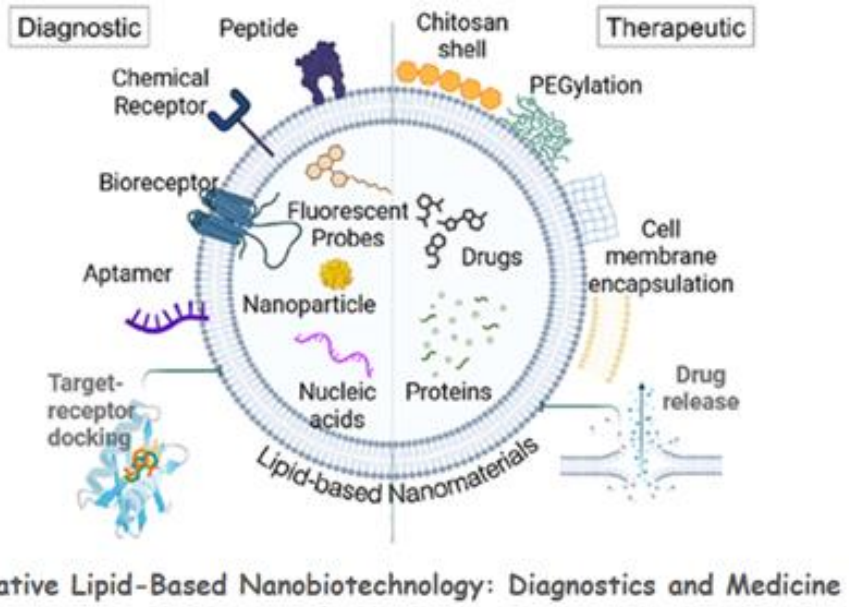
[Research Achievement] Associate Professor Wei-Peng Li, Department of Medicinal and Applied Chemistry — Publication in *ACS Nano* (Impact Factor: 17.3)



Innovative Lipid-Based Nanobiotechnology: Diagnostics and Medicine

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This review provides an overview of recent advances in technologies for the integration of lipid-based natural biomaterials, with particular emphasis on their diverse applications and potential in therapeutics and diagnostics. It focuses primarily on the use of bioengineered lipid-based nanomaterials as drug delivery carriers and diagnostic agents, which constitute a major area of research in this field.

The properties of different types of lipid-based nanomaterials are largely determined by their chemical structures, functionalities, and synthesis methods, enabling their versatile applications in drug delivery, targeted delivery to specific cancer cells, and controlled immunotherapy. Furthermore, lipid-based biomaterials have been widely employed across diverse research fields. Surface engineering can further modify these biomaterials to incorporate various functional regulatory molecules, thereby enabling the integration of nanomaterials or bioactive components with specific functions, such as signaling pathway modulators, nucleic acid therapeutics, and proteins for active targeting.

Overall, this review systematically surveys the latest developments and applications of innovative lipid-based nanobiotechnology, organizing the discussion around material types, preparation methods, and applications.