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SCIENTISTS AND ENGINEERS ASSOCIATION

About KSEA

Korean-American Scientists and Engineers Association (KSEA) is a 47-year-old non-profit national-level professional organization. It is open for individuals residing in the USA who are engaged in science, engineering or a related field.

KSEA's objectives are:

- To promote the application of science and technology for the general welfare of society;
- To foster the cooperation of international science communities especially among the US and Korea;
- To serve the majority of Korean-American Scientists and Engineers and help them to develop their full career potential.

KSEA has 78 Chapters/Branches, 13 Technical Groups and 30 Affiliated Professional Societies (APS) covering all major branches of science and engineering. Since its birth in 1971, KSEA has been recognized as the main representative organization promoting the common interests of Korean-American scientists and engineers toward meeting the objectives mentioned above.

KSEA welcomes participation from 1.5th-generation, 2nd-generation, and 3rd-generation Korean-American scientists and engineers including the mixed-race and adoptee communities. KSEA promotes helping younger generation Korean-Americans to be aware of the rapid advances in science and engineering occurring both inside and outside of the US. Especially, to create opportunities for young generation members to interact with talented scientists and engineers in Korea.



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2019 NMSC, 2019 PDF
Chapter, APS & HQ News

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The Editorial Board's Note

A Message from the Publication Directors of the KSEA 47th Administration

Warm weather is finally here as we come to the close of this administration and start with the next. In this issue of Letters, we look back at the national events of the 2019 National Mathematics and Science Competition (NMSC) held around the country in April and the 2019 Professional Development Forum (PDF) held in June in Austin, TX. Even though one event was focused on primary and secondary school students, and the other targeted early-career industry professionals, both events provided opportunities for fostering academic curiosity and foundations for professional growth.

We also peek into the future of cutting-edge research with a featured article by the 2019 KSEA Young Investigator Grant (YIG) recipients Dr. Se Kwon Kim from University of Missouri at Columbia on “Quantum Spintronics: Mutual Thrust for Spintronics and Quantum Materials”. Also we include a contributed article by James Han from the University of Toronto on “Overriding the Suppressive Effects of Regulatory T Cells to Enhance Adoptive T Cell Therapy.”

Headquarters news includes the 2019 KSEA Election results for 48th President-Elect, Vice-Presidents, Auditor, and Technical Group Councilors. We also recognize the 40 student recipients of the KSEA-KUSCO Graduate Scholarships and the KSEA Undergraduate Scholarships.

Finally, there would be no future of KSEA without its members and the incredible activity at the local and technical level as we share news of Regional Conferences held by the host Local Chapters and several Affiliated Professional Society (APS) meetings news.

As always, if you have any news, event information, or articles to share with other KSEA members, please contact the KSEA Publications Directors or simply email your article to sejong@ksea.org.

The 47th Admin. Publication Directors



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The President's Message



K. STEPHEN SUH, PhD

President
Korean–American Scientists and
Engineers Association

President
DiagnoCine

Dear Fellow KSEA Members and colleagues,

It has been an honor and a privilege to serve as the 47th President of the Korean-American Scientists and Engineers Association (KSEA) during 2018-2019 administration. I must say that serving this role was not feasible without many executive members, directors, chapter/branch presidents and leaders. We all worked together to successfully finished the 47th administration. For publication of newsletters, I want to specially thank all of publication directors and Ryuhwa Stella Kim for leading the publication matters. 47th administration published four KSEA newsletters, and I want to thank all contributors. The newsletters started to include more pictures of events and tried to modify the traditional format, while include new and innovative research topics from KSEA members. We believe KSEA members enjoyed more visual contents in the newsletters, and I hope this format continues because we received many positive feedbacks.

This newsletter reports National Mathematics and Science Competition (NMSC2019) and many young generation volunteers from 31 chapters and branches were involved. We sincerely thank Overseas Korean Foundation (OKF) to sponsor this major KSEA event that is designed for serving Korean-American community in USA. Featured articles include very innovative projects on topics of quantum spintronics and T-cell therapy. As you read from KSEA news section, the election process was smooth and without glitches to elect new officers and leaders that will lead KSEA organization. We congratulate all undergraduate and graduate KSEA members that are awarded with KSEA and KSEA-KUSCO scholarships. We hope all of these young scholars become successful to lead the next generation of Korean-American scientists, engineers, technologists and entrepreneurs. The most recent KSEA event was Professional Development Forum (PDF2019) that was held in Austin, Texas during June 21-23, 2019. I hope readers enjoyed reading about this industry-focused event and we strongly recommend more young generation and professionals to participate PDF2020 next year.

Several stories are illustrated for KSEA chapters and regional conferences. All our chapters worked hard to successfully accomplished 7 regional conferences during 47th administration. I want to congratulate many chapter leaders and volunteers that contributed to these excellent events. Affiliated Professional Societies (APS) are holding great events across the USA, and we thank presidents and leaders of each fields of science and technology. Young generation leaders held several important YG events nationally and regionally, including summits and leadership meetings. Due to strong efforts from the next generation group leaders, the YG membership increased over 1000 members. Great job!

Lastly, I want to thank sponsors that supported all our activities and events, especially KUSCO for their consistent support. I want to thank KSEA Headquarter staff for their dedicated works on all operation.

K. Stephen Suh
KSEA President

National Mathematics and Science Competition

NMSC 2019



TAE (TOM) OH, PhD
KSEA Vice President 1
National Contest Committee Chair

Associate Professor
Rochester Institute of Technology

The National Mathematics and Science Competition (NMSC) is one of the main activities that the Korea- an-American Scientists and Engineers Association (KSEA) organizes annually. This is an excellent opportunity to reach out to the public and promote science, technology, engineering, and math (STEM) education for our future generations. NMSC 2019 was offered at 37 different sites throughout the US on April 13, 2019.

This event was successful, and I would like to thank all chapter/branch presidents, local NMSC chairs, and all volunteers from the 31 chapters for running the event as smoothly as possible. Without their commitment and dedication, this event wouldn't have been successful. Table 1 shows Chapters/Branches that participated in the 2019 NMSC as well as the Presidents and NMSC Chairs who made dedicated efforts this year. It was the 18th year for the math competition, 14th year for the science competition, and 7th year for the physics competition.

Chapter	Chapter President	NMSC Chair
Dayton-Ohio	Munsup Seoh	
New Jersey	Nakjung Choi	
Georgia	Junkoo Park	Dong-Gook Kim
Tampa	Jong Park	Youngchul Kim
Ohio	Do-Gyoon Kim	
Michigan	Jun Ha Park	Yunjae Cho
Southern VA	Mintai Kim	
Southern CA	Samuel Choi	John Lee
Seattle	Woon Jong Yoon	
Eastern Carolina	Myon-Hee Lee	
Washington Metro	Nam Cheol Kim	Pilgyu Kang
Central Illinois	Andrew Yun	
NY Metropolitan	Ohbong Kwon	
North Carolina	Sunkyu Park	Minyoung Suh
South Texas	Minsu Kim	Goo Jun
Indiana	Dan Daehyun Koo	
SW Ohio	Changjoo Kim	Jaewoo Jeong
New England	Yoojin Chung	JinHaeng Cho
San Diego	John Baik	Yoona Kim
Chicagoland	Dong-Hyun Kim	Seungwon Chung
Austin	Hong-Gu Kang	In-Hyouk Song
Orlando	Hyoung Jin Cho	Boo Hyun Nam
Nebraska	Sangjin Ryu	
Utah	Keunhan Park	Jiyoung Chang
Wisconsin	Hung Tae Kim	Joy Kwon
Gainesville Florida	Yong-Kyu Yoon	
North Texas	Wooram Park	
Idaho	Jae Ryu	
Silicon Valley	Steve Sung Won Moon	
Sacramento	Jeff Olson	Young Lee
Costal Bend	Dugan Um	

Table 1. Chapters/Branches that Participated in the 2019 NMSC

The math competition was offered to 4th to 11th grade students. There were 30 questions for each grade, which included 20 multiple-choice questions and 10 free response questions. Grades 4-8 had 60 minutes and grades 9-11 had 90 minutes to solve them. A total of 1,260 students participated in the math competition. In addition to the chapter-level awards, the top three national winners in each grade were awarded with certificates and cash prizes. This year's national winners are listed in Table 2.

Grade	Name	School	Chapter	Rank
4	Rayoon Kim	Penn Wynne	New Jersey	1
	Shourya Vyas	Walnut Glen Academy for Excellence	North TX	2
	Jason Kim	Murdock Portal	Silicon Valley	3
5	Susie Lu	Smith Elementary	Seattle	1
	Sanghyeon Joo	Medina	Seattle	2
	Vishnu Mangipudi	Home School	Seattle	2
6	Jiah Lee	Hope Middle School	Eastern Carolina	1
	Daniel Kim	Miller Middle	Silicon Valley	1
	Jian Kweon	Tom Matsumoto	Silicon Valley	1
	Won Jang	Landell Elementary	Southern CA	1
7	Jaejoon Hwang	Tenakil Middle	New Jersey	1
	Alexander Jun	Quail Valley MS	South TX	2
	Youngwoo Tahk	Cupertino Middle	Silicon Valley	3
8	Alan Dongjin Lee	Fletcher MS	Silicon Valley	1
	Edward Kong	Mason MS	SW Ohio	2
	Suyash Pandit	Cedar Park MS	Seattle	3
9	Alan Xie	Beavercreek HS	Dayton-OH	1
	Joseph Kim	Stuyvesant HS	NY Metro	2
	Apollo Heo	Dublin HS	Silicon Valley	3
10	Joshua Lee	Lincoln East High	Nebraska	1
	Tae Kyu Kim	Monta Vista HS	Silicon Valley	2
	Jonathan Gai	The Seven Hills School	Dayton-OH	3
	Hyunwoo Lee	Interlake HS	Seattle	3
11	Alex Chung	Perrysburg HS	Washington Metro	1
	Alex Wang	Columbus Academy	Dayton-OH	2
	Sooyoung Choi	Lexington HS	New England	3

Table 2. National Winners of Math Competition

Similarly to the previous year, the Math Exam Committee was gracious enough to accept our invitation to lead and manage the math questions for all grades. Former Chair Prof. Jaewoo Jeong, Miami University at Hamilton, served as the Chair of the Math Exam Committee this year as well. Members of the Math Exam Committee included 8 experienced, continuing members: Dr. Ji Young Choi (Shippensburg University), Dr.

Samjoo Doh (Nuance Communications), Dr. Jimin Lee (University of North Carolina, Asheville), Dr. YoungHee Park Lee (Foothill College, CA), Dr. Youngmi Kim (Jacksonville State University), Dr. Junkoo Park (Georgia Gwinnett College), Dr. Jaedeok Kim (Jacksonville State University), Dr. Samjoo Doh, and Dr. Jin Hyung To (University of Illinois at Urbana-Champaign). The committee evaluated previous NMSC exams and exam result data to adjust the difficulty levels. To encourage and build a confidence in students, the committee invested a lot of time and resources to balance the questions with easy and essential concept questions as well as some challenging questions. Also, the committee prepared example questions to help students understand the question format, difficulty, and types. After the necessary revisions, questions were reviewed by the External Review Committee chaired by Dr. Sung-Yell Song, Iowa State University, former President of Korean-American Mathematical Scientist Association (KAMSA). Mrs. Catherine Cerone also served on the External Review Committee. The final version of example questions along with solutions was posted on the web at <http://www.ksea.org/nmsc/> when online registration was opened on February 06, 2019. The official exam questions and answers for the contest were prepared according to the same procedure. Each committee member framed exam questions for each grade and reviewed the exam questions framed by another member. After the internal review, the External Review Committee reviewed the exam questions and answers. This was a lengthy process that took dedicated commitment of the committee members. I would like to express deep thanks to the committee members who made it possible to have the exam questions and solutions for NMSC 2019 on time. It is not easy to target the adequate level of difficulties for each grade without careful thoughts and dedicated efforts. All members of the Exam Committee and the Review Committee did an excellent job for NMSC to be a competitive global contest.

Grade / Score	4th	5th	6th	7th	8th	9th	10th	11th
0-19	10	5	11	10	20	12	13	10
20-29	21	21	8	14	27	12	19	16
30-39	28	28	9	27	23	19	12	17
40-49	33	30	18	36	16	16	29	17
50-59	32	32	29	39	17	10	14	9
60-69	24	34	31	14	6	10	10	3
70-79	22	31	31	6	7	10	14	4
80-89	14	17	28	3	4	13	1	4
90-99	4	13	19	0	4	6	2	1
100-116	1	9	24	0	4	11	4	1
# of Participant	207	249	208	149	128	119	118	82

Figure 1. Score Distribution by Grade

for the committee to analyze students' performances. The score distribution for each grade is summarized in Figure 1. Numeric values in a tabular form along with bar charts for each grade are available on the NMSC website. Science projects were offered to 4th to 11th grade students to promote science by fostering students' engagement with science practices. A total of 513 students participated from 10 local chapters and branches. The science projects were a project-based competition unlike the math competition. Since national-level awards were not available for science, only chapter-level awards were given to the winners.



The physics contest was offered to 9th to 12th grade students. Seventy-five minutes were given to solve twelve questions including 8 mechanics and 4 electromagnetism questions. Forty students participated from 9 local chapters and branches. The top three national winners were awarded with certificates and cash prizes. The national winners are listed in Table 3. Our strong collaboration continued with the Association of Korean Physicists in America (AKPA), which is an Affiliated Professional Society (APS) of KSEA, as they increased the quality of the 7th National High School Physics Contest. Under the direction and leadership of Dr. Chueng-Ryong Ji of the North Carolina State University, AKPA developed and delivered exam questions for grades 9-12 along with solutions and grading instructions. The cash prizes for the national winners were provided by AKPA, while KSEA provided T-shirts to promote participation in the physics contest this year once again. The certificates for the winners were jointly signed by the President of KSEA, Dr. K. Stephen Suh, and the President of AKPA, Prof. Young-Keek Kim.

Grade	Name	School	Chapter	Ranking
11	Tae Kyu Kim	Monta Vista High School	Silicon Valley	1
10	Andrew Choi	Hoffman	Chicagoland	2

Table 3. National Winners of Physics Competition

The grading sheets with built-in tie breakers created by the Exam Committee were used this year again for chapters to fill out for each participant. This data makes it possible

Many people had to work together for this nation-wide event to be coordinated. I would like to express my special thanks to KSEA-HQ Associate Project Manager, Ms. Michelle Cho for hosting multiple conference calls, and responding to many email questions with Chapter/Branch Presidents and NMSC Chairs, and for providing administrative operational support. Michelle dedicated tremendous amount of time and effort to execute NMSC as smoothly as possible. Mr. Ryan Chung's IT group helped in creating, updating, and maintaining the NMSC website especially with opening the online registration page on time and posting relevant information as needed. Ms. Kelly Han provided tremendous help and supported managing finances in a timely manner. Ms. Euna Yoon helped with other general matters and NMSC business for chapters with advertisements. Without their commitment, I am sure this challenging event could not have been conducted so smoothly and seamlessly.

I would like to thank again all participants and volunteers for a successful NMSC 2019. I would like to express special thanks for the Seattle chapter for hosting 170 math and 170 science participants.

As we celebrate the success of NMSC 2019, I would like committees, organizers, and volunteers from each chapter/branch to collect any feedback to improve future NMSC to be even more successful.



Professional Development Forum PDF 2019



STEVE SUNG WON MOON
PDF Chair

Chapter President
Silicon Valley Chapter

The 2nd Professional Development Forum, also known as PDF was held in Austin, TX from June 21st to 23rd, 2019. A Three days event, PDF had 27 sessions of stimulating talks and informative sessions, in addition to an industry site visit of a hi-tech company and networking opportunities with special entertaining events.

As a forum that draws across many different fields and professions, this year's PDF also consists of diverse group of passionate individuals from industry, academia, and Korean-American community. The Keynote lectures covered subjects such as emerging trends of STEM fields (Bio, ICT, Medicine, Robotics, Smart environment, AI, life and leadership development), founding and managing startup companies, becoming a leader in the field at United States, and so much more. The speakers were invited to share their challenges and experiences, and paths to success and leadership.

The PDF provided myriad learning and networking opportunities to interact and connect with other participants. Each day every participant created their own 90 seconds Elevator Speech to share who they are, why they came to PDF, what they can learn from PDF, and how they can apply these learnings for achieving their lifetime goals. In addition, 13 competitive teams had boasted their singing and performance at the PDF's Got Talent on the second day. We genuinely believe that the 2nd PDF 2019 was a great success of providing venues for learning, connecting, and making a step forward.



QUANTUM SPINTRONICS: MUTUAL THRUST FOR SPINTRONICS AND QUANTUM MATERIALS



Se Kwon Kim, PhD
2019 Young Investigator Grants (YIG) Winner

Vineyard Assistant Professor
University of Missouri at Columbia

The spintronic vision of computing is to use spin in addition to charge to overcome fundamental obstacles of conventional electronics such as significant energy loss due to Joule heating [1]. A problem of particular importance is to achieve efficient spin transport with little dissipation, which is crucial in spintronics since spin is not a conserved quantity unlike charge. The promising direction has recently emerged at the intersection of the two fields of spintronics and quantum materials [3] dubbed as quantum spintronics. See Fig. 1 for the conceptual diagram for quantum spintronics. The introduction of quantum materials, which includes superconductors and 2D materials such as graphene, to spintronics will change the shape of spintronics by, e.g., quantum-enabled low-dissipation spin transport [4]. In addition, advanced spintronic techniques will provide new tools for exploring spin degrees of freedom of quantum materials [5].

One example of the recent researches in quantum spintronics is offered by our study on topological magnon bands in an insulating honeycomb ferromagnet [6], where we showed that the magnet possesses the topologically nontrivial band structures of spin-wave excitations, called magnons, and the topologically protected edge modes along the boundary as illustrated in Figs. 2(a-c). We also showed that the nontrivial topology of the magnon bands can be inferred by measuring the spin Hall response to an applied tem-

perature gradient, which is referred to as the spin Nernst effect. This work has been recognized as one of the first identifications of magnonic topological insulators, which are magnetic analogs of conventional electronic topological insulators. Another example in quantum spintronics research is given by our recent proposal to use a vortex liquid in superconductors for efficient spin transport [7].

Superconductivity refers to the ability of certain materials that can support dissipationless charge transport. However, superconductivity can be destroyed by increasing the temperature or by applying a magnetic field via the proliferation of defects, so-called vortices which have been considered as harmful sources of dissipation. Our idea in the recent paper [7] is to depart from this conventional antagonistic view on superconducting vortices as a parasitic source of dissipation for charge transport, by proposing to actively use them as topologically stable information carriers. Figure 2(d) illustrates spin transport carried by vortices in superconductors, during which no spin information is lost thanks to the topological protection of vortices unlike exponentially decaying spin currents in conventional magnets. Our proposal can be probed by performing ferromagnetic resonance (FMR) measurements on superconductor-ferromagnet heterostructure.

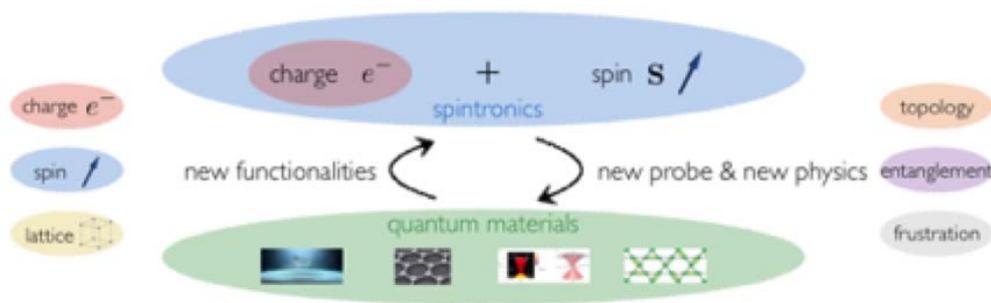


Fig. 1. The conceptual diagram for quantum spintronics, in which the two different fields of spintronics and quantum materials meet for mutual benefits.

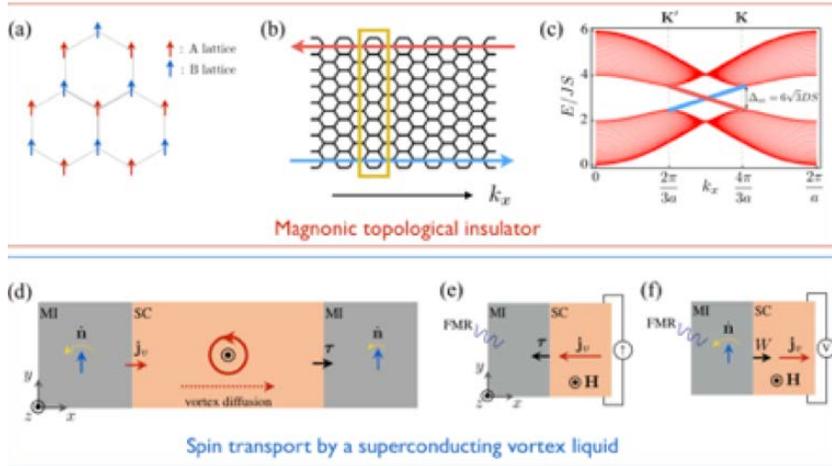


Fig. 2. (a) A spin state of a honeycomb ferromagnet. (b, c) A honeycomb ferromagnet strip with zigzag boundary and its magnon band structures. The red and the blue lines connecting two bulk magnon bands are topological magnon modes localized along the top and the bottom edges of the system. (d) A schematic of the nonlocal spin transport between two magnetic insulators (MIs) mediated by a vortex liquid in the interconnecting superconductor (SC). (e) and (f) Schematics for experimental setups for probing spin-vorticity transmutation utilizing ferromagnetic resonance measurements (FMRs). The figures are adapted from Refs. [6, 7].

The recent marriage of spintronics, which have been driven by practical motivations for more efficient spin-based devices, and quantum materials, which are characterized by exotic macroscopic quantum effects, will provide new opportunities and challenges that can drive future researches in physics and material science. In particular, as two aforementioned examples illustrate, we envision that topology will be likely to play an important role in interconnecting spintronics and quantum materials, providing a convenient language for robust phenomena and quantized effects.

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OVERRIDING THE SUPPRESSIVE EFFECTS OF REGULATORY T CELLS TO ENHANCE ADOPTIVE T CELL THERAPY



James Han, PhD Candidate
Princess Margaret Cancer Center, University Health Network

The fundamental understanding of how our immune system elicit anti-tumor function has revolutionized the field of oncology. In particular, the concept of utilizing the T cells, to recognize and eliminate cancer cells has contributed to the advancements of immunotherapy against multiple malignancies, such as the Chimeric Antigen Receptor (CAR)-T cell therapy. However, despite the attempts to modulate anti-tumor T cell function, a large proportion of patients still do not respond to T cell modulatory drugs, and therefore the mechanisms of resistance against immunotherapy has become an active area of investigation (1-2). One particular resistance mechanism includes the presence of immunosuppressive cells such as regulatory T (Treg), known to restrict T cell immunity (3-5). Thus, overcoming the suppressive effects of Treg cells serves as a promising strategy to bolster anti-tumor T cell properties.

Regulatory T cells recruited by the tumors play an important role in regulating immune surveillance and promoting tumor progression, although the mechanism of how Treg cells limit anti-tumor T cell immunity is still unclear. Numerous strategies have been proposed to reverse the effects of Treg cells by either blocking, depleting or

destabilizing Treg cells (Figure 1) (6). However, these approaches are limited by the lack of a Treg cell-specific biomarker (resulting in off-target effects) and potential induction of autoimmunity as a consequence of systemic Treg cell depletion (6-8). Furthermore, adoptive T cell therapies require prior T cell stimulation prior to infusion and become susceptible to being targeted by conventional Treg cell modulatory drugs. Addressing the previously described limitations, another strategy to enhance anti-tumor immunity is to render tumor-specific T cells resistant to the suppressive effects of Treg cells (Figure 1) (6). In this article, we have specifically highlighted the role of E3 ubiquitin ligase Cbl-b in rendering T cells resistant to Treg cell-mediated suppression and enhancing anti-tumor immunity.

E3 ubiquitin ligase Cbl-b ubiquitinates and phosphorylates proteins involved in the T cell receptor signaling pathway such as PKC θ , Nedd4, PLC- γ 1, Vav1, LAT, and p85, serving as a potent negative regulator of T cell activation (9). Consequently, Cbl-b can control a diverse repertoire of intracellular mechanisms associated with early T cell activation, such as calcium influx, cytoskeletal rearrangement, immune synapse formation, cytokine secretion and proliferation (6,10,11). Consistent with these properties, studies suggest that T cells deficient in Cbl-b are refractory to Treg cell-mediated suppression in vitro and in vivo, through potential amplification of PI3K signaling pathway (Figure 2) (6). Accordingly, Cbl-b deficient T cells augment anti-tumor immunity in both genetically engineered and transplantable tumor models (6,12,13). In these studies, despite the increased infiltration of Treg cells in the tumors, T cells were able to either reject or attenuate tumor growth (12,13).

In conjunction with the ability of Cbl-b deficient T cells to resist Treg cell-mediated suppression, these cells possess additional properties which enable enhanced anti-tumor function. Cbl-b serves as a direct downstream target of CTLA-4 and PD-1 (14-16), both of which are widely explored checkpoint molecules in immune-oncology. Deficiency in Cbl-b partially abrogates the effect of these inhibitory receptor signaling, making it an attractive target to enhance adoptive T cell therapy. Thus, whether or not the enhanced anti-tumor immunity results from T cell resistance to Treg cells is yet to be elucidated. Reinforcing the clinical potential of Cbl-b inhibition, genome-wide CRISPR screens in primary human T cells indicate Cbl-b and associated molecules to be important regulator of T cell activation, proliferation and cytotoxic function (17). However, chemical inhibitors which selectively target Cbl-b is currently unavailable. Thus, our group demonstrates that Glycogen Synthase Kinase 3 serves as a direct modulator of Cbl-b which can alternatively be targeted ex vivo to control Cbl-b expression (18).

This article primarily focused on translational potential of targeting Cbl-b in adoptive T cell therapy to render them resistant to immunosuppressive signals in the tumor, such as those generated by Treg cells. However, further work is required to 1) understand

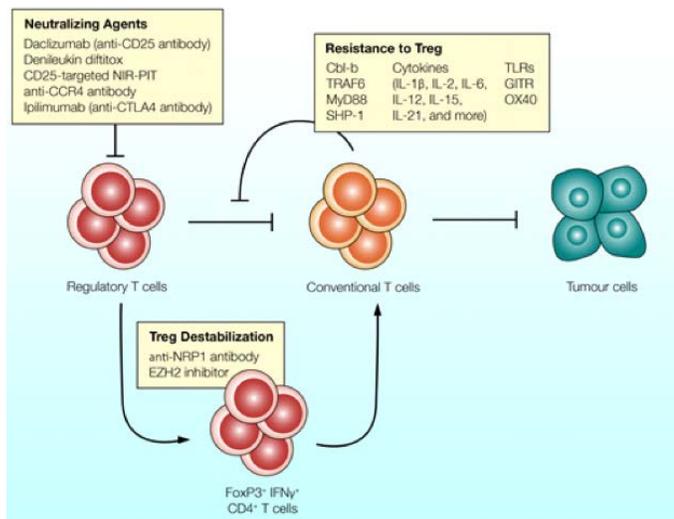


Fig. 1. **Strategies to override the suppressive effects of Treg cells** (Adapted from Han et al. 2019, *Frontiers in Oncology*). 1) Antibodies and antibody-conjugates have been developed targeting surface molecules that are highly expressed by regulatory T cells such as CD25 and CTLA-4. Many of these agents can reduce the overall frequency of Treg cells and enhance immune response against cancer. 2) Epigenetic modifiers and a specific receptor signaling can be utilized to disrupt the function and lineage stability of Treg cells, converting them into “effector-like” CD4⁺ T cells. 3) Intracellular molecules, surface receptors and cytokines can be targeted to amplify T cell activation and function against the suppressive effects of Treg cells (6).

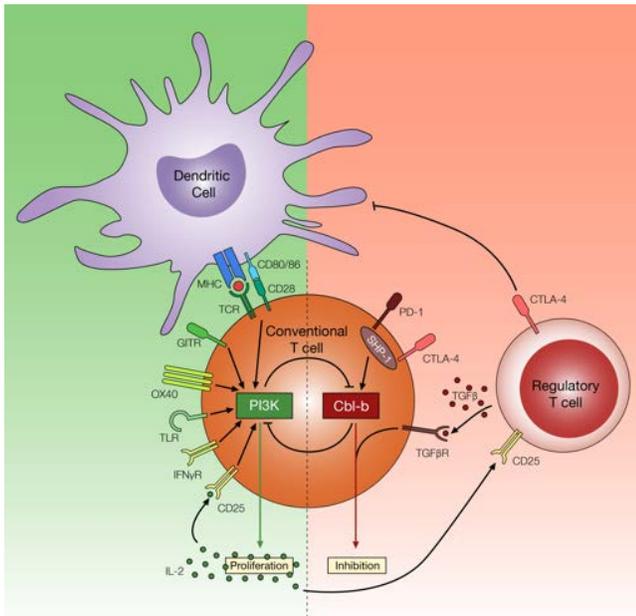


Fig. 2. **Potential role of Cbl-b in T cell resistance to Treg cells** (Adapted from Han et al. 2019, *Frontiers in Oncology*). To date, multiple suppressive mechanisms utilized by Treg cells have been reported, including down-modulation of co-stimulatory molecules by dendritic cells, secretion of immunosuppressive cytokine TGF- β and depletion of IL-2 (a key growth factor required for sustaining T cell proliferation and function). Although the precise mechanism of how Cbl-b deficiency renders T cells refractory to Treg cell-mediated suppression is unknown, Cbl-b deficient T cells are more sensitive to T cell receptor signaling pathway, less sensitive for TGF- β receptor signaling and are capable of secreting a higher quantity of IL-2 (6).

the fundamental biology of how T cells and Treg cells interact in the tumor microenvironment (both in mice and humans), and 2) precisely evaluate the mechanisms which render Cbl-b deficient T cells resistant to the suppressive effects of Treg cells.

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2019 KSEA GENERAL ELECTION RESULTS

The Korean-American Scientists and Engineers Association (KSEA) is pleased to announce the results of its 2019 general election.

The ballot counting took place at KSEA HQ on April 13, 2019. All ballots have been accounted for according to the rules that were pre-established by the Election Committee, and no election-related irregularities were found.

- Number of Eligible Voters: 3,477
- Valid Ballots Received: 720 (20.71% of eligible voters; 10% quorum was met)

The newly elected officers and councilors are:



**PRESIDENT-ELECT
(49TH PRESIDENT)**

Soolyeon Cho
North Carolina State University



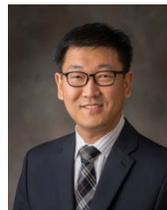
VICE PRESIDENT 1

Jong Y. Park
Moffitt Cancer Center / Univ. of
South Florida



VICE PRESIDENT 2

Yun H. Choe
Lucas & Mercanti, LLP



AUDITOR

Yong Rak Kim
University of Nebraska



COUNCILOR GROUP K

Gon Namkoong
Old Dominion University



COUNCILOR GROUP M

Ahseon Park
Ahseon Park Law Firm PLLC

2019 KSEA UNDERGRADUATE SCHOLARSHIP RECIPIENTS

KSEA Scholarships for Undergraduate Students in the U.S. recognize outstanding undergraduate students in the United States, who excel in academics as well as in services to the community, and have demonstrated a potential to become future leaders for a society for closer cooperation between the U.S. and Korea.

Scholarship Name	Recipient	School	Major
Shoon Kyung Kim	MinSoo Kang	Georgia Institute of Technology	Materials Science and Engineering
Inyong Ham	Soonmyung Hwang	The Johns Hopkins University	Neuroscience; Public Health Studies
Nam Sook & Je Hyun Kim	Ahryun Kim	St. John's University	Biology
Woojin	Rachael Han	Harvard University	Neurobiology
Chunghi Hong Park	Yejin You	UC Berkeley	Civil and Environmental Engineering
Hyundai	David Byun	Carleton College	Chemistry
Chunghi Hong Park	Yunjoo Shin	Earlham College	Neuroscience
SeAh-Haiam	Hyun Seok Shin	New York University	Mechanical Engineering
Yohan & Rumie Cho	Caroline Kim	Stanford University	Chemical Engineering
Wan Kyoo Cho	Yubin Kim	University of Washington	Mechanical Engineering
Chankiu Riew & Hyunsoo Kim	Jinjoo Kang	MCPHS University	Pharm D.
Jae S. & Kyuho Lim	Sanghyun Nam	Illinois Wesleyan University	Physics and Minor in Chemistry
Yoo, YoungSoo & Im, KyungBin	Kyle Kim	University of California, San Diego	Molecular Biology
Chan Il and Young Hee Chung	Sally Shin	Northwestern University	Neuroscience and Global Health
樂山 李龍洛	Da-El Kim	University Central of Arkansas	Computer Science
KSEA	Rea Yoh	Brown University	Biology
KSEA	Jin Song Kim	Rutgers University	Pharmacy
KSEA	Joseph Chong	University of Pennsylvania	Biochemistry
KSEA	Hyeyeong Jang	MCPHS University	Doctor of Pharmacy
KSEA	Min Kim	University of California, Davis	Statistics and Spanish

2019 KSEA-KUSCO GRADUATE SCHOLARSHIP RECIPIENTS

KSEA-KUSCO Scholarships for Graduate Students in the U.S. recognize outstanding graduate students in the United States, who excel in academics as well as in services to the community, and have demonstrated a potential to become future leaders for a society for closer cooperation between the U.S. and Korea.

Recipient	School	Major
Jung Park	Columbia University	Neurobiology and Behavior
Dennis Cha	UCLA	Data Science Engineering
Eugene Yoon	University of Southern California	Biomedical Engineering
Seung Hwan Lee	Rice University	Chemical and Biomolecular Engineering
Jaehyeok Jin	The University of Chicago	Chemistry
Soojin Kim	Northwestern University	Neuroscience
Youngkwan Song	University of Illinois at Chicago	Nursing Science
Yujin Park	The Ohio State University	City and Regional Planning
Hana Kim	University of Cincinnati	Geography & GIS
Yongjin Shin	Northwestern University	Materials Science and Engineering
Min-hwan Oh	Columbia University	Operations Research / Data Science
Hyun Gi Yun	California Institute of Technology	Chemistry
Dongheon Lee	Texas A&M University	Chemical Engineering
Youlim Ha	Johns Hopkins University	Chemical and Biomolecular Engineering
Junghyun Park	New York University	Social Work
Isaac Kim	Alpert Medical School of Brown University	MD/PHD
Yuri Park	University of Houston	Cellular and Molecular Biology
Matthew Shin	University of Chicago	Computational and Applied Mathematics
Jieun Chon	Virginia Tech	Computer Science and Application
Donggeun Tak	University of Maryland	Physics

2019 KSEA REGIONAL CONFERENCE: FORGING A GLOBAL LEADERSHIP IN SCIENCE



NAMWOO JOSEPH CHO
North Carolina Chapter Membership and YG Director

Graduate Student
North Carolina State University

The 2019 Regional Conference is one of the proud and enjoyable annual events hosted by the North Carolina (NC) Chapter, and this year was no exception. With varying topics from different academic fields provided by many professionals, paired with a field trip to a local industry, many participants attended the conference – composed of undergraduates to professionals and residents from Virginia to Alabama. For 2019, the conference was held on February 23 in Raleigh, NC, with the industry visit of choice being Syngenta, which is the internationally leading company in agrochemicals and crop genomics.



This year's conference focused on leadership in science, which is useful to know not only as a scientist, but for anyone aspiring to a better self. The event started with the welcoming note from Dr. Sunkyuu Park, the president of NC Chapter, followed by two faculties who shared their wisdom and insight in leadership and professionalism. Dr. MiGyung Kim, a professor in history at NC State University, shared a story about science's utopian promises and moral obligations in the historical context, which was weaved in a playful atmosphere that brought both laughter and seriousness to the audience; it was like anyone's favorite bedtime story that you always wanted to hear more. Dr. Richard Kim, a professor in civil engineering at NC State University, provided his perspective in different leadership styles and critical elements that can shape one's leadership appropriately for the field they are attuned to.

After the two inspiring speeches, the 'Meet the Professionals' panel was hosted. Five panelists – Seongwook Park from IBM, Sam Kim from RFHIC Corporation, Dr. Hwanhee Hong from Duke University, MiHwa Lee from East Carolina University, and Dr. Jongeun Ryu from NC State University – shared their experience with their employment and the preparation they made to their current path, especially during their student life. Participating students were able to compare the experiences with themselves, formulate their own pathway, and have a casual Q&A session with these professionals.

Aside from professional sessions, there was a flash talk program, where students could freely and casually share interesting stories from their academic field for about 2 to 3 minutes. The flash talk has been a favorite panel to host, since it helps students practice their speech skills in a clear and impactful manner and also attracts an audience who want to broaden the knowledge outside of their expertise.

For the last program, there was a panel on CPT/OPT and immigration law. This panel was actually made part of this year's conference due to the high demand from students who were having difficulties or had a lot of unanswered questions about getting employment opportunities with their status in the United States. The Office of International Services from NC State University and CL Attorneys shared their precious time to provide all the necessary information for those who seeked to enhance their career post-graduation.

The Syngenta industry visit was primarily composed of two sessions; keynotes and discussion by Syngenta employees and the lab tour. The speech was made by several high-end officials who shared their precious time to give us a warm welcome, which was a surprising occasion even for Syngenta employees. Some of them quoted, "It's impossible to see these two leaders in the same room, even at Syngenta's own meeting." Following the seminar on genome editing and panel discussions with Korean employees at Syngenta, the crop lab tour was made. Syngenta had recently rebuilt their labs, equipped with high-tech devices that can simulate any weather condition for the crop. Though it was a rainy day, the huge lab space was so sunny and dry that the visitors were given sunglasses (which they were able to keep after the tour!). The tour was undoubtedly an inspiring moment, not only to those who study a similar field such as crop science, biology, and pharmaceuticals, but also to others who seek motivation and knowledge from other fields. Hopefully, this visit was beneficial to the attendees' career, as it was to other participants who were able to get an intern opportunity or job at previous visits such as IBM and SAS.

KSEA NC Chapter always strives to host programs that brings both pleasure and benefits to the members and the local community, not limited to a specific field nor generation. We would like to thank those who attended the program, KSEA, and other sponsors who make this intellectual nourishment possible. We wish them all the best.

Chapter News

New York Metropolitan

THE 28TH NORTHEAST REGIONAL CONFERENCE (NRC)



OHBONG KWON, PhD.
New York Metropolitan Chapter President

Assistant Professor
New York City College of Technology, CUNY

The Northeast Regional Conference (NRC) is an annual meeting jointly hosted by KSEA New York Metropolitan Chapters (CP: Dr. Ohbong Kwon), New Jersey (CP: Dr. Nakjung Choi), and Philadelphia (CP: Dr. Albert Kim). The 28th NRC was held on March 23, 2019 at Montclair State University, NJ. Partnered with several of KSEA-affiliated professionals, this year's NRC featured a wide array of sessions which highlighted its theme, "Diversity and Integration of Science and Technology."



Distinguished leaders from diverse fields discussed the cutting-edge advancements leading the next generation of science and engineering. Particularly, four invited plenary speakers, Dr. Eun-Suk Seo (Univ. of Maryland), Dr. Kyu Rhee (VP and CHO at IBM Corporation), Dr. Chongwoo Yu (FDA), and Prof. Jihoon Rim (NYU Stern Business School and former CEO of Kakao), shared their interesting works and challenges with (1) a cosmic ray experiment particularly for balloon borne and space based study, (2) artificial intelligence in the healthcare ecosystem, (3) Clinical Pharmacology in Drug Development, and (4) open conversation about Kakao story and what the young generation needs in order to prepare for their future career. Moreover, this year's NRC had a total of 120 participants with the highest number of KSEA Young Generation (YG) members participating from diverse geographical backgrounds (from 10 different schools).

To accommodate the growing number of YG leaders, the YG Forum lead by Dr. Kwangsu Park (Icahn School of Medicine at Mount Sinai), which entered its 5th successful year, offered sessions on more diverse topics and networking sessions that maximized the participation of both current and new YG members encompassing undergraduate students, graduate students, pharmacy students, as well as young professionals. Specifically, this year, three



independent sessions covered a variety of interests of the young generation, 1) Patent; knowing is seeing by Dr. Choe Yun, Lucas & Mercanti LLP, (2) Investment basics and current market condition by Mr. Suhwan Steve Jeong from Citigold and Mr. Danny Kim from Citi personal wealth management, and (3) The next big move: Academia vs. Industry open discussion forum by Dr. Eun-Suk Seo, Dr. Chongwoo Yu, and Prof. Jihoon Rim. In addition, NRC officially partnered with the Andrew Kim Memorial Foundation to select its 2nd fellows in the fields of life sciences and engineering lead by the Scholarship Committee Chair, Dr. Min Suk Kang and the Andrew Kim Memorial Foundation Founder & Executive Director, Mr. Paul Kim. Awardees were Dr. Howook Hwang (Columbia University), Heuijoon Park (Fred Hutchinson Cancer Research Center), Yoonhee Lee (Columbia University), Taewan Kim (Memorial Sloan Kettering Cancer Center), Youngwan Kim (Columbia University), and Tae-Hyeon Shin (Univ. of Pennsylvania). Commemorating Andrew Jay-Hoon Kim, an alumnus of the Columbia Engineering school and a victim of 9/11, this prestigious fellowship provided not only the financial support for young scientists and engineers to attend the conference but also a training opportunity to present and discuss their research achievements to a large group of audiences.



Overall, the 28th NRC was an enormous success and further heightened its reputation in providing a social platform for fostering the professional development of KSEA members. The greater New York Metropolitan, New Jersey, and Philadelphia Chapters and YGs will continue to attract bright leaders who will further drive this advancement together in other future events as well.

29TH ANNUAL KSEA-SC SOUTHWESTERN REGIONAL CONFERENCE (SWRC)



SEON HO KIM, PhD
SWRC Program Chair
President Elect, KSEA-SC

Associate Director
University of Southern California

The 29th SWRC was held on April 27 at the Chapman University School of Pharmacy. Its theme was "Data Driven Real World Problem Solving." Speakers included professors and researchers from USC, UCLA, UCI, UC Riverside, Cal Poly Pomona, CSULA, UNLV, and leading experts from industry.



For keynote speeches, we had two excellent speakers. Prof. Sharad Mehrotra from UC Irvine gave a wonderful talk about "Challenges in Scaling Privacy Enhancing Technologies to Campus Level IoT Testbed." Dr. John Lee, Managing Director and Data Scientist at KPMG LLC, introduced "The Future Impact of Artificial Intelligence" from the perspective of top industrial consultants. Both provided wonderful introductions to the upcoming 4th industrial revolution with the Internet of Things and AI.

After the keynote speeches, ten presentations were given in three technical sessions; 1) Smart City, Architecture, Building Science, Civil Engineering, 2) Data in Medicine and Public Health, and 3) Data Science, Big Data, and Mathematics. Ten outstanding speakers were carefully selected and invited by the SWRC program committee to provide our members the state-of-the-art technology and technical trends, and they were very well received by the audience. We had a diverse group of speakers from academia, industry, hospital, government, startup, and entertainment. We were especially glad to have speakers from the San Diego Chapter (Dr. Sunghwan Cho) and the Las Vegas Chapter (Prof. Hokwon Cho).

This year, we had a special session, a student research presentation session where four students were selected to present their research in front of the audience. The students' presentations were very well received and the audience was very impressed by the quality of the students' research. The first prize (\$5,000 cloud credit sponsored by the Oracle Cloud Innovation Accelerator program) went to Mr. Eugene Yoon, Ph.D. student at USC. We believe that this kind

of opportunity for students to present their work in front of a big audience should continue in future events.



As usual, a wonderful lunch was provided to all participants, including volunteers and guests. After lunch, there was a walkthrough tour of the Chapman University Pharmacy Lab. The Chapman University School of Pharmacy provided us a great conference venue with a big auditorium and several rooms. Associate Dean Keykavous Parang was very helpful in arranging the event and gave a congratulatory remark at the opening of the event.

The registered guests for SWRC was around 80 (including speakers and staff), and we are confident that the event was a success from the remarks received by our attendees. Specifically, the quality of research talks were highly regarded.

The closing session included acknowledgement of all KSEA-SC staff involved in preparing for the successful SWRC and a raffle for prizes. Thanks to the generous sponsorship from the Oracle Cloud Innovation Accelerator program, one lucky student received \$5,000 cloud credit as the grand prize. Afterwards, we celebrated and continued our networking at a local restaurant where we socialized over delicious burgers and beer.



IMPACTS & EFFECTS OF THE EVENT

Every year, the Korean-American Scientists and Engineers Association Southwestern Regional Conference (KSEA-SWRC) is well known for featuring top professionals and experts from

Chapter News

Southern California

industry, academia, and government agencies to promote open collaboration and education of the global scientific and technological advancements to make the world better and to create opportunities for the next generation by establishing networks and open communication among talented scientists and engineers globally in the United States and Korea. This year, our SWRC provided a forum for professionals and students (both Korean and Non-Koreans) to learn about current research occurring in their respective fields, while at the same time being introduced to research occurring in other disciplines. Thus, this year was truly a conference of diversity and significance that covered so many ways in which our scientists and experts are improving our communities through science and technology. Equally important, SWRC provided a platform for students to interact with each other and professionals, as well as hear of upcoming professional/leadership development and collaborative opportunities (e.g. Professional Development Forum, United States and Korean Conference). With many of our attendees being either undergraduate or graduate students, we believe that we successfully achieved this objective of our conference.

KSEA NORTH TEXAS FALL SEMINAR



WOORAM PARK, PhD
North Texas Chapter President

Clinical Associate Professor
University of Texas at Dallas

KSEA North Texas Fall Seminar was held on October 27, 2018 at the Korean Culture Center in Dallas, Texas. This event was supported by the Korean-American Scientist and Engineer Association (KSEA) and the Korean Society of Dallas. Around 60 professionals in Engineering, Biology, Medicine, and Architecture attended this seminar and broaden their network with other scientists and engineers.

The event was started with the introduction of the Chapter President, Dr. Wooram Park (UT Dallas). In the opening remark, he commented on his 2018-2019 plan to promote new member recruiting, and collaboration with other local communities and former chapter officers.

Two seminar speakers were invited. The first speaker was Dr. Won Hwa Kim who is currently an assistant professor in the Department of Computer Science and Engineering at University of Texas at Arlington. With his research background in graph theory, artificial intelligence, and machine learning, he talked about the fundamental research advances and application in Artificial Intelligence. Very active and constructive discussion with audiences were followed.

The second speaker was Mr. Brian Park, who has been working at American Airlines for 17 years as a senior analyst. Under the seminar title "Project Management and Networking Skills," he shared valuable experiences he obtained from his work. He discussed the major components in successful professionalism in the US focusing on the cultural difference between Korea and the US. His talk was especially beneficial for the audiences who are about to start their professional careers in the US.

The two seminar talks were followed by a Korean Gold-bell style quiz event, which was planned to promote the attendees' networking and communications. Groups of three members were formed, and competed against each other in the quiz event. One of the North Texas Chapter officer, Dr. Moon, organized this quiz event, and brought very interesting and intellectually entertaining problems ranging from math and science problems to questions about the seminar contents.

During the seminar event, the audiences were able to obtain information about the KSEA SEED (the Scientists and Engineers Early Career Development) program. One of the NT chapter officer, Dr. Tae-Youl Choi who is also the director of the SEED program gave detailed information about the program and encouraged the participation especially for researchers and engineers from UT South Western Medical Center and nearby Universities.



Chapter News

YG Summits

YG SUMMITS

Event Location: New York, Chicago, Atlanta, Houston, LA

Final Report Author(s) Name (Affiliation, Title/Position): Daegene Koh, YGD1; Clara Kim, YG National Board Chair; Soobin Park, YG National Board Director; Marcus Lee, YG National Board Director; Sungmin Bae, YG National Board Director; Elaine Kim, YG National Board Director; Seunghwan Allen Lee, YG National Board Director



Event Summary

The YG Regional Summits were a series of events launched for the first time this year. The summits aimed to develop regional networks among YG Group leaders and provide opportunities for the YG leaders to interact and discuss successes and struggles of each YG groups. Each YG summit was catered to the needs of each region; for example, the Atlanta summit was catered towards sharing very basic knowledge regarding KSEA and YG activities, as most chapters in attendance were new (established within the past 5 years). YG National Board directors were in attendance at each summit to facilitate discussions.

New York, NY (9/22-23, 2018)

The summit was kicked off in New York, with 29 attendees assembling in Garrison, NY. The New York summit's main event were chalkboard talks. Five volunteers gave a 5-minute talk on their specialty using a dry erase board as a visual tool to help illustrate their points.

Presenters included: Jung Park, Neuroscience, Columbia University; Hyunsoo Lim, Dental, NYU; Joanne Lee, Biomedical Engineering, Columbia University; Ben Lee, Radiology and Machine Learning, Weill Cornell; Kwangsoo Park, Pharmacology, Mount Sinai

This was an effective way for participants to talk about their work in a concise way. Participants got a chance to develop their science communication skills. After the summits, participants of this session gave feedback that it was really engaging. After the presentations, smaller groups formed for follow-up discussions.

In the meantime, YG chapter officers were given the time to learn how to effectively write KSEA budget proposals. With many experienced YG leaders in this region, attendees could learn from them on how to run successful chapters.

The event overall was at a very strategic timing with other major NY KSEA events coming up such as Young Scientists' Night, KMSO, the math and science olympiad coming up the following month. Having these social events, and especially a retreat away from the bustle of Manhattan, is really integral to the NY YG activities because everyone is always so busy and cramped in the city.

The YG Summits were an effective way to get out of town and bring the YG community, including officers, to build a cohesive community.

Chicago, IL (10/6-7, 2018)

The Midwest YG Summit took place in Chicago. However, due to last minute complications regarding scheduling, we had a lower turnout than expected. The chapter representatives from University of Michigan and Purdue joined to discuss issues regarding KSEA. These issues included membership retention, lack of communication with grad chapters, increasing diversity, and how to become a successful chapters.

Purdue has a small and homogenous membership base and was also founded fairly recently. Contrarily to the Michigan chapter, which has one of the largest and most active membership bases. This allowed the two chapters to discuss and help each other with different issues they have been facing, particularly growing and how to prevent membership apathy. Additionally, we also discussed how to best use KSEA to network and attend workshops.

Atlanta, GA (10/20-21, 2018)

The YG Summits in Atlanta, GA happened in a beautiful lake house near the city. YG officers from North Carolina State University (NCSU), University of North Carolina-Chapel Hill (UNC), Georgia Tech, and Vanderbilt University joined to discuss leadership and engagement strategies to become a successful chapters.

NCSU, UNC, and Vanderbilt University all have relatively new chapters, being established within the past 3 years. We learned that many of the officers were still unaware of the advantages and opportunities that KSEA can provide. The experienced YG members provided insight on communicating with their local KSEA chapters and participating in national KSEA events such as Ygnite, UKC, and SEED to maximize their career potential upon graduation.

Houston, TX (10/27-28, 2018)

The Houston YG Summits were launched in parallel to the Texas regional conference led by the South Texas regional chapter. Student officers of Texas A&M and University of Houston introduced their chapter and their current and future events. The Texas community is unique in that they have an APS called KONNECT, which is a young professional networking platform. KONNECT members attended the regional conference and YG summit sessions to discuss the KSEA involvement opportunities beyond the YG level and how to utilize their local and national resources effectively. The undergraduate students in attendance were largely unaware of KSEA opportunities beyond their local chapter. The YG National Board officers and the South Texas KSEA Chapter president helped to bridge this knowledge gap by providing resources and advice on how to maximize KSEA national programs.

The first speaker was Dr. Yun Jae Koh, PhD, JD, who underwent major career changes first from a PhD to a JD. He currently practices as a patent lawyer. Dr. Koh shared his considerations and thought process when undergoing this major career change. The session was interactive, with students and young professionals asking questions on how to make this effective career transition.

The next speaker was Dr. Alex Lee, who is well known to the KSEA community. Dr. Lee shared communication strategies in the workplace, along with helpful career tips to be a successful candidate for promotion. Dr. Lee emphasized the principle of “act like you are already in the position,” and how to narrow the gap between our Korean mindset of work and what is expected in the American “Western” workplace. Overall, the Houston YG Summits were unique that it had a large number of young professionals in attendance. Through robust conversations along the topics of KSEA, career, and

life choices, the YG Summit program helped the community grows more close-knit.

Los Angeles, CA (11/3-4, 2018)

The regional summit in LA was joined by YG group officers of UCLA, USC, UCSD, UC Davis, and Harvey Mudd College. The chapter presidents shared what they are doing as a YG group to increase publicity and attract members, as well as their chapter development plan and goals on how to make their chapters more successful.

Most YG groups were balanced in their number of social and academic events. Most academic events were mentorship programs with professors and young professionals among various areas of STEM. The YG groups in the California region shared the common goals of providing more networking opportunities within their school and outside of their school to provide useful career tips to each other and motivate each other for success. They also shared a goal of increasing presence on campus through various methods such as utilizing social media and creating balanced activities between social and academic events.

The YG leaders expressed their interests in what they want to gain from being a part of KSEA. They called for opportunities for YGs to be connected to the KSEA national level by being provided resources for local young professionals and helping them understand the resources around them. YG National Board aims to help YG Groups achieve this goal by serving as their direct resource for YG-related events and opportunities.

KOREAN TRANSPORTATION ASSOCIATION IN AMERICA (KOTAA) ANNUAL MEETING



SERI PARK, PhD
KOTAA President

Associate Professor
Villanova University

In January 2019, during the Annual Transportation Research Board (TRB) Meeting, Korean Transportation Association in America (KOTAA) hosted its 14th annual meeting attended by more than 100 participants across from all sectors (e.g., academia, public, and private sectors).

The KOTAA annual meeting was divided into two major sessions: Technical Session and General Session. During the Technical session, a total of 31 graduate students had a venue to present their research activities as well as explore other research topics.

These graduate students are indeed KOTAA Travel Grant Recipients selected based on their academic performance and paper contribution to the TRB meeting.

During the General Session, several presentations were shown. KSEA's President-Elect Dr. Jun Seok Oh (Western Michigan University) announced the upcoming UKC 2019 (<https://ukc.ksea.org/ukc2019/>) while Dr. Hosin David Lee (The University of Iowa) introduced the 서울연구원 (<https://www.si.re.kr/>) and International Conference on Smart Cities (<http://icsc2019.org/conference-overview/>).

Both presenters highly encouraged KOTAA members' participation in the above-mentioned conferences. Several agencies (대한교통학회, 국토연구원) also had time to share their own job opportunities. The KOTAA annual meeting ended with a network dinner where over 100 participants were able to expand their social and professional circles. KOTAA's annual meeting was sponsored by KSEA and 대한교통학회.



GEOSPATIAL AND ENVIRONMENTAL SCIENCES (KAGES) GENERAL MEETING



SUNHUI SIM, PhD
KAGES President

Associate Professor
University of North Alabama

Korean-American Association for Geospatial and Environmental Sciences (KAGES) is a non-profit organization as well as one of the chapters of KSEA. The mission of KAGES is to foster the following for Korean or Korean-American students, scientists and professionals in the geospatial-technical and environmental science fields. KAGES aims to support students developing their career successfully through education and research, support members developing research, teaching and services, and promote interactions between South-Korea and USA in geospatial technology and environmental science fields.



Recently, KAGES had its 2019 Annual General Meeting at Omni Shoreham Hotel in Washington, D.C. in April. The event was hosted by 2018-2019 KAGES board members. The goals of the event included: 1) to recruit new members of KAGES and KSEA; 2) to promote networking opportunities among scholars and students from United States, South Korea, and other countries in related

disciplines of geography and environmental sciences; and 3) to encourage KAGES student members to strengthen their activities of research and career development through awards, scholarships, KAGES-hosted AAG forums, and mentoring services. The meeting was announced in March 2019 through KAGES website and LinkedIn.

Organizing committee of the event include: Drs. Hyowon Ban (Interim President, California State University, Long Beach), Kyung In Huh (California State Polytechnic University, Pomona), Sunhui Sim (University of North Alabama), Hyejin Yoon (University of Wisconsin-Milwaukee), Injeong Jo (Texas State University, San Marcos), Misun Hur (East Carolina University), Sanglim Yoo (Ball State

University), Hosuk Lee (University of North Georgia), Byung Yun Yang (DePaul University) (Board Members), and Jinwoo Park (Student Board Member, Texas A&M University).

Fifty-four participants including twenty professionals and thirty-four students from the U.S., South Korea, and other countries registered for the event. During the General Meeting, the KAGES members had reports of KAGES activities during 2018-2019, scholarship awards and ceremonies, and elections and appointments of new KAGES board members. During the scholarship ceremonies, KAGES awarded 2019 Sim Travel Award, KSEA Student Paper Award, and KGS Student Paper Awards. Six student members received the awards this year. KAGES elected a new Vice President, two new regular Board Members, and a new Student Board Member for 2019-2020. KAGES student board members have provided many services in communicating with KAGES student members since 2015.

Following the previous year, KAGES hosted two Young Korean Scholar Forums on the same day of the General Meeting. During the Forums, KAGES had a Mentoring Session where mentors (professional members) and mentees (student members) had introduced each other and shared their stories related to career developments. Nine pairs of a mentor and a mentee from various regions including Michigan, North Carolina, Texas, Florida, Ohio, Massachusetts, and China participated at the Mentoring Session. The pairs will continue online communication for a year to keep sharing know-hows of research, career developments, and life.

Dinner of KAGES members followed after the General Meeting. Participants enjoyed a raffle prize event as one of activities of membership drive. Thanks to the KSEA support, the KAGE General Meeting was successfully done this year, too. KAGES looks forward to the next General Meeting in 2020.

KWiSE - LA



JAYOUNG KIM, PhD
KWiSE LA President

Professor
Cedars-Sinai Medical Center,
UCLA

We had a conversation with KWiSE LA President, Dr. Jay Kim.

The 13th KWiSE Annual Conference was held in Biola University on May 4th. This year's themes were "Applied Science for Human Health" and "Leadership/Mentoring". The KWiSE Westcoast Annual Conference aims not only to provide an opportunity to build strong connections and solidarity among the current members, but also to seek and welcome new women professionals who can serve as mentors and role models for younger students. We thank you all for participating in our ambitious mission.

Who attended this conference?

We had a lot of students, including high schoolers who are interested in the STEM field and graduate/undergraduate students from CalTech, USC, UCLA, UC Riverside, Biola University, Pomona University et al. Our members are from variety fields, including healthcare, engineering, pharmaceutical, patent law, bioengineering, etc.



REBEKAH JULIE PARK
KWiSE LA Member

Rice University
Director and Mentor at 4S
Education Foundation

What was this year's theme?

This year's theme was "Applied Science for Human Health". We carefully selected relevant lectures to present to our scientific community. The main question we asked was: how will scientific progress and development contribute to human health? Our speakers were chosen after well-thought processing by the committee. Our guests included the Cancer Center Director from Cedars-Sinai Medical Center, faculty members from UC Riverside, biotech researchers, and IT CEOs. Research trends in their field and career advice were shared with all attendees.

Tell me about invited speakers and their lectures

Our first speaker was Prof. Diane Woodbridge, who is an assistant professor in the data sciences program at the University of San Francisco. Her specialties include database management systems, data fusion, and data mining. Prof. Woodbridge's talk was on a scalable smart-watch-based medication adherence system that would provide accurate real-time management of medication compliance.

Our second speaker was Prof. Nosang Vincent Myung, who is the current director for the UC-KIMS Center for Innovative Materials for Energy and the Environment and co-director for the Winston Chung Global Energy Center. He received his PhD in chemical engineering at UCLA and worked as part of the engineering staff at NASA Jet Propulsion Laboratory for several years. His talk focused on high-density chemical sensor arrays.

The third speaker was Prof. Dan Theodorescu, who is the current director of the Samuel Oschin Comprehensive Cancer Institute at Cedars-Sinai Medical Center. Prof. Theodorescu's work focuses on three core areas: 1) precision medicine, 2) use of "big data" to solve difficult research or treatment questions, and 3) population health. His opening keynote address was on translating biology into therapies against human cancer.

Our fourth talk was titled, "Navigating Drug Discovery Career Pathway", and was given by Dr. Eun Jeong Yoo, an industrial expert in pharmaceuticals. She is currently an in vivo pharmacologist at Wuxi Apptec, one of the largest contact research organizations, and is focusing on pre-clinical drug development for immune therapy.

The fifth speaker was Dr. Minjung Kim, an Assistant Professor of University of South Florida, an animal model expert for melanoma research. Her talk was titled, "Discovery of novel melanoma targets: Comparative genomics approach".

The final and closing keynote speaker was Prof. Paul W. Ferguson, the Dean of the School of Science, Technology, and Health at Biola University. He also serves as a professor in toxicology at Biola. His talk was on how to develop leaders in the STEM field with passion and purpose.

Who were involved in conference committee?

The conference committee consisted of two co-chairs and three staff members. The two co-chairs were Prof. Jayoung Kim, the current president of KWiSE Los Angeles, and Prof. Hyuna Lee, the current vice president of KWiSE Los Angeles. Prof. Kim is an active principal investigator and associate professor at Cedars-Sinai Medical Cen-

ter and UCLA. Prof. Lee serves as part of the BIOS Research Committee Chair and is also conducting her own research at Biola. The morning session chair was Prof. Eun Jung Chae, who is currently an assistant professor in the department of mechanical and aerospace engineering at CSULB. The mentoring session chair was Dr. Janet Hur, the CEO and co-founder of Millibatt, Inc. The support team chair was Gayeoun Kim, a recent B.S. graduate and researcher at the Doheny Eye Institute.

What was the most interesting lecture to KWiSE members?

“Driving research to realize powerful treatments and exquisite care for patients facing cancer.” This vision guides Dr. Dan Theodorescu as he leads an integrated team of investigators and physicians to identify creative approaches that will shape modern cancer care. His mission focuses on three core areas: precision medicine to personalize treatments; “big data” to solve difficult research and treatment questions; and population health ideas to improve the lives of our patient community. His talk was about translating biology into therapies of human cancer, and was well received by KWiSE members.



Group Photo



Dong Hee Kim, CS Korean Community coordinator; Dr. Rachel Chang, CS clinical fellow, Dr. Dan Theodorescu (Director of CS SOCCI), Dr. Jay Kim (CS, Dept. of Surgery)

KWiSE - NY / NJ



The 2019 KWiSE New York/New Jersey Chapter Regional Conference was held on Saturday, the 4th of May, 2019 at Montclair State University. Under the theme of “For Women in Life Science,” this year’s conference featured three scholars from the fields of Environmental and Occupational Health, Family Science and Human Development, and Psychology. The organizers were Drs. HeaYeon Lee (Founder/CEO of MaraNanotech New York, Inc.), Sung Eun Choi (Associate Professor, Queens College), Yeon, Bai (Associate Professor, Montclair State University), and Yuen Mi Cheon (Postdoctoral Fellow, Fordham University). A total of 13 members were in attendance.

This year’s conference started with the greetings of the new Chapter President Dr. HeaYeon Lee. In her greetings, Dr. Lee emphasized one of the missions of KWiSE New York/New Jersey chapter to support one another for the pursuit of both personal and professional excellence and happiness. For the pursuit of this goal, a member introduction session was held in a roundtable setting. During this session, each member had a chance to introduce themselves to the group and share any updates about both their personal and professional lives. Topics covered a wide range of life experiences, including changes in work settings, professional achievement, academic interests, family transitions, immigration, marriage and children, just to name a few.

Next, the three speakers took turns to present on their respective topics. The first speaker was Dr. Mingzhu Fang, Assistant Professor in the Department of Environmental and Occupational Health at the School of Public Health, Rutgers, and The State University of New Jersey. The title of her presentation was “Adverse Impact of Night-Shift Work and Light-at-Night on Breast Cancer Risk.” Various research methods and the roles of sleep, light and circadian rhythm were actively discussed amongst the members. The second speaker was Dr. Soyoung Lee,

Associate Professor in the Department of Family Science and Human Development at Montclair State University. Dr. Lee’s presentation was an interactive session titled, “Reflective Discussion on Cultural Sensitivity as Human Services Professionals.” Through various activities, such as “community maps” and “the penny story,” the members had a chance to reflect on their biases, appreciate diversity, and getting to know one another at a deeper level. Bringing the prior two presentations—one on sleep and the other one on diversity—together, in the third presentation, Dr. Yuen Mi Cheon discussed on the topic of “Ethnic/Racial Disparities in Children’s Sleep: Possible Causes, Consequences, and Solutions.” During this talk, issues regarding diversity, ethnic/racial discrimination experiences, and how they may impact children and adolescents’ sleep were discussed along with innovative contemporary research methods to measure various aspects of sleep and biomarkers. The new and the old members varying in age and academic disciplines enthusiastically engaged in discussions, generating potential interdisciplinary research ideas.

After the three presentations and discussions, all of the members took a group photo together and went out for lunch. Conversations on both personal and professional lives as well as discussions on potential research ideas continued throughout the lunch time and the following tea time. Upon the completion of the conference, one of the members remarked, “It was a great time spent with good people. I feel supported by the time we shared together during the conference.” A visiting undergraduate student from Korea also commented, “Thank you for making my time today so meaningful! It was an unforgettable experience!”

2019 KWiSE SOUTHEAST CHAPTER ANNUAL CONFERENCE



MIHYEON (CHRISTY) JEON, PhD
KWiSE Southeast Chapter President

Supervising Planner/Engineer
WSP

The 9th Annual Conference of the KWiSE Southeast Chapter was held on Saturday, May 18, 2019 at the Gwinnett Convention and Visitors Bureau. Registration began at 9:30AM with coffee and snack provided. Dr. Mihyeon Jeon, the president of the KWiSE Southeast Chapter, welcomed everyone and briefly introduced the purpose of the KWiSE annual conference. She introduced Dr. Hey-Kyoung Lee, the president of the KWiSE Headquarter (Johns Hopkins University), who provided history and latest activities in chapters around the nation. Every attendee then had a chance to introduce themselves to the group before the program began in order to promote effective networking throughout the event.

The research session was recessed for a networking lunch and group photo time. The attendees gathered around based on their research/career interests and continued conversations during lunch. After lunch, Professor Young Rae Shim (Georgia Gwinnett College) continued research discussion on “Acculturation, Psychological Distress, and Cultural Adjustment Difficulties among Korean Americans.” She introduced the concept of “acculturation” in multiculturalism, women, and identity conflict among adolescents and emphasized the importance of counseling to release stress. Professor Jeoung Soo Lee (Clemson University) then talked about “Multi-functional Polymeric Nanocarrier for Combinatorial Therapy of Bioactive Molecules.” She demonstrated the development of biomaterial-based drug/gene delivery system for site-specific of bioactive molecules designed to alleviate pathological conditions and promote functional tissue regeneration.

As the program began, the Professor Hey-Kyoung Lee (Johns Hopkins University) came up again to provide a keynote speech focusing on her career and ongoing research, “My journey through Memory Lane: How Our Experience Shapes Our Brain.” In addition to demonstrating her experiments

on how memories formed and how sensory experience shape our brain, she blended her personal experience and challenges on work-life balance as a working woman. As the first speaker of the research session, Professor Hyesung Park (Georgia Gwinnett College) provided her talk on “Information Technology Education – Adaptive Learning System.” She presented on how to engage undergraduate students in learning successfully by adaptive learning systems with authentic real-life experience hands-on projects. Dr. Eunseon Ahn (Emory University) then presented on “Role of PD-1 during Effector CD8 T Cell Differentiation.” Based on her experiments with the spleens, livers, and lungs of mice, she discussed that PD-1 is needed for the generation of long-lived memory CD8 T cells.

After the research session was concluded, Dr. Mihyeon Jeon briefly reviewed the KWiSE SE Chapter 2018-2019 activities. She presented a Certificate of Appreciation along with a small gift to the speakers and expressed gratitude to the committee members including Dr. Sohyun Park (CDC), Professor Hyesung Park (Georgia Gwinnett College), and Dr. Sung-Sil Moon (CDC). Dr. Jeon concluded the conference by presenting an Outstanding Leadership Award to the former president and senior advisor, Dr. Sung-Sil Moon, in recognition of her fine leadership and extraordinary dedication during her tenure as the president and the officers in the preceding years. The conference was adjourned, and a group of attendees actively continued their networking and conversations at a local coffee shop. The KWiSE board members, the KWiSE Headquarter president, and a couple of speakers gathered again for a debriefing dinner and congratulated the successful event while continuing conversations on a diverse topic.



KASBP 2019 SPRING SYMPOSIUM

The 2019 KASBP Spring Symposium was another great success!

The 2019 Korean-American Society in Biotech and Pharmaceuticals (KASBP) Spring Symposium was successfully held at the Sheraton Edison Hotel Raritan Center, New Jersey on May 31st and June 1st (Fri-Sat). KASBP hosted this symposium with Hanmi, Yuhan, GC Pharma, and SK Biopharmaceuticals under the main theme of “Drug Discovery and Development – From Bench to Commercialization.” Like in previous years, many people attended the symposium, including under- and graduate students, faculties, research scientists, and healthcare professionals from small and large biotechnology and pharmaceutical companies as well as prestigious universities and academic research institutions in both Korea and the US.

The job fair was opened on Friday, prior to the symposium as a pre-event where several major Korean pharmaceutical companies and research institutes had an opportunity to interview highly qualified applicants who are currently pursuing their Ph.D. or conducting research in the US.

The main event on Friday was moderated by Dr. Wooseok Han, the executive director of KASBP. The opening remark was given by Dr. Sean Kim, the president of KASBP, who described the history of KASBP as well as its missions for the present and future. He then officially commenced the symposium by introducing both ceremonial and scientific programs during the symposium. This year, Dr. Mooje Sung, the vice-president of KASBP presented Dr. Sechang Kwon, the president of Hanmi Pharmaceuticals with the KASBP Appreciation Award for his long dedication to the drug discovery and development in Korea and his long-standing support for KASBP community.

Then, the keynote speech followed the ceremony. Dr. Young-Chun Moon, one of the founders of KASBP and currently the vice president of PTC Therapeutics, gave a lecture on drug discovery through targeting RNA. He summarized his long journey as a drug discovery scientist and reviewed the current progress of RNA-based

therapy development. His lecture helped the audience more clearly understand where the development of RNA-based therapeutics is and where it goes to be accepted until accepted as an efficacious and safe modality.

The first day of the symposium was concluded with a group networking session, where the attendees were divided into seven areas of interest (immuno-oncology/immune diseases, gene therapy, pharmacy, respiratory/cardiovascular/neuro-degenerative, chemistry, business development/legal, and pharmacodynamics and pharmacokinetics) and discussed current trends on the respective research areas. In parallel, the KASBP YG (young generation) group also introduced their activities to the audience, particularly regarding the mentor-mentee program that has been successfully run in past years.

The second day of the symposium started with breakfast and a short greeting by Dr. Stephen Suh, the president-designate of KASBP. Two scientific sessions were prepared to show the cutting-edge research by six speakers throughout the day. Between the sessions, there was a fellowship award ceremony for postdoctoral fellows and Ph.D. students for their excellent research as well as presentations from our major sponsors for this symposium. After all these sessions were completed, a very special time was planned as the post-symposium event, where field experts introduced critical points to consider for a successful IND.

During the first scientific session moderated by Dr. Yonghoon Oh, the KASBP-Philadelphia chapter president, Dr. Min-Jong Kang at Yale University School of Medicine introduced his research on the potential role of mitochondria in chronic obstructive pulmonary disease (COPD). This seems to be a very interesting shift of the perspective of the disease onset and progress of COPD, which can lead to a more effective therapeutic development for the disease. The second speaker was Dr. Jeong Woo Cho from SK Biopharmaceuticals. SK Biopharmaceuticals is probably one of the Korean bio-pharma companies who have successfully grown in terms of size and quality. He exemplified several cases of SK Biopharmaceuticals’

HYUNJIN (GENE) SHIN, PhD
KASBP Director

Senior Scientist
Takeda Pharmaceuticals

continuing efforts for drug development. Dr. Dennis Kim at Emerald Health Services served as the last speaker of the first scientific session. Dr. Kim also told the audience about a very interesting and unique area of drug development, endocannabinoid and cannabis research. It was meaningful to include Dr. Kim's presentation in the sense that we could hear about the research area where natural substances are studied for treatment development.

The second scientific session was moderated by Dr. Nam Chul Kim, the KASBP-DC chapter president. Dr. Hyunsun Jo at Pin Therapeutics opened the session by introducing his company's technologies of degrading target proteins. Unlike other conventional small-molecule- or antibody-based therapies, Pin Therapeutics' products can inhibit proteins known to be undruggable. Next, Dr. Youngsoo Kim at Ionis Pharmaceuticals reviewed the current development of RNA-targeting-based therapies, particularly focusing on the use of antisense oligonucleotide for cancer treatment. The accurate measurement of Pharmacodynamics (PD), Pharmacokinetics (PK), and anti-drug antibody (ADA) is important in successful drug development. Dr. Hanjo Lim at Genentech spoke of assays that could help for better problem identification and decision making and discussed reagents used for such assays by pointing out potential issues and possible troubleshooting.

The fellowship award ceremony was held during the symposium, and a total of 10 awardees received fellowships from KASBP-Hanmi (3 awardees), KASBP-Yuhan (3 awardees), KASBP-GC Pharma (2 awardees), and KASBP-SK (2 awardees). All awardees were given a podium for a short oral presentation to highlight their research. During lunch time, a number of posters from the awardees as well as other researchers from renowned academic and research

institutions were displayed. Symposium attendees had the opportunity to visit, raise questions, and participate in active discussions with the poster presenters.

In the session for sponsor presentations, our main sponsors, Yuhan, Hanmi, GC Pharma, and Bridge Bio, shared with symposium attendees their current status, vision, culture, and enthusiasm for open collaboration. This gave a chance to understand where major Korean pharmaceutical companies are standing now and heading towards in the future.

After all the scientific sessions successfully ended, a special event was held for registered participants along with a dinner networking. For this event, three renowned experts regarding IND were invited as panelists enclosing regulatory, DMPK, and safety aspects of the process. The three panelists walked the attendees through critical factors that they must know for successful IND.

To summarize, the spring symposium provided a wonderful opportunity for the attendees to follow up on cutting-edge technologies and scientific findings in a very broad range of drug, discovery, and development activities. This event also offered a chance to build a strong network between Korean-American scientists across their research areas and generations since participants could grow beyond their boundaries by learning from each other regardless of their expertise or age. Moreover, the symposium proved its value by serving as a platform to make true impact on pharmaceutical industry beyond a mere ordinary scholastic event by hosting an arena. This wonderful two-day festival for pharmaceutical and bio-industrial professionals ended with a promise that participants will meet again at the next symposium, which will be held in the spring of 2020 back in Boston, Massachusetts.



Member Corner

Interview #4

INTERVIEW WITH MS. CLAIRE HUR



CLAIRE HUR, PhD

Clare Boothe Luce Assistant Professor
Johns Hopkins University

Soojung Claire Hur is the Clare Boothe Luce Assistant Professor in the Department of Mechanical Engineering and holds a secondary appointment as an assistant professor of oncology at Johns Hopkins University. She received her B.S., M.S., and Ph.D. in Mechanical Engineering from UCLA in 2005, 2007, and 2011, respectively. After her doctoral training, she joined the Rowland Institute at Harvard University as one of two Rowland Fellows in September 2011 with five years of research funding. Before joining Johns Hopkins University, she managed the clinical studies funded by Vortex Biosciences, Inc. as an assistant researcher at UCLA Department of Bioengineering. She has won numerous awards and scholarships, including the Edward K. Rice Outstanding Doctoral Student award, HSEAS academic scholarship, MAE department's Chevron scholarship, UCLA Dean's special fellowship, the 2018 inaugural Johnson and Johnson WiSTEM2D scholar award, and the School of Engineering Faculty Award at the 2018 Johns Hopkins Department of Medicine Research Retreat. She co-authored 14 peer-reviewed journals, including three articles featured as journal covers, 40+ conference proceedings, 3 US patents, and two international patents.

How has KSEA helped your career?

I believe that one can succeed beyond their limit when they have a role model who they can identify with to emulate and aspire to be. Ever since I joined KSEA as an undergraduate student volunteer in 2004, I was surrounded by fellow KSEA members, great role models, and talented peers, who "look" like me. Thanks to a broad spectrum of scientific and engineering backgrounds of KSEA members, I was always able to find mentors, with whom I could seek advice on how to overcome the challenges I was facing and peers who support me, challenge my ideas with constructive criticisms, and advance career and leadership together with me. The immense professional network that I was able to build in KSEA was most beneficial for my career advancement.



You received the inaugural Johnson & Johnson Women in STEM2D (WiSTEM2D) Scholars Award. As a female scientist, please share your story about the meaning of the award and your achievements.

The award provided me not only pivotal financial support to initiate an exciting new research direction but also unique and valuable visibility and recognition to recruit, teach, and serve as a role model for female high school, undergraduate, and graduate students aspiring to careers in science and engineering.

What is/was your primary motivation for your accomplishments?

Creating innovative and practical instruments for cancer research has been the most satisfying aspect of being a mechanical engineer for me. An engineer working to pursue ingenious breakthroughs in this field should have a sound fundamental foundation, be fearless of failures, develop skill sets through hands-on experiences, and be self-motivated to identify and solve important problems. I strongly believe that great technology becomes feasible when the developer truly understands the significance of the problem and that he or she should be fully dedicated and persistent in reaching the goal. One of the major factors that ignited my passion in this field was during my second year of doctorate training when my dear cousin Paul lost his 8-year fight to

colorectal cancer at the age of 41. Paul was a doctor and a role model for me when I was growing up, and more importantly, a close friend. The pain of losing him had a profound effect on me, and my firsthand experience as a family member of a terminally ill cancer patient had radically transformed my research focus from nanostructure characterizations using MEMS technology to creating practical biomedical instruments, aiding the rapid advancement of cancer research. If my work can help diagnose or help find a cure to save or extend cancer patients' life, then I know I am doing what I had set out to do.

What advice do you have for students that may have come to the United States from outside the country?

Unfamiliarity always provokes discomforting uneasiness. But, outstanding innovations often require the outsider who is capable of looking at a problem from a different angle and thinking outside the box. Remember you have a lot to offer to diversify the culture of the U.S. Embrace your uniqueness and transform your "non-mainstreamness" into your strength.



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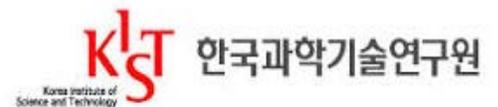


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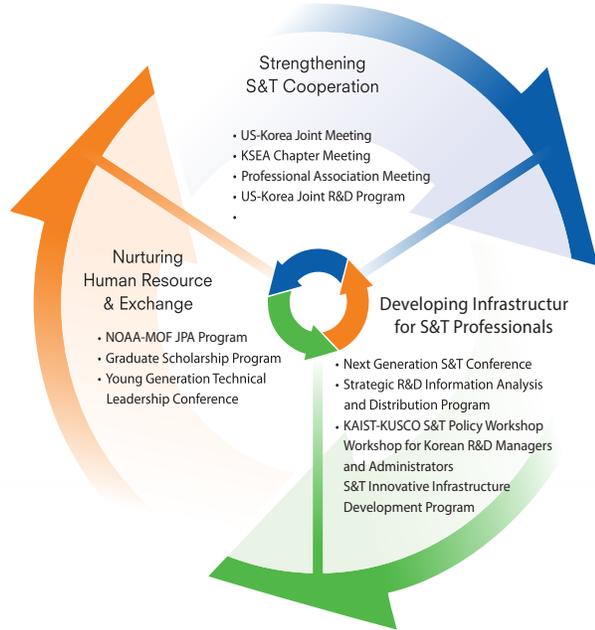
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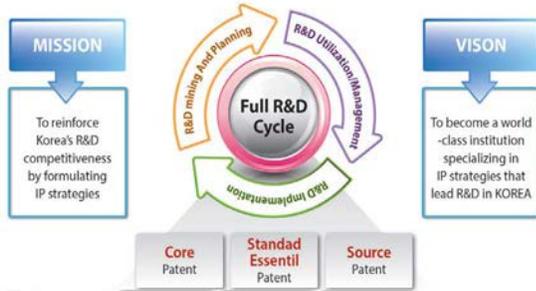
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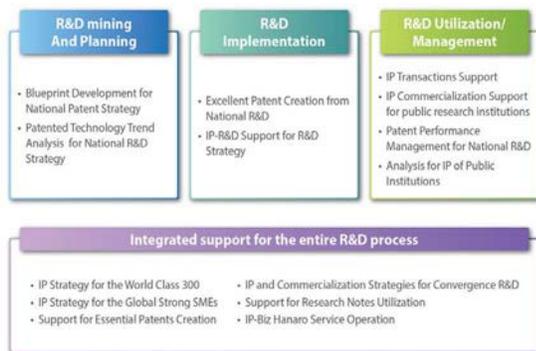
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