

The 272nd MANA Special Seminar



Nanoscale Structures as Drug Carriers for Pharmaceutical Reformulation

Chair: Dr. Guoping Chen (MANA PI)

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Nanotechnology is to utilize matter smaller than 100 nanometers and takes advantages of properties that are only presented at this nano level. Recent advances in nanotechnology have provided various new tools for biomedical research and clinical applications. Nanopharmaceutics is one of the disciplines that will benefit from this technology the most. Nanomaterials, with their unique size-dependent physical and chemical properties, have showed promising advantages as drug and gene delivery vehicles, ultra-sensitive and controllable intracellular payload release, and precisely silence of targeted genes. However, to develop nucleic acids, peptides or chemicals-based pharmaceuticals along with these promising progresses, the high transfection and low toxicology of engineered nanomaterials as carriers exist as a potential barrier and has caught much attention. Therefore, Designing nanopharmaceutics for effectively expected bioeffects without significant toxicity has become an important issue for clinical application of novel nanomaterials. Nanotechnology will have a revolutionary impact on clinically based therapy due to the exceptional characteristics of nanopharmaceutics. It is critical to screen and identify novel nanopharmaceutics with an exclusive biological function in vitro and in vivo. Recently, innovative nanomaterials for pharmaceuticals have been discovered as a potential competent drug with negligible cytotoxicity in tissue culture and without detectable side effects in vivo. Nanostructures can specifically inhibit the growth of solid malignant tumors in nude mice by direct injection into the neoplasm. The mechanism of how these nanostructures seeking for and docking into tumor after i.v. injection in patient is unknown and still needs further study. This finding may inspire researchers to develop a new generation of nanomaterials with inventive non-traditional approach for disease treatment. The development of nanomaterials will allow for more precise efficiently targeted treatment with less toxicity of clinical therapy.

Venue: Seminar Room #431, 4F, MANA Bldg.

Date: June 28th, Thursday Time: 10:00-10:45

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