

Jung Sun YOO
(Assistant Professor)



QUALIFICATIONS: Research Fellow (National University of Singapore, Singapore) 2011-2013
PhD (Seoul National University, South Korea) 2009 Biomedical Physics
BSc (Seoul National University, South Korea) 2004 Physics Education

Homepage: www.oigtm.com

BRIEF OUTLINE OF EXPERIENCE AND POSTS HELD:

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| Oct 2016 - present | Assistant Professor, Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong |
| Jan 2017 – Dec 2018 | Honorary Research Fellow, Nano-Bio Research Laboratory, Advanced Institutes of Convergence Technology, Seoul National University, South Korea |
| Mar 2014 - Sep 2016 | BK Assistant Professor, Smart Humanity Convergence Center, Program in Biomedical Radiation Sciences, Department of Transdisciplinary Studies, Graduate School of Convergence Science and Technology, Seoul National University, South Korea |
| Nov 2014 - Sep 2016 | Joint Research Scientist, Center for Nanomolecular Imaging and Innovative Drug Development, Institute of Bio Convergence, Advanced Institutes of Convergence Technology, South Korea |
| Feb 2011 – Oct 2013 | Research Fellow, Department of Chemistry, Faculty of Science, National University of Singapore & Singapore Bioimaging Consortium, Agency for Science, Technology and Research, Singapore |
| Sep 2009 – Jan 2011 | Postdoctoral Research Associate, College of Natural Sciences & The Research Institute of Basic Sciences, Seoul National University, South Korea |
| Sep 2003 - Aug 2009 | Research Assistant, Department of Physics and Astronomy, Seoul National University, South Korea |
| Apr 2007 – Mar 2008 | Visiting Student, Chair of Biological Imaging, School of Medicine, School of Engineering, Technical University of Munich & Institute of Biological and Medical Imaging, Helmholtz Center Munich-German Research Center for Environmental Health, Germany |

Dec 2005 – Visiting Student, Harvard Medical School, Department of Radiology,
Feb 2006 Massachusetts General Hospital & Department of Medicine, Brigham and
Women's Hospital, USA

RESEARCH INTERESTS:

Fluorescence molecular imaging, Multimodality imaging, Intraoperative/Intravital imaging,
Nanomedicine, Deep learning application in biomedical imaging

**SERVICE TO PROFESSIONAL & SCIENTIFIC BODIES, CONSULTANCY, MEMBERSHIP OF
PROFESSIONAL & LEARNED SOCIETIES:**

- Editorial Board Member
Frontiers in Oncology (Review Editor on the Editorial Board of Radiation Oncology, Since July 2020)
International Journal of Molecular Sciences (Topic Editor on the Editorial Board, Since August 2020)
- Reviewer Board Member
Information (Reviewer Board Member, Since March 2020)
Journal of Imaging (reviewer Board Member, Since July 2020)
- Reviewer for academic journals
Scientific Reports, PLoS ONE, Molecular Imaging, Molecular Imaging and Biology, Biomedical Optics Express, Review of Scientific Instruments, Stem Cells and Development, Journal of Acupuncture and Meridian Studies, Cancer Epidemiology, Biomarkers & Prevention, Cancers, Journal of Imaging, Electronics, Machine Learning and Knowledge Extraction, Journal of International Society of Life Information Science, Frontiers in Oncology, Cells, Sensors, Current Molecular Pharmacology, Information, Diagnostics, Molecules, applied Sciences-Basel, International Journal of Molecular Sciences
- Reviewer for research grants/proposals
Individual Basic Science & Engineering Research Program, National Research Foundation of Korea, Ministry of Science, ICT and Future Planning, South Korea
National Cancer Control Research Program, National Cancer Control Planning Board, Ministry of Health and Welfare, South Korea
Industry Convergence Fundamental Technology Development Program, Korea Evaluation Institute of Industrial Technology, Ministry of Trade, Industry and Energy, South Korea
- Reviewer for conference
World Molecular Imaging Congress 2020
- Member for the Korean Physical Society (2006 - present)
- Member for World Molecular Imaging Society (2012 - present)

AWARDS:

14 Nov 2014 KOFWST Future Talent Award from Korea Federation of Women's Science & Technology Associations (KOFWST), South Korea
25 Jul 2014 Conference and Training Participation Support for Non-Regular Researchers from Center for Women in Science, Engineering and Technology (WISSET), South Korea
11 Oct 2009 Young Scientist Award for the Acupuncture and Meridian Studies Awards 2009 from the International Pharmacopuncture Institute (IPI)

- 31 Aug 2009 Graduate Student Research Award-Second Place from the Seoul National University, South Korea
- 11 Mar 2005 Seoul Science Fellowship from Seoul Metropolitan Government, South Korea
– Feb 2007
- 26 Feb 2004 Secondary School Teacher License for Physics (Ministry of Education, Korea)

Award of Research Postgraduate Students under my Supervision

- 23 June 2021 2nd Prize from Department of Health Technology and Informatics of the Hong Kong Polytechnic University, Postgraduate Symposium 2021, Mr Nagi Nick Alex Wong (23 June 2021, Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Ngai Nick Alex Wong, **Jung Sun Yoo***: Prioritization on whole-slide images of clinical gastric carcinoma biopsies through a weakly supervised and annotation-free system)
- 14 Jun 2019 2nd Prize from Department of Health Technology and Informatics of the Hong Kong Polytechnic University, Postgraduate Symposium 2019, Mr Nagi Nick Alex Wong (14 June 2019, Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Ngai Nick Alex Wong, **Jung Sun Yoo***: Intraoperative imaging technique to highlight peripheral nerves using polarized spectral reflectance)
- 14 Dec 2018 Certificate of Excellence from Organizing Committee of 2018 International Symposium on NanoBiotechnology, Biosensors and Biochips (2018 ISNBB, Organized by Asian Federation of Biotechnology (AFOB), Chinese Society of Biotechnology (CSBT), City University of Hong Kong (CityU)), Mr Ngai Nick Alex Wong (City University of Hong Kong, December 13-14, 2018, Ngai Nick Alex Wong, **Jung Sun Yoo***: Intraoperative Imaging System to Highlight Peripheral Nerves using Polarized Spectral Reflectance)
- 25 Aug 2016 Poster Award from Korean Association for Laboratory Animal Science (KALAS), 2016 KALAS International Symposium (Hwabaek International Convention Center, Gyeongju, Korea, August 24-26, 2016, Ga Ram Kim, Sang Eun Kim, **Jung Sun Yoo*** : Intraoperative Visualization of Nerve for Surgical Guidance with No Exogenous Label using Spectral Reflectance Imaging)

REPRESENTATIVE PUBLICATIONS:

ORCID: [0000-0002-8865-0424](https://orcid.org/0000-0002-8865-0424)

Scopus Author ID: [7402295459](https://orcid.org/7402295459)

Peer-reviewed journal papers

- Minfeng Yang, In Young Oh, Arpan Mahanty, Wei-Lin Jin*, **Jung Sun Yoo*** : Immunotherapy for Glioblastoma: Current State, Challenges, and Future Perspectives, *Cancers*, 12(9): 2334, 2020 August 19 (*corresponding author)
- Nunzio Denora, Chaedong Lee, Rosa Maria Iacobazzi, Ji Young Choi, In Ho Song, **Jung Sun Yoo**, Yuanzhe Piao, Antonio Lopalco, Francesco Leonetti, Byung Chul Lee, Sang Eun Kim : TSPO-targeted NIR-fluorescent ultra-small iron oxide nanoparticles for glioblastoma imaging, *European Journal of Pharmaceutical Sciences*, 139: 105047, 2019 November 1
- Chaedong Lee, Ga Ram Kim, Juhwan Yoon, Sang Eun Kim, **Jung Sun Yoo***, Yuanzhe Piao* : In Vivo Delineation of Glioblastoma by Targeting Tumor-associated Macrophages with Near-Infrared Fluorescent Silica-coated Iron Oxide Nanoparticles in Orthotopic Xenografts for Surgical Guidance, *Scientific Reports*, 8: 11122, 2018 July 24 (*corresponding author)
- Bo Quan, Chaedong Lee, **Jung Sun Yoo***, Yuanzhe Piao* : Facile Scalable Synthesis of Highly Monodisperse Small Silica Nanoparticles using Alkaline Buffer Solution and its Application for

Efficient Sentinel Lymph Node Mapping, *Journal of Materials Chemistry B*, 5: 585-594, 2017 January 1 (*corresponding author)

- Min Su Lee, Hyun Soo Park, Byung Chul Lee, Jae Ho Jung, **Jung Sun Yoo***, Sang Eun Kim* : Identification of Angiogenesis Rich-Viable Myocardium using RGD Dimer based SPECT after Myocardial Infarction, *Scientific Reports*, 6 : 27520, 2016 June 10 (*corresponding author)
- Haeyun Jang, Chaedong Lee, Gi-Eun Nam, Bo Quan, Hyuck Jae Choi, **Jung Sun Yoo**, Yuanzhe Piao : In Vivo Magnetic Resonance and Fluorescence Dual Imaging of Tumor Sites by using Dye-Doped Silica-Coated Iron Oxide Nanoparticles, *Journal of Nanoparticle Research*, 18(2) :41, 2016 February 8
- **Jung Sun Yoo**, Jonghwan Lee, Jae Ho Jung, Byung Seok Moon, Soonhag Kim, Byung Chul Lee, Sang Eun Kim : SPECT/CT Imaging of High-Risk Atherosclerotic Plaques using Integrin-Binding RGD Dimer Peptides, *Scientific Reports*, 5 : 11752, 2015 June 30
- Satoshi Arai, Madoka Suzuki, Sung-Jin Park, **Jung Sun Yoo**, Lu Wang, Nam-Young Kang, Hyung-Ho Ha, Young-Tae Chang : Mitochondria-targeted Fluorescent Thermometer Monitors Intracellular Temperature Gradient, *Chemical Communications*, 51(38) : 8044-8047, 2015 April 1
- **Jung Sun Yoo**, Kwang-Sup Soh : A Transformative Approach to Cancer Metastasis: Primo Vascular System as a Novel Microenvironment for Cancer Stem Cells, *Cancer Cell & Microenvironment*, 1(3) : e142, 2014 July 2
- **Jung Sun Yoo**, Raj Kumar Das, Zhi Yen Jow, Young-Tae Chang : In Vivo Detection of Macrophage Recruitment in Hind-limb Ischemia using a Targeted Near-Infrared Fluorophore, *PLoS ONE*, 9(7) : e103721, 2014 July 29
- **Jung Sun Yoo**, Sung-Chan Lee, Zhi Yen Jow, Pamela Yun Xiang Koh, Young-Tae Chang : A Macrophage-Specific Fluorescent Probe for Intraoperative Lymph Node Staging, *Cancer Research*, 74(1): 44-55, 2014 January 1
- Jaekwan Lim, Sungwoo Lee, Zhendong Su, Hong Bae Kim, **Jung Sun Yoo**, Kwang-Sup Soh, Sungchul Kim, and Yeon Hee Ryu : Primo Vascular System Accompanying a Blood Vessel from Tumor Tissue and a Method to Distinguish It from the Blood or the Lymph System, *Evidence-Based Complementary and Alternative Medicine*, 2013 : 949245, 2013 May
- **Jung Sun Yoo**, Hong Bae Kim, Nayoun Won, Jiwon Bang, Sungjee Kim, Saeyoung Ahn, Byung-Cheon Lee, and Kwang-Sup Soh : Evidence for an Additional Metastatic Route: In vivo Imaging of Cancer Cells in the Primo-Vascular System around Tumors and Organs, *Molecular Imaging and Biology*, 13(3) : 471-480, 2011 June
- Vasilis Ntziachristos, **Jung Sun Yoo**, Gooitzen M. van Dam : Current Concepts and Future Perspectives on Surgical Optical Imaging in Cancer, *Journal of Biomedical Optics*, 15(6) : 066024, 2010 November/December
- Ping An, Jingxing Dai, Zhendong Su, **Jung Sun Yoo**, Rongmei Qu, Sung-Woo Lee, Ki-Hoon Eom, Kyang-Hee Bae, Hesheng Luo, Kwang-Sup Soh : Putative Primo-vascular System in Mesentery of Rats, *Journal of Acupuncture and Meridian Studies*, 3(4) : 232-240, 2010 Dec
- **Jung Sun Yoo**, Nayoun Won, Hong Bae Kim, Jiwon Bang, Sungjee Kim, Saeyoung Ahn, and Kwang-Sup Soh : In vivo Imaging of Cancer Cells with Electroporation of Quantum Dots and Multispectral Imaging, *Journal of Applied Physics*, 107(12) : 124702, 2010 June 15
- **Jung Sun Yoo**, M. Hossein Ayati, Hong Bae Kim, Wei-bo Zhang, and Kwang-Sup Soh : Characterization of the Primo-Vascular System in the Abdominal Cavity of Lung Cancer Mouse Model and Its Differences from the Lymphatic System, *PLoS ONE*, 5(4) : e9940, 2010 April
- **Jung Sun Yoo**, George Themelis, Kwang-Sup Soh, Ralf Schulz, and Vasilis Ntziachristos : Real-time Intraoperative Fluorescence Imaging System using Light-absorption Correction, *Journal of Biomedical Optics*, 14(6) : 06412, 2009 November/December
- **Jung Sun Yoo**, Hong Bae Kim, Vyacheslav Ogay, Byung-Cheon Lee, Saeyoung Ahn, and Kwang-Sup Soh : Bonghan Ducts as Possible Pathways for Cancer Metastasis, *Journal of Acupuncture and Meridian Studies*, 2(2) : 118-123, 2009 June

- George Themelis, **Jung Sun Yoo**, and Vasilis Ntziachristos : Multispectral Imaging using Multiple-bandpass Filters, *Optics Letters*, 33(9) : 1023-1025, 2008 May
- **Jung Sun Yoo**, Min Su Kim, Vyacheslav Ogay, and Kwang-Sup Soh : In vivo Visualization of Bonghan Ducts inside Blood Vessels of Mice by using an Alcian Blue Staining Method, *Indian Journal of Experimental Biology*, 46(5) : 336-339, 2008 May
- Byung-Cheon Lee, **Jung Sun Yoo**, Ku Youn Baik, Baeckkyoung Sung, Jawoong Lee, and Kwang-Sup Soh : Development of a Fluorescence Stereomicroscope and Observation of Bong-Han Corpuscles inside Blood Vessels, *Indian Journal of Experimental Biology*, 46(5) : 330-335, 2008 May
- Baeckkyoung Sung, Min Su Kim, Byung-Cheon Lee, **Jung Sun Yoo**, Sang-Hee Lee, Youn-Joong Kim, Ki-Woo Kim, and Kwang-Sup Soh : Measurement of Flow Speed in the Channels of Novel Threadlike Structures on the Surfaces of Mammalian Organs, *Naturwissenschaften*, 95(2) : 117-124, 2008 Feb
- Su Hong, **Jung Sun Yoo**, Ju Young Hong, Byung-Cheon Lee, Kwang-Sup Soh, Sang-Hee Lee, Youn-Joong Kim, Dae-In Kang, Byung Soo Ahn, and Hee-Jong Woo : Immunohistochemical and Electron Microscopic Study of the Meridian-like System on the Surface of Internal Organs of Rats, *Acupuncture & Electro-Therapeutics Research*, 32(3/4) : 195-210, 2007
- **Jung Sun Yoo**, Min Su Kim, Baeckkyoung Sung, Byung-Cheon Lee, Kwang-Sup Soh, Sang-Hee Lee, Youn-Joong Kim, and Harald Dobberstein : Cribiform Structure with Channels in the Acupuncture Meridian-like System on the Organ Surfaces of Rabbits, *Acupuncture & Electro-Therapeutics Research*, 32(1/2) : 130-132, 2007
- **Jung Sun Yoo**, Hyeon-Min Johng, Tae-Jong Yoon, Hak-Soo Shin, Byung-Cheon Lee, Changhoon Lee, Byung Soo Ahn, Dae-In Kang, Jin-Kyu Lee, and Kwang-Sup Soh : In vivo Fluorescence Imaging of Threadlike Tissues (Bonghan Ducts) inside Lymphatic Vessels with Nanoparticles, *Current Applied Physics*, 7(4) : 342-348, 2007 May
- Byung-Cheon Lee, **Jung Sun Yoo**, Vyacheslav Ogay, Ki Woo Kim, Harald Dobberstein, Kwang-Sup Soh, and Byung-Soo Chang : Electron Microscopic Study of Novel Threadlike Structures on the Surfaces of Mammalian Organs, *Microscopy Research and Technique*, 70(1) : 34-43, 2007 Jan
- Hyeon-Min Johng, **Jung-Sun Yoo**, Tae-Jong Yoon, Hak-Soo Shin, Byung-Cheon Lee, Changhoon Lee, Jin-Kyu Lee, and Kwang-Sup Soh : Use of Magnetic Nanoparticles to Visualize Threadlike Structures inside Lymphatic Vessels of Rats, *Evidence-based Complementary and Alternative Medicine*, 4(1) : 77-82, 2007 Mar
- Yong-Yui Han, Joon-Mo Yang, **Jung Sun Yoo**, Vyacheslav Ogay, Jung-Dae Kim, Min-Su Kim, Byung-Cheon Lee, Ku-Youn Baik, Sang-Hyun Park, and Kwang-Sup Soh : Measurement of the Optical Properties of In-vitro Organ-Surface Bonghan Corpuscles of Rats, *Journal of the Korean Physical Society*, 49(6) : 2239-2246, 2006 Dec
- Changhoon Lee, **Jung Sun Yoo**, Joonhyung Kwon, Kwang-Sup Soh : Study on the flow through the organ surface Bonghan duct by using nanoparticles, *Journal of the Korean Society of Jungshin Science*, 10(2) : 49-55, 2006 Dec
- Byung-Cheon Lee, **Jung Sun Yoo**, Ku Youn Baik, Ki Woo Kim, and Kwang-Sup Soh : Novel Threadlike Structures (Bonghan Ducts) inside Lymphatic Vessels of Rabbits Visualized with a Janus Green B Staining Method, *Anatomical Record-Advances in Integrative Anatomy and Evolutionary Biology*, 286B(01) : 1-7, 2005 Sep
- Baeckkyoung Sung, Vyacheslav Ogay, **Jung Sun Yoo**, Hyung Suk Yu, Byung-Cheon Lee, Chan Chung, Guhung Jung, and Kwang-Sup Soh : UV-A-Induced Activation of Bonghan Granules in Motion, *Journal of International Society of Life Information Science*, 23(02) : 297-301, 2005 Sep
- **Jung Sun Yoo**, Kihwan Choi, Ku Youn Baik, Doo Soo Chung, and Kwang-Sup Soh : Liquid-Phase Microextraction Method in Capillary Electrophoresis to Detect Adrenaline in Bonghan Liquid, *Journal of International Society of Life Information Science*, 23(02) : 292-296, 2005 Sep
- Hak-Soo Shin, Hyeon-Min Johng, Byung-Cheon Lee, Sung-Il Cho, Ku Youn Baik, **Jung Sun Yoo**,

and Kwang-Sup Soh : Feulgen Reaction Study of Novel Threadlike Structures (Bonghan Ducts) on the Surface of Mammalian Organs, *Anatomical Record-Advances in Integrative Anatomy and Evolutionary Biology*, 284B(01) : 35-40, 2005 May

- Byung-Cheon Lee, **Jung Sun Yoo**, Eun Sung Park, Yeo Sung Yoon, Hak-Soo Shin, and Kwang-Sup Soh : Histological features of Bonghan Corpuscles on the Surface of Rabbit Internal Organs, *Journal of International Society of Life Information Science*, 23(01) : 95-99, 2005 Mar
- Hyeon-Min Johng, Hak-Soo Shin, **Jung Sun Yoo**, Byung-Cheon Lee, Ku-Youn Baik, Soyeun Kim, and Kwang-Sup Soh : Bonghan Ducts on the Surface of Rat Liver, *Journal of International Society of Life Information Science*, 22(2) : 469-472, 2004 Sep

Book chapters

- **Jung Sun Yoo**, Baatartsogt Oyungerel, Il Youn Han, Ji Young Kim, Choong Hwan Lee, Kang Duk Choi, Kwang-Sup Soh, Tae Young Han : Molecular Compositional Differences of the Primo and the Lymphatic Vascular Systems in Murine Melanoma Models, *The Primo Vascular System: Its Role in Cancer and Regeneration*, Springer New York, Ed. K. S. Soh, K. A. Kang, and D. K. Harrison, 185-191, 2012, ISBN=9781461406006
- Walter Akers, Yang Liu, Gail Sudlow, Joon Lee, **Jung Sun Yoo**, Byung-Cheon Lee, Kwang-Sup Soh, and Samuel Achilefu : Identification of Primo Vascular System in Murine Tumors and Viscera, *The Primo Vascular System: Its Role in Cancer and Regeneration*, Springer New York, Ed. K. S. Soh, K. A. Kang, and D. K. Harrison, 179-183, 2012, ISBN=9781461406006

Patents

- Tae-Rin Lee, **Jung Sun Yoo**, System and Method for Quantitatively Estimating Delivering Efficiency of Cells and/or Drugs in Microvessels and Tissue: Advanced Institutes of Convergence Technology: KR Patent 10-1909447, Oct. 12, 2018, Republic of Korea
- **Jung Sun Yoo**, Tae-Rin Lee, Label-free Imaging System for Specific Detection of Peripheral Nerve: Seoul National University, Advanced Institutes of Convergence Technology: KR Patent 10-1790988, Oct. 26, 2017, Republic of Korea, PCT/KR2017/001823, Feb. 20, 2017
- Seong-Tae Han, **Jung Sun Yoo**, Device for Stimulating the Growth of Hair and Skin Tissue: Korea Electrotechnology Research Institute: KR Patent 10-1773983, Aug. 28, 2017, Republic of Korea
- Kwang-Sup Soh, **Jung Sun Yoo**, Jaekwan Lim, A Method for Imaging Metastasis of Cancer via Primo-vessel: Seoul National University R&DB Foundation, Mobase Co., Ltd: KR Patent 10-1218798, Dec. 28, 2012, Republic of Korea
- Kwang-Sup Soh, Byung-Cheon Lee, **Jung Sun Yoo**, Ku-Youn Baik, Sung-Il Cho, Visualizing Agent Comprising a Janus Green B and Visualizing Method by using the Same: Seoul National University R&DB Foundation: KR Patent 10-0950246, Mar. 23, 2010, Republic of Korea, US Patent US20090155171A1, 18 June 2009, United States
- Kwang-Sup Soh, Hyeon-Min Johng, Hak-Soo Shin, Chunho Choi, **Jung Sun Yoo**, Young-Zoon Yoon, Changhoon Lee, Sung-Il Cho, Visualizing Agent Comprising a Magnetic Nanoparticle and Visualizing Method by using the Same: Seoul National University R&DB Foundation: KR Patent 10-0875989, Dec. 18, 2008, Republic of Korea
- Kwang-Sup Soh, Byung-Cheon Lee, **Jung Sun Yoo**, Changhoon Lee, Hyeon-Min Johng, Min Su Kim, Visualizing Method by using the Alcian Blue: Seoul National University R&DB Foundation, Mobase Co., Ltd: KR Patent 10-0753899, Aug. 24, 2007, Republic of Korea

RESEARCH GRANTS:

(Since I joined the PolyU – Oct 2016)

1. 15107118 **Jung Sun Yoo (PI)** 01/01/19-06/30/22
General Research Fund (GRF), Research Grants Council of Hong Kong (RGC), HKD 899,100

Terahertz Wave Irradiation Promotes Skin Regeneration and New Hair Growths

The goal of this project to investigate the effect of Terahertz wave irradiation to promote skin regeneration and new hair growths via inflammatory activation.

Role: Principal Investigator

Externally competitive and peer-reviewed

2. 25104017 **Jung Sun Yoo (PI)** 01/01/18-06/30/21

Early Career Scheme (ECS), Research Grants Council of Hong Kong (RGC), HKD 1,248,632

Intraoperative Imaging System to Highlight Peripheral Nerves using Polarized Spectral Reflectance

The goal of this project is to develop specific surgical imaging system for detection of peripheral nerve based on specific optical properties including polarization and spectral reflectance.

Role: Principal Investigator

Externally competitive and peer-reviewed

“I am looking for self-motivated and enthusiastic PhD candidates, research assistants, and student assistants.”