

POSTECH SIGNATURE CONFERENCE 2022

The 1st International Conference
on Futuristic Medical Science and Engineering

OCTOBER 11-12, 2022 (Tue. - Wed.)

VENUE

Off-line : POSCO International Center, International Conference Hall (1F)

On-line : The live broadcast link will be shared only for
online live broadcast participants

Co-management

POSTECH School of Convergence Science and Technology
Innovative Program for Graduate School Development
POSTECH School of Molecular Science (Chemistry)
Next-Generation Bio-Leaders (Life Sciences)
Education and Research Center for Future Materials (Materials Science & Engineering)
Education Program for Frontier Leadership in Advanced Machinery Technology (Mechanical Engineering)
Education Program for Innovative Chemical Engineering Leaders (Chemical Engineering)
POSTECH Mathematical Science Division (Mathematics)
Educational Institute for Intelligent Information Integration (Electrical Engineering)
School of Interdisciplinary Bioscience & Bioengineering
Advanced Materials Science
Convergence IT Engineering
Medical Device Innovation Center

Sponsor

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Hosting

POSTECH

WELCOME AND OPENING REMARKS

Welcome to the 2022 POSTECH Signature Conference. I would like to first thank the speakers who have taken the time from their busy schedules to join us. I also would like to extend my warm welcome to the distinguished guests and participants from around the world.

The POSTECH Signature Conference is the first international conference that POSTECH has launched to enhance its global visibility and strategically convey its new vision and goals. Going forward, we plan to cultivate it into POSTECH's hallmark conference and have selected medical science and biomedical engineering as its first theme this year.

The COVID-19 pandemic has lingered on for more than two years with repeated outbreaks of variants. The global technology industry has entered an endless competition as nations vie to lead the biomedical field and secure capacities for vaccine and pharmaceutical production. In line with this global trend, POSTECH has newly launched the graduate program of medical science and engineering to take the lead in the medical science field, including predictive medicine, regenerative medicine, and new drug development. POSTECH will also focus on training the next generation of physician-scientists (MD-PhDs), vital for the future of humanity.

With this vision in mind, POSTECH has invited the top Korean and international experts to the 2022 POSTECH Signature Conference to explore the current issues in medical science and biomedical engineering field and discuss the current environment and the future of commercialization of predictive medicine, new drug discovery, and regenerative medicine. I hope this conference will be a venue to seek together the path for progress and facilitate global convergence research.

Once again, I welcome all of you to the 2022 POSTECH Signature Conference.



Moo Hwan KIM
President of POSTECH

WELCOME MESSAGE

On behalf of the organizing committees, I would like to welcome you to Pohang, Korea, for the first POSTECH Signature Conference 2022. The POSTECH Signature Conference is a newly designed international conference by POSTECH to promote innovations and collaborations in science and engineering.

Under the theme of the conference “Futuristic Medical Science and Engineering”, the POSTECH Signature Conference 2022 provides a rich program, including plenary speeches by Prof. Wayne Yokoyama and Prof. Jonathan Sessler in immunology and drug discovery and Prof. Zhenan Bao, Prof. Kam Leong, and Prof. Taeghwan Hyeon in biomaterials, drug delivery, and regenerative medicine. We offer a unique opportunity to bring together world-leading researchers and serve as a platform to deliver innovative research and the latest trends and facilitate discussions, networking, and collaboration.

This year, POSTECH has launched a new graduate program, Medical Science and Engineering, to foster next-generation physician-scientists and have a solid plan to establish a research-oriented medical school and affiliated hospital. We will lead the future of medicine by focusing on drug discovery, precision, and regenerative medicine. We hope to have an opportunity for potential collaborations and partnerships with the world's leading research institutes through this conference.

Before closing, I would like to thank all members of the organizing committees, collaborating partners, companies, and volunteers for their tremendous efforts to organize this conference successfully. The committee has scheduled a vibrant scientific program and invited highly respected and world-renowned speakers. I hope you have a productive meeting with exciting and encouraging discussions and an exchange of knowledge so that we together can anticipate a future of groundbreaking innovations in medicine and healthcare.

I look forward to a successful conference and wish you all delightful and stimulating days.

Best regards,



Changill BAN
Conference Chair

CONGRATULATORY REMARKS

I would like to sincerely congratulate the opening of the 1st POSTECH International Conference on Medical Science and Engineering. My appreciation also goes to President Moo-hwan Kim and all participants for your dedication to the innovative development of the biotechnology industry.

In addition to population aging, the COVID-19 pandemic is also attributable to increasing attention from the public toward biotechnology, vaccine and healthcare industries. It is expected that preparation demands against a novel infectious disease, as well as for COVID-19 vaccines and therapeutics, will continue to grow. However, Korea is highly dependent on overseas sources for vaccines and its global market share is still small, along with a large competency gap in biotechnology. This is one of the reasons that we should foster talent in medical science and engineering.

What is more, we are living in an era of great digital transformation alongside the fourth industrial revolution. Artificial intelligence, big data, metaverse and other technologies have penetrated our daily lives, facilitating industrial changes. The wave of the fourth industrial revolution is also affecting medical and healthcare areas with the adoption of advanced digital medical care and smart hospitals while digital healthcare industry is expanding its horizon. Responding to changing times while simultaneously strengthening competitiveness is a great challenge, but it is also a new opportunity.

POSTECH is a university well recognized for its high technological competitiveness in Korea. Furthermore, the university has established the foundations for nurturing talent in medical convergence through personalized new drug development, predictive medicine, regenerative medicine, Pohang Accelerator Laboratory and the Institute of Membrane Proteins. I strongly believe that Korea's healthcare industry will take another leap forward with the establishment of a research-centric college of medicine at POSTECH. Today's international conference is being held as a wish for the ambition to be realized. I look forward that all participants of this event could share their visions and information about medical science and engineering while making progress in materializing a dream of fostering physician-scientists in Korea.

Gyeongsangbuk-do plans to nurture the biotechnology industry as a new strategic engine. We will also plan on providing support for training experts to be the drivers of the biotechnology and healthcare industries. I would like to ask for your support as a partner for Gyeongbuk's ambition, and wish all the best for you and POSTECH's future endeavor. Thank you.

Cheol Woo LEE
Governor of Gyeongbuk Province



CONGRATULATORY REMARKS

I am pleased to see that the 2022 POSTECH Signature Conference is being held in Pohang, a new growth hub of Korea's bio-health industry, and a city that takes off as a global mecca of biotechnology. Today, we are gathered here under a shared understanding that achieving "technological innovation through the convergence of medical science and engineering" is the only way for us to be a leader in the future bio-health industry. It is also a meaningful opportunity to share the latest trends that applied engineering to medical science and to build a global network in the healthcare industry. I'd like to extend my deepest appreciation to the president of POSTECH for hosting this conference and also to the best authorities on medical science and engineering at home and abroad and POSTECH members who are attending this event as speakers for your participation.

The COVID-19 pandemic has brought various changes across our society. Public interest that was once concentrated on preventive medicine and infectious diseases has now begun to expand organically to the bio-health industry in general with the start of vaccines and new drug development. The global bio-healthcare market is expected to grow from 11 trillion dollars in 2020 to 16 trillion dollars in 2026, enlarging annually by 7.5% on average. As of 2021, 17% of South Korea's total population is aged over 65, indicating that South Korea is already an aged society. The aging speed of our society is accelerating, as the proportion of those over 65 will be increasing to 40% by 2050. In line with the rapid growth trend of the global bio-health industry and population aging in developed countries, new drug development and regenerative medicine in the biotechnology industry as well as prediction and prevention in the smart healthcare industry are on the rise. In this context, I believe that promoting innovative advancement in these industries is the only way of meeting the demands of a super-aged society and of people who value a healthy life.

Hoping that this conference would offer a meaningful chance to explore ground-breaking ideas for the development of medical technology for the future and to gather wisdom, I would like to ask all participants for your support and attention toward Pohang, a central city of East Sea Rim region, to grow as a core hub of bio-health industry and to contribute to the advancement of not only the region but also to the nation.

Again, congratulations on the opening of the 2022 POSTECH Signature Conference at POSTECH, one of the best universities specialized in science in Korea, and I wish you all the best and happiness. Thank you.

Kang-deok LEE
Mayor of Pohang City




TIME	TITLE
08:00 ~ 08:40	Registration
08:40 ~ 08:44	Welcome and Opening Remarks
	<i>President. Moo Hwan KIM</i> POSTECH, KR
08:44 ~ 08:50	Congratulatory Remarks
	<i>Cheol Woo LEE</i> Governor of Gyeongbuk Province, KR
	Congratulatory Remarks
	<i>Kang-deok LEE</i> Mayor of Pohang City, KR
08:50 ~ 09:00	Group Photograph
SESSION I	Plenary Session
	<i>/ Session Chair / Prof. Jongshin KIM, Unyong JEONG</i>
09:00 ~ 09:40	Control of viral infections by natural killer cell inhibitory receptors
	<i>Prof. Wayne M. YOKOYAMA</i> Washington University in St. Louis, US
09:40 ~ 10:20	Skin-inspired electronics for bioelectronics applications
	<i>Prof. Zhenan BAO</i> Stanford University, US
10:20 ~ 10:40	Coffee Break
10:40 ~ 11:20	Texas-inspired drug discovery efforts
	<i>Prof. Jonathan L. SESSLER</i> University of Texas at Austin, US
11:20 ~ 12:00	Unexpected applications of cationic biomaterials
	<i>Prof. Kam W. LEONG</i> Columbia University, US
12:00 ~ 12:40	Designed synthesis and assembly of inorganic nanomaterials for medical and healthcare applications
	<i>Prof. Taeghwan HYEON</i> Seoul National University/IBS, KR
12:40 ~ 13:30	Lunch
13:30 ~ 15:00	Poster Session
	<i>/ Session Chair / Prof. Sekyu CHOI</i>
SESSION II	Drug Discovery Session
	<i>/ Session Chair / Prof. Jie-Oh LEE, Sang Ki PARK</i>
15:00 ~ 15:30	Ligand-directed chemistry of protein in live cells and brain
	<i>Prof. Itaru HAMACHI</i> Kyoto University, JP
15:30 ~ 16:00	The AUTOTAC chemical platform: targeted protein degradation via the autophagy-lysosome system
	<i>Prof. Yong Tae KWON</i> Seoul National University, KR
16:00 ~ 16:20	Coffee Break
16:20 ~ 16:50	T cell immune responses against SARS-CoV-2
	<i>Prof. Eui-Cheol SHIN</i> KAIST/IBS, KR
16:50 ~ 17:20	Microbiome therapeutics to enhance anti-cancer immunity
	<i>Prof. Sin-Hyeog IM</i> POSTECH, KR
16:20 ~ 17:50	Make invisible target cells visible by magic bullet probe
	<i>Prof. Young-Tae CHANG</i> POSTECH/IBS, KR
17:50 ~ 18:00	Futuristic medical technology and industry for human welfare
	<i>Minister. YU-KYOUNG OH</i> Minister of Food and Drug Safety, KR
18:30 ~ 20:00	Banquet

TIME	TITLE
SESSION III	Medical Engineering Session
	<i>/ Session Chair / Prof. Sungjee KIM, Junmin LEE</i>
09:00 ~ 09:30	Laser particles for single cell analysis
	<i>Prof. Seok Hyun (Andy) YUN</i> Harvard Medical School, US
09:30 ~ 10:00	Pollen-based materials innovation for sustainable technologies
	<i>Prof. Nam-Joon CHO</i> Nanyang Technological University, SG
10:00 ~ 10:30	Bioprinting for fabrication of structurally and functionally relevant tissues
	<i>Prof. Y. Shrike ZHANG</i> Harvard Medical School, US
10:30 ~ 10:50	Coffee Break
10:50 ~ 11:20	Smart wearable devices for on-demand healthcare applications
	<i>Prof. Sei Kwang HAHN</i> POSTECH, KR
11:20 ~ 11:50	Multi-modal imaging: photoacoustic imaging plus more
	<i>Prof. Chulhong KIM</i> POSTECH, KR
11:50 ~ 12:20	Recapitulating human physiological system using 3D bioprinting technology
	<i>Prof. Jinah JANG</i> POSTECH, KR
12:20 ~ 14:00	Lunch
SESSION IV	Regenerative Medicine Session
	<i>/ Session Chair / Prof. Yong Joo AHN, Jinah JANG</i>
14:00 ~ 14:30	Bioconvergence: harnessing cell-instructive materials and regenerative engineering technologies for biofabrication of functional tissues
	<i>Prof. Tim B. F. WOODFIELD</i> University of Otago, NZ
14:30 ~ 15:00	Precision targeting tumor cells using cancer-specific InDel mutations with CRISPR-Cas9
	<i>Prof. Kyungjae MYUNG</i> UNIST/IBS, KR
15:00 ~ 15:20	Coffee Break
15:20 ~ 15:50	Dynamics of stem cells and niches during lung regeneration and disease
	<i>Prof. Joo-Hyeon LEE</i> University of Cambridge, UK
15:50 ~ 16:20	Innovative adhesive biomaterials for regenerative medicine and drug delivery
	<i>Prof. Hyung Joon CHA</i> POSTECH, KR
16:20 ~ 16:50	A hair-raising tale: stress and tissue regeneration
	<i>Prof. Sekyu CHOI</i> POSTECH, KR
16:50 ~ 17:00	Closing Remarks
	<i>Dean. Changill BAN</i> POSTECH, KR

※ The above program may be subject to some changes.

Futuristic medical technology and industry for human welfare

Name	YU-KYOUNG OH (Ph.D.)
Affiliation	Ministry of Food and Drug Safety



Academic Background	1994	Department of Pharmaceutics, State University of New York at Buffalo (Ph.D.)
	1988	College of Pharmacy, Seoul National (M.S.)
	1986	College of Pharmacy, Seoul National (B.S.)

Professional Career	2014-Present	Member, The Korean Academy of Science and Technology
	1999-2005	Professor, Department of Medicine, CHA University
	1994-1996	Post-Doc, Department of Cell Biology, Harvard Medical School
	2022-Present	Minister of Food and Drug Safety
	2009-2022	Professor, College of Pharmacy, Seoul National University
	2005-2009	Professor, College of Life Sciences & Biotechnology, Korea University

SESSION I. Plenary Session

Control of viral infections by natural killer cell inhibitory receptors

Name	Wayne M. YOKOYAMA (M.D.)
Affiliation	Department of Medicine, Washington University School of Medicine in St. Louis




Academic Background	1985-1989	Research Fellow, Lab of Ethan Shevach, Laboratory of Immunology, National Institutes of Health, Bethesda, MD USA
	1982-1985	Research Fellow, Lab of Robert F. Ashman, University of Iowa Hospitals
	1981-1982	Clinical Fellow, Rheumatology U. of Iowa Hospitals, Iowa City, Iowa, USA
	1978-1981	Intern and resident, Internal Medicine, U. of Iowa Hospitals, Iowa City, IA
	1978	University of Hawaii School of Medicine, Honolulu, HI USA (M.D.)
	1974	Department of Biology, University of Rochester, Rochester, NY USA (B.A.)

Professional Career	2019-Present	Associate Dean, Division of Physician-Scientists, Washington University
	2007-Present	Director, MD-PhD program, Washington University
	1997-2017	Investigator, Howard Hughes Medical Institute
	1995-2007	Chief, Division of Rheumatology, Washington University in St. Louis
	1995-Present	Professor of Medicine and of Pathology and Immunology, Wash. University
	1994-1995	Associate Investigator, Howard Hughes Medical Institute
	1992-1995	Associate Professor of Medicine, Mt. Sinai Medical Center, New York, NY
	1989-1992	Assistant Professor of Medicine, University of California at San Francisco

Skin-inspired electronics for bioelectronics applications

Name	Zhenan BAO (Ph.D.)
Affiliation	Department of Chemical Engineering, Stanford University



Academic Background	1995	Chemistry, University of Chicago, Chicago, IL (Ph.D.)
	1993	Chemistry, University of Chicago, Chicago, IL (M.S.)
	1987-1990	Chemistry, Nanjing University, Nanjing, China

Professional Career	2018-2022	Department Chair, Department of Chemical Engineering, Stanford University
	2016-Present	K.K. Lee Professor, Department of Chemical Engineering, Stanford University
	2016-Present	Founder and Director, Stanford Wearable Electronics Initiative (eWEAR)
	2012-Present	Professor, Department of Chemical Engineering, Stanford University
	2004-2012	Associate Professor, Department of Chemical Engineering, Stanford University
	2022-2027	Investigator, Chan Zuckerberg BioHub
	2016-Present	Founder, Board of Directors, PyrAmes, Stanford, California
	2010-Present	Founder, Board of Directors, C3 Nano Co., Hayward, California
	2001-2004	Distinguished Member of Bell Labs, Lucent Technologies, Murray Hill, NJ
	1995-2001	Member of Technical Staff Bell Labs, Lucent Technologies, Murray Hill, NJ

Texas-inspired drug discovery efforts

Name	Jonathan L. SESSLER (Ph.D.)
Affiliation	Department of Chemistry, The University of Texas at Austin, USA



Academic Background	1982-1982	Tabushi Group, Department of Engineering, Kyoto University (Post-Doc)
	1982-1984	Labo Lehn, Université Louis Pasteur de Strasbourg (Post-Doc)
	1977-1982	Department of Chemistry, Stanford University (Ph.D.)
	1973-1977	University of California, Berkeley (B.S. with Highest Honors)

Professional Career	2016-Present	R. P. Doherty, Jr.-Welch Regents Chair in Chemistry, University of Texas at Austin, USA
	2009-2013	WCU Professor, Yonsei University, South Korea
	2009-2020	Associate Editor, Chemical Communications, RSC
	2015-2020	Foreign Faculty Associate, Shanghai University, China
	1994-2015	Assistant, Associate, Professor and Pettit Chair of Chemistry, University of Texas at Austin, USA

Unexpected applications of cationic biomaterials	
Name	Kam W. LEONG (Ph.D.)
Affiliation	Department of Biomedical Engineering, Columbia University



Academic Background	1983-1986	Applied Biological Sciences, M.I.T (Res. Ass.)
	1977-1982	Chemical Engineering, U. of Pennsylvania (Ph.D.)
	1977	Chemical Engineering, U. of California, Santa Barbara (Sc.B.)

Professional Career	2014-Present	Professor, Biomedical Engineering, Systems Biology, Columbia University
	2006-2014	Professor, Department of Biomedical Engineering, Duke University
	2009-2012	Distinguished Visiting Professor, National University of Singapore, Singapore
	1986-2006	Professor, Associate Professor, Assistant Professor, Department of Biomedical Engineering, School of Medicine, Johns Hopkins University
	1999-2006	Principal Investigator, Johns Hopkins Singapore

Designed synthesis and assembly of inorganic nanomaterials for medical and healthcare applications	
Name	Taeghwan HYEON (Ph.D.)
Affiliation	School of Chemical and Biological Engineering, Seoul National University / Center for Nanoparticle Research, Institute for Basic Science (IBS)



Academic Background	1996-1997	Catalysis Center, Northwestern University (Post-Doc)
	1991-1996	Department of Chemistry, Univ. of Illinois at Urbana-Champaign (Ph.D.)
	1987-1989	Department of Chemistry, Seoul National University (M.S.)
	1983-1987	Department of Chemistry, Seoul National University (B.S.)

Professional Career	1997-Present	Professor, School of Chemical and Biological Engineering, Seoul National University
	2012-Present	Director, Center for Nanoparticle Research, IBS
	2017-Present	SNU Distinguished Professor, Seoul National University
	2010-2020	Associate Editor, Journal of the American Chemical Society
	2010-2016	SNU Distinguished Fellow, Seoul National University
	2002-2010	Director, National Creative Research Initiative Center for Oxide Nanocrystalline Materials

SESSION II. Drug Discovery Session	
Ligand-directed chemistry of protein in Live cells and brain	
Name	Itaru HAMACHI (Ph.D.)
Affiliation	Department of Synthetic Chemistry and Biological Chemistry, Kyoto University



Academic Background	1985-1988	Kyoto University (Ph.D.)
	1983-1985	Kyoto University (M.S.)
	1979-1983	Kyoto University (B.S.)

Professional Career	2018-Present	Research Director, ERATO project (innovative molecular technology for neuroscience), JST
	2014-2020	Supervisor, PRESTO project (single cell analysis), JST
	2008-2018	Team Leader of two CREST projects, JST
	2005-Present	Professor, Kyoto University
	2001-2005	Professor, Kyushu University
	2000-2007	PRESTO Investigator, Japan Science and Technology (JST) Agency
	1992-2001	Associate Professor, Shinkai Lab., Kyushu University
	1988-1992	Assistant Professor, Kunitake Lab., Kyushu University

The AUTOTAC chemical platform: targeted protein degradation via the autophagy-lysosome system	
Name	Yong Tae KWON (Ph.D.)
Affiliation	Department of Biomedical Sciences, Seoul National University



Academic Background	1993	Department of Biological Science, Seoul National University (Ph.D.)
	1986	Department of Molecular Biology, Seoul National University (M.S.)
	1984	Department of Molecular Biology, Seoul National University (B.S.)

Professional Career	2020-Present	Director, Cellular Degradation Biology Center (SRC), Seoul National University
	2019-Present	CEO, AUTOTAC BIO Inc., Seoul, Korea
	2013-Present	Professor, Department of Biomedical Sciences, Seoul National University
	2010-2013	WCU Professor, Seoul National University
	2008-2013	Associate Professor(Tenured), School of Pharmacy, University of Pittsburgh, USA
	2002-2008	Assistant Professor, School of Pharmacy, University of Pittsburgh, USA
	2000-2002	Senior Scientist and Key Staff, California Institute of Technology, CA, USA
	1994-2000	Postdoctoral Fellow & Research Fellow, California Institute of Technology, CA, USA

T cell immune responses against SARS-CoV-2

Name	Eui-Cheol SHIN (M.D., Ph.D.)
Affiliation	Graduate School of Medical Science and Engineering, KAIST/ Korea Virus Research Institute, Institute for Basic Science (IBS)



Academic Background	1996-2001	Department of Microbiology and Immunology, Yonsei University College of Medicine (Ph.D.)
	1990-1996	Yonsei University College of Medicine (M.D.)

Professional Career	2021-Present	Director, The Center for Viral Immunology, Korea Virus Research Institute, Institute for Basic Science, Daejeon, Korea
	2007-Present	Assistant Professor, Associate Professor, and Professor, Graduate School of Medical Science and Engineering, KAIST, Daejeon, Korea
	2002-2007	Research Fellow, Immunology Section, Liver Diseases Branch, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Bethesda, MD, USA

Microbiome therapeutics to enhance anti-cancer immunity

Name	Sin-Hyeog IM (Ph.D.)
Affiliation	Department of Life Sciences, POSTECH / ImmunoBiome Inc.




Academic Background	2001-2003	Department of Pathology, Harvard Medical School (Post-Doc)
	1996-2001	Department of Immunology, Weizmann Institute of Science (Ph.D.)
	1987-1989	School of Life Sciences, Korea University (M.S.)
	1983-1987	School of Life Sciences, Korea University (B.S.)

Professional Career	2014-Present	Professor, Department of Life Sciences, POSTECH
	2019-Present	Chief Executive Officer, ImmunoBiome Inc.
	2018-Present	Adjunct Professor, Yonsei University
	2014-2019	Group leader/Acting Director, Institute for Basic Science (IBS)
	2004-2014	Professor, Gwangju Institute of Science and Technology (GIST)
	2002-2005	Senior Research Scientist, Chong Kun Dang (CKD) Pharm. Seoul, Korea

Make invisible target cells visible by magic bullet probe

Name	Young-Tae CHANG (Ph.D.)
Affiliation	Department of Chemistry, POSTECH / Center for Self-assembly and Complexity, Institute for Basic Science (IBS)



Academic Background	1997-2000	UC Berkeley, Scripps (Post-Doc)
	1995-1997	Department of Chemistry, POSTECH (Ph.D.)
	1991-1995	Department of Chemistry, POSTECH (M.S.) + Korean Army Service
	1987-1991	Department of Chemistry, POSTECH (B.S.)

Professional Career	2017-Present	Professor, Chemistry, POSTECH
	2017-Present	Associate Director, Center for Self-Assembly and Complexity, IBS
	2007-2017	Head, Laboratory of Bioimaging Probe Development, SBIC, A*STAR
	2012-2017	Professor, Chemistry, National University of Singapore
	2007-2017	Director, Medicinal Chemistry Program, National University of Singapore
	2007-2011	Associate Professor, Chemistry, National University of Singapore
	2005-2007	Associate professor, NYU Chemistry
	2000-2005	Assistant Professor, NYU Chemistry

SESSION III. Medical Engineering Session

Laser particles for single cell analysis

Name	Seok Hyun YUN (Ph.D.)
Affiliation	Harvard Medical School and Massachusetts General Hospital



Academic Background	1997-2000	Department of Physics, KAIST (Research Fellow, Military Service)
	1993-1997	Department of Physics, KAIST (Ph.D.)
	1991-1993	Department of Physics, KAIST (M.S.)
	1987-1991	Department of Physics, KAIST (B.S.)

Professional Career	2017-Present	Professor, Harvard Medical School
	2010-2017	Associate Professor, Harvard Medical School
	2005-2010	Assistant Professor, Harvard Medical School
	2005-Present	Principal Investigator, MGH
	2003-2005	Instructor, Harvard Medical School and MGH, Boston, MA, USA
	2000-2003	Optical System Architect, Novera Optics, Inc., San Jose, CA, USA
	1998-2000	Founding member, Novera Optics, Inc., Korea

Pollen-based materials innovation for sustainable technologies	
Name	Nam-Joon CHO (Ph.D.)
Affiliation	School of Materials Science and Engineering, Nanyang Technological University (NTU)



Academic Background	2007-2011	School of Medicine, Stanford University (Post-Doc)
	2003-2007	Chemical Engineering, Stanford University (Ph.D.)
	2001-2003	Materials Science and Engineering, Stanford University (M.S.)
	1993-1996	Civil and Environmental Engineering, University of California-Berkeley (B.S.)
Professional Career	2019-Present	Full Professor, School of Materials Science and Engineering, NTU
	2019-Present	Affiliated Principal Investigator, Singapore Centre for Environmental Life Sciences and Engineering (SCELSE), NTU
	2019-Present	Materials Research Society of Singapore Chair in Materials Science and Engineering, NTU
	2011-Present	Principal Investigator, SMART Infectious Disease Interdisciplinary Research Group, NTU
	2011-2019	Nanyang Associate Professor, School of Materials Science and Engineering, NTU
	2011-2013	Visiting Associate Professor, School of Medicine, Stanford University
	2010-2010	Visiting Scholar, Division of Biological Physics, Chalmers University of Technology
	2002-2006	Research Assistant, Department of Chemical Engineering, Stanford University

Bioprinting for fabrication of structurally and functionally relevant tissues	
Name	Y. Shrike ZHANG (Ph.D.)
Affiliation	Department of Medicine, Harvard Medical School



Academic Background	2013-2016	Division of Engineering in Medicine, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School (Post-Doc)
	2012-2013	Department of Biomedical Engineering, Georgia Institute of Technology (Ph.D.)
	2008-2011	Department of Biomedical Engineering, Washington University in St. Louis (M.S.)
	2004-2008	Department of Biomedical Engineering, Southeast University, China (B.S.)
Professional Career	2018-Present	Assistant Professor, Department of Medicine, Harvard Medical School
	2016-2018	Instructor, Department of Medicine, Harvard Medical School
	2018-Present	Associate Bioengineer, Division of Engineering in Medicine, Brigham and Women's Hospital

Smart wearable devices for on-demand healthcare applications	
Name	Sei Kwang HAHN (Ph.D.)
Affiliation	Department of Materials Science and Engineering, POSTECH / PHI BIOMED Co.



Academic Background	2001-2002	Department of Bioengineering, University of Washington (Post-Doc)
	1993-1996	Department of Chemical and Biomolecular Engineering, KAIST (Ph.D.)
	1991-1993	Department of Chemical and Biomolecular Engineering, KAIST (M.S.)
	1987-1991	Department of Chemical and Biomolecular Engineering, KAIST (B.S.)
Professional Career	2005-Present	Professor, Department of Materials Science and Engineering, POSTECH
	2020-Present	National Academy of Engineering Korea
	2019-2020	Visiting Professor, Dept. of Chemical Engineering, Stanford University
	2017-2018	Presidential Advisory Council on Science and Technology, Korea
	2016-2018	Samsung Future Technology Committee
	2012-2013	Visiting Associate Professor, MGH and Harvard Medical School
	2002-2005	Stage II Research Scientist, Roche Group, Chugai Pharmaceutical Co.
	1996-2001	Senior Research Scientist, LG Chemical Co. and LG Life Sciences

Multi-modal imaging: photoacoustic imaging plus more	
Name	Chulhong KIM (Ph.D.)
Affiliation	Department of Electrical Engineering, Convergence IT Engineering, and Mechanical Engineering, POSTECH / OPTICHO



Academic Background	2009-2010	Department of Biomedical Engineering, Washington University in St. Louis, St. Louis, MO (Post-Doc)
	2006-2009	Department of Biomedical Engineering, Washington University in St. Louis, St. Louis, MO (Ph.D.)
	1997-2004	Department of Electrical, Electronic and Computer Engineering, Kyungpook National University (B.S.)
Professional Career	2022-Present	Department Chair of Convergence IT Engineering, POSTECH
	2022-Present	Program Chair of Medical Science and Engineering, POSTECH
	2021-Present	POSTECH Young Distinguished Professor
	2013-Present	Professor of Department of Electrical Engineering, Convergence IT Engineering, and Mechanical Engineering, POSTECH
	2020-Present	Director of Medical Device Innovation Center, POSTECH and Ministry of Education
	2018-Present	Mueunjae Chair Professorship, POSTECH
	2010-2013	Assistant Professor of Department of Biomedical Engineering, University at Buffalo, The State University of New York

Recapitulating human physiological system using 3D bioprinting technology	
Name	Jinah JANG (Ph.D.)
Affiliation	Department of Mechanical Engineering, Convergence IT Engineering, Life Science, and School of Convergence Science, POSTECH



Academic Background	<div><div>2016-2017</div><div>Institute for Stem Cells and Regenerative Medicine, University of Washington, WA, USA (Visiting Scholar)</div></div> <div><div>2015-2017</div><div>Department of Mechanical Engineering, Pohang University of Science and Technology (Post-Doc)</div></div> <div><div>2010-2015</div><div>Integrative Biosciences and Biotechnology, Pohang University of Science and Technology (Ph.D.)</div></div> <div><div>2006-2010</div><div>Mechanical Design and Automation Engineering, Seoul National University of Science & Technology, Korea (B.S.)</div></div>
Professional Career	<div><div>2022-Present</div><div>Director, Center for 3D Bioprinting and Stem Cells, POSTECH</div></div> <div><div>2021-Present</div><div>Board of Directors, International Society for Biofabrication</div></div> <div><div>2021-Present</div><div>Associate editor, Bio-Design & Manufacturing</div></div> <div><div>2019-Present</div><div>Editorial board, Journal of Korean Society for Precision Engineering</div></div> <div><div>2018-Present</div><div>Adjunct Professor, Yonsei Institute of Convergence Technology, Yonsei University, Republic of Korea</div></div> <div><div>2015-2019</div><div>Presidential Post-Doc Fellow, National Research Foundation, Korea</div></div>

SESSION IV. Regenerative Medicine Session

Bioconvergence: harnessing cell-instructive materials and regenerative engineering technologies for biofabrication of functional tissues	
Name	Tim B.F. WOODFIELD (Ph.D.)
Affiliation	Department of Orthopaedic Surgery; Director - Centre for Bioengineering & Nanomedicine, University of Otago



Academic Background	<div><div>2005</div><div>Inst for Biomedical Innovation (BMTi), Univ of Twente, Netherlands (Post-Doc)</div></div> <div><div>2000-2004</div><div>BMTi, Univ of Twente, and IsoTis Orthobiologics, Netherlands (PhD)</div></div> <div><div>1998-2000</div><div>Inst for Biomaterials & Biomedical Eng, Univ of Toronto, Canada (MAsc)</div></div> <div><div>1992-1997</div><div>Department of Mechanical Engineering, Univ of Canterbury (BEng Hons 1st Class)</div></div>
Professional Career	<div><div>2022+</div><div>President, International Society for Biofabrication (ISBF)</div></div> <div><div>2020+</div><div>Full Professor, Dept Orthopaedic Surgery & MSM, Univ of Otago, NZ.</div></div> <div><div>2018+</div><div>President Elect, International Society for Biofabrication; Exec Board 2014+</div></div> <div><div>2018+</div><div>Council Member, TERMIS-Asia Pacific Chapter (TERMIS-AP)</div></div> <div><div>2015-2021</div><div>Principal Investigator, Medical Technology Centre of Research Excellence, NZ.</div></div> <div><div>2015-2019</div><div>Assoc Professor, Dept Orthopaedic Surgery & MSM, Univ of Otago, NZ.</div></div> <div><div>2014-2016</div><div>President, Australasian Society for Biomaterials & Tissue Engineering (ASBTE).</div></div> <div><div>2011-2015</div><div>Senior Research Fellow, Dept Orthopaedic Surgery & MSM, Univ of Otago, NZ.</div></div> <div><div>2005-2011</div><div>Research Fellow, Dept Orthopaedic Surgery & MSM, Univ of Otago; Dept of Mechanical Engineering, Univ of Canterbury, Christchurch, NZ.</div></div>

Precision targeting tumor cells using cancer-specific InDel mutations with CRISPR-Cas9	
Name	Kyungjae MYUNG (Ph.D.)
Affiliation	Department of Biomedical Engineering, UNIST / Center for Genomic Integrity, Institute for Basic Science (IBS)



Academic Background	<div><div>1999-2002</div><div>Postdoctoral Fellow, Ludwig Institute for Cancer Research, UCSD</div></div> <div><div>1999</div><div>Department of Molecular Cellular Biology & Biochemistry, Brown University (Ph.D.)</div></div> <div><div>1993</div><div>Department of Molecular Biology, Seoul National University (M.S.)</div></div> <div><div>1991</div><div>Department of Zoology, Seoul National University (B.S.)</div></div>
Professional Career	<div><div>2014-Present</div><div>Distinguished professor, UNIST/Director, Center for Genomic Integrity, IBS</div></div> <div><div>2009-2014</div><div>Senior Investigator, NHGRI, NIH</div></div> <div><div>2002-2009</div><div>Investigator, NHGRI, NIH</div></div>

Dynamics of stem cells and niches during lung regeneration and disease	
Name	Joo-Hyeon LEE (Ph.D.)
Affiliation	Wellcome – MRC Cambridge Stem Cell Institute, Department of Physiology, Development, and Neuroscience (PDN), University of Cambridge



Academic Background	<div><div>2009-2015</div><div>Children's Hospital Boston, Harvard Stem Cell Institute, USA (Post-Doc)</div></div> <div><div>2003-2008</div><div>Department of Biological Sciences, KAIST, Korea (Ph.D.)</div></div> <div><div>2001-2003</div><div>College of Life Sciences & Biotechnology, Korea University, Korea (M.S.)</div></div> <div><div>1995-2001</div><div>Division of Biological Sciences, Korea University, Korea (B.S.)</div></div>
Professional Career	<div><div>2022-Present</div><div>Tenured Associate Professor, Department of PDN, University of Cambridge</div></div> <div><div>2022-Present</div><div>Academic Editor of PLOS Biology</div></div> <div><div>2021-Present</div><div>Wellcome Trust Senior Research Fellow, UK</div></div> <div><div>2020-Present</div><div>Suh Kyungbae Science Foundation (SUHF) Young Investigator, Korea</div></div> <div><div>2019-Present</div><div>Affiliate Principal Investigator, CRUK Cambridge Cancer Centre, UK</div></div> <div><div>2016-2021</div><div>Wellcome Trust Sir Henry Dale Fellow, UK</div></div> <div><div>2016-2021</div><div>European Research Council (ERC) Investigator</div></div> <div><div>2016-Present</div><div>Group Leader, Wellcome – MRC Cambridge Stem Cell Institute, UK</div></div>

Innovative adhesive biomaterials for regenerative medicine and drug delivery	
Name	Hyung Joon CHA (Ph.D.)
Affiliation	Department of Chemical Engineering, POSTECH / POSTECH / Nature Gluetechnology Co., Ltd.



Academic Background	1992-1995	Chemical Engineering, Seoul National University (Ph.D.)
	1986-1990	Chemical Engineering, Seoul National University (B.S.)
Professional Career	1999-Present	Professor, Department of Chemical Engineering, POSTECH
	2017-2033	SeAH Chair Professor, POSTECH
	2021-Present	Dean of Engineering, POSTECH
	2015-Present	Co-CEO/CTO, Nature Gluetechnology Co., Ltd.
	2014-Present	Member, The Korean Academy of Science and Technology
	2019-Present	Member, The National Academy of Engineering of Korea
	2010-Present	Director, Biomaterials Research Center
	1998-1999	Research Assistant Professor, University of Maryland, College Park
	1996-1998	Postdoctoral Research Associate, University of Maryland, College Park

A hair-raising tale: stress and tissue regeneration	
Name	Sekyu CHOI (Ph.D.)
Affiliation	Department of Life Sciences, POSTECH



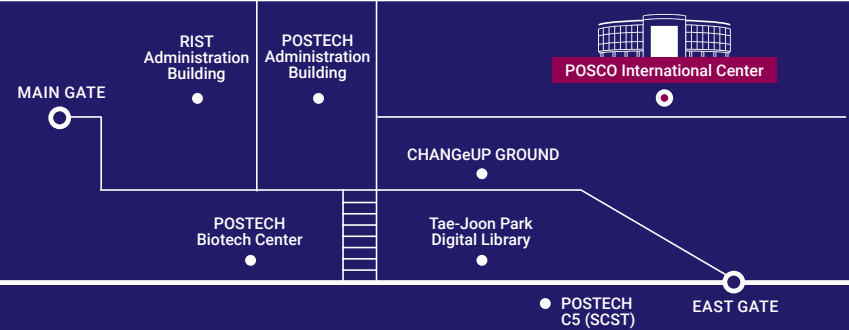
Academic Background	2016-2021	Department of Stem Cell and Regenerative Biology, Harvard University (Post-Doc & Research Associate)
	2014-2016	Institute of Molecular Biology and Genetics, Seoul National University (Post-Doc)
	2007-2014	Department of Biological Sciences, KAIST (Ph.D.)
	2001-2007	Department of Life Sciences, Sogang University (B.S.)
Professional Career	2021-Present	Assistant Professor, Department of Life Sciences, POSTECH
	2022-Present	Joint appointment, Medical Science and Engineering, SCST, POSTECH
	2022-Present	Adjunct Professor, School of Interdisciplinary Bioscience and Bioengineering, SCST, POSTECH
	2022-Present	Adjunct Professor, Institute for Convergence Research and Education in Advanced Technology, Yonsei University

GENERAL INFORMATION

POSTECH was established to conduct in-depth research on profound theories and applications in science and engineering that are necessary for the advancement of nation and humanity, and to cultivate global leaders equipped with knowledge and intellect. Carrying on the late founding chairman Tae-joon Park's legacy on educational patriotism, POSTECH is leading the progress on education and science in Korea by taking on great challenges.

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- # by Train
- 1 Incheon International Airport to Seoul Station (Airport Railroad Express, 45 min)
Seoul Station to Pohang Station (KTX, 160 min)
 - 2 Gimpo International Airport to Seoul Station (Airport Railroad Express, 22 min)
Seoul Station to Pohang Station (KTX, 160 min)
 - 3 Pohang Station to POSTECH (Taxi, 15 min)
- # by Airport
- 1 Incheon International Airport to Gimpo International Airport (Airport Railroad Express, 60 min)
Gimpo International Airport to Pohang Airport (Domestic Airline, 50 min)
 - 2 Pohang Airport to POSTECH (Taxi, 20 min)





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