

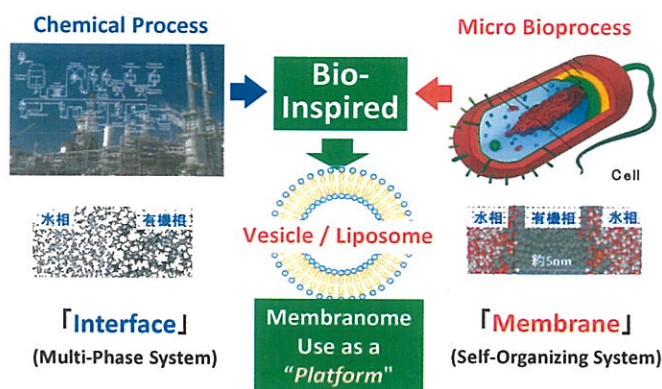
“*Bio-Inspired Chemical Engineering*” based on “*Membranome*”
 ~ Our Challenge for NEXT ~



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A “*Biomembrane*” is a highly-organized self-assembly of biomolecules (i.e. lipid, protein etc.) and a key interface for the survival of biological cell. The “*Membranome*” can be defined as the properties of vesicle (or liposome), which arise from the bilayer molecular assembly of amphiphiles, focusing on “*emergent properties*” which are not present in the individual components, and is gradually recognized as an important research methodology to investigate the potential functions of vesicles (or liposome) and to apply them for the bioprocess design. A liposome possesses several benefits in the recognition of (bio)molecules, where it can recognize them with (i) electrostatic, (ii) hydrophobic interaction, and (iii) stabilization effect of hydrogen bonds in the hydrophobic lipid environment. A molecular recognition with high selectivity can be achieved by the simple liposome membrane on its surface through the combination of (i)-(iii). We are now focusing on the creation of “*Bio-Inspired Chemical Engineering*” based on the “*Membranome*” by selecting “liposome or vesicle membrane” as a “*platform*” to perform the “*recognition*” and “*conversion*” of biomolecules, such as (a) “*Artificial Chaperone*”, (b) “*Artificial Enzyme (LIPOzyme)*”, (c) “*Artificial Virus*”, (d) “*Artificial Organ*” (liposome-immobilized hydrogel matrix) and etc. The author will make a presentation on the basic concept of “*membranome*” and “*LIPOzyme*”, together with some examples.



Faculty Lounge
 Thursday, November 20, 2014
 10:00 AM