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Physiology Department,
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Education:

M.Sc. (2005-2008)

Medical Physiology, Physiology Department, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Ph.D. (2009-2014):

Medical Physiology. Physiology Department, Shiraz University of Medical Sciences, Shiraz, Iran.

Ph.D. research project:

Behavioral and molecular study of the interaction between insulin and A β neurotoxicity, in-vivo and in-vitro, considering MAPKs (JNK, ERK, P38) and apoptosis pathways.

Research Interests:

1. The mechanisms of neurodegeneration and neuroprotection in neurological disorders
2. Neuroendocrinology
3. Neurophysiology

Research Experience:

- Proteomics: SDS-PAGE, western blotting, Immunohistochemistry.
- Molecular biology: Isolation and electrophoretic analysis of genomic DNA and RNA, Reverse Transcriptase-PCR.
- Cellular studies: Primary and transformed cell culture and cell death analysis methods.
- Other techniques:
 - A. Animal surgeries like stereotaxic brain cannulation
 - B. Learning and memory studies; Morris Water Maze

Teaching experiences:

- Teaching medical physiology for students of medicine, dentistry, pharmacy and MSc /PhD students of physiology and anatomy. Shahid Beheshti University of Medical Sciences (2013 to present)
- Teaching medical physiology for students of paramedical students (nursing, Radiology, laboratory sciences...). Shiraz University of Medical Sciences (2010 to 2013)
- Teaching laboratory physiology for students of medicine, Dentistry, Pharmacy. Shahid Beheshti University of Medical Sciences. (2014 to present)
- Teaching laboratory physiology for students of medicine, Dentistry, Pharmacy. Shiraz University of Medical Sciences. (2010 to 2013)

Research projects (as a principal investigator PI):

- To assess the time course effects of high fat diet on the activity of MAPKs components and insulin signaling pathway in the hippocampus of male

adult rats. Neurophysiology research center Shahid Beheshti University of Medical Sciences, 1396-1397

مصوب مرکز تحقیقات نوروفیزیولوژی دانشگاه ع پ شهید بهشتی ۱۳۹۶ اتمام ۱۳۹۷

- Determination the possible roles played by members of MAPKs family (JNK, ERK, P38) in neuroinflammation induced insulin resistance in the primary hippocampal cell culture

مصوبه موسسه ملی تحقیقات پزشکی (نیما) ۱۳۹۶ اتمام ۱۳۹۹

- Evaluation of LPS induced-neuroinflammation and time dependency on MAPK signaling pathway components in PC12 cells.

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۶ (گرنه همکاری بین المللی

در یک مقاله) اتمام ۱۳۹۸

- To study the protective effects of intrahippocampal insulin against scopolamine-induced spatial learning and memory impairment, and role of MAPK signaling in these effects.

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۹۴ اتمام ۱۳۹۶

- To investigate the possible protective effects of insulin against neuroinflammatory induced memory loss in adult rats and the role of MAPK signaling pathway in these effects. Shahid Beheshti University of Medical Sciences. 1394-1396

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۴ اتمام ۱۳۹۶

- Investigating the effect of ceramide synthesis inhibition by imipramine in memory impairment and insulin signaling pathway dysregulation in In vivo model of Alzheimer's disease

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۷ (گرنه بیش از صد ارجاع در سال

۲۰۱۸) اتمام ۱۴۰۰

- Evaluation of the effect of carbamylated form of erythropoietin (CEPO) on molecular and behavioral deficits induced by STZ as an animal model of AD

مصوب مرکز تحقیقات نوروفیزیولوژی دانشگاه ع پ شهید بهشتی ۱۳۹۷ اتمام ۱۳۹۹

- Evaluation of possible protective effects of curcumin against molecular and behavioural deficits induced by stz in rats.

مصوب مرکز تحقیقات نوروفیزیولوژی دانشگاه ع پ شهید بهشتی ۱۳۹۸

- Evaluation of the insulin signaling pathway in cinnamaldehyde-induced neuroprotection in an animal model of central STZ -induced memory impairment. Neurophysiology research center Shahid Beheshti University of Medical Sciences, 1399

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۶ (گرننت چاپ مقاله در مجلات با IF از ۵ تا ۵٫۹۹)

- Study of the effect of central ER stress on spatial learning and memory and hippocampal insulin and MAPK signaling pathway in an animal model of central ER stress. Neurophysiology research center Shahid Beheshti University of Medical Sciences, 1399

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۹ (گرننت استادیاران جوان وزارت)

- Study of the effect of MAPK members in the toxic effects of ER stress induced by Tapsigargin in cultured PC12 cells. Neurophysiology research center Shahid Beheshti University of Medical Sciences, 1399

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شهید بهشتی ۱۳۹۹ (گرننت ۱۰۰ مورد استناد در پایگاه Scopus در سال ۲۰۲۰)

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Participation in research projects (as co-investigator):

- Evaluation of behavioral and molecular effects of carbamylated erythropoietin-Fc on preventing β -amyloid induced learning and memory impairment and hippocampal cell death in male rats

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۹۴

- To assess the effect of restraint stress during pregnancy on expression of BDNF and its receptors. Shahid Beheshti University of Medical Sciences. 1386-1388

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۸۶ اتمام ۱۳۸۸

- To assess the effect of agmatine on LPS-induced memory deterioration and hippocampal apoptosis. Shahid Beheshti University of Medical Sciences. 1387-1389

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۸۷ اتمام ۱۳۸۹

- To assess the effect of restraint stress in pregnant rats on MAPK activation in hippocampus. Shahid Beheshti University of Medical Sciences. 1387-1388

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۸۷ اتمام ۱۳۸۸

- Study of the effects of kindeling on learning & memory and its molecular mechanisms. Shahid Beheshti University of Medical Sciences. 1388-1390

مصوب مرکز تحقیقات علوم اعصاب دانشگاه ع پ شهید بهشتی ۱۳۹۰ اتمام ۱۳۸۸

- Study of protective effects of insulin against AB induced oxidative stress in primary Hippocampal cell culture. Shiraz University of Medical Sciences. 1390-139۲

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شیراز ۱۳۹۲ اتمام ۱۳۹۰

- Study of protective effects of agmatine against STZ induced memory deficits. Shiraz University of Medical Sciences. 1391-1393

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شیراز ۱۳۹۳ اتمام ۱۳۹۰

- Study of probable protective effects of insulin against 6-OHDA induced toxicity in SH-SY5Y cells as an in-vitro model of Parkinson disease. Shiraz University of Medical Sciences. 1391-1393

مصوب معاونت تحقیقات و فناوری دانشگاه ع پ شیراز ۱۳۹۳ اتمام ۱۳۹۰

Peer-Reviewed Journal Articles:

- 1- Abtin S, **Ghasemi R**, Manajehi H. Progesterone modulates the expression of spinal ephrin-B2 after peripheral nerve injury: New insights into progesterone mechanisms. *Steroids*. 2023 Feb 1;190:109155.
- 2- Pourhadi M, Zali H, **Ghasemi R**, Vafaei-Nezhad S. Promising role of oral cavity mesenchymal stem cell-derived extracellular vesicles in neurodegenerative diseases. *Molecular Neurobiology*. 2022 Oct;59(10):6125-40.

- 3- Azizi F, **Ghasemi R**, EbrahimiBarough S, Ardalan M, Hadjighassem M. Effect of multifactorial therapeutic approach on axonal regeneration and cell viability in an in-vitro model of spinal-derived neural injury. *Cell and tissue banking*. 2023 Jun;24(2):471-84.
- 4- Askari S, Azizi F, Javadpour P, Karimi N, **Ghasemi R**. Endoplasmic reticulum stress as an underlying factor in leading causes of blindness and potential therapeutic effects of 4-phenylbutyric acid: from bench to bedside. *Expert Review of Ophthalmology*. 2022 Nov 2;17(6):415-25.
- 5- Bagheri-Mohammadi S, Askari S, Alani B, Moosavi M, **Ghasemi R**. Cinnamaldehyde Regulates Insulin and Caspase-3 Signaling Pathways in the Sporadic Alzheimer's Disease Model: Involvement of Hippocampal Function via IRS-1, Akt, and GSK-3 β Phosphorylation. *Journal of Molecular Neuroscience*. 2022 Nov;72(11):2273-91.
- 6- Naseri F, Sirati-Sabet M, Sarlaki F, Keimasi M, Mokarram P, Siri M, **Ghasemi R**, Shahsavari Z, Goshadrou F. The effect of ghrelin on apoptosis, necroptosis and autophagy programmed cell death pathways in the hippocampal neurons of amyloid- β 1-42-induced rat model of alzheimer's disease. *International Journal of Peptide Research and Therapeutics*. 2022 Sep 6;28(5):151.
- 7- Askari S, Javadpour P, Rashidi FS, Dargahi L, Kashfi K, **Ghasemi R**. Behavioral and Molecular Effects of Thapsigargin-Induced Brain ER-Stress: Encompassing Inflammation, MAPK, and Insulin Signaling Pathway. *Life*. 2022 Sep 2;12(9):1374.
- 8- Nazari M, Jafari A, Torabi N, Vajed-Samiei T, **Ghasemi R**, Fahanik-Babaei J, Eliassi A. The Effect of 40-Hz White LED Therapy on Structure-Function of Brain Mitochondrial ATP-Sensitive Ca-Activated Large-Conductance Potassium Channel in Amyloid Beta Toxicity. *Neurotoxicity Research*. 2022 Oct;40(5):1380-92.
- 9- Mohebichamkhorami F, Niknam Z, Khoramjouy M, Heidarli E, **Ghasemi R**, Hosseinzadeh S, Mohseni SS, Hajikarim-Hamedani A, Heidari A, Ghane Y, Mahmoodifard M. Brain Homogenate of Rat Model of Alzheimer' Disease Modifies Secretome of 3D Cultured

Periodontal Ligament Stem Cells; A Potential Neuroregenerative Therapy. Iranian Journal of Pharmaceutical Research. 2022 Feb 27.

- 10- Iloun P, Hooshmandi E, Gheibi S, Kashfi K, **Ghasemi R**, Ahmadiani A. Roles and Interaction of the MAPK Signaling Cascade in A β 25–35-Induced Neurotoxicity Using an Isolated Primary Hippocampal Cell Culture System. Cellular and Molecular Neurobiology. 2021 Oct;41(7):1497-507.
- 11- Javadpour P, Askari S, Rashidi FS, Dargahi L, Ahmadiani A, **Ghasemi R**. Imipramine alleviates memory impairment and hippocampal apoptosis in STZ-induced sporadic Alzheimer's rat model: Possible contribution of MAPKs and insulin signaling. Behavioural Brain Research. 2021 Jun 25;408:113260.
- 12- Binayi F, Zardooz H, **Ghasemi R**, Hedayati M, Askari S, Pouriran R, Sahraei M. The chemical chaperon 4-phenyl butyric acid restored high-fat diet-induced hippocampal insulin content and insulin receptor level reduction along with spatial learning and memory deficits in male rats. Physiology & Behavior. 2021 Mar 15;231:113312.
- 13- Javadpour P, Askari S, Azizi F, **Ghasemi R**. Time course study of ERK1/2 activity and cell viability in lipopolysaccharide challenged PC12 cells. Physiology and Pharmacology. 2021 Mar 10;25(1):76-82.
- 14- Mozafari R, Karimi-Haghighi S, Hooshmandi E, **Ghasemi R**, Koruji M, Ahadi R, Haghparast A. Hippocampal D1—but not D2—like dopamine receptors modulate the phosphorylation of ERK in food deprivation-induced reinstatement of morphine in extinguished rats. NeuroReport. 2021 Mar 3;32(4):332-8.
- 15- Anjomani M, Eliassi A, **Ghasemi R**, Fahanik-Babaei J. Effect of intracerebroventricular injection of streptozotocin on memory, reactive oxygen species of brain mitochondria, and β -amyloid plaques in rat hippocampus. Iranian Journal of Physiology and Pharmacology. 2020 Jun 10;4(3):49-37.

- 16- Azizi F, **Ghasemi R**, Hadjighassem M. Primary Spinal Cord Neurons Better Attach to Non-Coated Surfaces Than to Poly (D-lysine)-Coated Surfaces. *Archives of Neuroscience*. 2020 Apr 30;7(2).
- 17- Moosavi M, Hooshmandi E, Javadpour P, Maghsoudi N, Katinger H, **Ghasemi R**. Effect of carbamylated erythropoietin Fc fusion protein (CEPO-Fc) on learning and memory impairment and hippocampal apoptosis induced by intracerebroventricular administration of streptozotocin in rats. *Behavioural Brain Research*. 2020 Apr 20;384: 112554.
- 18- Hooshmandi E, Moosavi M, Katinger H, Sardab S, **Ghasemi R**, Maghsoudi N. CEPO (carbamylated erythropoietin)-Fc protects hippocampal cells in culture against beta amyloid-induced apoptosis: considering Akt/GSK-3 β and ERK signaling pathways. *Molecular biology reports*. 2020 Mar;47(3):2097-108.
- 19- Azizi F, Askari S, Javadpour P, Hadjighassem M, **Ghasemi R**. Potential role of exosome in post-stroke reorganization and/or neurodegeneration. *EXCLI journal*. 2020;19: 1590.
- 20- Soukhaklari R, **Ghasemi R**, Moosavi M. Insulin attenuates 6-hydroxydopamine induced cell death in human neuroblastoma cells and restores p-Akt/t-Akt level. *Physiology and Pharmacology*. 2019 Jul 10;23(2):115-22.
- 21- Javadpour P, Dargahi L, Ahmadiani A, **Ghasemi R**. To be or not to be: PP2A as a dual player in CNS functions, its role in neurodegeneration, and its interaction with brain insulin signaling. *Cell Mol Life Sci*. 2019 Mar 14. doi: 10.1007/s00018-019-03063-y.
- 22- Jahanmahin A, Abbasnezhad Z, Haghparast A, Ahmadiani A, **Ghasemi R**; Intrahippocampal insulin injection does not prevent against scopolamine-induced spatial memory impairment and ERK alteration. *Basic Clin Neurosci*. (Accepted)
- 23- Abbasnejad Z, Nasser B, Zardooz H, **Ghasemi R**. Time-course study of high fat diet induced alterations in spatial memory, hippocampal JNK, P38, ERK and Akt activity. *Metab Brain Dis*. 2018 Dec 14. doi: 10.1007/s11011-018-0369-1. [Epub ahead of print]

- 24- Hooshmandi E, Ghasemi R, Iloun P, Moosavi M. The neuroprotective effect of agmatine against amyloid β -induced apoptosis in primary cultured hippocampal cells involving ERK, Akt/GSK-3 β , and TNF- α . *Mol Biol Rep*. 2018 Nov 24. doi: 10.1007/s11033-018-4501-4. [Epub ahead of print]
- 25- Iloun P, Abbasnejad Z, Janahmadi M, Ahmadiani A, **Ghasemi R**. Investigating the role of P38, JNK and ERK in LPS induced hippocampal insulin resistance and spatial memory impairment: effects of insulin treatment. *EXCLI J*. 2018 Aug 20;17:825-839. doi: 10.17179/excli2018-1387. eCollection 2018.
- 26- Hooshmandi E, Motamedi F, Moosavi M, Katinger H, Zakeri Z, Zaringhalam J, Maghsoudi A, **Ghasemi R**, Maghsoudi N. CEPO-Fc (An EPO Derivative) Protects Hippocampus Against A β -induced Memory Deterioration: A Behavioral and Molecular Study in a Rat Model of A β Toxicity. *Neuroscience*. 2018 Sep 15;388:405-417. doi: 10.1016/j.neuroscience.2018.08.001. Epub 2018 Aug 11.
- 27- Hosseini SI, Javaherian Z, Minai-Tehrani D, **Ghasemi R**, Ghaempanah Z et al. Antibacterial properties of fluorinated diamond-like carbon films deposited by direct and remote plasma. *Materials Letters* 188, 84-87
- 28- Amiri E, **Ghasemi R**, Moosavi M. Agmatine Protects Against 6-OHDA-Induced Apoptosis, and ERK and Akt/GSK Disruption in SH-SY5Y Cells. *Cell Mol Neurobiol*. 2015 Sep 7.
- 29- **Ghasemi R**, Dargahi L, Ahmadiani A. Integrated sphingosine-1 phosphate signaling in the central nervous system: From physiological equilibrium to pathological damage. *Pharmacol Res*. 2016 Feb; 104:156-64. doi: 10.1016/j.phrs.2015.11.006.
- 30- Rahmani B, **Ghasemi R**, Dargahi L, Ahmadiani A, Haeri A. Neurosteroids; potential underpinning roles in maintaining homeostasis. *Gen Comp Endocrinol*. 2016 Jan 1;225:242-50. doi: 10.1016/j.ygcen.2015.09.030
- 31- Tamijani SM, Karimi B, Amini E, Golpich M, Dargahi L, Ali RA, Ibrahim NM, Mohamed Z, **Ghasemi R***, Ahmadiani A*. Thyroid hormones: Possible roles in epilepsy pathology. *Seizure*. 2015 Sep; 31:155-64. doi:10.1016/j.seizure.2015.07.021.

- 32- **Ghasemi R**, Moosavi M, Zarifkar A, Rastegar K, Maghsoudi N. The Interplay of Akt and ERK in A β Toxicity and Insulin-Mediated Protection in Primary Hippocampal Cell Culture. *J Mol Neurosci*. 2015 Nov; 57(3):325-34. doi: 10.1007/s12031-015-0622-6
- 33- Golpich M, Amini E, Hemmati F, Ibrahim NM, Rahmani B, Mohamed Z, Raymond AA, Dargahi L, **Ghasemi R**, Ahmadiani A. Glycogen synthase kinase-3 beta (GSK-3 β) signaling: Implications for Parkinson's disease. *Pharmacol Res*. 2015 Mar 28; 97:16-26. doi: 10.1016/j.phrs.2015.03.010.
- 34- Negintaji K, Zarifkar A, **Ghasemi R**, Moosavi M. Humanin Does Not Protect Against STZ-Induced Spatial Memory Impairment. *J Mol Neurosci*. 2015 Jun;56(2):290-8. doi: 10.1007/s12031-015-0531-8.
- 35- Amini E, Rezaei M, Mohamed Ibrahim N, Golpich M, **Ghasemi R**, Mohamed Z, Raymond AA, Dargahi L, Ahmadiani A. A Molecular Approach to Epilepsy Management: from Current Therapeutic Methods to Preconditioning Efforts. *Mol Neurobiol*. 2015 Aug;52(1):492-513. doi: 10.1007/s12035-014-8876-5.
- 36- **Ghasemi R**, Zarifkar A, Rastegar K, maghsoudi N, Moosavi M. Insulin Protects Against A β -Induced Spatial Memory Impairment, Hippocampal Apoptosis and MAPKs Signaling Disruption. *Neuropharmacology*. 2014 Jun2; 85C 113-120. doi:10.1016/j.neuropharm.2014.01.036.
- 37- **Ghasemi R**, Zarifkar A, Rastegar K, maghsoudi N, Moosavi M. Repeated intra-hippocampal injection of Beta-Amyloid 25-35 induces a reproducible impairment of learning and memory: considering caspase-3 and MAPKs activity. *European journal of pharmacology*. *Eur J Pharmacol*. 2014 Mar 5; 726:33-40.
- 38- Moosavi M, Zarifkar AH, Farbood Y, Dianat M, Sarkaki A, **Ghasemi R** Agmatine protects against intracerebroventricular Streptozotocin-induced Water Maze Memory deficit, hippocampal apoptosis and Akt/GSK3 β signaling Disruption. *European journal of pharmacology*. *Eur J Pharmacol*. 2014 Aug 5;736:107-14. doi:10.1016/j.ejphar.2014.03.041
- 39- **Ghasemi R**, Dargahi L, Haeri A, Moosavi M, Mohamed Z, Ahmadiani A. Brain insulin dysregulation: implication for neurological and neuropsychiatric

disorders. *Mol Neurobiol.* 2013 Jun;47(3):1045-65. doi: 10.1007/s12035-013-8404-z.

- 40- Hemmati F, **Ghasemi R**, Mohamed Ibrahim N, Dargahi L, Mohamed Z, Raymond AA, Ahmadiani A. Crosstalk Between Insulin and Toll-like Receptor Signaling Pathways in the Central Nervous system. *Mol Neurobiol.* 2014 Dec; 50(3):797-810. doi: 10.1007/s12035-013-8631-3. (first co-author)
- 41- **Ghasemi R**, Haeri A, Dargahi L, Mohamed Z, Ahmadiani A. Insulin in the brain: sources, localization and functions. *Mol Neurobiol.* 2013 Feb;47(1):145-71. doi: 10.1007/s12035-012-8339-9.
- 42- Maghsoudi N, **Ghasemi R**, Ghaempanah Z, Ardekani AM, Nooshinfar E, Tahzibi A. Effect of Chronic Restraint Stress on HPA Axis Activity and Expression of BDNF and Trkb in the Hippocampus of Pregnant Rats: Possible Contribution in Depression during Pregnancy and Postpartum Period. *Basic Clin Neurosci.* 2014 Spring;5(2):131-7.
- 43- Sherafat MA, Ronaghi A, Ahmad-Molaei L, Nejadhoseynian M, **Ghasemi R**, Hosseini A, et al. Kindling-induced learning deficiency and possible cellular and molecular involved mechanisms. *Neurol Sci.* 2013 Jun;34(6):883-90. doi: 10.1007/s10072-012-1142-6.
- 44- Ardekani AM, Maghsudi N, Meyfour A, **Ghasemi R**, Lakpour N, Nooshinfar E, et al. Stress-induced proteomic changes in the hippocampus of pregnant wistar rats. *Avicenna J Med Biotechnol.* 2011 Oct;3(4):157-66.
- 45- Moosavi M, **Ghasemi R**, Maghsoudi N, Rastegar K, Zarifkar A. The relation between pregnancy and stress in rats: considering corticosterone level, hippocampal caspase-3 and MAPK activation. *Eur J Obstet Gynecol Reprod Biol.* 2011 Oct;158(2):199-203. doi: 10.1016/j.ejogrb.2011.05.005.
- 46- Zarifkar A, Choopani S, **Ghasemi R**, Naghdi N, Maghsoudi AH, Maghsoudi N, et al. Agmatine prevents LPS-induced spatial memory impairment and hippocampal apoptosis. *Eur J Pharmacol.* 2010 May 25;634(1-3):84-8. doi: 10.1016/j.ejphar.2010.02.029.