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Principal Investigator

DEVELOPMENTAL DISORDERS & RARE DISEASES GROUP
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Molecular aging and development

Intellectual disability known as mental retardation and learning deficiency is common phenomenon of the developmental disorders which are present from early life affecting the entire life. Our study is focused on the pathoetiological mechanisms of the developmental disorders and the exploring the rare disorders utilizing the exosome-omics technology and database. Many similarities appear in the developmental disorders and the neurodegenerative disorders in the disease process. In long term study, we will intensively study the common mechanism of the developmental and neurodegenerative disorders in many difference levels of neuronal circuitry ranging from molecular to systemic and develop the cutting-edge technologies for diagnosis and therapies.



Research keywords

Developmental disorders, GPCR, exosome, secretome, nanobody, database.

Curriculum Vitae

2013~Present : Principal Investigator, KBRI
 2009~2013 : Research Fellow, HMS/Boston Children's Hospital, USA
 2002~2009 : Postdoctoral Fellow, HMS/MGH, USA
 2000~2002 : Postdoctoral Fellow, Dept. of Pharmacology, College of Medicine, SNU, Korea

Academic Credential

2000 : Ph.D., Molecular Biology, SNU
 1994 : M.S., Molecular Biology, SNU
 1992 : B.S., Biology, Catholic Univ of Korea

Grants/Awards/Honors/Memberships

2019 : Committee Member, Korea Society for Neural and Brain Science
 2018~Present : Council Member, World Economic Forum, Neurotech Council
 2018~ : Member, Nat'l Brain Science Working Comm. (Ministry of Sci. & ICT)
 2018 : Committee Member, Korea Society for Molecular and Cellular Biology
 2017~2022 : Brain Research Program, NRF, Ministry of Science and ICT
 2015~2020 : Brain Research Program, NRF, Ministry of Science and ICT
 2017~ : Co-chair, Global Neuroethics Summit
 2017~ : Secretary General, FAONS
 2016~ : Office Director of IBRO 2019
 2015 : Award of Daegu City Mayor
 1994~ : Member, Society for Neuroscience

Key techniques

2D Exosome purification and proteomics, 3D clearing and staining, in utero electroporation, behavior test, single-cell transcriptome.

Research Interests/Topics

- Pathoetiological study on the mechanisms of cortical development and malformation.
- Development of new tools for diagnosis and therapy utilizing extracellular vesicle incl exosome.

Research Publications (selected)

- Giera S, Luo R, Ying Y, Ackerman SD, **Jeong SJ**, Stoveken HM, Folts CJ, Welsh CA, Tall GG, Stevens B, Monk KR, Piao X. Microglial transglutaminase-2 drives myelination and myelin repair via GPR56/ADGRG1 in oligodendrocyte precursor cells. *eLife*, 33385, 2018.
- Petersen SC, Luo R, Liebscher I, Giera S, **Jeong SJ**, Mogha A, Ghidinelli M, Feltri ML, Schoneberg T, Piao X, Monk KR. The adhesion GPCR GPR126 has distinct, domain-dependent functions in Schwann cell development mediated by interaction with laminin-211. *Neuron*, 85(4):755-69, 2015.
- **Jeong SJ**, Luo R, Singer K, Giera S, Krediberg J, Kyojumi D, Shimono C, Sekiguchi K, Piao X. GPR56 functions together with $\alpha 3 \beta 1$ integrin in regulating cerebral cortical development. *PLoS ONE*, 8(7):E68781, 2013.
- Luo R*, **Jeong SJ***, Jin Z*, Storkes N, Li S, Piao X. G protein-coupled receptor 56 and collagen III, a receptor-ligand pair, regulates cortical development and lamination. *Proc Natl Acad Sci USA*, 108:12925-12930, 2011. (*These authors contributed equally to the work)

Neuroethics Publications (selected)

- **Jeong SJ**, Lee IY, Jun BO, Ryu YJ, Sohn JW, Kim SP, Woo CW, Koo JW, Cho U, Oh U, Kim K, Suh PG. Korea Brain Initiative: Emerging Issues and Institutionalization of Neuroethics. *Neuron*, 101:391-393, 2019.
 (Neuron Editorial) Rommelfanger KS, Jeong SJ, Montojo C, and Zirlinger M. Neuroethics: Think Global. *Neuron*, 101:364, 2019.

Patents (selected)

- **Jeong SJ**, Jjang YJ, Joo JY, Ha BK. Method of decellularized scaffold for tissue regeneration using oil and composition of tissue decellularization. (10-2018-0011113 patent application)

Ongoing Research Support

- NRF (PI, 06/01/15-05/30/20) Establishment of brain mapping DB to development the diagnostic approaches for developmental brain disorders.
- NRF (PI, 06/01/17-12/31/21) Multimodal DB for understanding neural networks of PFC.
- NRF (PI, 06/01/19-12/31/23) Intl and domestic networking of neuroethics research.