

# 4<sup>th</sup> African Pharma Congress

June 20-21, 2016 Cape Town, South Africa



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### Genetic insight into antibiotic resistance reversion in multidrug resistant tuberculosis by iodine-containing nanomolecular complex FS-1

Drug induced reversion of antibiotic resistance is considered as a promising way to combat multidrug resistant infection that nowadays became a major threat to human health. Despite a general recognition of this opportunity, little studies were performed in the world to elucidate this phenomenon mainly because of the lack of reliable experimental models. An innovative anti-tuberculosis drug FS-1 was accepted for clinical use in Kazakhstan in 2015. Clinical trials and *in vitro* experiments revealed ability of this drug to induce reversion of antibiotic resistance in MDR-TB. A series of experiments on laboratory animals infected with the MDR-TB strain *Mycobacterium tuberculosis* SCAID 187.0 was performed for a systemic study of the drug resistance reversion phenomenon. The initial strain SCAID 187.0 was sequenced and the complete genome was deposited in NCBI (CP012506.1). Multiple Mtb isolates were collected at different stages of the experiment from the animals treated with traditional antibiotics with antibiotics supplemented with FS-1 in different concentrations and those which were left without treatment. The Mtb isolates were sequenced by Illumina and variant calling was performed. Bioinformatic analysis of the trends of genomic changes confirmed the theoretically predicted induced synergy mechanism of the drug resistance reversion. To our best knowledge, this experiment was the first systemic study of the drug resistance reversion phenomenon.

### Biography

Oleg Reva has completed his PhD from Kiev State University, Ukraine and Postdoctoral studies from High School of Medicine, Hannover, Germany. He is an Associate Professor in the Centre for Bioinformatics and Computational Biology at the University of Pretoria. He has published more than 90 papers in reputed journals, H-index 20, NRF rating C2.

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