Journal of
Proteomics & Bioinformatics

Khan, J Proteomics Bioinform 2014, 7:10
DOI: 10.4172/jpb.10000e27

Editorial Open Access

# Beta-lactomics: A New Term Coined in "OMICS"

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In English language OMICS informally refers to a field of study in biology ending in *-omics*, such as genomics, proteomics, metabolomics, transcriptomics etc. The related suffix -ome is used to address the objects of study of these fields such as the genome, proteome, metabolome and transcriptome respectively. The Omics aims at the complete characterization and quantification of pools of biological molecules and their structural and functional insight of an organism. The idea of beta-lactomics came after the worldwide spread of different groups of beta-lactamases and their variants among different strains of bacteria [1,2]. Beta-lacatmases are enzymes coded by specific gene and produced in bacteria to hydrolyze antibiotics and hence cause drug resistance against antibiotics a major health problem. A total of about hundreds of variants of each groups of beta-lactamases have been identified and documented in form of manuscripts and databases in the public domain [3-5]. The structural and function diversity of these enzymes are remarkable as evident from the fact that a single mutation may changed its activity towards antibiotic hydrolysis. Some of the structures of these beta-lactamases have been explored using X-ray crystallography and other biophysical techniques but still there are many left in the pool which has not yet been solved for their structural and functional understanding. It is important to understand the structure of these enzymes to map the newly designed lead molecules as future drug candidate [6]. Designing drug is an emerging area as it has become a need of an hour since almost all antibiotics are getting ineffective after the discovery of "Superbug" and spread of NDM-1 enzyme [7,8]. Moreover, natural products are also screened against bacterial infections caused by multiple drug resistant starins. We have proposed several novel approches to inhibit the action of these enzymes in bacteria [9,10]. The study is in progress on these aspects of beta-lactamases besides their epidemiology and surveillance studies in order to control hospital infection. Hence, a new name as beta-lactomics may be given to this field of beta-lactamases and their emerging variants in bacteria causing multiple drug resistance.

Hence, I am proposing a new term (Beta-lactomics) for this field. It has become a need in the current scenario to understand the whole lot of proteins of this kind circulating in the environment and hospital setting. The control measures of infection can be attained by designing new empirical treatment based on the information gathered through this field. Moreover, databases of these enzymes and proteins are also required to provide functional and structural information for the researchers working in this area.

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**Received** October 25, 2014; **Accepted** October 28, 2014; **Published** October 29, 2014

**Citation:** Khan AU (2014) Beta-lactomics: A New Term Coined in "OMICS". J Proteomics Bioinform 7: e27. doi:10.4172/jpb.10000e27