



KOREAN
LIFE SCIENTISTS
IN THE BAY AREA

STANFORD UC BERKELEY UC DAVIS UCSF

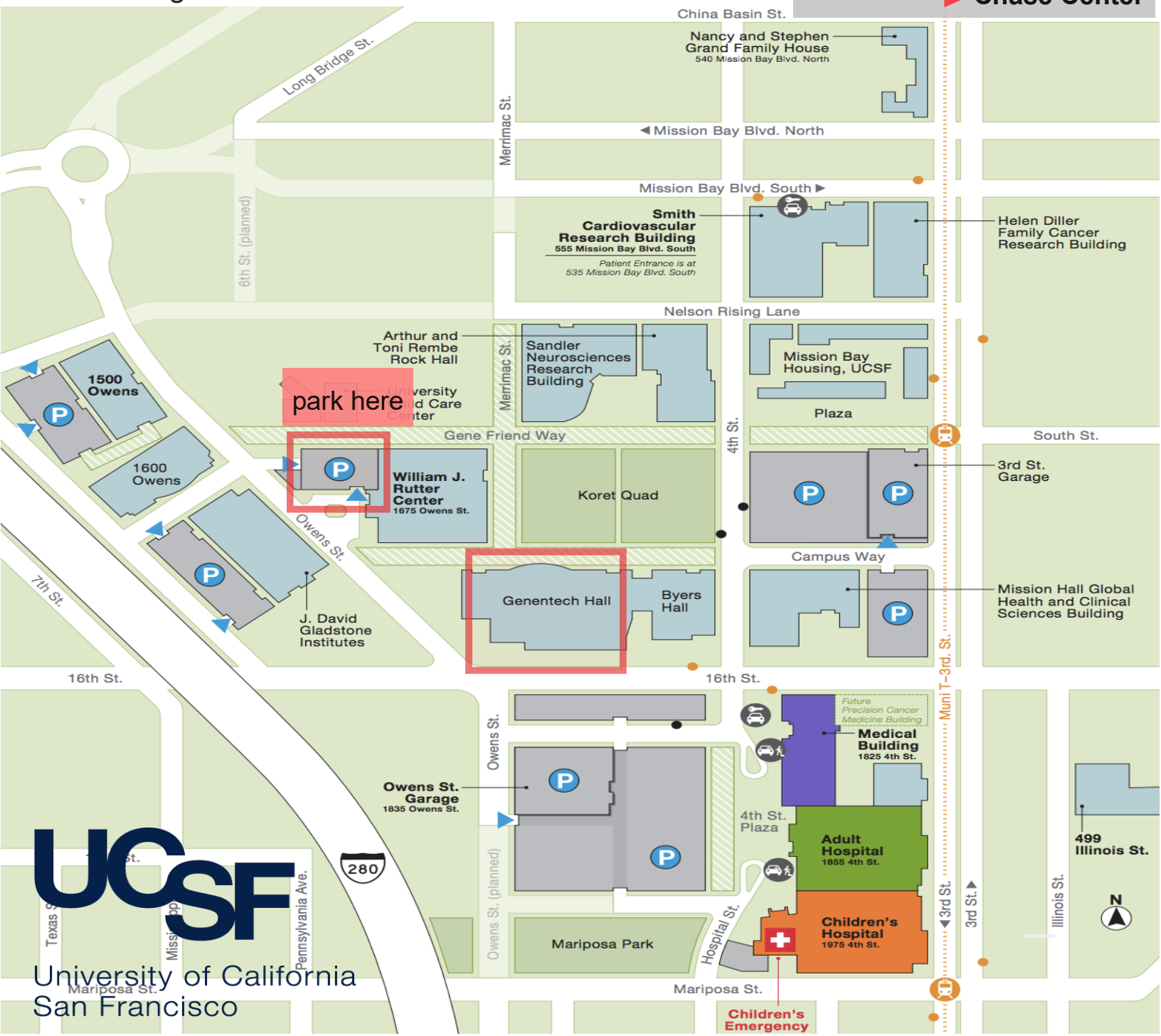
2023 Annual Conference

June 3rd 2023

UCSF Mission Bay Campus
Genentech Hall
San Francisco, CA



*Parking fee will be reimbursed





KOREAN
LIFE SCIENTISTS
IN THE BAY AREA

2023 Annual Conference June 3rd 2023

Jae-Young Jung, Ph.D.
Postdoc, UCSF
President, KOLIS 2023



안녕하십니까 KOLIS 회원 여러분,

2023 년 KOLIS 회장을 맡은 UC San Francisco 의 정재영입니다.

약 2 년간의 어려웠던 COVID-19 팬데믹 기간을 이겨내고, 작년에 이어 올해 2023 년에도 KOLIS 연례 학술대회를 대면으로 개최하게 되어 기쁜 마음입니다. 팬데믹 기간 동안 학술활동을 하며 강요되었던 여러 온라인 시스템 경험에 의해 올해부터는 KOLIS 의 가장 활발하고 중요한 학술 이벤트 중 하나인 Monthly Seminar 를 대면과 온라인에서 하이브리드로 동시에 진행하게 되었습니다. 이러한 온/오프라인 동시 모임을 통해 각 학교별 내부적인 교류 뿐만 아닌 타 학교의 세미나 행사에도 참여할 수 있게 되어 온라인으로 서로 알고 교류하게 된 많은 분들과 이번 연례 대면 총회를 통해 직접 뵙고 소통할 수 있는 기회의 장이 되었으면 하는 바램입니다.

2023 도 상반기 동안 도움 주신 KOLIS 운영진 분들께 감사하다는 말씀을 전하고 싶습니다. 또한 각 학교 대표분들, 그리고 KOLIS 를 후원 해주시는 소중한 후원사 분들에게 감사의 말씀을 드리고 싶습니다. 올해에는 특히 인더스트리와의 접점을 더 활발히 하기 위한 노력의 일환으로, Industry 부문을 담당하시는 이진영 부회장님의 도움으로 후원사 및 SF 베이 지역에 계신 다양한 학술 단체 및 기업체와 더욱 더 적극적으로 교류하고 있습니다. 또한 학술단체로서의 본분도 잊지 않고 Adcademic 부문을 담당하시는 목찬희 부회장님의 도움으로 타 지역 학술단체 및 한국 내 연구자분들과도 활발한 교류를 하고 있습니다.

올해 키노트 연사로 선뜻 참석을 결정해주신 UC Davis 안설희 교수님과 Neuralink 의 서동진 VP 님께도 감사의 말씀을 드립니다. 또 다양한 진로로 진출하여 흥미로운 얘기를 들려주실 커리어 세션 연사분들께도 감사드립니다. 마지막으로 각자의 자리에서 생명과학을 연구하고 귀한 시간을 내주어 참석해주신 KOLIS 의 회원 여러분들께 존경과 감사를 전합니다.

KOLIS 에 관심을 갖고 2023 년 다시 대면으로 개최하는 연례 학술대회에 참석해 주셔서 다시 한 번 감사드립니다. 이번 학술대회를 통해 직접 교류하고 소통할 수 있는 기회가 되길 바라며 앞으로도 KOLIS 를 통해 다양한 네트워킹을 진행할 수 있도록 노력하겠습니다. 감사합니다.

2023 KOLIS 회장 정재영 드림

Chul-Hee Lee Ph.D.
Postdoc, WCM
President, NYKB 2023



KOLIS

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2023 Annual Conference June 3rd 2023



안녕하세요 KOLIS 여러분,

New York Korean Biologists (NYKB) 2022-2023 회장을 맡고 있는 이철희입니다. 6 월의 시작과 함께, KOLIS 회원분들의 건강과 행복 그리고 염원하는 모든 일들이 모두 이루어지길 바랍니다!

2023 KOLIS Annual Conference 의 성공적인 개최를 진심으로 축하드립니다. 미국 서부를 대표하는 한인 생명과학단체로서 지속적이고 활발한 학술교류가 미 전체의 한인과학자들에게도 영향을 미치고 있으며 이러한 네트워킹을 통해 한인과학자의 영향력이 이어질 수 있다고 생각합니다. 이번 연례 학회를 준비하기 위해 최선을 다하신 KOLIS 정재영 회장님과 임원진분들께 축하의 인사를 전합니다. 준비한 다양한 프로그램들을 통해 KOLIS 회원분들 간의 즐겁고 보람 있는 네트워킹이 완성되길 바랍니다. 또한 학회에 참석하시고 자리를 빛내 주신 모든 KOLIS 회원분들께도 축하와 감사의 인사를 전하고 싶습니다.

뉴욕의 위치한 NYKB 는 KOLIS 와 꾸준한 협력관계를 이어 나가고 있습니다. 특히 메릴랜드에 위치한 KLAM 과 뉴잉글랜드에 위치한 NEBS 와 함께 '전미한인생명과학자의 날'과 같은 다양한 온라인 학술 교류를 통해, 미국에서 활발하게 연구활동을 이어가고 있는 많은 한인 생명과학자 들이 함께 소통할 수 있는 중요한 기회를 이끌어 가고 있습니다. KOLIS 연례 학회의 성공과 더불어 올해도 준비중에 있는 '전미한인생명과학자의 날' 행사의 많은 관심과 참여를 부탁드립니다.

이번 연례 학회를 통해서 KOLIS에 계시는 많은 한인 생명과학자분들이 값지고 의미가 있는 시간을 보내시길 진심으로 멀리서 기원드립니다!

2023 NYKB 회장
이철희 드림

Chul-Hee Lee



KOREAN
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IN THE BAY AREA

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Sangsoo Lee, Ph.D.
Postdoc, WCM
President, KLAM 2023



안녕하세요.

2023 년 KLAM 의 회장을 맡고 있는 이상수입니다.

KOLIS 의 연례 학술대회를 진심으로 축하드립니다. COVID-19 팬데믹 이후 생명과학/의학/보건 연구의 중요성이 더욱 대두되고 있는 지금, 한인 과학자간의 교류는 어느때보다도 중요할 것입니다. 특히 생명/의학 연구의 흐름을 주도하고 있는 Bay 지역을 기반으로 한 KOLIS 의 학술 교류는 더욱 의미가 있다고 생각합니다.

메릴랜드의 존스홉킨스 대학, 메릴랜드 주립대를 중심으로 한 저희 KLAM 은 작년부터 KOLIS 와 학술적인 교류를 시작하였습니다. 향후에도 긴밀한 협력을 통하여 한인 생명과학자간의 네트워크를 확장하는데 노력하겠습니다.

다시한번 KOLIS 의 2023 년 학술대회 개최를 축하드립니다.

감사합니다.

2023 KLAM 회장

이상수 드림

Program



2023 Annual Conference June 3rd 2023

09:30 - 10:00

Registration

10:00 - 10:10

Opening Remarks & Raffle 1

Session I

Keynote & Fellowship

Moderator: **ChanHee Mok, Ph.D., UCSF**

10:10 - 11:00

Keynote I

Prof. Surl-Hee (Shirley) Ahn, UC Davis

11:00 - 11:25

Fellowship

HyunJung (Danielle) Kim, UC Davis

11:25 - 11:50

Fellowship

Gwanggyu Sun, Stanford

11:50 - 13:00

Lunch & Group Photo

Session II

Career Development

Moderator: **Jinyoung Lee, Ph.D., UCSF**

13:00 - 13:20

Academia in Korea

Prof. Han Min Woo, SKKU

13:20 - 13:40

Academia in US

Prof. Surl-Hee (Shirley) Ahn, UC Davis

13:40 - 14:00

Industry in US

Aram Chang, Ph.D., Bristol Myers Squibb

14:00 - 14:20

Startup

Jooyeon Chung, M.D., Kakao Ventures

Session III

Poster & Networking

14:20 - 15:00

Poster Presentation & Coffee Break

Session IV

Keynote & Fellowship

Moderator: **Kibeom Hong, Ph.D., UCSF**

15:00 - 15:50

Keynote II

Dongjin Seo, Ph.D., VP, Neuralink

15:50 - 16:15

Fellowship

Aram Lyu, Ph.D., UCSF

16:15 - 16:40

Fellowship

Sungwoo Choi, Ph.D., UC Berkeley

16:40 - 17:00

Sponsor Talk

Intag Yu, Director, Cellgentek

17:00 - 17:15

Sponsor Information

17:15 - 17:30

Closing Remarks & Raffle 2

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ABSTRACTS

Session I Keynote



2023 Annual Conference
June 3rd 2023

Looking through the lens of a computational microscope

Surl-Hee (Shirley) Ahn, Ph.D.

Department of Chemical Engineering

Assistant Professor, UC Davis

Molecular dynamics (MD) simulations are becoming quintessential tools in many fields, including biology, chemistry, chemical and biomolecular engineering, materials science, and medicine. They serve as a computational microscope that uncovers the fundamental atomistic mechanisms of many important biological and physical processes and systems and are important tools for human health and new materials technology. In this talk, I will talk about how MD simulations were used and vital to uncover important discoveries and findings regarding the SARS-CoV-2 spike protein. I will also talk about the challenges for MD simulations (e.g., the timescale barrier between simulations and biological processes) and developing state-of-the-art enhanced sampling methods (or building the lens of a computational microscope) to overcome these challenges for MD simulations.

Session IV Keynote



**2023 Annual Conference
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Interfacing with the brain at Neuralink

Dongjin Seo , Ph.D.

Vice President, Neuralink

Neuralink is creating a generalized brain interface to restore functionality and autonomy to those with unmet medical needs. This talk will describe what we are building today, how it addresses key engineering challenges, and what's next.

Session I
Fellowship
UC Davis



2023 Annual Conference
June 3rd 2023

Neonatal immune signatures differ by sex regardless of neurodevelopmental disorder status: macrophage migration inhibitory factor (MIF) alone reveals a sex by diagnosis interaction effect

HyunJung (Danielle) Kim
Graduate Group in Immunology, School of Veterinary Medicine
Division of Rheumatology, Allergy & Clinical Immunology
UC Health Internal Medicine
University of California, Davis



Immune dysregulation, including aberrant peripheral cytokine/chemokine levels, is implicated in neurodevelopmental disorders (NDD) such as autism spectrum disorder (ASD). While the diagnosis of ASD is more common in males compared to females, sex effects in immune dysregulation related to neurodevelopment remain understudied. The aim of this exploratory study was to determine whether there are sex-specific effects in neonatal immune dysregulation with respect to an ASD or delayed development (DD) diagnosis. We utilized the data from the Early Markers for Autism study, a population based case-control study of prenatal and neonatal biomarkers of ASD. The immune profile of newborns later diagnosed with ASD (n= 482, 91 females), DD (n= 140, 61 females) and sex-matched general population controls (GP; n= 378, 67 females) were analyzed using neonatal bloodspots (NBS) via 42-plex multiplex assay. Multiple linear regression analysis was performed to identify whether sex was associated with differences in cytokine/chemokine levels of children with ASD, DD, and GP. A sex by diagnosis interaction effect was observed only for the chemokine macrophage migration inhibitory factor (MIF), with males displaying higher levels of NBS MIF than females in the GP control group (p= 0.02), but not in ASD (p= 0.52) or DD (p= 0.29) groups. We found that regardless of child diagnosis, newborn blood spot eluates from females had a significantly higher concentration than males with the same diagnosis of the chemokines granulocyte chemotactic protein 2 (GCP-2; p< 0.0001), macrophage inflammatory protein 2-alpha (GRO α ; p= 0.002), interferon-inducible t-cell alpha chemoattractant (I-TAC; p< 0.0001), stromal cell-derived factor 1 alpha and beta (SDF-1 α - β ; p= 0.03), innate inflammatory chemokines interferon-gamma induced protein 10 (IP-10; p= 0.02), macrophage inflammatory protein 1-alpha (MIP-1 α ; p= 0.02), and the Th1-related pro-inflammatory cytokine interleukin-12 active heterodimer (IL-12p70; p= 0.002). In contrast, males had a higher concentration than females of secondary lymphoid-tissue chemokine (6CKINE; p= 0.02), monocyte chemotactic protein 1 (MCP-1; p= 0.005) and myeloid progenitor inhibitory factor 1 (MPIF-1; p= 0.03). Results were similar when analyses were restricted to NBS from DD and ASD further classified as ASD with intellectual disability (ID), ASD without ID, and DD (GCP-2, p= 0.007; I-TAC, p= 0.001; IP-10, p= 0.005; IL-12p70, p= 0.03 higher in females; MPIF-1, p= 0.03 higher in male). This study is the first to examine sex differences in neonatal cytokine/chemokine concentrations, and whether these differences are associated with neurodevelopmental outcomes. Results highlight the importance of considering sex as a critical factor in understanding the immune system as it relates to child development.

**Session I
Fellowship
Stanford University**



**2023 Annual Conference
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Cross-evaluation of *E. coli*'s operon structures via a whole-cell model suggests alternative cellular benefits for low- versus high-expressing operons

Gwanggyu Sun
Stanford University



Throughout various scientific disciplines, mathematical models have been used to improve our understanding of complex systems and guide new discoveries. We explored whether such model-driven discoveries would be possible in biology by building a mathematical model of the most well-studied organism in the field. The *E. coli* whole-cell model is an in silico representation of an *E. coli* cell that takes into account the known functions of all genes and molecules within the cell, and can simulate the cell's growth in multiple environments. With the whole-cell model, we were able to evaluate the cross-consistency of heterogeneous datasets that were curated for the model, and suggest model-guided corrections to some of the datasets that were inconsistent. We were also able to derive new biological hypotheses from the emergent properties observed from the simulation outputs. In this talk, I will introduce the basic concepts of the *E. coli* whole-cell model, and share recent discoveries that were made with the model concerning the transcription unit structures of *E. coli*.

**Session IV
Fellowship
UC San Francisco**



**2023 Annual Conference
June 3rd 2023**

Integrin signaling is critical for myeloid-mediated support of T-cell acute lymphoblastic leukemia

Aram Lyu, Ph.D.
UC San Francisco



We previously found that T-cell acute lymphoblastic leukemia (T-ALL) requires support from tumor-associated myeloid cells, which activate IGF1R signaling in the leukemic blasts. However, IGF1 is not sufficient to sustain T-ALL survival in vitro, implicating additional myeloid-mediated signals in T-ALL progression. Here, we find that T-ALL cells require close contact with myeloid cells to survive. Transcriptional profiling and in vitro assays demonstrate that integrin-mediated cell adhesion and activation of the downstream FAK/PYK2 kinases are required for myeloid-mediated support of T-ALL cells and promote IGF1R activation. Consistent with these findings, inhibition of integrins or FAK/PYK2 signaling diminishes leukemia burden in multiple organs and confers a survival advantage in a mouse model of T-ALL. Inhibiting integrin-mediated cell adhesion or FAK/PYK2 also diminishes survival of primary patient T-ALL cells co-cultured with myeloid cells. Furthermore, elevated integrin pathway gene signatures correlate significantly with myeloid enrichment and an inferior prognosis in pediatric T-ALL patients.

**Session IV
Fellowship
UC Berkeley**



**2023 Annual Conference
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**Factor X coordinates adipose plasticity and energy balance
by uncoupling Factor Z expression from fat mass**

Sungwoo Coi, Ph.D.
UC Berkeley



Adipose tissue regulates systemic energy homeostasis by acting as an energy reservoir and endocrine organ. Coordinated regulation of these functions is essential for metabolic health, but the underlying mechanisms are unknown. Here we show that the transcriptional coregulators Factor X mediates the crosstalk between adipose tissue mass and Factor Z levels to maintain systemic energy balance. The activation of adipocyte-specific Factor X via genetic ablation of the upstream regulator Factor Y resulted in a profound reduction in fat mass due to the conversion of mature adipocytes into delipidated cells with progenitor-like features. Rosiglitazone treatment normalized fat mass, indicating that PPARG inhibition is a major contributor to Factor X-induced lipoatrophy. Surprisingly, Factor Y knockout mice did not exhibit lipodystrophy-related metabolic dysfunction. This phenotype was attributed to a paradoxical increase in circulating Factor Z levels, which was found to offset the energy storage deficit by increasing fat oxidation and energy expenditure. Mechanistically, we identify a Factor X-T axis that upregulates Factor Z expression by direct binding to an upstream enhancer site of the Factor Z gene. Finally, we find that Factor X activity is associated with and functionally required for Factor Z regulation during fasting and refeeding, revealing a pivotal role for Factor X in linking nutrient status of adipose tissue to systemic energy homeostasis. Taken together, we demonstrate that adipocyte factor X functions as a nexus for coordinating nutrient storage capacity and systemic energy balance by regulating adipocyte plasticity and Factor Z gene transcription.

Poster Presentation



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Graduate Students

Narrowband Gamma Oscillation (NBG) Synchronizes and Propagates
Throughout Thalamocortical Visual System

Donghoon Shin, UCSF

Cross-evaluation of E. coli's Operon Structures via a Whole-Cell Model
Suggests Alternative Cellular Benefits for Low- Versus High-Expressing Operons

Gwanggyu Sun, Stanford

Postdoctoral Researchers

Two Step Enzymatic Carbonylation of C1 Compounds into C4 Chemical
a Using a Marine Carbonylase

Hye Jin Jo, Ph.D., UCB

EMBER Multidimensional Spectral Microscopy Enables Quantitative
Determination of Disease- and Cell-specific Amyloid Strains

Hyunjun Yang, Ph.D., UCSF

Development of Novel Hybrid Antibiotics by Organic Synthesis and
Binding-induced Hybridization

Seul Ki Yeon, Ph.D., UCSF

Functional Interrogation of a TGDS Patient Variant in the Pathogenesis of
Catel-Manzke Syndrome

Yoon-Gu Jang, Ph.D., UCSF

Cortical-Hippocampal Coupling During Manifold Exploration in Motor Cortex

Jaekyung Kim, Ph.D., UCSF

Sponsors

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THANK YOU



Hanmi Pharm.

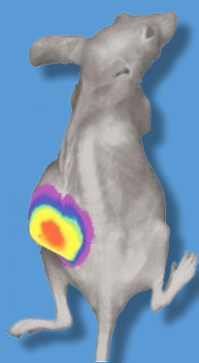


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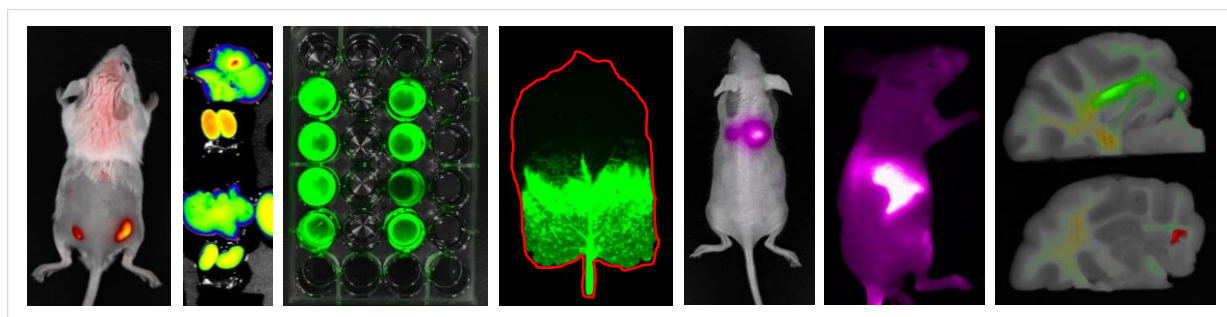


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the boundaries of healthcare**



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For the last 90 years, the corporate culture of honesty and integrity,
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가족들의 간절함을 알기에
동아쏘시오그룹은 연구실의 불을 끌 수가 없습니다.

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Provides phenotypic MIC in as low as 5 hours



Random access with up to 12 samples
simultaneously (15 panel positions)



Expert system on board with a choice
of guidelines



2 panels: 1 Gram-negative + 1 Gram-positive

Website



PR Video



Helping you care for
sepsis patients

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2023 Annual Conference June 3rd 2023



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