

Genomic-driven New Antibacterial Targets: Using Genomic Technologies for Antimicrobial Drug Discovery

SO Min-Kyung, SEOL Min-Jeong, CHOI Soo-Young¹ and KWAK Jin-Hwan*

School of Life and Food Sciences, Handong University, Pohang 791-708, Korea. ¹ImaGene, Seoul, Republic of Korea,.

Nearly all-contemporary classes of antibiotics were developed over 30 years ago. These antibiotics were discovered traditionally by random screening of natural products. However, New advances in genetic engineering and microbial genomics, over the past 10 years, have allowed for a paradigm shift in anti-infective R&D where drug discovery now starts at the level of gene. Sequencing of microbial genomics has yielded many new potential targets for antimicrobial drug discovery. As genome sequence data accumulates, the list of potential novel antimicrobial targets grows. Rationally selected bacterial targets should lead to more powerful new agents with well-defined behavior. With the availability of complete genome sequences of more than 100 different species, more efficient target selection was possible in the field of antimicrobial drug discovery. This presentation will summarize how microbial genomics has changed strategies of drug discovery by applying novel genetic approaches and genomics-based technologies, and the genomic-driven new antibacterial targets such as FabI, PDF, and aminoacyl-tRNA synthetases which are under development by several pharmaceutical companies