"...So my group for almost a decade now, we've been interested in looking at an organism called Mycobacterium tuberculosis that causes TB in humans. I think the work that we have done has a tremendous future in terms of either diagnoses or medical treatment you would do for a tuberculosis patient."

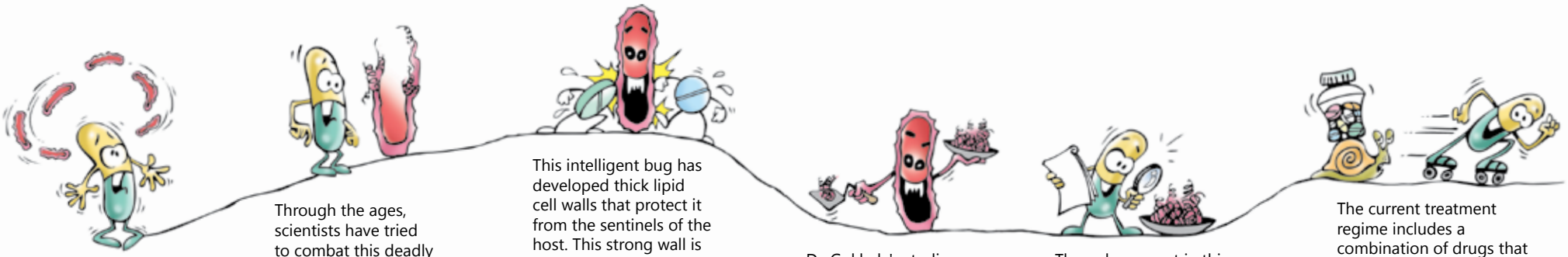
Rajesh S. Gokhale

Director, CSIR – Institute of Genomics and Integrative Biology, New Delhi

- M.Sc. in Chemistry from the Indian Institute of Technology, Bombay
- Ph.D. in Molecular Biophysics from the Indian Institute of Science, Bangalore

Dr. Rajesh S. Gokhale is a leader in the study of the enzymology of polyketide synthases in tubercle bacilli. He discovered fatty acyl AMP ligases in tubercle bacillus, their role in the generation of the lipid components of its cell wall and of their existence in other organisms, where they play a role in biosynthesis of complex molecules.

Battling the tuberculosis menace



A deadly killer is on the prowl! It strikes and kills one person every minute! Mycobacteria – the menace that inflicts tuberculosis (TB) is spread through air and infects the patient's lungs.

Through the ages, scientists have tried to combat this deadly army of mycobacteria by understanding its properties. These tiny organisms are capable of generating a novel set of cell wall lipids which is encoded by its unique set of genes. Dr. Gokhale's pioneering research is aimed at decoding these genetic clusters.

This intelligent bug has developed thick lipid cell walls that protect it from the sentinels of the host. This strong wall is impermeable to several drugs thereby enabling its survival. So the key is to penetrate these fortress-like walls.

Dr. Gokhale's studies discovered a large cluster of multifunctional enzymes called Polyketide synthases (PKS) and Fatty acyl-AMP ligases (FAAL) which assist in the formation of unique lipids that construct these cell barriers.

The only way out in this TB warfare is to completely decode and understand the biochemical pathways that help in the formation of lipid cell walls. Disrupting this barricade will help us vanquish this pathogen.

The current treatment regime includes a combination of drugs that makes the patient weak due to its multiple side effects. 'Single drug – multi target' approach is the driving force behind Dr. Gokhale's research which will help expedite the treatment against this life threatening disease.