COINS Seminar #19

"Polymer-based Nitric Oxide Delivery System for Bioapplication"

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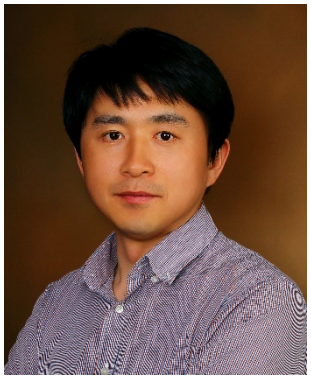
Date: Friday, October 7, 2016
Time: 2:00pm – 3:00am (Open at 1:30pm)
Venue: 4F Rm#4101, Innovation Center of NanoMedicine (iCONM)
Capacity: 40 people

Registration: By sending an email to <jimukyoku-coins@kawasaki-net.ne.jp> including your "Name", "Affiliation & Division" and "email address".



—Abstract—

Nitric Oxide (NO) is one of the important signaling molecules in physiology and pathology. With considerable efforts of many researchers, the significant role of NO in various biological functions such as angiogenesis, apoptosis, immune response, neurotransmission, and cardiovascular homeostasis has been identified. NO is an unstable gaseous radical; thereby, exogenous administration of NO primarily relies on NO-donors and NO-releasing materials. Among NO-delivery products, polymer-based NO delivery system has been widely developed for bioapplication with several advantages, including controlled NO release and high stability. In our group, we developed F127-BPEI-NONOates hydrogel and observed its effect on endothelial as well as smooth muscle cell proliferation. F127-BPEI-NONOates is composed of Pluronic F127, a commercially available thermosensitive triblock copolymer, conjugated with BPEI (branched polyethyleneimine) that serves amine moiety for conjugation of NONOates (1-substituted diazen-1-ium-1,2-diolates). We further synthesized NO-releasing ointment simply mixed with the F127-BPEI-NONOates and PEG-based ointment ingredient, showing the efficient wound healing *in vivo* experiment. Besides, we developed a good antibacterial agent against various bacteria using F68-BPEI-NONOates that caused destruction of bacterial membrane induced by NO. Moreover, we developed the pNE (poly(norepinephrine)) layer containing DHBA-NE (3,4-dihydroxybenzaldehyde-norepinephrine) that served to store and release NO, giving the potential use for NO-relating biomedical application. In this presentation, I will briefly introduce the main role of NO in biological system and various smart NO delivery system.

Organizer: Center of Innovation (COI Program) by JST,
Center of Open Innovation Network for Smart Health (COINS), Chairman: Nobuhiro Nishiyama, COINS R&D Theme 5 Leader/Principal Research Scientist/Laboratory Head, Innovation Center of NanoMedicine (iCONM), KAWASAKI INSTITUTE OF INDUSTRIAL PROMOTION
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Web: http://coins.kawasaki-net.ne.jp/

<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