

## PLENARY LECTURES

Kiho Cho (조기호, UC Davis), D.V.M., Ph.D.

### ***“The Genomic Landscape of Transposable Repetitive Elements, the “TREome”, in Normal and Disease Biology”***

Attempts to decode both normal and disease biology of humans have focused on ~1.2% (exome) of a rather *static* genome; however, the outcomes are mostly inconclusive or unsuccessful. This presentation provides a set of clues why the entire landscape of the *dynamic* genome information system, not just the gene section, needs to be interrogated to enable the precision biomedicine.

C. Justin Lee (이창준, KIST), Ph.D.

### ***“Study of Astrocytes at KIST”***

Astrocytes are the most numerous cell type in the brain. Astrocytes have been traditionally known to have supportive role for neurons. Here I present the novel roles of astrocytes in cognition by providing evidence for involvement of astrocytes in transmitter release, synaptic transmission, synaptic plasticity, behavior, and neurodegenerative and psychiatric disorders.

Danny Joh, (조현정, BioMarin), Ph.D.

### ***“Career Options for Bioscience PhDs in Biopharma Industry”***

Besides discovery research in a biopharma company, a wide variety of drug development career is available to bioscience PhDs considering careers in the industry. My presentation will briefly touch upon the complex drug development process and career possibilities open to those who are interested in non-academic careers in the industry.

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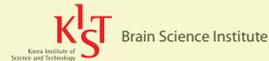
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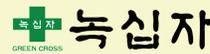
## KOLIS SPRING CONFERENCE 2014

2014.05.17 @ UCSF GENENTECH HALL

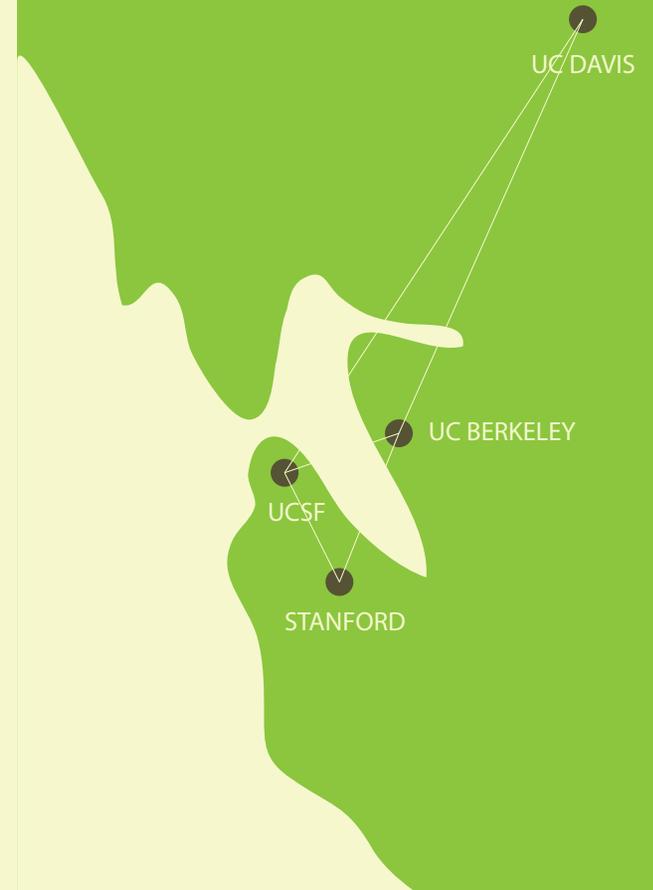
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## PROGRAMS

10:30-11:00	Registration	
11:00-11:10	Opening Remarks	
11:10-11:50	PL I: Kiho Cho, (조기호, UC Davis), D.V.M., Ph.D. “The Genomic Landscape of Transposable Repetitive Elements, the “TREome”, in Normal and Disease Biology”	
11:50-12:40	PL II: C. Justin Lee (이창준, KIST), Ph.D. “Study of Astrocytes at KIST”	
12:40-1:30	Lunch	
1:30-2:10	PL III: Danny Joh (조현정, BioMarin), Ph.D. “Career Options for Bioscience PhDs in Biopharma Industry”	
2:10-2:20	Break	
	Genentech Hall <b>Session I</b> <b>Neurobiology and Pharm. Chemistry</b>	N-114 <b>Session II</b> <b>Immunotherapy</b>
2:20-2:50	Hanmi Lee, Ph.D. (이한미, Stanford)	Nam-Kyung Lee, Ph.D. (이남경, UCSF)
2:50-3:20	Nathan Joh, Ph.D. (조현중, UCSF)	Yun Cheol Kim, Ph.D. (김윤철, Pfizer)
3:20-3:30	Break	
	<b>Session III</b> <b>Cell Biology</b>	<b>Session IV</b> <b>Biomedical Engineering</b>
3:30-4:00	Sang-Ho Kwon, Ph.D. (권상호, UCSF)	Kyung Jin Son, Ph.D (c) (손경진, UC Davis)
4:00-4:30	Hak kyun Kim, Ph.D. (김학균, Stanford)	Seungmin Park, Ph.D. (박승민, UC Berkeley)
4:30-4:45	Special Talk: IBS	
4:45-5:00	Raffle and Closing Remarks	
5:00-	Dinner and Networking	

## SESSIONS I&III @ GENENTECH HALL

### SESSION I: NEUROBIOLOGY & PHARM. CHEM. (2:20-3:20 pm)

Hanmi Lee (이한미, Stanford), Ph.D.

#### “Synapse elimination and learning rules co-regulated by MHC class I H2-D<sup>b</sup>”

The formation of precise neuronal connections involves the activity-dependent elimination of some synapses, with strengthening of others. We demonstrate that the major histocompatibility complex (MHC) class I molecule H2-D<sup>b</sup> is necessary and sufficient for synapse elimination / refinement in the retinogeniculate system by regulating long-term depression (LTD) and Ca<sup>2+</sup>-permeable AMPA receptors.

Nathan Hyunjoong Joh (조현중, UCSF), Ph.D.

#### “De-Novo Design of a Membrane Protein Capable of Co-Transportation”

Transporters are gaining therapeutic significance and mechanistic understanding has practical importance. To critically test our knowledge, I create a *de-novo* co-transporter of Zn<sup>2+</sup> and H<sup>+</sup> by using only the first principles. Together with its minimalist structure verified by crystallography, our results support that complex co-transportation evolved from very simple precursors.

### SESSION III: CELL BIOLOGY (3:30-4:30 pm)

Sang-Ho Kwon (권상호, UCSF), Ph.D.

#### “Intercellular transfer of GPRC5B via exosomes drives HGF-mediated invasive epithelial growth”

Hepatocyte growth factor (HGF) plays a crucial role in invasive epithelial growth- tubulogenesis and metastasis. From in vitro tubulogenesis driven by HGF, we identified GPRC5B, an orphan GPCR controls the invasive growth via exosome secretion. Our results suggest that through the induction of GPRC5B, HGF signaling propagates its activation via exosomes to the recipient cells.

Hak kyun Kim (김학균, Stanford), Ph.D.

#### “Inactivation of tRNA-derived small RNA induces apoptosis through impaired ribosome biogenesis”

Inactivation of one specific 3'tRNA-derived small RNA (tsRNA), from LeuCAG tRNA, induces apoptosis through the translational suppression of ribosomal protein small subunit 28 (RPS28) in a non-microRNA mediated mechanism. Our data suggests that this group of small non-coding RNAs may fine tune gene regulation through unique mechanisms.

## SESSIONS II&IV @ N-114

### SESSION II: IMMUNOTHERAPY (2:20-3:20 pm)

Nam-Kyung Lee (이남경, UCSF), Ph.D.

#### “Antibody engineering by LC-switching improves cellular internalization efficiency of IgGs for application in ADCs”

A scFv phage library possessing highly diverse LC population was used for antibody screenings. Several scFvs with an identical HC and different LCs were selected by their cell-binding capacities, and specific LCs consequently improved the cellular internalization efficiency of LC-switched IgGs, suggesting application in antibody-drug conjugates for cancer immunotherapy.

Yun Cheol Kim (김윤철, Pfizer), Ph.D.

#### “The Upcoming Battle for Antibodies”

For the past 20 years, chemical based therapeutic approaches have been rapidly switched toward bio-therapeutics due to the unprecedented growth of molecular biology and antibody engineering technology as well as bio-molecular medicine. This session will discuss general antibody discovery processes and antibody discovery platform, which can transform the current paradigm of discovery strategies.

### SESSION IV: BIOMEDICAL ENGINEERING (3:30 - 4:30 pm)

Kyung Jin Son (손경진, UC Davis), Ph.D. candidate

#### “Single Cell Analysis: Multifunctional Hydrogels for Detecting Single Cellular Secretory Activities”

Cancer cells often exhibit distinct phenotypic characteristics, such as cellular morphology, gene expression, and proliferative potential. Herein, I propose the design of multifunctional hydrogel-based microfluidic devices for detecting single cellular secretory activities to examine phenotypic heterogeneities of cancer cells and to retrieve the individual cell selectively.

Seungmin Park (박승민, UC Berkeley/Stanford), Ph.D.

#### “Integrated Nanotechnologies for Comprehensive Circulating Tumor Cell Analysis”

We established an integrated CTC analysis platform to analyze the molecular characteristics of individual CTCs for cancer diagnosis/prognosis. Our goal is to provide a way to combine multiple functional assays into a portable device that allows clinicians to obtain a confirmatory indication of cancer.