

Curriculum Vitae

Kunyoo Shin, Ph.D.
Professor
School of Biological Sciences
College of Natural Sciences
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Education

2001 – 2006 Ph.D. University of Michigan Medical School, Ann Arbor, MI USA
1998 – 2000 M.S. Korea University, Seoul Korea
1991 – 1998 B.A. Korea University, Seoul Korea

Honors and Awards

2022 Pioneer Research Award
Ministry of Science and ICT, Korea
2022 The 1st GongWu Nature Award
GongWu Foundation/Korean Society for Biochemistry and Molecular Biology,
Seoul Korea
2021 The 16th Jin-Pok Kim's Award for the Best Cancer Research
Korean Foundation for Cancer Research, Seoul Korea
2021 The 16th Mystery of Life Award
Catholic Archdiocese of Seoul, Seoul Korea
2021 The Best 100 Research Award
Ministry of Science and ICT, Korea
2014 NIH Pathway to Independence Award (R00)
National Cancer Institute, NIH, MD USA
2012 NIH Pathway to Independence Award (K99)
National Cancer Institute, NIH, MD USA
2008 Excellent Biomedical Scientist Award, College of Medicine, Seoul National
University, Seoul Korea
2006 Anthony and Lillian Lu Award on the achievement in the graduate program,
University of Michigan Medical School, Ann Arbor, MI USA

Positions, Training and Employment

2022 - current Professor, School of Biological Sciences, College of Natural Sciences, Seoul
National University, Seoul, Korea
2024 – current Director, Institute of Molecular Biology & Genetics Incubation Center, Seoul
National University, Seoul, Korea
2016 - 2022 Associate Professor, Department of Life Sciences, Pohang University of
Science and Technology (POSTECH), Pohang, Gyungbuk Korea

2014 - 2016	Assistant Professor, Department of Cell, Developmental & Cancer Biology, Oregon Health & Science University (OHSU) School of Medicine, Portland, OR USA
2014 - 2016	Member, Knight Cancer Institute, Oregon Health & Science University (OHSU) Portland, OR USA
2014 - 2016	Member, OHSU Center for Spatial Systems Biomedicine, Oregon Health & Science University (OHSU), Portland, OR USA
2012 - 2014	Instructor, Institute for Stem Cell Biology and Regenerative Medicine, Stanford University School of Medicine, Stanford, CA USA
2007 - 2012	Research Associate in the laboratory of Dr. Phil Beachy, Howard Hughes Medical Institute (HHMI), Department of Biochemistry, Stanford University School of Medicine, Stanford, CA USA
2006 - 2007	Postdoctoral fellow in the laboratory of Dr. Andrew McMahon, Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA USA
2002	Teaching Assistant, Department of Biological Chemistry, University of Michigan Medical School, Ann Arbor, MI USA
2001 - 2006	Graduate Student Research Assistant in the laboratory of Dr. Ben Margolis, Howard Hughes Medical Institute (HHMI), Department of Biological Chemistry, University of Michigan Medical School, Ann Arbor, MI USA

Other Experience and Professional Membership

2024 - current	Editorial Board, Molecules and Cells
2022 - current	Editorial Board, International Journal of Stem Cells (IJSC)
2021 - 2023	Editorial Board, Organoid
2014 - current	Editorial Board, Bladder
2014 - current	Member, American Association for Cancer Research (AACR)
2010 - current	Member, International Society for Stem Cell Research (ISSCR)

Major Publications

Kim E, Kim Y, Hong S, Kim I, Lee J, Yoo J, Kim J, Yoo K, Kim J, Choi J, Shin K. Single rosette-based generation of uniform cortical assembloids recapitulating cellular interactions between neurons and glial cells. **Nat Commun** 2025 In press.

Kong W, Lu W-J, Dubey M, Suryawanshi RK, Vijayakumar S, Jeong Y, Gombor S, Diehn M, Shin K, Ott M, Chien Y-H, Sarin KY, Desai TJ, Beachy PA. Neuroendocrine cells orchestrate regeneration through Desert hedgehog signaling. **Cell**. 2025 Jun 3. doi: 10.1016/j.cell.2025.05.012.

Lee J, Kim Y, Lee C, Jeon S, Seo H, Lee J, Choi J, Kang M, Kim E, Shin K. Generation of prostate cancer assembloids modeling the patient-specific tumor microenvironment. **PLoS Genet**. 2025 Mar 31; 21(3): e1011652. doi: 10.1371/journal.pgen.1011652.

Kim E, Kim Y, Hong S, Kim I, Lee J, Lee K, An M, Kim S, Kim S, Shin K. Identification of neuron-glia signaling feedback in human schizophrenia using patient-derived mix-and-match forebrain assembloids. **bioRxiv**. 2024 Dec 23. doi: 10.1101/2024.12.22.629557.

Kim E, Kim Y, Hong S, Kim I, Lee J, Yoo J, Kim J, Yoo K, Kim J, Choi J, Shin K. A stepwise, modular design of building uniform brain assembloids representing the dynamic cellular interplay between neurons and glial cells. **bioRxiv**. 2024 Oct 2. doi: 10.1101/2024.10.01.615952.

Hong S, Lee J, Kim Y, Kim E, Shin K. AAVS1-targeted, stable expression of ChR2 in human brain organoids for consistent optogenetic control. **Bioeng Transl Med**. 2024 June 9. doi: 10.1002/btm2.10690.

Kim R, Kim M, Jeong S, Kim S, Moon H, Kim H, Lee M, Kim J, Kim H, Choi M, Shin K, Song, Chang W. Melatonin alleviates myocardial dysfunction through inhibition of endothelial-to-mesenchymal transition via the NF- κ B pathway. **J. Pineal Res.** 2024 May 15. doi: 10.1111/jpi.12958

Sharma G, Sharma A, Kim I, Cha D, Kim S, Park E, Noh J, Lee J, Ku J, Choi Y, Kong J, Lee H, Ko H, Lee J, Notaro A, Hong S, Rhee J, Kim S, Castro C, Molinaro A, Shin K, Kim S, Kim J, Rudra D, Im S. A dietary commensal microbe enhances antitumor immunity by activating tumor macrophages to sequester iron. **Nat Immunol.** 2024 Apr 25. doi: 10.1038/s41590-024-01816-x.

Kim Y, Kim I, Shin K. A new era of stem cell and developmental biology: from blastoids to synthetic embryos and beyond. **Exp Mol Med.** 2023 Oct 2. doi: 10.1038/s12276-023-01097-8.

Kong J, Ha D, Lee J, Kim I, Park M, Im S, Shin K, Kim S. Network-based machine learning approach to predict immunotherapy response in cancer patients. **Nat Commun.** 2022 June 28;13(1): 1-15.

Kim E, Choi S, Kang B, Kong J, Kim Y, Yoon WH, Lee HR, Kim S, Kim HM, Lee H, Yang C, Lee Y, Kang M, Roh TY, Jung S, Kim S, Ku J, Shin K. Creation of bladder assembloids mimicking tissue regeneration and cancer. **Nature.** 2020 Dec 16. doi: 10.1038/s41586-020-3034-x. Highlighted in Nat. Methods 2021 Feb 04;18:119.

Kong J, Lee H, Kim D, Han SK, Ha D, Shin K*, Kim S*. Network-based machine learning in colorectal and bladder organoid models predicts anti-cancer drug efficacy in patients. **Nat Commun.** 2020 Oct 30;11(1):5485 *Co-corresponding authors.

Yoon WH, Lee HR, Kim S, Kim E, Ku J*, Shin K*, Jung S*. Use of inkjet-printed single cells to quantify intratumoral heterogeneity. **Biofabrication.** 2020 June 29; 12(3) Epub. *Co-corresponding authors.

Kim S, Kim Y, Kong J, Kim E, Choi JH, Yuk HD, Lee H, Kim HR, Lee KH, Kang M, Roe JS, Moon KC, Kim S, Ku JH, Shin K. Epigenetic regulation of mammalian Hedgehog signaling to the stroma determines the molecular subtype of bladder cancer. **eLIFE.** 2019 Apr 30;8 Epub.

Zhao C, Cai S, Shin K, Lim A, Kalisky T, Lu WJ, Clarke MF, Beachy PA. Stromal Gli2 activity coordinates a niche signaling program for mammary epithelial stem cells. **Science.** 2017 Mar 9; Epub.

Lee JJ, Rothenberg ME, Seeley ES, Zimdahl B, Kawano S, Lu WJ, Shin K, Sakata-Kato T, Chen JK, Diehn M, Clarke MF, Beachy PA. Control of inflammation by stromal Hedgehog pathway activation restrains colitis. **PNAS.** 2016 Nov 22; 113(42): E7545-53

Lim A\$, Shin K\$*, Zhao C, Kawano S, Beachy PA*. Spatially restricted Hedgehog signaling regulates HGF-induced branching of the adult prostate. **Nat Cell Biol.** 2014 Dec;16(12):1135-45. *Co-corresponding authors.

Shin K*, Lim A, Zhao C, Sahoo D, Pan Y, Spiekerkoetter E, Liao JC, Beachy PA*. Hedgehog signaling restrains bladder cancer progression by eliciting stromal production of urothelial differentiation factors. **Cancer Cell.** 2014 Oct 13;26(4):521-33. *Co-corresponding authors.

Shin K*, Lim A, Odegaard JI, Honeycutt JD, Kawano S, Hsieh MH, Beachy PA*. Cellular origin of bladder neoplasia and tissue dynamics of its progression to invasive carcinoma. **Nat Cell Biol.** 2014 May;16(5):469-78. *Co-corresponding authors. Highlighted in Nat. Rev. Cancer. 2014 Jun;14(6):386-7. Highlighted in Nat. Rev. Urol. 2014 Jun;11(6):302.

Shin K*, Lee J, Guo N, Kim J, Lim A, Qu L, Mysorekar IU, Beachy PA*. Hedgehog/Wnt Feedback supports regenerative proliferation of bladder stem cell. **Nature**. 2011 Apr 7;472(7341):110-4. *Co-corresponding authors. Recommended by Faculty of 1000.

Oshima K, Shin K, Peng AW, Ricci AJ, Heller S. Mechanosensitive Hair cell-like cells from embryonic and induced pluripotent stem cells. **Cell**. 2010 May 14;141(4):704-16.

Shin K, Wang Q and Margolis B. PATJ regulates directional migration of mammalian epithelial cells. **EMBO Rep**. 2007 Feb;8(2):158-64.

Shin K and Margolis B. ZOning Out Tight Junctions. **Cell**. 2006 Aug 25;126(4):647-9.

Shin K, Vanessa CF and Margolis B. Tight Junction and Cell Polarity. **Annu Rev Cell Dev Biol**. 2006 Nov; 22:207-35.

Shin K, Straight SW and Margolis B. PATJ Regulates tight junction formation and polarity in mammalian epithelial cells. **J Cell Biol**. 2005 Feb 28;168(5):705-11.

Straight SW, Shin K, Fogg VC, Fan S, Liu CJ, Roh M, Margolis B. Loss of PALS1 Expression leads to tight junction and polarity defects. **Mol Biol Cell**. 2004 Apr;15(4):1981-90.

Roh MH, Makarova O, Liu CJ, Shin K, Lee S, Laurinec S, Goyal M, Wiggins R, Margolis B. The Maguk protein, Pals1, functions as an adapter, linking mammalian homologues of Crumbs and Discs Lost. **J Cell Biol**. 2002 Apr 1; 157(1): 161-72.