Michihiko Kobayashi, J Biotechnol Biomater 2015, 5:2
http://dx.doi.org/10.4172/2155-952X.S1.031

OMICS International
conferenceseries.com

7th Asia-Pacific
Biotech Congress
July 13-15, 2015 Double Tree by Hilton, Beijing, China

Vectors based upon unique gene regulatory mechanims

Michihiko Kobayashi
University of Tsukuba, Japan

Expression systems are essential tools for production of recombinant proteins in cells and for analyses of the function of unknown genes or proteins. We have investigated microbial metabolism of nitrile compounds through the following two enzymatic pathways: nitrile hydratase hydrating nitrile to the corresponding amide; nitrilase hydrolyzing nitrile to the corresponding acid and ammonia. An actinomycete produces the both nitrile-converting enzymes, depending on the corresponding inducer. Nitrilase and nitrile hydratase are inductively overexpressed by adding nitrile and amide, respectively, to the culture media. We clarified the regulation mechanisms of the both enzymes at protein, DNA and RNA levels. The characteristics of the strong promoters of these enzyme genes are promising for the design of a new expression system. Using each of these regulation mechanisms and the strong gene promoters of the both enzymes, we succeeded in the construction of expression systems in microorganisms. We made the vector with the nitrilase system functioning an actinomycete as a host microorganism, which has been for the manufacture of useful compounds. Another vector includes the other nitrile-converting enzyme system functioning in actinomycetes, which have widely been for the production of biologically active compounds. Diverse restriction sites are available within the multi-cloning site of each vector.

Biography

Michihiko Kobayashi obtained PhD from Kyoto University in 1991 and started his professional career in Kyoto University (1991-1999; as Assistant Professor and Associate Professor etc). In 1999, as Professor, he started the lab of Molecular Microbial Bioengineering at University of Tsukuba.

kobay@agbi.tsukuba.ac.jp

Notes: