

高分子学会九州支部 外国人講演会

Design, Synthesis & Performance of Materials for Gene Delivery & Templated Protein Crystallization

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主催：高分子学会九州支部

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場所：九州大学 伊都キャンパス ウエスト4号館3階
大学院物質系4番講義室
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Thompson 教授は Purdue 大学化学科の教授で世界的に著名な分子集合体の研究者です。近年では、細胞への薬物送達、膜タンパク質のセンシングやテンプレートを利用するタンパク質の結晶化など、バイオ関連分野をはじめとする幅広い展開をすすめられています。今回、学振の招きで大阪大学を訪問されており、九大来訪の機会に講演会を企画いたしました。多数、ご出席くださいますようご案内申し上げます。

<http://www.chem.purdue.edu/people/faculty/faculty.asp?itemID=63>

Liposomes that efficiently release their contents within the cytoplasm of target cells are of great interest for cell biology, pharmaceutical, and gene therapy applications. Unfortunately, the potencies of many liposome-based formulations are curtailed by inefficient escape of the encapsulated contents following target cell uptake. We have developed plasma-stable liposomes that rapidly and efficiently release their contents from endosomal compartments. The acid-catalyzed and photooxidative cleavage reactions that greatly enhance membrane permeability in these systems have been used to deliver water-soluble drugs, photosensitizers, and plasmids to target cells. These results suggest that concurrent application of selective targeting and membrane translocation mechanisms in liposomal drug carriers can greatly increase their efficacy. Molecular design, synthesis, kinetic studies, and tissue culture techniques are employed in our efforts to develop novel materials that promote efficient liposome-cell membrane fusion and intracellular drug delivery. New lipid membrane constructs are also under development in our laboratory as 1) templates for two-dimensional protein crystallization, 2) biomimetic energy transduction mechanisms using bolaamphiphile membrane vesicles containing vectorially-oriented gramicidin derivatives, 3) supported bilayer membrane sensors, and 4) "cascade" sensitizing agents for the formation of controlled-release polymer hydrogels.

連絡先

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