A Facile Detection of Verotoxins by Quartz Crystal Microbalance

An artificial glycolipid was designed and applied to quartz crystal microbalance technique for the detection of verotoxins produced by highly toxic bacteria: Escherichia coli O-157. We have successfully detected both types of verotoxins (type-1 and 2) within 30 – 40 min in crude sample solutions and to determine the binding constants, associate and dissociate constants.

The QCM system for the detection of verotoxins produced by pathogenic bacteria: O-157.

Hirotaka UZAWA
Nanoarchitectonics Research Center
e-mail:
h.uzawa@aist.go.jp
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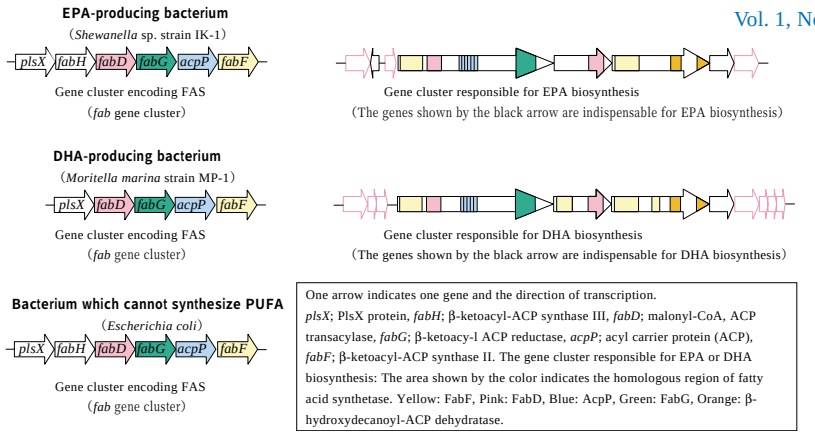
Gene Clusters Responsible for DHA and EPA Biosynthesis

- New Genetic Resources Found in Marine Bacteria -

Some marine bacteria have the ability to synthesize DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid). The fatty acid biosynthetic (*fab*) gene cluster encoding a part of fatty acid synthetase (FAS) and the gene cluster responsible for biosynthesis of polyunsaturated fatty acid (PUFA) such as DHA or EPA have been cloned from DHA-producing and EPA-producing bacteria. The isolated gene clusters responsible for DHA and EPA biosynthesis from marine bacteria would be significant genetic resources for considering the origin of DHA and EPA in living organisms and for utilization on applications (for instance, DHA and EPA production in microorganisms and plants by the gene manipulation).



Gene clusters responsible for fatty acid biosynthesis found in bacteria.
The bacterium that can synthesize DHA or EPA has the two gene clusters responsible for fatty acid biosynthesis. One is the gene cluster involved in DHA or EPA biosynthesis, and the other is the *fab* gene cluster encoding a part of FAS found in bacteria that cannot synthesize any PUFAs. Therefore PUFA-producing bacteria would have two fatty acid biosynthetic systems, the synthesis of fatty acids with up to 16- or 18-carbon atoms and the synthesis of DHA or EPA.

Naoki MORITA
Research Institute of Biological Resources
e-mail:
morita.n@aist.go.jp
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