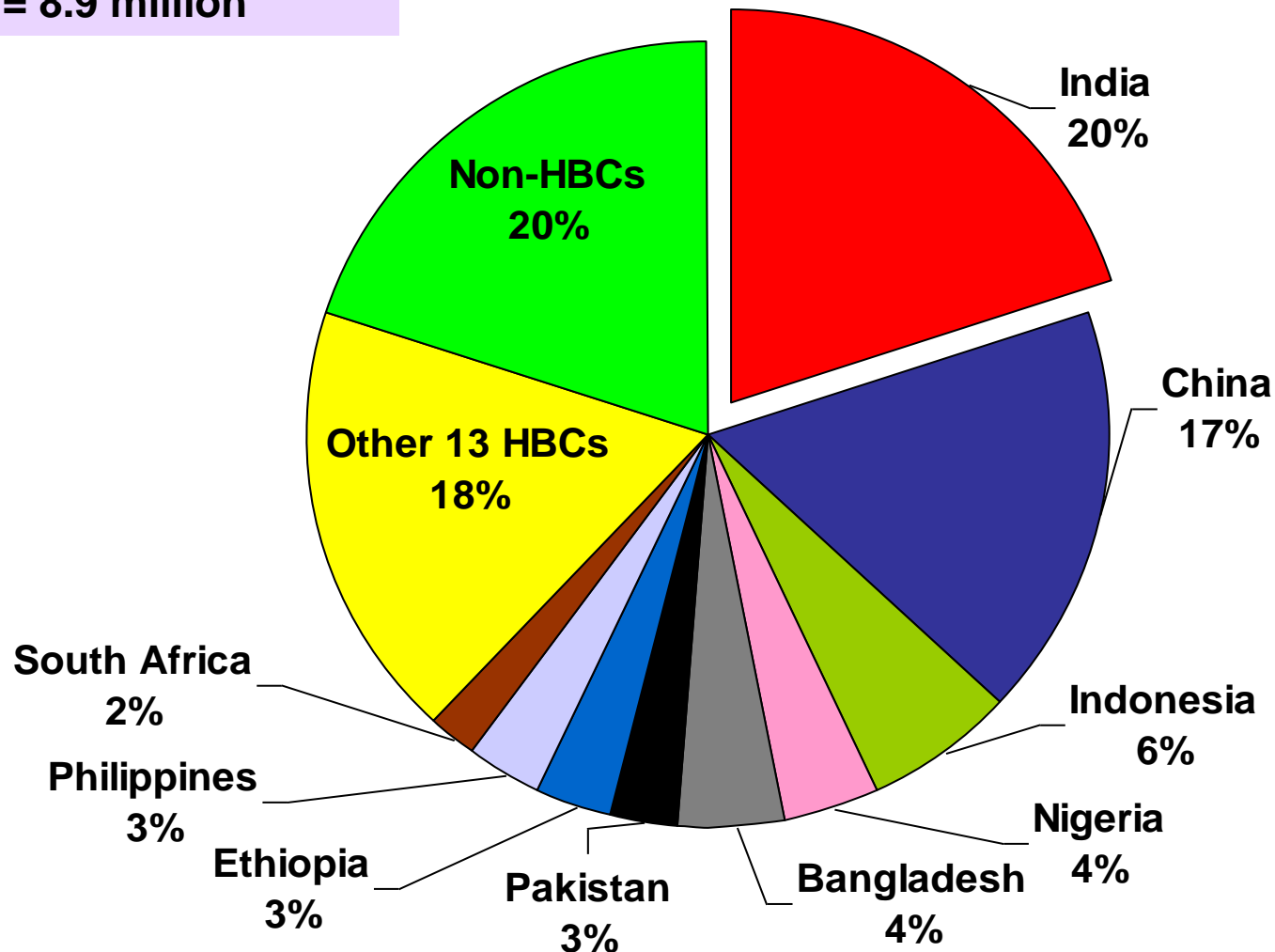


1 Indian die of TB every 2 mins (3,31,000 deaths per year)

Source: World Health Organisation / TRC

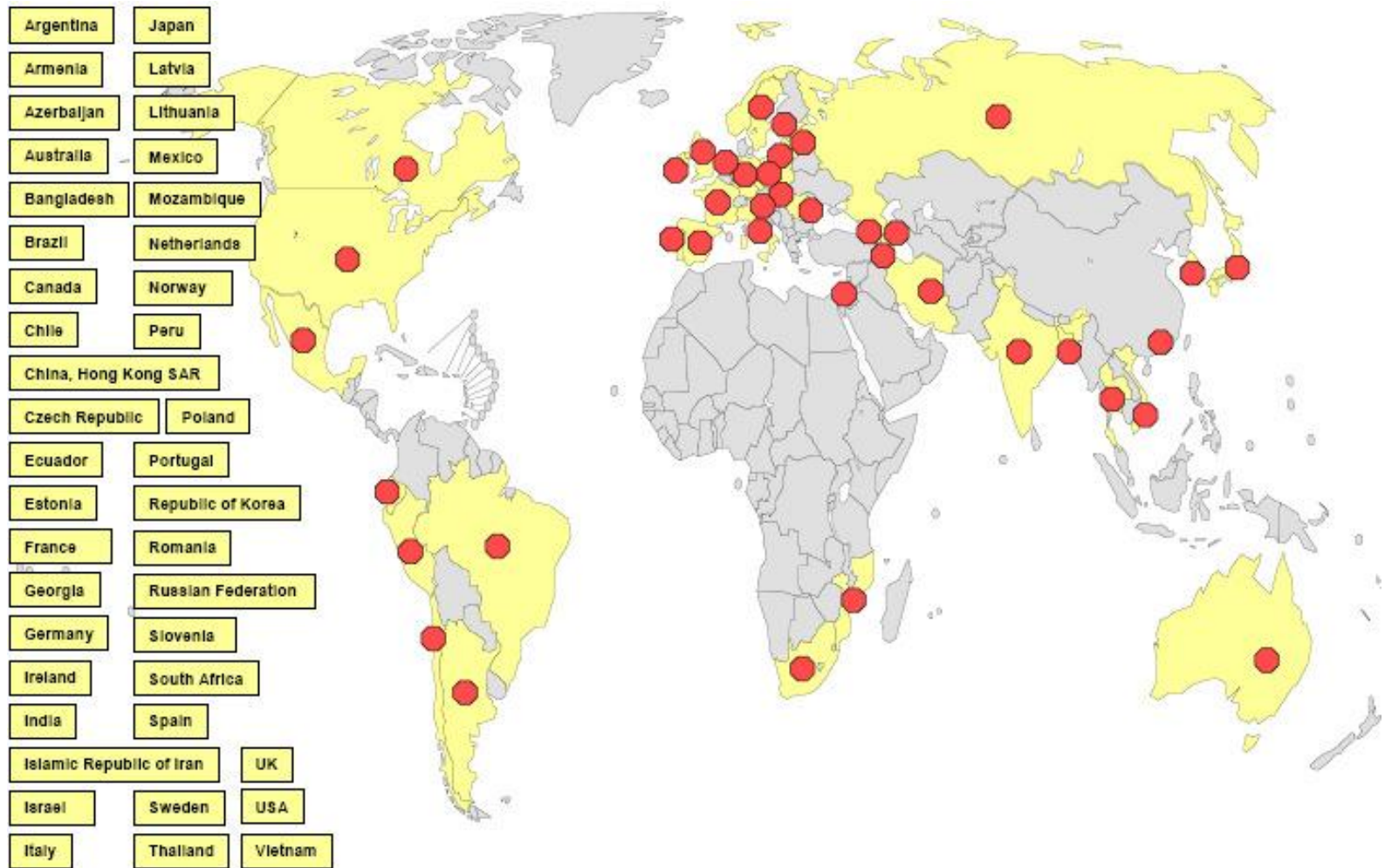
India is the highest TB burden country globally accounting for one fifth of the global incidence

Global annual incidence
= 8.9 million



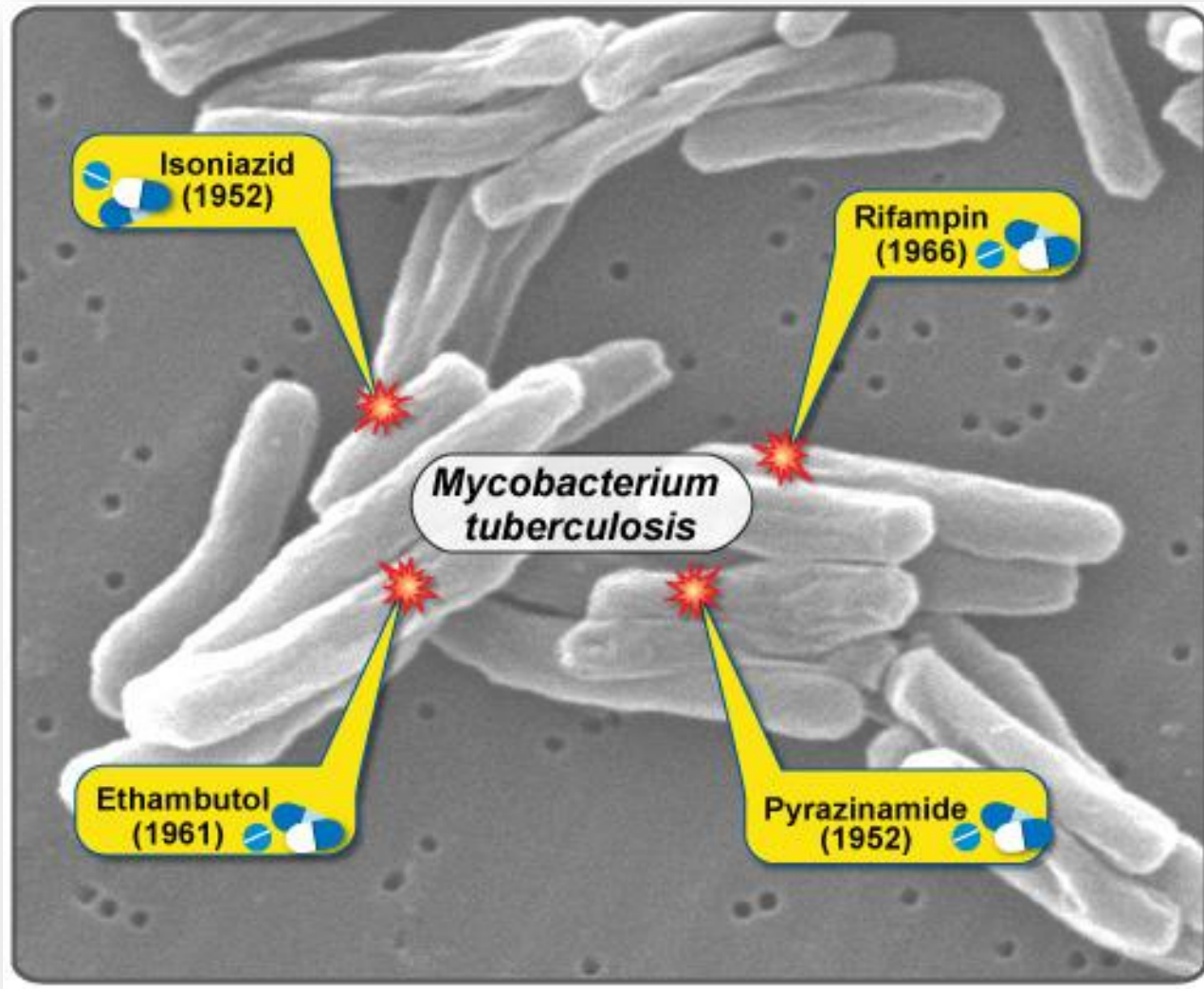
Source: WHO Geneva; WHO Report: Global Tuberculosis Control; Surveillance, Planning and Financing

41 Countries with XDR TB



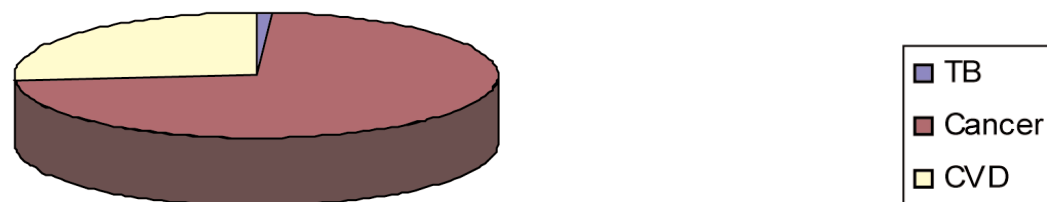
Source: World Health Organisation

First-Line Treatment of TB for Drug-Sensitive TB

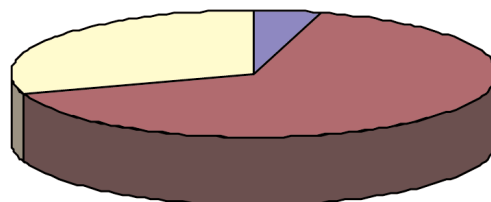


Drug pipelines for TB and for “more profitable” diseases

a) Number of drugs in clinical stage of development



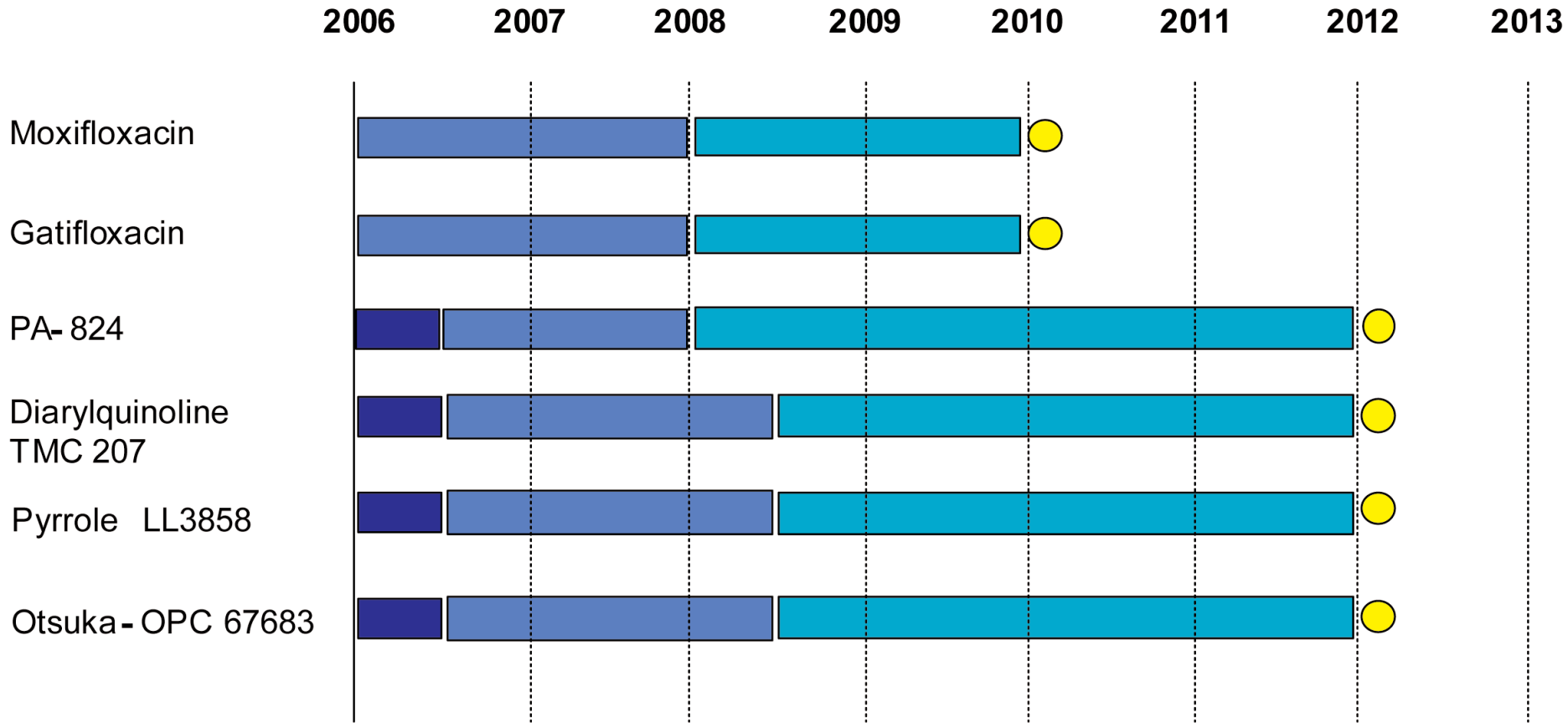
b) Number of pharmaceutical & biotech companies involved in drugs development projects



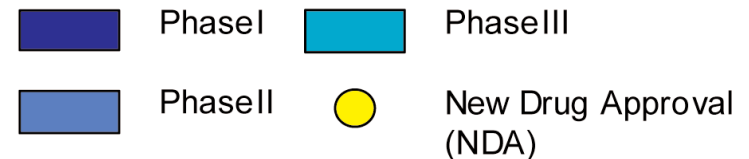
	TB	Cancer	Cardiovascular diseases
No. of drugs under development	6	399*	146*
No. of pharma companies	12	178*	82*

Source: Casenghi M, DEVELOPMENT OF NEW DRUGS FOR TB CHEMOTHERAPY Analysis of the current drug pipeline

Expected timelines towards approval of candidate drugs currently in clinical stage of development



Source: Casenghi M, DEVELOPMENT OF NEW DRUGS FOR TB CHEMOTHERAPY Analysis of the current drug pipeline



The promise of The Human Genome sequence

- The sequencing of the Human Genome created stir in the scientific community with the promise to make a remarkable difference to healthcare
- *Mycobacterium tuberculosis* genome was sequenced 10 years ago
- With both the genome sequences available to the scientific community, no effective therapy/drug has been discovered!

Deciphering the biology of *Mycobacterium tuberculosis* from the complete genome sequence

S. T. Cole*, R. Brosch*, J. Parkhill, T. Garnier*, C. Churcher, D. Harris, S. V. Gordon*, K. Eiglmeier*, S. Gas*, C. E. Barry III†, F. Tekaiia‡, K. Badcock, D. Basham, D. Brown, T. Chillingworth, R. Connor, R. Davies, K. Devlin, T. Feltwell, S. Gentles, N. Hamlin, S. Holroyd, T. Hornsby, K. Jagels, A. Krogh§, J. McLean, S. Moule, L. Murphy, K. Oliver, J. Osborne, M. A. Quail, M.-A. Rajandream, J. Rogers, S. Rutter, K. Seeger, J. Skelton, R. Squares, S. Squares, J. E. Sulston, K. Taylor, S. Whitehead & B. G. Barrell

Sanger Centre, Wellcome Trust Genome Campus, Hinxton CB10 1SA, UK

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† Tuberculosis Research Unit, Laboratory of Intracellular Parasites, Rocky Mountain Laboratories, National Institute of Allergy and Infectious Diseases, National

Institutes of Health, Hamilton, Montana 59840, USA

§ Center for Biological Sequence Analysis, Technical University of Denmark, Lyngby, Denmark

Sequence of the Human Genome

Er, 1* Mark D. Adams, 1 Eugene W. Myers, 1 Peter W. Li, 1 Richard J. Mural, 1
on, 1 Hamilton O. Smith, 1 Mark Yandell, 1 Cheryl A. Evans, 1 Robert A. Holt, 1
Gocayne, 1 Peter Amanatides, 1 Richard M. Ballew, 1 Daniel H. Huson, 1
ortman, 1 Qing Zhang, 1 Chinnappa D. Kodira, 1 Xiangqun H. Zheng, 1 Lin Chen, 1
upski, 1 Gangadharan Subramanian, 1 Paul D. Thomas, 1 Jinghui Zhang, 1
Miklos, 2 Catherine Nelson, 3 Samuel Broder, 1 Andrew G. Clark, 4 Joe Nadeau, 5
asick, 6 Norton Zinder, 7 Arnold J. Levine, 7 Richard J. Roberts, 8 Mel Simon, 9
chael Hunkapiller, 11 Randall Bolanos, 1 Arthur Delcher, 1 Ian Dew, 1 Daniel Fasulo, 1
iana Florea, 1 Aaron Halpern, 1 Sridhar Hannenhalli, 1 Saul Kravitz, 1 Samuel Levy, 1
Reinert, 1 Karin Remington, 1 Jane Abu-Threideh, 1 Ellen Beasley, 1 Kendra Biddick, 1
nda Brandon, 1 Michele Cargill, 1 Ishwar Chandramouliswaran, 1 Rosane Charlab, 1
i, 1 Zuoming Deng, 1 Valentina Di Francesco, 1 Patrick Dunn, 1 Karen Eilbeck, 1
ndrei E. Gabrielian, 1 Weiniu Gan, 1 Wangmao Ge, 1 Fangcheng Gong, 1 Zhiping Gu, 1
s J. Heiman, 1 Maureen E. Higgins, 1 Rui-Ru Ji, 1 Zhaoxi Ke, 1 Karen A. Ketchum, 1
i, 1 Yiding Lei, 1 Zhenya Li, 1 Jiayin Li, 1 Yong Liang, 1 Xiaoying Lin, 1 Fu Lu, 1
Merkulov, 1 Natalia Milshina, 1 Helen M. Moore, 1 Ashwinikumar K Naik, 1
Vaibhav A. Narayan, 1 Beena Neelam, 1 Deborah Nusskern, 1 Douglas B. Rusch, 1 Steven Salzberg, 12
Wei Shao, 1 Bixiong Shue, 1 Jingtao Sun, 1 Zhen Yuan Wang, 1 Aihui Wang, 1 Xin Wang, 1 Jian Wang, 1
Ming-Hui Wei, 1 Ron Wides, 13 Chunlin Xiao, 1 Chunhua Yan, 1 Alison Yao, 1 Jane Ye, 1 Ming Zhan, 1
Weiqing Zhang, 1 Hongyu Zhang, 1 Qi Zhao, 1 Liansheng Zheng, 1 Fei Zhong, 1 Wenyan Zhong, 1

11 JUNE 1998 VOL 393 NATURE

16 FEBRUARY 2001 VOL 291 SCIENCE

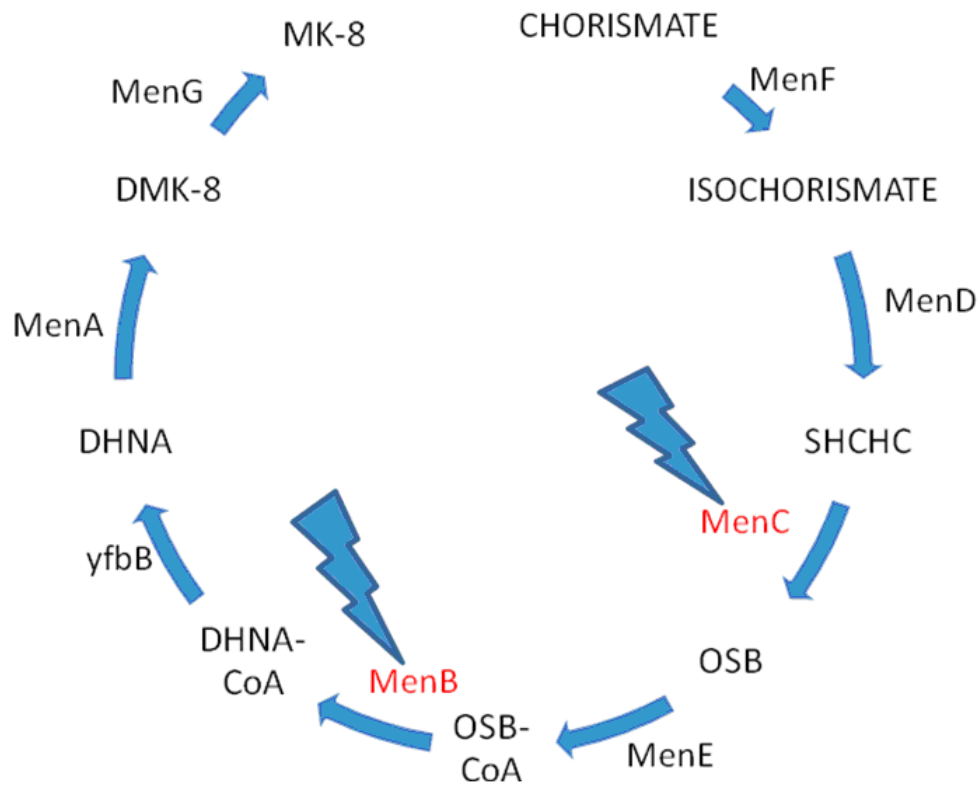
Few ongoing OSDD projects

and

Funding Model

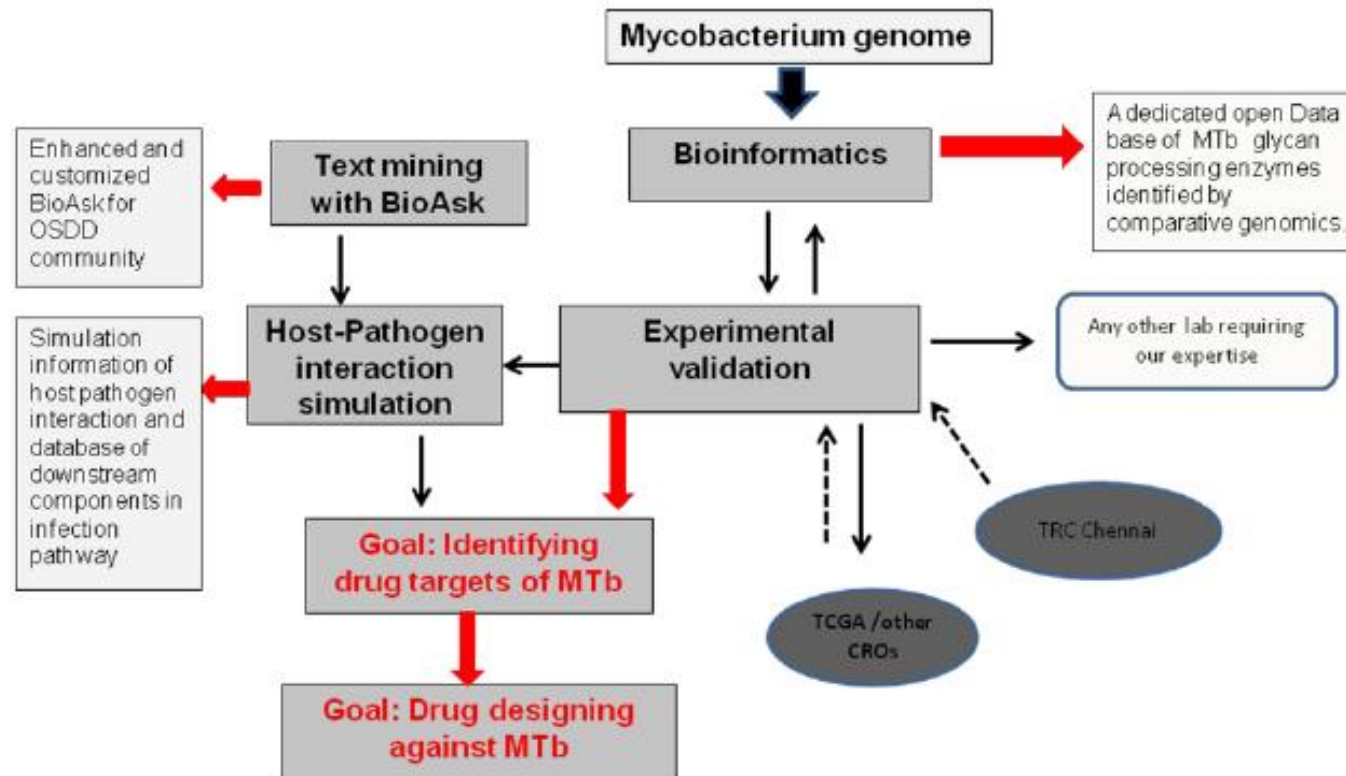
Small molecule inhibitors of Mycobacterial menaquinone biosynthetic enzymes as novel anti – tubercular agents

Anil Kumar, Medicinal Chemistry Division, Institute of Life Sciences



Identification and experimental validation of Glycan modifying enzymes and surface glycoproteins in *M. tuberculosis*

Project Managers- Dr. Banerjee, Dr. Kumar, Dr. Ali - AU-KBC Research Centre, Anna University. Mr. Ravi Condamoor, Mr. Vaidhy Mayilrangam - KBCRF Pvt. Ltd.



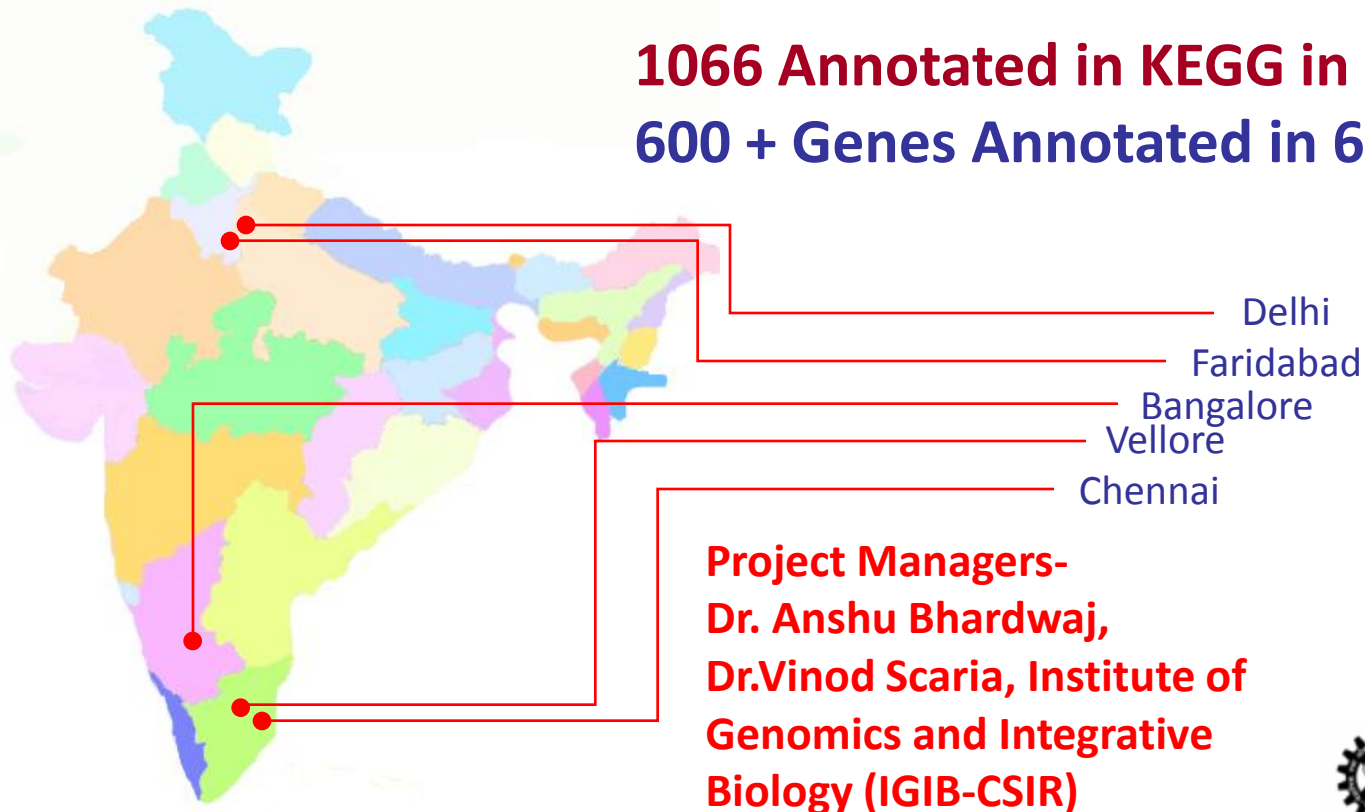
Red Block arrows indicate possible deliverables from each component



Pathway annotation of *M. tuberculosis*

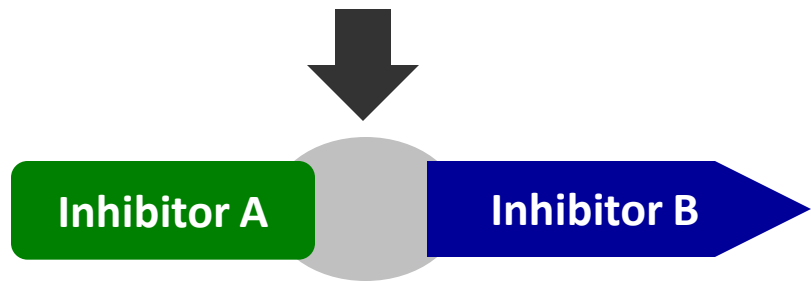
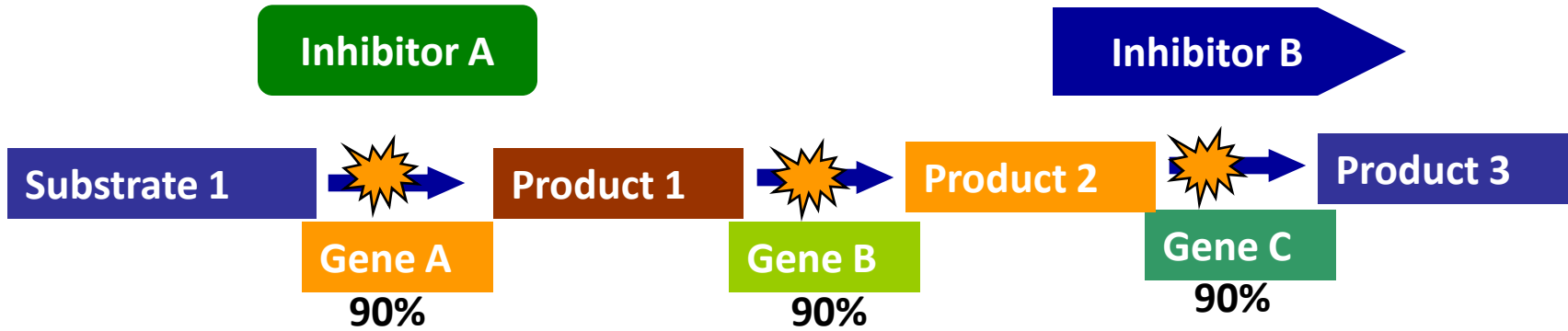
Recent OpenLabNoteBook? Entries

10 Jan 2009 - 16:15	Results for Pathway Database for Mycobacterium Tuberculosis	GirishMR , ParmodKumar , KrishnaBosak , NutanJaiswal , NegarAnwar , ManjariManisha , NehaVirmani , ShravanSingh , AnshuBhardwaj
24 Feb 2009 - 17:40	AntiTBCompoundsDatabaseSDFFormat	SrinivasanRamachandran
21 Feb 2009 -	KEGG annotation of Mycobacterium tuberculosis genes	AnshuBhardwaj

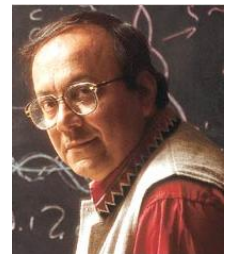


Open Challenges:

Creation of Fused Inhibitors targeting multiple limiting steps in a pathway



99% blockage of pathway?



Challenge posted by : Prof Samir Brahmachari,
Director General , CSIR, India

How does one take part in this Initiative ?

- Register yourself and let us know you exist !!
- Let us know what you feel you are good at
- Take part in one of the Projects
- Solve one of the Challenges
- Discuss your Ideas
- Tell others

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Business Standard

Tuesday, May 05, 2009

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Sreelatha Menon: Researchers sans borders

Science 2.0 is here as CSIR resorts to open source drug research for TB

Sreelatha Menon / New Delhi March 1, 2009, 0:23 IST

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Global Health Policy

MARCH 11TH, 2009

The Best Thing to Come Out of India Since "Slumdog Millionaire"

By Scott Kniaz

After reading about India's new [Open Source Drug Discovery](#) (OSDD) project this week (1), I couldn't help but feel — amid the current housing/financial/Wall Street/economic crisis — at least one thing is moving in the right direction: collaborative efforts to accelerate neglected disease product development. OSDD, the newest entrant in this effort, incorporates a web-based platform for scientists and students all over the world (NIH and the Institute of Life Sciences in Hyderabad, India are major supporters) to share research and collaborate on drug discovery projects for malaria, TB and other neglected diseases. One such project leveraged the world's largest Mycobacterium tuberculosis (MTB) database (hosted by OSDD) to bring together 13 researchers across India to decode 4000 the 4,000 genes of MTB in less than 6 months: years of work for a lone researcher.

Elc

News Paper clippings
/Magazine/Blog on the
Pathway Annotation Project

Printed from
THE TIMES OF INDIA
Students roped in for TB drug hunt

19 Mar 2009, 0552 hrs IST, Risha Chitlangia, TNN

NEW DELHI: In a first of its kind real-time drug discovery project, the CSIR has roped in 13 scientists from across India to hunt for a new drug against TB. It is called Open Source Drug Discovery.

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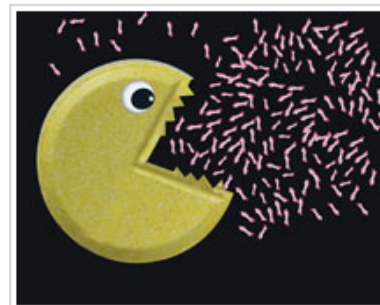
PHARMACEUTICALS

Hope On The Horizon

Open-source drug discovery could help curb TB

NOEMIE BISSERBE

06 Feb 2009



Sitting in a crammed conference room at Anusandhan Bhawan in New Delhi — a stone's throw away from the Parliament building — a dozen scientists from various research institutions are having an animated discussion. The sole window of the room is shuttered, and maps run on the large blackboard wall. These days they gather to discuss the mission: to discover a new drug against TB (TB) — a bacterial disease that kills 2 million Indians every two minutes and has eluded Big Pharma for 40

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- 
- ***Together we can ...***
 - ***... and we should !***

www.osdd.net

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Project Director – zt@csir.res.in

Thanks