COINS Seminar #16

Liposome-based cancer nanomedicines - DOXIL and beyond

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Date: Thursday, May 12, 2016
Time: 3:30pm – 4:30pm (Open at 3:00pm)
Venue: Room#4101, 4F, Innovation Center of NanoMedicine (iCONM)
Capacity: 40 people
Research Mixer:4:30pm-6:00pm(Fee:JPY500)
Registration: By E-mail to <jimukyoku-coins@kawasaki-net.ne.jp> including Please send your "name" and "Affiliation"and" Division"and"Attendance of Research Mixer"and"E-Mail"

—Abstract—

Cancer chemotherapeutic agents lack selectivity and have problematic toxicities. Nanoparticles provide effective control of the release rate and tissue distribution of these agents, leading to major pharmacokinetic and pharmacodynamic changes. PEG coating of liposomes results in significant prolongation of residence time in the blood stream. A hallmark of these long-circulating liposomes is their enhanced accumulation in tumors by a mechanism known as enhanced permeability and retention effect. An example of nanomedicine with demonstrated clinical added value in cancer therapy is PEG-liposomal doxorubicin (DOXIL®), which has demonstrated clinically a favorable safety profile with an impressive reduction in cardiac toxicity and proven efficacy against various malignancies and can be considered as the first anti-cancer nanomedicine approved for clinical use. Other liposomal formulations recently approved for clinical use hold promise in cancer chemotherapy. Another approach in liposomal drug delivery combines a stable and long-circulating liposome with chemical modification of a drug to form a lipophilic prodrug with strong association to the liposomal bilayer. This is the case of a prodrug of mitomycin-C (MMC) activated by thiolytic cleavage. PEG-liposomal MMC prodrug (Promitil®) is more effective and less toxic than conventional chemotherapy in the treatment of various animals and human tumor models. A recently completed phase 1 study of Promitil shows a 3-fold reduction in toxicity as compared to free MMC. Co-encapsulation of synergistic agents in the same nanoparticle is another valuable approach in liposome delivery, particularly if toxicities do not overlap. Co-encapsulation of a drug and an imaging agent can provide real-time imaging of drug biodistribution using the nanocarrier as a theranostic platform. Furthermore liposome-based nanomedicines offer a unique tool for other manipulations including the grafting of tumor-specific ligands for active targeting to tumor cells and enhanced intracellular drug delivery. Results of these innovative approaches using the pegylated liposomal platform will be presented.

Organizer: Center of Innovation (COI Program) by JST,
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<Venue access>
Name: Innovation Center of Nanomedicine (iCONM)

Address: 3-25-14, Tonomachi, Kawasaki-ku, Kawasaki 210-0821, JAPAN

Access by train:
Keikyu-Kawasaki Sta. to Kojima-Shinden Sta. by Keikyu-Daishi Line (ride time about 10 minutes) and Walk about 15 minutes to iCONM (See below access map)

Access by bus
"Bus stop on East Terminal at JR Kawasaki Sta."
1) No. 20 bus stop (KAWASAKI TSURUMI RINKO BUS Co.,LTD)
川 (kawa) 02 line; Tonomachi terminal, to "Tonomachi" bus stop (ride time about 30 minutes), walk about 3 minutes to iCONM from the bus stop

2) No. 20 bus stop (KAWASAKI TSURUMI RINKO BUS Co.,LTD)
川 (kawa) 02 line; Ukishima-Bashi terminal, to "King Sky Front Irigchi" (ride time about 20 minutes), walk about 5 minutes to iCONM from the bus stop
3) No. 16 bus stop (KAWASAKI TSURUMI RINKO BUS Co.,LTD)
川 (kawa) 03 line; Ukishima-bus terminal, to "King Sky Front Irigchi" (ride time about 30 minutes), walk about 5 minutes to iCONM from the bus stop

Access Map