BIOGRAPHICAL SKETCH

NAME: Lee, Eun-Sook Y.

eRA COMMONS USER NAME (credential, e.g., agency login): EunLee

POSITION TITLE: Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date MM/YYYY	FIELD OF STUDY
Hyo-Sung University, South Korea	B.S.	1985	Pharmacy
Florida A&M University, Tallahassee, FL	Ph.D.	1999	Pharmacology
Florida A&M University, Tallahassee, FL	Postdoc.	2005	Neuropharmacology /Toxicology

A. Personal Statement

Dr. Eun-Sook Lee is Professor, and Warner-Lambert Endowed Chair, at Florida A&M University. Dr. Lee has been a highly productive researcher with active support from NIH, currently holding SC1 and R01 awards and has published 50 articles since 1999. She has trained and mentored numerous Ph.D. students, medical and dental students, and postdoctoral research associates. Dr. Lee is a licensed pharmacist (Florida, USA, #PS38968. This professional education and practice have helped her greatly in the pharmacotherapeutic approaches to the treatment of human diseases). She has a record of successful and productive research projects and publications in an area of Neurotoxicology, molecular biology, and neuropharmacology. She has extensive experiences of training numerous undergraduate, medical students, Ph.D. students, postdocs and junior faculty. She is also currently a regular member of the NIH grant review (NAL study section) as well as a research grant advisory board member of Ed and Ethel Moore Alzheimer's Disease Research Program in Florida Health Department. All these expertise and experiences will make her very suitable to lead the IDC of this grant. The primary goal of the RCMI Investigator Development Core (IDC) is to support the development of early-career investigators in basic, behavioral and/or clinical sciences in close collaboration with Dr. Suther, a Community Core leader on this grant. The long-term success of the IDC is to support early career investigators to transit into an Independent-Investigators by obtaining extramural mainstream funding (mentored K award and R series funding). The IDC will foster competitive research in the behavioral, molecular and cellular basis of health disparities. **Dr. Lee will serve as the core leader of the RCMI Investigator Development Core.**

B. Positions and Honors

Positions

2000-2005 Research Associate, Neuroscience Laboratory, College of Pharmacy, Florida A&M University (FAMU), Tallahassee, Florida
2001-2005 Adjunct Professor of Organic Chemistry, Department of Chemistry, FAMU
2005-2007 Research Assistant Professor, Division of Neurobiology/Neurotoxicology, Meharry Medical College, Nashville, TN
2007-2010 Assistant Professor, Department of Neurology, Meharry Medical College, Nashville, TN
2007-2013 Adjunct Assistant Professor, Division of Pediatric Toxicology, Vanderbilt University Medical Center, Nashville, TN
2010-2013 Assistant Professor, Department of Physiology, Meharry Medical College, Nashville, TN
2012-2016 Associate Professor, Department of Physiology, Meharry Medical College, Nashville, TN
2012-2016 Adjunct Associate Professor, Department of Pharmacology, Vanderbilt University Medical Center, Nashville, TN

2016-present Professor, Department of Pharmaceutical Sciences, Florida A&M University, Tallahassee, Florida

Honors

1984 Outstanding student scholarship, Hyo-Sung University
1997-1998 Outstanding graduate student scholarship, Florida A&M University
2010 Scholarship award for Glia meeting, Cold Spring Harbor Lab, New York
2016 Exemplary Award: Excellence in Research, Meharry Medical College
2017 Researcher of the year, College of Pharmacy, Florida A&M University

Professional Memberships and Other Experience

1996-Present Member, Experimental Biology
1996-Present Member, Society for Neuroscience
2012-Present Member, Society of Toxicology
2005-Present Ad-Hoc Reviewer, Journal of Neural Transmission
2007-Present Ad-Hoc Reviewer, Cell Biology, and Toxicology
2008-Present Ad-Hoc Reviewer, Neuroscience
2012 Ad-Hoc NIH grant reviewer: NAL (Neurotoxicology and Alcoholism) study section
Ad-Hoc NIH grant reviewer: ONES (*Outstanding New Environmental Scientist*) award study section
Ad-Hoc NIH grant reviewer: NAL (Neurotoxicology and Alcoholism) study section
2017-Present Regular Member NIH grant reviewer: (Neurotoxicology and Alcoholism) study section
2017-Present Florida Department of Health, Advisory Board member of Ethel Alzheimer's Disease Grants Program

License Registered Pharmacist (Florida, #PS38968)

C. Contribution to Science

1. Role of phospholipid methylation in Parkinson's disease: my earlier work is to understand the etiology of Parkinson's disease (PD). Excess methylation has been proposed as a mechanism of pathogenesis of PD because injection of a biological methyl donor, S-adenosyl methionine (SAM) into the lateral ventricle of the rat brain induced PD-like tremors and hypokinetic behaviors. I had found that excess methylation of phospholipids resulted in increased production of lysophosphatidylcholine that is toxic and produces PD symptoms. MPTP (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) is a prodrug to the neurotoxin MPP+, which causes permanent symptoms of Parkinson's disease, also increased methylation of phospholipids.
    a. Eun-Sook Y. Lee, Hongtao Chen, Kennie R. Shepherd, Nazarius S. Lamango, Karam F. A. Soliman and Clivel G. Charlton (2004). Inhibitory effects of lysophosphatidylcholine on the dopaminergic system. Neurochemical Research 2004 29(7):1333-42. PMID: 15202762
    b. Eun-Sook Y. Lee, Karam F. A. Soliman and Clivel G. Charlton (2005). Lysophosphatidylcholine decreases locomotor activities and dopamine turnover rates in rats. Neurotoxicology. 26, 27-38. PMID: 15527871
    c. Eun-Sook Y. Lee, Hongtao Chen, Karam F.A. Soliman and Clivel G. Charlton (2005). Effects of homocysteine on the dopaminergic system and behavior in rodents. Neurotoxicology. 26, 361-371. PMID:15935208
    d. Eun-Sook Y. Lee, Hongtao Chen, Clivel G. Charlton and Karam F.A. Soliman (2005). The role of phospholipid methylation in 1-methyl-4-phenyl-pyridinium ion (MPP+)-induced neurotoxicity in PC12 cells. NeuroToxicology 26, 945-957. PMID:15950286
2. Enhancing effects of estrogens and selective estrogen receptor modulators (SERMs) on expression of astrocytic glutamate transporters (GLAST and GLT-1): I have worked on astrocytic glutamate transporters (GLAST and GLT-1) which are the main glutamate transporters, being responsible for removing over 80% of glutamate from the synaptic clefts and thus preventing excitotoxic neuronal injury in the brain. I have found that estrogen increased expression of both GLAST and GLT-1 at the transcriptional levels by increasing the levels of proteins and mRNA via activation of NF-kB and CREB pathways. SERMs such as tamoxifen and raloxifene also induced upregulation of GLAST/GLT-1 via the non-genomic ER pathways. **Eun-Sook Lee**, Marta Sidoryk, Haiyan Jiang, Zhaobao Yin and Michael

Aschner (2009). Estrogen and tamoxifen reverse manganese-induced glutamate transporter impairment in astrocytes. *J Neurochem.* 110(2):530-44.\

a. **Eunsook Lee**, Sidoryk-Wegrzynowicz M, Farina M, Rocha JB, Aschner M (2013). Estrogen Attenuates Manganese-Induced Glutamate Transporter Impairment in Rat Primary Astrocytes. *Neurotox Res*. 23(2):124-30. PMC3681521
b. Karki P, Webb A, Smith K, Lee K, Son DS, Aschner M and **Eunsook Lee** (2013). cAMP response element-binding protein (CREB) and nuclear factor κB mediate the tamoxifen-induced up-regulation of glutamate transporter 1 (GLT-1) in rat astrocytes. *J Biol Chem*. 288:28975-86. PMC3789995
c. Karki P, Webb A, Zerguine A, Choi J, Son DS and **Eunsook Lee** (2014). Mechanism of Raloxifene-induced Upregulation of Glutamate Transporter GLT-1 in Rat Primary Astrocytes. *Glia* 62(8):1270-83. PMC4061260
d. Pajarillo E, Johnson J Jr, Kim J, Karki P, Son DS, Aschner M, **Lee** E (2018). 17β-estradiol and tamoxifen protect mice from manganese-induced dopaminergic neurotoxicity. *NeuroToxicology.* 65:280-288. PMID: 29183790.

3. Mechanism of manganese (Mn)-induced repression of astrocytic glutamate transporters: I have been working on Mn toxicity in astrocytes. Particularly, I have focused on the mechanism of Mn-induced downregulation of astrocytic glutamate transporters (GLAST and GLT-1) at the transcriptional level. I have found that transcription factor yin yang 1 (YY1) is critically involved in this mechanism. Mn increases YY1 expression which is a powerful repressor of GLAST and GLT-1.
    a. Karki P, Smith K, Johnson Jr. J, Aschner M and Eunsook Lee (2015). Genetic dysregulation of astrocytic glutamate transporter EAAT2 and its implications for neurological disorders and manganese toxicity. Neurochem Res. 40(2):380-8. PMC4308576
    b. Karki P, Kim C, Smith K, Son D, Aschner M and Eunsook Lee (2015). Transcriptional regulation of the astrocytic excitatory amino acid transporter 1 (EAAT1) via NF-κB and Yin Yang 1 (YY1). J Biol Chem. See comment in PubMed Commons below290(39):23725-37. PMC4583050.
    c. Pratap Karki, James Johnson Jr, Deok-Soo Son, Michael Aschner and Eunsook Lee (2016). Transcriptional regulation of human transforming growth factor-α in astrocytes. Mol Neurobiol. 2016 Jan 21. PMC4956607
    d. Johnson J Jr, Pajarillo E, Karki P, Kim J, Son DS, Aschner M, Lee E (2018). Valproic acid attenuates manganese-induced reduction in expression of GLT-1 and GLAST with concomitant changes in murine dopaminergic neurotoxicity. Neurotoxicology. 67:112-120. PMID: 29778792.
4. Roles of proinflammatory chemokines on the progression of ovarian cancer: This research is to define the functions of proinflammatory chemokines in the progression of ovarian cancer. We have found that proinflammatory chemokines promote the progression of ovarian cancer by driving an inflammatory burden via NF-κB and EGFR mediated signaling.
    a. Dong Y, Kabir SM, Lee E, Son DS. CXCR2-driven ovarian cancer progression involves upregulation of proinflammatory chemokines by potentiating NF-κB activation via EGFR-transactivated Akt signaling. PLoS One 2013;8: e83789. PMC3869803
    b. Cho M, Kabir SM, Dong Y, Lee E, Rice VM, Khabele D, Son DS. Aspirin blocks EGF-stimulated cell viability in a COX-1 dependent manner in ovarian cancer cells. J Cancer 2013; 4:671-8. PMC3805995
    c. Khabele D, Kabir SM, Dong Y, Lee E, Rice VM, Son DS. Preferential effect of akt2-dependent signaling on the cellular viability of ovarian cancer cells in response to EGF. J Cancer 2014; 5:670-8. PMC4174511
    d. Ignacio RMC, Dong YL, Kabir SM, Choi H, Lee ES, Wilson AJ, Beeghly-Fadiel A, Whalen MM, Son DS (2018). CXCR2 is a negative regulator of p21 in p53-dependent and independent manner via Akt-mediated Mdm2 in ovarian cancer. Oncotarget. 9(11):9751-9765. PMID: 29515768

PubMed: https://www.ncbi.nlm.nih.gov/pubmed/?term=eun-sook+lee

D. RESEARCH SUPPORT

Ongoing Research Support

U54	U54CA233396	Reams (PI)	09/19/2018-08/31/2019

1/3 Florida-California Cancer Research, Education and Engagement (CaRE2)
Health Equity Center – Pilot Project
Goal: to eliminate cancer health disparities in Florida, California and nationally, the University of Florida (UF), Florida A&M University (FAMU) and University of Southern California (USC) have formed a triad partnership to establish the Florida-California Cancer Research, Education & Engagement (CaRE2) Health Equity Center. We hypothesize that Blacks undergo ADM to a greater extent than Whites and that genetic and epigenetic factors that drive ADM contribute to the disparity. Proposed here is a novel pilot study that will determine the molecular, genetic and epigenetic factors that contribute to the early development of PDAC.
Role: Co-Investigator

R01 R01ES024756 Lee (PI) 08/15/2015-06/30/2020
Mechanism of manganese-induced impairment of astrocytic glutamate transporters
Goal: to elucidate the mechanism of manganese (Mn)-induced neurotoxicity via dysregulation of glutamate transporters at the transcriptional level.
Role: PI

Completed Research Support
SC1 GM089630-NCE Lee (PI) 06/10/2010-05/31/2017
Estrogen-neuroprotection due to astroglial Glu transporters occurs via TGF-α/β1
Goal: to elucidate the neuroprotective mechanisms of 17β-estradiol (E2) and selective estrogen receptor modulators (SERMs) and develop strategies for the discovery of suitable SERMs that can be used as neuroprotectants without risks of cancer for women or of feminizing effects for men.
Role: PI

VICTR VR9584 06/01/2014-06/30/2016
Mechanism of Tamoxifen-Induced Suppression of Malignant Brain Tumor Growth by Inhibiting PKC-Dependent Translocation of FGF/FGFR1 to the Nucleus
Goal: to identify the molecular target for the Treatment of Malignant Brain Tumors.
Role: PI