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Principal Investigator

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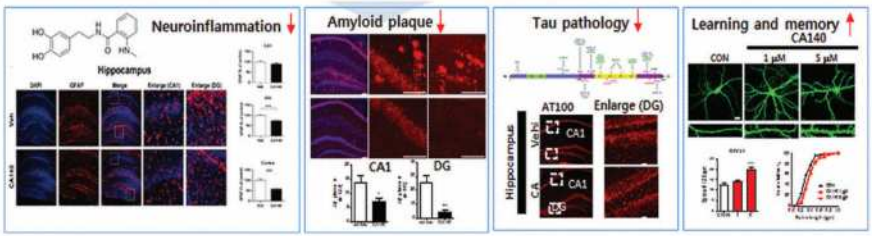
Development of therapeutic agents in Neurdegenerative disease

Our lab research is focused on the role of APP and its binding synaptic proteins in the neuronal and synaptic damage that occurs in neurodegenerative diseases of the central nervous system (CNS). Specifically, we will focus on examining A) the role of APP in synapse regulation in the normal brain and in the Alzheimer's disease (AD) and B) Novel treatments for AD including the effects of anti-neuroinflammatory drugs, Ab/Tau binding small molecules, synaptic and cognitive function enhancement, as well as its therapeutic effects on neurodegenerative disease. To achieve our goals, we will continuously examine the effectiveness of Ab/Tau targeting small molecules and 15 of these novel agents as effective novel therapeutic strategy for AD.

Aim	Develop therapeutic drug for Alzheimer's disease(AD)
Tool	Cell biology+Molecular biology+Multi-target drug screening +*in vivo* validation system
TARGET	

Curriculum Vitae

2013~Present : Principal Investigator, KBRI
2010~2013 : Assistant Professor (Tenure track), Georgetown University, USA
2008~2009 : Assistant Professor (Research track), Georgetown University, USA
2006~2008 : Instructor, Georgetown University, USA
2003~2005 : Post-doc, Georgetown University, USA
2002~2003 : Post-doc, Osaka University, Japan

Academic Credential

2002 : Ph.D., Genetic engineering, Sungkyunkwan University
1997 : M.S., Genetics, Wonkwang Univeristy
1995 : B.S., Biology, Wonkwang University

Awards/Honors/Memberships

2013~present : American Journal of Neurodegenerative Diseases (AJND), Editorial Board Member
2011 : M4M Young Investigator award, Georgetown University, USA
2002~2003 : Award from post-doctoral fellowship of Korea science & Engineering foundation (KOSEF)
2002~Present : Member, Society for Neuroscience

Research keywords

Alzheimer's disease, Amyloid, Tau, Neuroinflammation, learning and memory.

Key techniques

Virus-related work, Primary hippocampal cultures, Primary astrocyte/microglial cell culture, Behavior work (Y maze, NOR test), Golgi staining.

Research Interests/Topics

- Determine the effects of APP and AD related protein on cognitive function in the normal brain and AD pathology and its molecular mechanism of action.
- Development of novel therapeutic strategy for Alzheimer's disease.

Research Publications (Selected)

- Nam HY, Nam JH, Yoon G, Lee JY, Nam Y, Kang HJ, Cho HJ, Kim J, **Hoe HS**. Ibrutinib suppresses LPS-induced neruoinflammatory responses in BV2 microglial cells and wild-type mice. *J Neuroinflammation, 15:271, 2018.*
- Lee JY, Nam JH, Nam Y, Nam HY, Yoon G, Ko E, Kim SB, Bautista MR, Capule CC, Koyangagi T, Leriche G, Choi HG, Yang J, Kim J, **Hoe HS**. The small molecule CA140 inhibits the neuroinflammatory responses in wild-type mice and a mouse model of AD. *J Neuroinflammation, 15:286, 2018.*
- Lee NJ, Song JM, Cho HJ, Sung YM, Lee T, Chung A, Hong SH, Cifelli JL, Rubinshtein M, Habib LK, Capule CC, Thrner RS, Pak DT, Yang J, **Hoe HS**. Hexa derivative of benzothiazole aniline promotes dendritic spine formation through the RasGRF1-Ras depenent pathway. *Biochim Biophys Acta, 1862: 284-95, 2016.*
- DiBattista AM, Dumanis SB, Song JM, Bu G, Weeber E, Rebeck GW, **Hoe HS**. Very low density lipoprotein receptor regulates dendritic spine formation in a RasGRF1/CaMKII dependent manner. *Biochim Biophys Acta, 1853;904-17, 2015.*
- Song JM, DiBattista AM, Sung YM, Ahn JM, Turner RS, Yang J, Pak DT, Lee HK, **Hoe HS**. A tetra derivative of benzothiazole aniline ameliorates dendritic spine density and cognitive function in a mouse model of AD. *Exp Neurol, 252:105-13, 2014.*
- Megill A, Lee T, DiBattista AM, Song JM, Spitzer MH, Rubinshtein M, Habib LK, Capule CC, Mayer M, Turner RS, Kirkwood A, Yang J, Pak DT, Lee HK, **Hoe HS**. A tetra derivative of benzothiazole aniline enhances Ras-mediated spinogeneis. *J Neurosci, 33 9306-18, 2013.*