

Mohammad Reza Raoufy (M.D., Ph.D.)

Associate Professor of Physiology
Head of Translational Brain Function and Neuromodulation Lab

Department of Physiology, Faculty of Medical Sciences,
Tarbiat Modares University, Tehran, Iran



Phone +98-21-82884586
E-Mail raoufy@modares.ac.ir; raoufy.mreza@gmail.com
Profile page: https://modares.ac.ir/en-pro/academic_staff/raoufy
Homepage www.neuromodulation.ir

Education

2008-2012 PhD in Physiology, Tarbiat Modares University, Tehran, Iran
2000-2008 Medical Doctor (MD), Shahid Beheshti University of Medical Sciences, Tehran, Iran

Honors and Awards

2024 Iran National Science Foundation (INSF) Award
2023 Top Researcher of Tarbiat Modares University, Tehran, Iran
2021 Top Faculty of Tarbiat Modares University, Tehran, Iran
2019 National Institute for Medical Research Development (NIMAD) Award for Young Medical Scientists
2019 Cognitive Science and Technologies Council Award
2017 Iran National Science Foundation (INSF) Award
2012 First Ranked Among PhD Students of Physiology, Tarbiat Modares University, Tehran, Iran
2006 Top Medical Student of Iran (given prize by president of Iran)
2005 First Ranked Student, 6th Festival of Research, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2004 Best Poster Award, Iranian Physiology & Pharmacology Congresses, Kerman, Iran
2004 Best Poster Award, Iranian Internal Medicine Congresses, Bandar-Abbas, Iran
2004 Best Poster Award, 1st Students Research Conference of Shahid Beheshti University of Medical Sciences, Tehran, Iran
2000 Rank 59th in Entrance Examine Universities of Iran (Among About 1.5 Million Participants)

Position

2019-pres	Associate Professor, Department of Physiology, Tarbiat Modares University, Tehran, Iran
2013-2019	Assistant Professor, Department of Physiology, Tarbiat Modares University, Tehran, Iran
2018-2022	Head of Clinic and Health Center, Tarbiat Modares University, Tehran, Iran
2016-pres	CEO of Trita Health Technology Company, Tehran, Iran
2017-pres	Chairman of The Ethics Committee in Clinical Studies, Tarbiat Modares University, Tehran, Iran
2018	Member of the Scientific Committee of the International Biology Olympiad (IBO). Designing physiology questions of the World Biology Olympiad.
2015-pres	Member of the National Committee of the Iranian Biology Olympiad. Designing the physiology questions of the National Biology Olympiad and training the members of the Iranian Biology Olympiad Team to participate in the World Biology Olympiad.
2015-2021	Member of the Scientific Committee of the Scientific Olympiad of Iranian Medical Students. Designing Questions and Reviewing Olympiad
2006	Scientific and Organizing Committee Chair, 7th Annual Research Congress of Iranian Medical Sciences Students
2005	Scientific and Organizing Committee Chair, The First Research Conference of Students of Shahid Beheshti University of Medical Sciences, Tehran, Iran
2003-2007	Head of the Student Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

The Narrative of the Research Line

Beginning of Programming (1995): I started programming with q-basic software at the age of 13 (1995) and then at the age of 16 (1998) I was programming with Pascal software.

Machine Learning in Medicine (2004): In 2000, I entered the field of medicine at Shahid Beheshti University of Medical Sciences (Tehran, Iran). Since 2004, I got acquainted with programming in MATLAB software. While I was a medical student, I used machine learning methods such as artificial neural networks and neuro-fuzzy to diagnose diseases and predict patients' response to treatment. My thesis in general medicine was the use of artificial neural networks to diagnose cirrhosis in patients with hepatitis B. My articles in this field were published in journals such as Journal of Medical Systems.

Complex Systems in Medicine (2008): Due to my interest in research, discovering the physiopathology of diseases and providing new treatment solutions, after completing my medical degree in 2008, I started PhD of physiology at Tarbiat Modares University (Tehran, Iran). At this point, I got acquainted with the subject of complex systems. Considering that the human body is known as a complex system, my research studies focused on the analysis of the complexity (non-linear methods, chaos theory, fractal, entropy, etc.) of the body's rhythms, especially the breathing rhythm, to better understand the pathophysiology of the disease (especially asthma). Since 2013, as an assistant professor at Tarbiat Modares University, I have continued the studies in this field and introduced the complexity analysis of

respiratory dynamics as a new method for diagnosing and classifying respiratory diseases. The results of my research were published in journals such as Lancet Respiratory Medicine, American Journal of Respiratory and Critical Care Medicine, PLoS One, etc.

Brain Structural and Functional Alterations in Allergic Inflammation (2015): In the following (2015), my translational studies on animal models and patients focused on finding the causes of changes in the complexity of the breathing pattern in allergic asthma. We showed that allergic inflammation causes structural and functional changes in the brain, and these changes, in addition to changing respiratory rhythms and lung function, lead to neuro-psychological disorders such as anxiety and depression. The results of these studies were published in journals such as Scientific Reports, PLoS One, Life Sciences, Neuroscience, Brain Research, Brain Research Bulletin, etc.

Non-invasive brain stimulation through olfactory pathway to reduce neurocognitive dysfunction (2018): From 2018, while reviewing the literature on brain-respiration interactions, I met a fascinating physiological phenomenon. Besides processing odorant information, olfactory sensory neurons (OSNs) also respond to mechanical stimulation of airflow passage. In nasal breathing, the airflow activates mechanosensitive OSNs of the nasal epithelium and entrains oscillatory neural activity in the olfactory bulb (OB). Rhythmic OB activation by nasal breathing generates respiration-coupled oscillations propagating throughout the cortical and subcortical regions implicated in cognitive functions such as learning and memory. Interestingly, nasal breathing diversion to the oral root as well as OB inhibition or OSN ablation abolishes these respiration-entrained brain rhythms, which are subsequently associated with cognitive impairments. Therefore, it seems that electrical and mechanical stimulation of OSNs, as a non-invasive brain stimulation method, can improve neural homeostasis to prevent disease progression or treat neuro-cognitive dysfunction. This project focuses on learning and memory disorders, Alzheimer's disease, cognitive impairment following mechanical ventilation, neurodegenerative diseases, epilepsy, depression and anxiety. The results of these studies have been published in prestigious journals such as American Journal of Respiratory and Critical Care Medicine, CNS Neuroscience & Therapeutics, Scientific Reports, Hippocampus, etc.

Techniques: Techniques used in animals include electrophysiological recording (multi-electrode recording of local field potentials (LFP) in conscious animals during behavioral experiments, spike recording and patch clamp recording), brain imaging (MRI), invasive and non-invasive brain stimulation, brain molecular and histological examination. Also, human and clinical techniques include electroencephalography (EEG), brain imaging (MRI and fMRI) and non-invasive brain stimulation. Data analysis is performed with an emphasis on electrical signal processing and image processing using MATLAB software.

Design and Production of Electrophysiology Research Devices

Since 2020, I founded Trita Health Technology Company, and I am the CEO of this company. Our research products include the animal brain stimulation device and the simultaneous recording device of biological signals in freely moving animals (local field potentials, single unit recording, electroencephalography, electrocardiogram and respiration). The software of these devices is in MATLAB and it is possible to perform closed-loop studies. These devices have received the first-level knowledge-based product certificate from the Presidential Scientific-Technological Vice-Chancellor. These devices have been sold to Iran's top universities and prestigious neuroscience centers. Several articles using these devices have been published in prestigious journals such as Scientific Reports, PLoS One, CNS Neuroscience & Therapeutics, Hippocampus, Life Science, Neuroscience, Brain Research, Epilepsy Research, Brain Research Bulletin, etc.

Journal Editor

Guest Editor, Frontiers in Physiology (2023)

Co-Topic Editor, Frontiers in Computational Neuroscience (2022)

Peer reviewer (34 Journals)

Scientific Reports | PLoS One | Experimental Neurology | BMC Neuroscience | Brain Research | NeuroImage: Reports | Journal of Alzheimer's Disease Reports | QJM: An International Journal of Medicine | Frontiers in Neuroscience | Journal of Neuroscience Research | Brain and Behavior | Brain Sciences | Neuropsychiatric Disease and Treatment | European Journal of Applied Physiology | Respiratory Physiology & Neurobiology | International Journal of Molecular Medicine | Journal of Clinical Medicine | Frontiers in Medicine | Frontiers in Pharmacology | Applied Sciences | Frontiers in Cardiovascular Medicine | Journal of Theoretical Biology | British Journal of Anaesthesia | Journal of Asthma and Allergy | Respiratory Care | Toxicology in Vitro | FEBS Open Bio | International Journal of Chronic Obstructive Pulmonary Disease | Endocrine, Metabolic & Immune Disorders - Drug Target | Journal of Biological Physics | OncoTargets and Therapy | The Journal of the Intensive Care Society | Iranian Journal of Allergy, Asthma and Immunology | Physiology and Pharmacology | Healthcare | Iranian Journal of Science and Technology Transactions A: Science | Iranian Journal of Pharmaceutical Research | Basic and Clinical Neuroscience | Iranian Journal of Basic Medical Sciences | International Journal of Environmental Research and Public Health |

Grant Reviewer

2017- pres Iran National Science Foundation (INSF)

2017-pres National Institute for Medical Research Development (NIMAD)

Research Grant support

2024-2025 Iran National Science Foundation (INSF)

IRR 1,500,000,000

Evaluating the protective effect of electrical stimulation of olfactory sensory neurons on brain electrophysiological alterations from hippocampal synaptic currents to olfactory bulb-medial prefrontal cortex-hippocampus circuit and memory impairment induced by mechanical ventilation: preclinical study of a new method of non-invasive brain stimulation.

2019-2023 Cognitive Science and Technologies Council

IRR 300,000,000

Evaluating the effect of applying nasal airflow on mechanical ventilation induced cognitive disorders.

2019-2023 National Institute for Medical Research Development (NIMAD)

IRR 300,000,000

Evaluating the effect of applying nasal air flow on cortical brain activity and somatosensory event-related potentials in mechanically ventilated patients.

2017-2021 Iran National Science Foundation (INSF)

IRR 200,000,000

Evaluating the relation between local field potentials of amygdala-hippocampus-prefrontal cortex circuit and breathing pattern during stress and structural alterations of this circuit's components in asthmatic rats and treated with inhaled corticosteroid.

Invited Speaker / Chairman of The Panel

- 2024 Invited Speaker: From Nasal breathing to Brain Dynamics and Cognition. 11th Iran Cognitive Neuropsychology Symposium, Tehran, Iran
- 2023 Chairman of The Panel: The olfactory pathway as a new target for electrical brain stimulation to improve neurocognitive diseases. 12th basic and clinical neuroscience congress. Tehran, Iran
- 2022 Invited Speaker: Non-invasive brain stimulation through olfactory pathway to reduce neurocognitive dysfunction. The 29th National and 7th International Iranian Conference on Biomedical Engineering (ICBME 2022), Tehran, Iran
- 2021 Chairman of The Panel: Neural activities during behavioral performance. 25th Iranian and 4th international congress of physiology and pharmacology. Tehran, Iran

Publications (* corresponding author)

1. Ghazvineh S, Mooziri M, Salimi A, Mirnajafi-Zadeh J, **Raoufy MR***. Olfactory epithelium electrical stimulation mitigates memory and synaptic deficits caused by mechanical ventilation. *Sci Rep*. 2025 Apr 9;15:12197.
2. Safarcharati Z, Bahramani A, Amjad PM, Ravanbakhsh M, **Raoufy MR***, Khademian M. Context-dependent modulations in zebra finch distance calls revealed by a novel goal-directed vocalization paradigm. *Sci Rep*. 2025 Mar 12;15:8572.
3. Zarei P, **Raoufy MR**, Shojaei A, Fathollahi Y, Mirnajafi-Zadeh J. Effect of High-frequency Electrical Stimulation of Olfactory Bulb on Spontaneous Excitatory Postsynaptic Currents in Hippocampal CA1 Pyramidal Cells of Kindling Rats. *Basic Clin Neurosci*. 2025; 16 (2) :393-402
4. Eslami-Behrooz M, Shahsavari P, Vali R, **Raoufy MR***. Breathing pattern alteration from weanling to old age in male Sprague-Dawley rats. *Respir Physiol Neurobiol*. 2025 Jan;331:104357
5. Salimi M, Nazari M, Shahsavari P, Dehghan S, Javan M, Mirnajafi-Zadeh J, **Raoufy MR***. Olfactory bulb stimulation mitigates Alzheimer's-like disease progression. *CNS Neurosci Ther*. 2024 Oct;30(10):e70056.
6. Farkhondeh Tale Navi F, Heysieattalab S, **Raoufy MR***, Sabaghypour S, Nazari M, Nazari MA. Adaptive closed-loop modulation of cortical theta oscillations: Insights into the neural dynamics of navigational decision-making. *Brain Stimul*. 2024 Sep 12;17(5):1101-1118.

7. Gholami-Mahtaj L, Mooziri M, Bamdad S, Mikaili M, Jamaati H, **Raoufy MR***. Neural signature of attention impairment in allergic asthma: an ERP study. *Int J Neurosci*. 2024 Aug;134(8):815-825.
8. Mooziri M, Samii Moghaddam A, Mirshekar MA, **Raoufy MR***. Olfactory bulb-medial prefrontal cortex theta synchronization is associated with anxiety. *Sci Rep*. 2024 May 27;14(1):12101.
9. Ghazvineh S, Shahsavar P, **Raoufy MR***. From nasal respiration to brain dynamic. *Rev Neurosci*. 2024 Apr 5;35(6):639-650.
10. Zeynali F, **Raoufy MR**, Gharakhanlou R. Investigating Olfactory Sensory Neurons Facilitation For Aerobic Exercise-induced Spatial Memory Improvement. *Basic Clin Neurosci*. 2024 May-Jun;15(3):355-366.
11. H Riazi, M Nazari, **MR Raoufy**, J Mirnajafi-Zadeh, A Shojaei. Olfactory Epithelium Stimulation Using Rhythmic Nasal Air-Puffs Improves the Cognitive Performance of Individuals with Acute Sleep Deprivation. *Brain Sci*. 14 (4), 378
12. Zare M, Rezaei M, Nazari M, Kosarmadar N, Faraz M, Barkley V, Shojaei A, **Raoufy MR**, Mirnajafi-Zadeh J. Effect of the closed-loop hippocampal low-frequency stimulation on seizure severity, learning, and memory in pilocarpine epilepsy rat model. *CNS Neurosci Ther*. 2024 Mar;30(3):e14656.
13. Valaei A, Bamdad S, Golfam A, Golmohammadi G, Ameri H, **Raoufy MR***. Examining resting state functional connectivity and frequency power analysis in adults who stutter compared to adults who do not stutter. *Front Hum Neurosci*. 2024 Feb 5;18:1338966.
14. Mohammadzadeh J, **Raoufy MR**, Nazari M, Sajedi RH. Bioluminescence measurement of superoxide anion in infertile men with oxidative stress. *J Photochem Photobiol B*. 2024 Mar;252:112852.
15. Najafi N, Soleimanjahi H, Moghaddam-Banaem L, **Raoufy MR**, Shahali S, Kazemnejad A, Nasiri Z. Humoral immunogenicity assessment after receiving three types of SARS-CoV-2 vaccine. *Sci Rep*. 2023 Nov 18;13(1):20213.
16. Dehdar K, **Raoufy MR***. Brain structural and functional alterations related to anxiety in allergic asthma. *Brain Res Bull*. 2023 Oct 1;202:110727.
17. Dehdar K, **Raoufy MR***. Effects of inhaled corticosteroids on brain volumetry, depression and anxiety-like behaviors in a rat model of asthma. *Respir Physiol Neurobiol*. 2023 Sep;315:104121.
18. Dehdar K, Salimi M, Tabasi F, Dehghan S, Sumiyoshi A, Garousi M, Jamaati H, Javan M, **Raoufy MR***. Allergen Induces Depression-like Behavior in Association with Altered Prefrontal-hippocampal Circuit in Male Rats. *Neuroscience*. 2023 Aug 1;524:21-36.
19. Enayati P, Dehdar K, Javan M, **Raoufy MR***. The protective effect of inhaled corticosteroid on lung inflammation and breathing pattern complexity in a rat model of asthma. *Respir Physiol Neurobiol*. 2023 Aug;314:104072.
20. Khatibi VA, Salimi M, Rahdar M, Rezaei M, Nazari M, Dehghan S, Davoudi S, **Raoufy MR**, Mirnajafi-Zadeh J, Javan M, Hosseinmardi N, Behzadi G, Janahmadi M. Glycolysis inhibition partially resets epilepsy-induced alterations in the dorsal hippocampus-basolateral amygdala circuit involved in anxiety-like behavior. *Sci Rep*. 2023 Apr 21;13(1):6520.

21. Ghazvineh S, Salimi M, Dehghan S, Asemi-Rad A, Dehdar K, Salimi A, Jamaati H, **Raoufy MR***. Stimulating olfactory epithelium mitigates mechanical ventilation-induced hippocampal inflammation and apoptosis. *Hippocampus*. 2023 Jul;33(7):880-885.
22. Dehdar K, Mooziri M, Samii Moghaddam A, Salimi M, Nazari M, Dehghan S, Jamaati H, Salimi A, **Raoufy MR***. Corticosteroid treatment attenuates anxiety and mPFC-amygdala circuit dysfunction in allergic asthma. *Life Sci*. 2023 Feb 15;315:121373.
23. Rezaei M, **Raoufy MR**, Fathollahi Y, Shojaei A, Mirnajafi-Zadeh J. Tonic and phasic stimulations of ventral tegmental area have opposite effects on pentylentetrazol kindled seizures in mice. *Epilepsy Res*. 2023 Jan;189:107073.
24. Khodadadi M, Zare M, Rezaei M, Bakhtiarzadeh F, Barkley V, Shojaei A, **Raoufy MR**, Mirnajafi-Zadeh J. Effect of low frequency stimulation of olfactory bulb on seizure severity, learning, and memory in kindled rats. *Epilepsy Res*. 2022 Dec;188:107055.
25. Salimi M, Ayene F, Parsazadegan T, Nazari M, Jamali Y, **Raoufy MR***. Nasal airflow promotes default mode network activity. *Respir Physiol Neurobiol*. 2023 Jan;307:103981.
26. Khatibi VA, Rahdar M, Rezaei M, Davoudi S, Nazari M, Mohammadi M, **Raoufy MR**, Mirnajafi-Zadeh J, Hosseinmardi N, Behzadi G, Janahmadi M. The Glycolysis Inhibitor 2-Deoxy-D-Glucose Exerts Different Neuronal Effects at Circuit and Cellular Levels, Partially Reverses Behavioral Alterations and does not Prevent NADPH Diaphorase Activity Reduction in the Intrahippocampal Kainic Acid Model of Temporal Lobe Epilepsy. *Neurochem Res*. 2022 Sep 5:1–19.
27. Salimi M, Javadi AH, Nazari M, Bamdad S, Tabasi F, Parsazadegan T, Ayene F, Karimian M, Gholami-Mahtaj L, Shadnia S, Jamaati H, Salimi A, **Raoufy MR***. Nasal Air Puff Promotes Default Mode Network Activity in Mechanically Ventilated Comatose Patients: A Noninvasive Brain Stimulation Approach. *Neuromodulation*. 2022 Dec;25(8):1351-1363.
28. Fathian A, Jamali Y, **Raoufy MR**; Alzheimer's Disease Neuroimaging Initiative. The trend of disruption in the functional brain network topology of Alzheimer's disease. *Sci Rep*. 2022 Sep 2;12(1):14998.
29. Enayat J, Mahdaviani SA, Rekabi M, Ghaini M, Eslamian G, Fallahi M, Ghazvineh S, Sharifinejad N, **Raoufy MR***, Velayati AA. Respiratory pattern complexity in newly-diagnosed asthmatic patients. *Respir Physiol Neurobiol*. 2022 Jun;300:103873.
30. Gholami-Mahtaj L, Salimi M, Nazari M, Tabasi F, Bamdad S, Dehdar K, Mikaili M, Mahdaviani SA, Salari F, Lookzadeh S, Jamaati H, Salimi A, **Raoufy MR***. Asthma induces psychiatric impairments in association with default mode and salience networks alteration: A resting-state EEG study. *Respir Physiol Neurobiol*. 2022 Jun;300:103870.
31. Salimi M, Tabasi F, Nazari M, Ghazvineh S, **Raoufy MR***. The olfactory bulb coordinates the ventral hippocampus-medial prefrontal cortex circuit during spatial working memory performance. *J Physiol Sci*. 2022 Apr 25;72(1):9.
32. Salimi M, Tabasi F, Abdolsamadi M, Dehghan S, Dehdar K, Nazari M, Javan M, Mirnajafi-Zadeh J, **Raoufy MR***. Disrupted connectivity in the olfactory bulb-entorhinal cortex-dorsal hippocampus circuit is associated with recognition memory deficit in Alzheimer's disease model. *Sci Rep*. 2022 Mar 15;12(1):4394.

33. Salimi M, Tabasi F, Ghazvineh S, Jamaati H, Salimi A, **Raoufy MR***. Stimulating Neural Pathways to Reduce Mechanical Ventilation-associated Neurocognitive Dysfunction. *Am J Respir Crit Care Med*. 2022 Mar 1;205(5):588-589.
34. Dehdar K, Salimi M, **Raoufy MR***. Allergen disrupts amygdala-respiration coupling. *Respir Physiol Neurobiol*. 2022 Mar;297:103835.
35. Gholami-Mahtaj L, Mooziri M, Dehdar K, Abdolsamadi M, Salimi M, **Raoufy MR***. ACC-BLA functional connectivity disruption in allergic inflammation is associated with anxiety. *Sci Rep*. 2022 Feb 17;12(1):2731.
36. Farkhondeh Tale Navi F, Heysieattalab S, Ramanathan DS, **Raoufy MR**, Nazari MA. Closed-loop Modulation of the Self-regulating Brain: A Review on Approaches, Emerging Paradigms, and Experimental Designs. *Neuroscience*. 2022 Feb 10;483:104-126.
37. Mazidi MH, Eshghi M, **Raoufy MR**. Premature Ventricular Contraction (PVC) Detection System Based on Tunable Q-Factor Wavelet Transform. *J Biomed Phys Eng*. 2022 Feb 1;12(1):61-74.
38. Azadi M, Aref E, Pazhoohan S, **Raoufy MR***, Semnanian S, Azizi H. Paternal preconception exposure to chronic morphine alters respiratory pattern in response to morphine in male offspring. *Respir Physiol Neurobiol*. 2022 Feb;296:103811.
39. Ghasemi Z, Naderi N, Shojaei A, **Raoufy MR**, Ahmadi N, Barkley V, Mirnajafi-Zadeh J. Group I metabotropic glutamate receptors contribute to the antiepileptic effect of electrical stimulation in hippocampal CA1 pyramidal neurons. *Epilepsy Res*. 2021 Dec;178:106821.
40. Salimi M, Tabasi F, Nazari M, Ghazvineh S, Salimi A, Jamaati H, **Raoufy MR***. The olfactory bulb modulates entorhinal cortex oscillations during spatial working memory. *J Physiol Sci*. 2021 Jun 30;71(1):21.
41. Rezaei M, Ahmadi N, Ghasemi Z, Shojaei A, **Raoufy MR**, Barkley V, Fathollahi Y, Mirnajafi-Zadeh J. Alpha adrenergic receptors have role in the inhibitory effect of electrical low frequency stimulation on epileptiform activity in rats. *Int J Neurosci*. 2021 May 17:1-10.
42. Salimi M, Ghazvineh S, Nazari M, Dehdar K, Garousi M, Zare M, Tabasi F, Jamaati H, Salimi A, Barkley V, Mirnajafi-Zadeh J, **Raoufy MR***. Allergic rhinitis impairs working memory in association with drop of hippocampal - Prefrontal coupling. *Brain Res*. 2021 May 1;1758:147368.
43. Ghazvineh S, Salimi M, Nazari M, Garousi M, Tabasi F, Dehdar K, Salimi A, Jamaati H, Mirnajafi-Zadeh J, Arabzadeh E, **Raoufy MR***. Rhythmic air-puff into nasal cavity modulates activity across multiple brain areas: A non-invasive brain stimulation method to reduce ventilator-induced memory impairment. *Respir Physiol Neurobiol*. 2021 May;287:103627.
44. Dehghan S, Aref E, **Raoufy MR**, Javan M. An optimized animal model of lysolecithin induced demyelination in optic nerve; more feasible, more reproducible, promising for studying the progressive forms of multiple sclerosis. *J Neurosci Methods*. 2021 Mar 15;352:109088.
45. Pazhoohan S, Aref E, Zare L, Dehghan S, Javan M, Hajizadeh S, **Raoufy MR***. Inhibition of Rho-kinase improves response to deep inspiration in ovalbumin-sensitized guinea pigs. *Iran J Basic Med Sci*. 2020 Dec;23(12):1584-1589.
46. Noroozzadeh M, **Raoufy MR**, Bidhendi Yarandi R, Faraji Shahrivar F, Moghimi N, Ramezani Tehrani F. Cardiac function and tolerance to ischemia/reperfusion injury in a rat model of polycystic ovary syndrome during the postmenopausal period. *Life Sci*. 2020 Dec 1;262:118394.

47. Eftekhari G, Shojaei A, **Raoufy MR**, Azizi H, Semnanian S, Mani A. Neonatal Sepsis Alters the Excitability of Regular Spiking Cells in the Nucleus of the Solitary Tract in Rats. *Shock*. 2020 54(2): 265-271.
48. Sadeghian A, Salari Z, Azizi H, **Raoufy MR**, Shojaei A, Kosarmadar N, Zare M, Rezaei M, Barkley V, Javan M, Fathollahi Y, Mirnajafi-Zadeh J. The role of dopamine D2-like receptors in a "depotential-like effect" of deep brain stimulation in kindled rats. *Brain Res*. 2020 Jul 1;1738:146820.
49. Mazidi M.H., Eshghi, M., **Raoufy MR**. Detection of premature ventricular contraction (PVC) using linear and nonlinear techniques: an experimental study. *Cluster Comput*. 2020 23:759–774
50. Vahedi A, Tabasi F, Monjazebi F, Hashemian SMR, Tabarsi P, Farzanegan B, Malekmohammad M, Salimi A, Salimi M, **Raoufy MR**, Jamaati H, Velayati AA. Clinical Features and Outcomes of ICU Patients with COVID-19 Infection in Tehran, Iran: a Single-Centered Retrospective Cohort Study. *Tanaffos*. 2020 Dec;19(4):300-311.
51. Zare M, Nazari M, Shojaei A, **Raoufy MR**, Mirnajafi-Zadeh J. Online analysis of local field potentials for seizure detection in freely moving rats. *Iran J Basic Med Sci*. 2020 Feb;23(2):173-177.
52. Dehdar K, Mahdidoust S, Salimi M, Gholami-Mahtaj L, Nazari M, Mohammadi S, Dehghan S, Jamaati H, Khosrowabadi R, Nasiraei-Moghaddam A, Barkley V, Javan M, Mirnajafi-Zadeh J, Sumiyoshi A, **Raoufy MR***. Allergen-induced anxiety-like behavior is associated with disruption of medial prefrontal cortex - amygdala circuit. *Sci Rep*. 2019 Dec 20;9(1):19586.
53. Salimi M, Ghazvineh S, Zare M, Parsazadegan T, Dehdar K, Nazari M, Mirnajafi-Zadeh J, Jamaati H, **Raoufy MR***. Distraction of olfactory bulb-medial prefrontal cortex circuit may induce anxiety-like behavior in allergic rhinitis. *PLoS One*. 2019 Sep 11;14(9):e0221978.
54. Niknam P, **Raoufy MR**, Fathollahi Y, Javan M. Modulating proteoglycan receptor PTP σ using intracellular sigma peptide improves remyelination and functional recovery in mice with demyelinated optic chiasm. *Mol Cell Neurosci*. 2019 Jul 2;99:103391.
55. Noroozzadeh M, **Raoufy MR**, Yarandi RB, Shahrivar FF, Tehrani FR. The effects of prenatal androgen exposure on cardiac function and tolerance to ischemia/reperfusion injury in male and female rats during adulthood. *Life Sci*. 2019 Jul;229:251-260.
56. Satti R, Abid NU, Bottaro M, De Rui M, Garrido M, **Raoufy MR**, Montagnese S, Mani AR. The Application of the Extended Poincaré Plot in the Analysis of Physiological Variabilities. *Front Physiol*. 2019 Feb 19;10:116.
57. Ghasemi Z, Naderi N, Shojaei A, **Raoufy MR**, Ahmadi-rad N, Barkley V, Mirnajafi-Zadeh J. The Inhibitory Effect of Different Patterns of Low Frequency Stimulation on Neuronal Firing following Epileptiform Activity in Rat Hippocampal Slices. *Brain Res*. 2019 Mar 1;1706:184-195.
58. Jand Y, **Raoufy MR***, Dehpour AR. Brain wave disturbance and cognitive impairment after CPR. *Med Hypotheses*. 2019 May;126:129-130.
59. Taghizadeh N, Eslaminejad A, **Raoufy MR***. Protective effect of heart rate variability biofeedback on stress-induced lung function impairment in asthma. *Respir Physiol Neurobiol*. 2019 Apr;262:49-56.

60. Mazidi M.H., Eshghi, M., **Raoufy MR**. FPGA implementation of wearable ECG system for detection premature ventricular contraction. *International Journal of COMADEM* 2019;22(4):51-59.
61. Ahmadi ZH, Salehi F, Niusha S, **Raoufy MR**, Farzanegan B, Afshar A, Mafhoomi Y, Faghih Abdollahi Z, Radmand G, Ansari Aval Z, Jahangirifard A. First Experience with Extracorporeal Membrane Oxygenation in Iran, under Difficult Conditions. *J Tehran Heart Cent*. 2018 Oct;13(4):166-172.
62. Nataj A, Eftekhari G, **Raoufy MR**, Mani AR. The effect of fractal-like mechanical ventilation on vital signs in a rat model of acute-on-chronic liver failure. *Physiol Meas*. 2018 Nov 26;39(11):114008.
63. Parsazadegan T, Salimi M, Ghavineh S, **Raoufy MR***. Cognitive disorders in allergic rhinitis may be induced by decline of respiration entrained rhythm in the brain. *Med Hypotheses*. 2018;121:89-90.
64. Ahmadi Soleimani SM, Mohamadi M A H MH, **Raoufy MR**, Azizi H, Nasehi M, Zarrindast MR. Acute morphine administration alters the power of local field potentials in mesolimbic pathway of freely moving rats: Involvement of dopamine receptors. *Neurosci Lett*. 2018 Sep 13;686:168-174.
65. Tabasi F, **Raoufy MR***. Eliminated respiration-coupled oscillations in the brain as a possible link between adenotonsillar hypertrophy and cognitive impairment. *Med Hypotheses*. 2018 Mar;112:63-64.
66. Eslami-Behroozi M, Javan M, **Raoufy MR***. Effect of airway remodeling and hyperresponsiveness on complexity of breathing pattern in rat. *Respir Physiol Neurobiol*. 2018 Jan;247:65-70.
67. Ghasemi Z, Naderi N, Shojaei A, **Raoufy MR**, Ahmadi N, Mirnajafi-Zadeh J. Effect of Low-Frequency Electrical Stimulation on the High-K+-Induced Neuronal Hyperexcitability in Rat Hippocampal Slices. *Neuroscience*. 2017 Nov 11;369:87-96.
68. Pazhoohan S, **Raoufy MR***, Javan M, Hajizadeh S. Effect of Rho-kinase inhibition on complexity of breathing pattern in a guinea pig model of asthma. *PLoS One*. 2017 Oct 31;12(10):e0187249.
69. Z Ghasemi, N Naderi, A Shojaei, N Ahmadi, **MR Raoufy**, Mirnajafi-Zadeh J. Low frequency electrical stimulation attenuated the epileptiform activity-induced changes in action potential features in hippocampal CA1 pyramidal neurons. *Cell J (Yakhteh)*. 2017; 20 (3)
70. **Raoufy MR***, Ghafari T, Mani AR. Complexity Analysis of Respiratory Dynamics. *Am J Respir Crit Care Med*. 2017 Jul 15;196(2):247-248.
71. Eslami-Behroozi M, Pazhoohan S, Aref E, Zare L, Javan M, Hajizadeh S, **Raoufy MR***. Bronchoconstriction Induces Structural and Functional Airway Alterations in Non-sensitized Rats. *Lung*. 2017 Apr;195(2):167-171.
72. Darooei R, Sanadgol G, Gh-Nataj A, Almasnia M, Darivishi A, Eslaminejad A, **Raoufy MR***. Discriminating Tuberculous Pleural Effusion from Malignant Pleural Effusion Based on Routine Pleural Fluid Biomarkers, Using Mathematical Methods. *Tanaffos*. 2017;16(2):157-165.
73. Jamaati H, Nazari M, Darooei R, Ghafari T, **Raoufy MR***. Role of shear stress in ventilator-induced lung injury. *Lancet Respir Med*. 2016 Aug;4(8):e41-2.

74. **Raoufy MR***, Ghafari T, Darooei R, Nazari M, Mahdavian SA, Eslaminejad AR, Almasnia M, Gharibzadeh S, Mani AR, Hajizadeh S. Classification of Asthma Based on Nonlinear Analysis of Breathing Pattern. *PLoS One*. 2016 Jan 29;11(1):e0147976.
75. Meamar M, Dehpour T, Mazloom R, Sharifi F, **Raoufy MR**, Dehpour AR, Mani AR. The effect of endotoxin on heart rate dynamics in diabetic rats. *Auton Neurosci*. 2015 May;189:83-6.
76. Sargolzaee Aval F, Behnaz N, **Raoufy MR***, Alavian SM. Predicting the outcomes of combination therapy in patients with chronic hepatitis C using artificial neural network. *Hepat Mon*. 2014 Jun 1;14(6):e17028.
77. Shirazi AH, **Raoufy MR**, Ebadi H, De Rui M, Schiff S, Hajizadeh S, Gharibzadeh S, Dehpour AR, Amodio P, Jafari GR, Montagnese S, Mani AR. Quantifying memory in complex physiological time-series. *PLoS One*. 2013 Sep 5;8(9):e72854.
78. **Raoufy MR**, Hajizadeh S, Gharibzadeh S, Mani AR, Eftekhari P, Masjedi MR. Nonlinear model for estimation of respiratory volume based on thoracoabdominal breathing movements. *Respirology*. 2013 Jan;18(1):108-16.
79. Eftekhari P, Hajizadeh S, **Raoufy MR**, Masjedi MR, Yang M, Hansbro N, Li JJ, Foster P. Preventive effect of n-acetylcysteine in a mouse model of steroid resistant acute exacerbation of asthma. *EXCLI Journal* 2013;12:184-192
80. Azarkhish I, **Raoufy MR**, Gharibzadeh S. Artificial Intelligence Models for Predicting Iron Deficiency Anemia and Iron Serum Level Based on Accessible Laboratory Data. *J Med Syst*. 2012 Jun;36(3):2057-61.
81. **Raoufy MR**, Vahdani P, Alavian SM, Fekri S, Eftekhari P, Gharibzadeh S. A Novel Method for Diagnosing Cirrhosis in Patients with Chronic Hepatitis B: Artificial Neural Network Approach. *J Med Syst*. 2011 Feb;35(1):121-6.
82. **Raoufy MR**, Eftekhari P, Gharibzadeh S, Masjedi MR. Predicting Arterial Blood Gas Values from Venous Samples in Patients with Acute Exacerbation Chronic Obstructive Pulmonary Disease Using Artificial Neural Network. *J Med Syst*. 2011 Aug;35(4):483-8.
83. **Raoufy MR**, Gharibzadeh S, Abbasifar R, Radmehr B, Akhondzadeh Basti A, Abbasifar A, Khaksar R. Modeling the growth of Salmonella typhimurium under the effect of Zataria multiflora essential oil, pH, and temperature by artificial neural networks. *Comparative Clinical Pathology*. 2011;20(5): 507-512
84. **Raoufy MR**, Gharibzadeh S, Radmehr B, Khaksar R, Hosseini H. Predicting the combined effect of zataria multiflora essential oil, pH and temperature on the growth of staphylococcus aureus using artificial neural networks. *J Food Safety*. 2010;30(2): 318-329
85. Khanzadi S, Gharibzadeh S, **Raoufy MR**, Razavilar V, Khaksar R, Radmehr B. Application of artificial neural networks to predict clostridium botulinum growth as a function of zataria multiflora essential oil, pH, nacl and temperature. *J Food Safety*. 2010;30(2): 490-505
86. Baniasadi S, Eftekhari P, Tabarsi P, Fahimi F, **Raoufy MR**, Masjedi MR, Velayati AA. Protective effect of N-acetylcysteine on antituberculosis drug-induced hepatotoxicity. *Eur J Gastroenterol Hepatol*. 2010 Oct;22(10):1235-8.
87. Vahdani P, Alavian SM, Aminzadeh Z, **Raoufy MR***, Gharibzadeh S, Vahdani G, Fekri G, Eftekhari P. Using Artificial Neural Network to Predict Cirrhosis in Patients with Chronic Hepatitis B Infection with Seven Routine Laboratory Findings. *Hepatitis Monthly*. 2009;9(4):271-275

88. Dariani S, Keshavarz M, Parviz M, **Raoufy MR**, Gharibzadeh S. Modeling force–velocity relation in skeletal muscle isotonic contraction using an artificial neural network. *Biosystems*. 2007 Sep-Oct;90(2):529-34.

Teaching Experience

2020-pres	Signal processing and analysis methods in neuroscience (PhD students) Faculty of Interdisciplinary Science and Technology, Tarbiat Modares University, Tehran, Iran
2020-pres	Applied statistical inference (PhD students) Faculty of Interdisciplinary Science and Technology, Tarbiat Modares University, Tehran, Iran
2021-pres	Cognitive Neuroscience (PhD students) Department of Cognitive linguistics, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran
2013-pres	MATLAB for Neuroscientists (PhD, MSc, and medical students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	Advanced Topics in Respiratory Physiology (PhD students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	Advanced Topics in Cardiovascular Physiology (PhD students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	Statistical Analysis (MSc students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	Respiratory Physiology (MSc students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	Cardiovascular Physiology (MSc students) Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
2013-pres	General Physiology (MSc students) Department of Bioengineering, Faculty of Electrical & Computer Engineering, Tarbiat Modares University, Tehran, Iran
2012-2016	General Physiology (BS and MSc students) Department of Bioengineering, Faculty of Electrical & Computer Engineering, University of Tehran, Tehran, Iran
2010-2014	General Physiology (MSc students) Department of Bioengineering, Faculty of Electrical & Computer Engineering, Sharif University of Technology, Tehran, Iran

- 2008-2010 Machine Learning in Medicine (PhD, MSc, and medical students)
Department of Physiology, Faculty of Medical Sciences,
Tarbiat Modares University, Tehran, Iran
- 2004-2007 Machine Learning in Medicine (medical students)
Faculty of Medicine,
Shahid Beheshti University of Medical Sciences, Tehran, Iran

Research Mentoring

Supervisor of PhD Students (15 total, 9 women)

Payam Shahsavari, Sepideh Ghazvineh, Ashkan Sanaei, Ensieh Kheirkhah, Rahin Moradian, Maryam Shojaei, Armin Pourhosseini, Kargar Yasin, Negar Boroujerdian, Valaei Atefeh, Gholami-Mahtaj Leila, Morteza Salimi, Kolsoum Dehdar, Shirin Mahdidoust, Saeid Pazhouhan

Advisor of PhD Students (15 total, 8 women)

Navid Heidari, Rouholah Eftekhari, Mahshid Sharifi, Zarei Parisa, Sadegh Mohammadi, Mohammad-Zadeh Jahangir, Mona Rahdar, Vahid Khatibi, Fatemeh Houssin-Pour, Davoud Aflatouni, Shadi Choupankare, Mahmoud Rezaei, Farzaneh Zeinali, Golnar Eftekhari, Hajar Philsoufian

Supervisor of MSc Students (13 total, 10 women)

Reyahneh Vali, Farid Afsari, Mohadese Nemati, Bahareh Jafari, Fahimeh Aeineh, Sepideh Ghazvineh, Tannaz Parsazadegan, Parisa Enayati, Niloufar Taghizadeh, Ehsan Aref, Mehdi Eslami-Behrouzi, Fatemeh Ilka, Mahya Mohammadi

Advisor of MSc Students (11 total, 5 women)

Reyhaneh Riazi, Alireza Fathian, Sobhan Bamdad, Amir Khazaei, Meysam Zare, Reza Darouei, Pegah Javadpour, Maryam Elahi, Morvarid Memar, Fatemeh Sharifi, Arman Nataj

Medical Students (9 total, 4 women)

Morteza Moziri, Ali Sameie-Moghadam, Mahtab Baghbani, Farhad Tabasi, Arshia Vahedi, Tara Ghafari, Forough Sargolzaei, Nazanin Behnaz, Sahba Fekri

BS Students (3 Total)

Mohsen Foroughi, Peyman Nazari, Iman Azarkish