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PIMPINAN UMUM/ PENANGGUNG JAWAB
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Universitas Islam Indonesia

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**PERANAN BIOLOGI MOLEKULER DAN HTS
(HIGH THROUGHPUT SCREENING) DALAM PENGEMBANGAN OBAT
SINTETIK BARU**

***Sebuah paradigma baru dalam pengembangan obat
di masa mendatang***

Arief Nurrochmad

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ABSTRACT

Recently, the discovery of new drugs uses the new concept by modern techniques instead of the conventional techniques. In the development of scientific knowledge, the role of molecular biology and the modern techniques in the investigations and discovery new drug becomes the important things. Many methods and modern techniques use in the discovery of new drugs, i.e, genetic engineering, DNA recombinant, radioligand binding assay technique, HTS techniques (*High Throughput Screening*), and mass ligand screening. In this review article, its focus in the role of molecular biology and HTS techniques (*High Throughput Screening*) which accelerated the discovery of new drugs. The role of molecular biology will be the important things on the characteristic of structure of protein target as well as receptor that interact with the drug molecule or ligand. By the modelling binding receptor technique, its will be known the conformation of binding receptor and ligand in the three dimension. In addition, by the quantum mechanics, molecular mechanics, and molecular dynamics will be identified the active sites, the consuming energy, and the conformation of the structure of molecule drug as well as the receptor when its interact biochemically. In other hand, the investigation of active compounds from natural resources still conducted. The investigation of active compound from natural resources, at present use the HTS techniques (High Throughput Screening) could screen thousand extracts combine with Human Genom Project data in this technique. By the HTS techniques (High Throughput Screening) will be performed screening extract from the natural resources rapidly. Active compounds resulted from this technique, subsequently identified and characterized the structure of molecules and synthesis instead of natural resources. Finally the compounds could be synthesized in the large scale. The molecular biology and HTS technique will play the big roles on the discovery of new drugs. The molecular biology techniques related the protein target and receptor have been changed the new paradigm in the design of new molecule drugs by rationally, whereas the HTS technique will accelerated screening active compounds from natural resources.

Key words: molecular biology, HTS (High Throughput Screening), new drugs