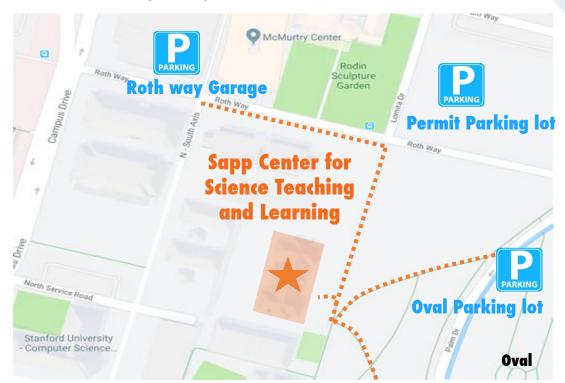


2018 Spring Conference





Sapp Center for Science Teaching and Learning Auditorium Stanford University | May 5th, 2018 |



Sapp center for Science Teaching and Learning

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Greeting from the KOLIS chair

Welcome to Stanford Campus and the 2018 KOLIS Spring Conference!

따뜻한 5월의 봄날, 스탠포드 캠퍼스로 콜리스 여러분을 초대합니다. 현재까지 100명 가까이 되는 많은 분들께서 총회에 관심을 표해주시고 참여 신청을 해주셔서 총회를 기획하는 임원진의 일원으로서 이번 콜리스 봄 총회가 매우 기대됩니다.

이번 봄총회의 테마는 <<Beyond the Lab: Start Mapping Your Career Path>>입니다. 5월 5일 하루만큼은 연구실에서 벗어나 다양한 학과, 연구, 커리어 레벨에 계신 분들과 만나셔서 아이디어 및 정보를 공유하시고, 더 나아가 다음 커리어 스텝으로 나아갈 때 도움을 얻는 중요한 네트워크의 기회로 삼으셨으면 좋겠습니다.



2018 Kolis Chair Soah Lee Ph.D.

emp

이러한 Career Development에 관한 논의를 북돋아주시고 멘토링을 해주실 각 계에 계신 대표 연사님들을 모셨습니다. UCSF 전영욱 교수님, 한양대학교 김태욱 교수님, Impossible Foods 박보라 박사님, Surrozen 이성진 박사님의 세미나를 통해 '한국-미국 Academia hiring process 및 funding situation 차이, how to make a transition from academia to industry' 등의 평소 가지고 계셨던 궁금증을 함께 토론할 수 있는 기회가 되었으면 좋겠습니다.

이와 더불어 최근 권위있는 학술 저널에 실린 연구 성과를 내신 세 분의 연사님을 초청하였습니다. Patient-specific iPSC를 이용한 disease modeling을 주제로 Stanford 이재철 박사님, Nuclear pore complex 구조와 기능에 대해서 UCSF 김승중 박사님, Autophagy regulation mechanism에 대해 UC Berkeley 신희재 박사님께서 재밌는 세미나를 해주실 예정입니다. 학문적 갈증도 해소하시고 연구 비하인드 스토리도 들을 수 있는 시간이 될 것 같습니다.

참석자 RSVP 리스트를 보면 생명 과학 관련 연구 분야에 종사하시는 다양한 background의 연구자분들이 오십니다. 이렇게 다양한 research interests를 가지신 콜리스 여러분의 네트워킹을 돕기위해 Lightening Talk Session 및 와인/맥주가 있는 해피아워 네트워킹 세션도 준비하였습니다. 다음 세션들을 통해 콜리스 커뮤니티가 융합 학문적 기류에 발맞추어 더욱 다원화되길 기원합니다.

이번 봄총회를 진정으로 의미있고 유쾌한 기억으로 남게 만들 수 있는 가장 중요한 요소는 여러분의 열성과 참여입니다. 맛있는 음식과 새로운 학문적 발견을 즐기시고, 오래된 동료와 또다른 추억 쌓으시며, 새로운 인적 네트워크를 만드시는 의미 깊은 총회를 만들어주세요! 마지막으로 이 모든 것을 가능할 수 있도록 콜리스를 물적/심적으로 지원해주신 후원 기관/회사들께 감사의 말씀을 전합니다. 감사합니다.



Sapp Center for Science Teaching and Learning Auditorium Stanford University | May 5th, 2018

Morning schedule

09:20 - 09:50 Registration

09:50 - 10:00 Welcoming Remarks

10:00 - 10:30 Career Development I: Industry in US

Dr. Bora Park, Impossible Foods "Make the Impossible to possible"

10:30 - 11:00 Scientific Talk I: Autophagy

Dr. Hijai Regina Shin, Zoncu Lab, UC Berkeley "AMPK-SKP2-CARM1 signaling cascade in epigenetic and transcriptional regulation of autophagy1"

11:00 – 11:30 Career Development II: Academia in Korea

Prof. Tae-Wuk Kim, Hanyang University
"The tail of a dragon and the head of a snake?"

11:30 - 11:45 Q&A Session with Speakers

11:45 – 12:00 Lightening Talk – Promote your research and yourself!

12:00 - 13:00 Lunch and Networking

13:00 - 13:10 Quiz & Raffle



Afternoon schedule

Afternoon sch	edule
13:10 - 13:40	Career Development III: Industry in Korea CJ Bio Research Center
13:40 - 14:10	Scientific Talk II: Nuclear Pore Complex
	Dr. Seungjoong Kim, UCSF "Integrative structure and functional anatomy of a nuclear pore complex (npc)"
14:10 - 14:40	Career Development IV: Academia in US Prof. Youngwook Jun, UCSF
14:40 - 15:00	Q&A Session with Speakers
15:00 - 16:00	Networking Session: Wine & Beer
16:00 - 16:30	Scientific Talk III: Disease Modeling using patient-derived iPSC-CM
	Dr. Jaecheol Lee, Stanford "Dysregulation of PDGFRB contributes to the pathogenesis of Imna-related dilated cardiomyopathy"
16:30 - 17:00	Career Development VI: Startup in US
	Dr. Sungjin Lee, Surrozen "About the world's most important issue"
17:00 - 17:20	Q&A Session with Speakers
17:20 - 17:30	KIST Biomedical Research Institute, Kihwan Choi, Stanford EE PhD
17:30 - 17:40	Korea Innovation Center Silicon Valley, Ryan Jung
17:40 - 18:00	Closing Remarks: Quiz & Raffle
18:00 -	Dinner & Networking



Sapp Center for Science Teaching and Learning Auditorium Stanford University | May 5th, 2018

ABSTRACTS





Career Development I : Industry in US 10:00 - 10:30 AM

Make the Impossible to possible



Dr. Bora Park Impossible Foods

How can you start a career in a different field without "experience"? I knew it would be challenging to switch careers or transition fields from pharmaceutical to the food industry, with no real job experience. This uncharted territory will likely require skills that you've yet to develop. However, you can bridge the transition by opting for an opportunity that guarantees exposure and first-hand experience—and allows you to give back to the community and find purpose and meaning.

I will share some of my experiences how I changed my field, career path and what I've learned throughout my journey as well as how I feel working in a fast-growing start-up company.



Scientific Talk I: Autophagy 10:30 - 11:00 AM

AMPK-SKP2-CARM1 signaling cascade in epigenetic and transcriptional regulation of autophagy1



Dr. Hijai Regina Shin UC Berkeley

Autophagy is a highly conserved self-digestion process, essential to maintain homeostasis and viability. Besides operating as a quality control mechanism in steady-state conditions, autophagy is up-regulated in response to a variety of homeostatic perturbations, especially in response to nutrient starvation. Failure to properly execute the autophagic program has been associated with many human pathologies including neurodegenerative disorders, auto-immune conditions and cancer. Although the core components of autophagy in the cytoplasm have been well studied, little has been known about the fine-tuning mechanism of autophagy through epigenetic regulations.

Here, we identified the histone arginine methyltransferase CARM1 as a new component and followed histone H3R17 dimethylation as a critical epigenetic mark in starvation-induced autophagy. Upon nutrient starvation, CARM1 is stabilized in the nucleus, whereas it is constantly degraded under nutrient-rich conditions by the SKP2-containing SCF (SKP1-CUL1-F-box protein) E3 ubiquitin ligase. We further showed that nutrient starvation induces the proteins levels and activity of AMPK in the nucleus. Activated AMPK then phosphorylates FOXO3, leading to SKP2 downregulation and increased CARM1 protein levels in the nucleus. Stabilized CARM1 in turn functions as an essential co-activator of TFEB and regulates the expression of autophagy and lysosomal genes. Our findings provide a conceptual advance that activation of specific epigenetic programs is indispensable for a sustained autophagic response, and shed light on a potential therapeutic targeting of the newly identified AMPK-SKP2-CARM1 signaling axis in autophagy-related diseases.



Career Development II : Academia in Korea 11:00 - 11:30 AM

The tail of a dragon and the head of a snake?



Prof. Tae-Wuk Kim Hanyang Univ.

As an old member who actively participated in KOLIS activities, I am going to briefly introduce academia position of Korea. The process of recruiting differs from university to university but there exist common procedures. Based on my experience of the last 7 years after appointment of professor, I will summarize overall recruitment process of faculty position and future prospect. In addition, I would like to talk about the advantages and disadvantages of research in Korea and the status of research funding. I hope that my presentation will be able to help you to apply a faculty position in Korea.



Scientific Talk II: Nuclear Pore Complex 01:40 - 02:10 PM

Integrative Structure and Functional Anatomy of a Nuclear Pore Complex (NPC)



Dr. Seung Joong Kim UC San Francisco

Despite the central role of Nuclear Pore Complexes (NPCs) as gatekeepers of RNA and protein transport between the cytoplasm and nucleoplasm, their large size and dynamic nature have impeded a full structural and functional elucidation. Here, we have determined a subnanometer precision structure for the entire 552-protein yeast NPC by satisfying diverse data including stoichiometry, a cryo-electron tomography map, chemical cross-links, and small angle X-ray scattering (Figure 1) [1-3]. The structure reveals the NPC's functional elements in unprecedented detail (Figure 2). The NPC is built of sturdy diagonal columns to which are attached connector cables, imbuing both strength and flexibility, while tying together all other elements of the NPC, including membrane-interacting regions and RNA processing platforms. Inwardly-directed anchors create a high density of transport factor-docking Phe-Gly repeats in the central channel, organized in distinct functional units. Taken together, this integrative structure allows us to rationalize the architecture, transport mechanism, and evolutionary origins of the NPC.



Career Development IV : Academia in USA 02:10 - 02:40 PM

Not(ch) Where It Should Be?:

Dynamic phase separation and colocalization of membrane proteins choreographs biochemical reaction sequences



Prof. Youngwook Jun UC San Francisco

Cell signaling is orchestrated by cooperative actions of multiple nanoscale biomolecular machines. These processes are highly dynamic in space and time, and aberrant spatiotemporal dynamics of cell signaling results in developmental defects and diseases. How cells choreograph these signaling sequences in space and time to regulate cell functions and fates is of a central question in biology. To interrogate spatiotemporal regulation of cell signaling, my lab has been developing various nanotechnology tools to image and manipulate cell signaling in space and time with single-cell and molecule resolution. In this talk, I will specifically focus on spatiotemporal dynamics of Notch, a key cell communication receptor, and its signaling consequences in cells. By integrating cutting-edge technologies including mechanogenetics (i.e. targeted control of genetically encoded mechanosignaling), super-resolution microscopy, and single particle tracking, we mapped dynamic spatial distributions of Notch receptors during the cell surface activation. We found that Notch receptors initially separated from the mechanically and enzymatically (y-secretase) active cadherin-junction. When first proteolytic cleavage of the Notch extracellular domain was triggered by mechanical force, these receptors undergoes changes in subcellular localization, leading to the localization to cadherin-mediated adherens junction that promoted subsequent downstream signaling outputs. Based on our experimental results, we propose a new cell surface activation mechanism of Notch receptors, demonstrating that dynamic phase separation and colocalization of Notch creates enzymatically distinct environments that facilitate sequential proteolysis of Notch and hence controlled signaling.



Scientific Talk III: Disease Modeling using patient-derived iPSC-CM 04:00 - 04:30 PM

Dysregulation Of PDGFRB Contributes To The Pathogenesis Of LMNA-Related Dilated Cardiomyopathy



Dr. Jaecheol Lee Stanford University

LMNA-related dilated cardiomyopathy (LMNA-DCM) is an autosomal dominant disorder caused by mutations in the gene encoding Lamin A/C (LMNA), an intermediate filament protein which constitutes the major component of the nuclear envelope. LMNA-DCM accounts for 5-10% of DCM cases and has an age-related penetrance whose onset typically appears between the ages of 30 and 40. In contrast to most other forms of familial DCM, sudden cardiac death may be the first manifestation of LMNA-DCM even when there has been minimal or no systolic dysfunction, due to malignant arrhythmias such as ventricular tachycardia and fibrillation. However, the precise mechanisms linking the LMNA mutation to increased arrhythmogenicity are still unknown. Here, we successfully recapitulate arrhythmias of LMNA-DCM using induced pluripotent stem cell-derived cardiomyocytes (iPSC-CMs). The electrophysiological studies of iPSC-CMs identify the LMNA mutation as a cause of increased arrhythmogenicity in mutant iPSC-CMs through abnormal calcium homeostasis. We find that the mutations in LMNA disrupt the global chromatin conformation, resulting in hyper-activation of the platelet-derived growth factor (PDGF) signaling pathway in LMNA-mutant iPSC-CMs. Inhibition of the PDGF signaling pathway can rescue the arrhythmic phenotype of mutant iPSC-CMs. These findings were corroborated in cardiac tissues from healthy and LMNA-DCM patients, thus confirming a novel mechanism of LMNA-DCM pathogenesis both in vitro and in vivo.



Career Development IV: Startup in US 04:30 - 05:00 PM

About the world's most important issue...



Dr. Sungjin Lee Surrozen

With a lot of capital and specialized technology, biopharma has been making great results. However, due to the nature of industry, the research results are tried to be hidden until a certain period of time, which makes, unlike Academia, the results not revealed to the public. Especially in recent years, the biopharma's workforce is rapidly becoming highly educated and well-trained, and the pace of growth is accelerating.

A lot of people are applying to biopharma for their next career. Particularly, here in Silicon Valley, there are a lot of applications from job seekers who are not only across the United States but also around the world, which expand a human resource pool. Although the US economy is getting better and job openings are increasing recently, there is still much more demand than supply. In addition, the industry often requires previous company experience in recruiting. This makes the job seekers in academia feel difficult to move to the industry. There are also a number of things to consider when moving for the next career, especially for foreigners like us, including visa issues, referrer issues, and so on.

I would like to share my recent experience of career transition from academia to industry, and hiring experience in my current position. I hope that it helps those who are preparing the next path for the industry career.



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2018년 CJ제일제당 BIO연구소 해외 박사신입 / 경력 연구원 모집



지원 자격

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- 해외여행에 결격사유가 없는 자
- 남자의 경우, 병역 필 또는 면제자

모집 전형

■ 일반 채용 I 해외 학위 소지(예정)자로, 2018년 內 입사가 가능한 자

신입	경력
해외 정규대학 석사 또는 박사학위 보유자	해외 정규대학 <u>Post Doc</u> 또는
또는 취득예정자 ('18년 內)	석/박사 학위 취득 후 <u>경력 보유자</u>

■ GTS 채용 I 해외 학위 소지(예정)자로, 2019~2020년 內 입사가 가능한 자

신입	경력
해외 정규대학 박사학위 취득예정자	비대상

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	발효공정	BIOMASS	생회학, 유전공학, 회학, 효소공학, Metabolomics, 원예학, 농학및	
	OMICS	효소	관련전공우대	
생물자원	제품/기술개발	분석	동물영양학,미생물학,수의학,천연물,축산학, 해양수신학및 관련전공 우대	

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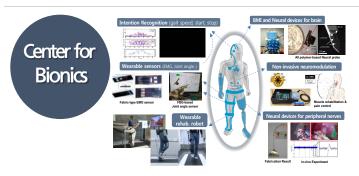
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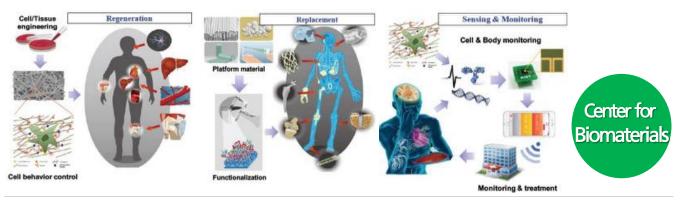


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GC녹십자	용인	해외사업본부 (Business Development)	· 해외 신규 수출 시장 발굴 · Market Research in Vaccine, Immunodeficiency, Autoimmune Diseas, and Hemophilia · Management in Technolgy Transfer Project	• MD/PhD with the strong background in the specific disease (A): MPS, Hemophilia, Vaccine) • Extensive experience in the design, conduct, analysis, and reporting of clinical studies • Interactions with key opinion leaders and investigators • Communication between medical staff and government body • Experience of new drug development with Academia (hospital)/Industry relationship • Education of internal staff with the policy and scientific information in the medical areas • Strong communication skills (interpersonal, influencing, presentation, and written and verbal)
GC녹십자 랩셀		Business Dev. Regulatory Affair Clinical study	Analysis of a new business/investment opportunity and establishment of business strategies Portfolio Optimization and market research Exploring R&D collaboration opportunities Early staged research pipeline licensing Development & operation of Clinical study Medical and regulatory writings	· 학위: 석사 이상 · 전공: 바이오 및 제약 분야 관련 전공자 · 우대사항: 어학 우수자, 전략기획/시장분석/사업개발/ Licensing/임상연구 기획 및 관리/허가 등의 관련 업무 유경험자
GC녹십자 랩셀 세포치료연구소		Immunology, Oncology, Cell biology, Molecular biology, Virology 공정개발 (동물세포 배양) 분석	· 면역/항암/세포치료제 개발 · 면역세포 항암 기전 연구 · 바이오 의약품 비임상 효력/독성 시험 · 분석법(cell based assay, 역가) 개발 · 동물세포 배양공정 개발 · 생산 공정 scale-up 및 기술이전	·학위: 박사 이상 · 전공: 바이오 및 제약 분야 관련 (면역학, 세포생물학, 생화학, 화학공학, 분석화학 등) 전공자 · 우대사항: 어학 우수자, 바이오텍 종사자



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Sapp Center for Science Teaching and Learning Auditorium Stanford University | May 5th, 2018

09:20 - 09:50	Registration
09:50 - 10:00	Welcoming Remarks
10:00 - 10:30	Career Development I: Industry in US Dr. Bora Park, Impossible Foods
10:30 - 11:00	Scientific Talk I: Autophagy Dr. Hijai Regina Shin, Zoncu Lab, UC Berkeley
11:00 - 11:30	Career Development II: Academia in Korea Prof. Tae-Wuk Kim, Hanyang University
11:30 - 11:45	Q&A Session with Speakers
11:45 - 12:00	Lightening Talk – Promote your research and yourself!
12:00 – 13:00	Lunch and Networking
13:00 - 13:10	Quiz & Raffle
13:10 - 13:40	Career Development III: Industry in Korea CJ Bio Research Center
13:40 - 14:10	Scientific Talk II: Nuclear Pore Complex Dr. Seungjoong Kim, UCSF
14:10 - 14:40	Career Development IV: Academia in US Prof. Youngwook Jun, UCSF
14:40 - 15:00	Q&A Session with Speakers
15:00 - 16:00	Networking Session: Wine & Beer
16:00 - 16:30	Scientific Talk III: Disease Modeling using patient-derived iPSC-CM Dr. Jaecheol Lee, Stanford
16:30 - 17:00	Career Development VI: Startup in US Dr. Sungjin Lee, Surrozen
17:00 - 17:20	Q&A Session with Speakers
17:20 - 17:30	KIST Biomedical Research Institute, Kihwan Choi, Stanford EE PhD
17:30 - 17:40	Korea Innovation Center Silicon Valley, Ryan Jung
17:40 - 18:00	Closing Remarks: Quiz & Raffle
18:00 -	Dinner & Networking