



**Beomsue Kim, PhD**  
Principal Investigator

**NEURAL CIRCUITS GROUP**  
Korea Brain Research Institute (KBRI)

Office : 5-2  
Lab : wet lab 5-2  
Tel : +82-53-980-8480  
Fax : +82-53-980-8000  
E-mail : kimbs@kbri.re.kr  
<https://beomsuekim.wixsite.com/vizbrcells>

## Visualizing brain cells

The brain is a mysterious organ. Recent knowledge has led us to think about glia as well as neurons for understanding the organ. However, tracking/visualizing specific brain cells in a live state often require labor-intensive, time-consuming work of producing transgenic line. To simplify the approach, I have developed a chemical fluorescent probe for microglia and neural stem cells, which label the target cells very quickly by applying the compounds under heterogeneous cell populations. The goal of my research is to develop novel fluorescent chemical probes targeting other types of brain cells including oligodendrocytes, astrocytes, and unknown brain cell populations. Through a fine target identification of the developing probe, those chemical structures can be applied in basic neuroscience fields and further in biomedical applications.

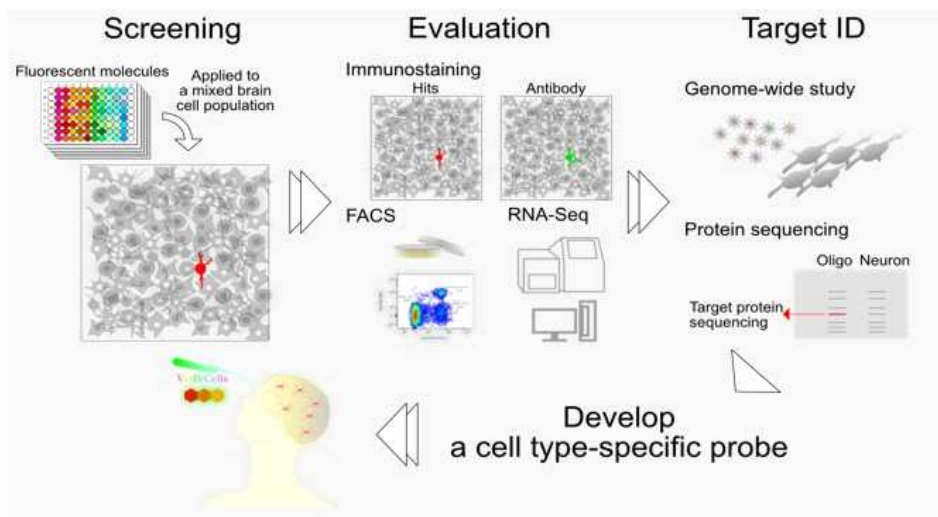
**Aim**

**Development of visualizing tools for Brain Cells**

**Tool**

**Fluorescent molecules screening, Animal/human brain cells, Biochemical methods, Bioimaging**

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## Curriculum Vitae

2020~Present : Principal Investigator, KBRI  
2014~2019 : Research Fellow / SBIC, A-STAR, Singapore  
2013~2014 : Research Fellow / Dept. Chemistry, NUS, Singapore  
2010~2013 : Postdoctoral Fellow / School of Medicine, Ajou University  
2003~2004 : Visiting Scholar / Dept. Pediatrics, UTHSC, USA

## Academic Credential

2009 : Ph.D. Neural Science & Technology, Ajou Univ.  
2003 : M.S. Life Science, Hanyang Univ.  
2001 : B.S. Biology, Hanyang Univ.

## Awards/Honors/Memberships

2020~Present, Finance fellow, Korean Society for Integrated Biology  
2019 : Poster ward, 12<sup>th</sup> UKorea Neuroscience Symposium  
2008~Present, Member, Korean Society for Molecular and Cellular Biology  
2007~Present, Member, Korean Society for Brain and Neural Sciences

## Research keyword

Visualizing tools, Fluorescent small molecules, Brain cells, Neurodegeneration, Bioimaging

## Key techniques

Brain-related cells/stem cells/tissue culture, Optical imaging, Molecular & chemical biology

## Research Interests/Topics

Development of visualizing probes for a type of brain cell  
Identification of functional subtypes of glia  
Provide a platform for diagnosis/treatment of a neurological disorder

## Research Publications (Selected)

Kim B\*, Fukuda M\*, Lee JY, Su D, Sanu S, Silvin A, Khoo ATT, Kwon T, Liu X, Chi W, Liu X, Choi S, Wan SDY, Park SJ, Kim JS, Ginhoux F, Je HS, Chang YT. Visualizing microglia with a fluorescence turn-on Ugt1a7c substrate. *Angew Chem Int Ed Engl.* 58(24):7972–76, 2019 (Frontispiece)  
Park SJ\*, Kim B\*, Choi S\*, Balasubramaniam S, Lee SC, Lee JY, Kim HS, Kim JY, Kim JJ, Lee YA, Kang NY, Kim JS, Chang YT. Imaging inflammation using an activated macrophage probe with Slc18b1 as the activation-selective gating target. *Nat. Commun.* 10(1):1111, 2019 (\*, equal contribution)  
Kim B, Feng S, Yun, SW, Leong C, Satapathy R, Wan SYD, Chang YT. A Fluorescent Probe for Neural Stem/Progenitor Cells with High Differentiation Capability into Neurons. *ChemBioChem.* 17(22): 2118–2122, 2016 (Front Cover)  
Kim B, Yang MS, Choi D, Kim JH, Kim HY, Seol W, Choi S, Jou I, Kim EY, Joe EH. Impaired inflammatory responses in murine Lrrk2-knockdown brain microglia. *PLoS ONE* 7(4):e34693, 2012  
Kim B, Jeong HK, Kim JH, Lee SY, Jou I, Joe EH. Uridine 5'-diphosphate induces chemokine expression in microglia and astrocytes through activation of the P2Y6 receptor. *J. Immunol.* 186(6):3701–3709, 2011