Neda Saraygord-Afshari

Ph.D.

Positions

Faculty
Assistant Professor/Research Fellow
2014-current

Iran University of Medical Sciences (IUMS) Faculty of allied medical sciences
Department of Medical Biotechnology
Tehran, Iran

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Education

Ph.D.	Biophysics, Tarbiat Modares University, Tehran, Iran	Sep 2012
M.Sc.	Biophysics, Tarbiat Modares University, Tehran, Iran	Sep 2009
B.Sc.	Biology, Razi University, Kermanshah, Iran	Jul 2003
The equivalent of an M.Sc. degree	Master of Business Administration (MBA), Sharif University Of Technology, Tehran, Iran,	Sep 2020
M.Sc.	Medical education, Iran University of Medical Sciences (IUMS)	2022-current

Executive Experiences

- Manager of the Educational Development Office (EDO), 2016-2022.
- Member of the Strategic Committee of Iran University of Medical Sciences (IUMS) Core Research Laboratory (ICL), 2020-current.
- Head of Iran University of Medical Sciences Core Research Laboratory (IUMS -ICL), 2019-2020
- Member of the IUMS Curriculum Planning Committee, 2019-2023

- Member of the Educational Evaluation Committee of the Ministry of Health's Transformation and Innovation Packages.
- Coordinator of the Biotechnologies' laboratory, IUMS, Biotechnology Department, 2014-current.
- Representative of postgraduate education of the IUMS faculty of the allied medical sciences, 2016-2023.
- Member of the student's research committee, IUMS, Faculty of the allied medical sciences, 2012-current.
- Collaboration with Iran Academy of Medical Sciences, 2012-2015.

Academic biography

- A cross-disciplinary researcher with expertise in proteomics techniques and data interpretation.
- Interested in clinical omics-based systems biology and medical bioinformatics.
- Director of several research projects mainly focused on breast neoplasms using different approaches including:
  - Developing innovative microfluidic Lab-On-Chip platforms to explore drug dosage effects on tumor cells.
  - Cellular senescence and aging.
  - Neoantigens discovery by serological proteome analysis (SERPA) techniques.
  - Epitope mapping and discovery of antibody-recognizing motifs of cancer protein antigens.
  - Investigating the miRNA tumor regulating functions using proteome profiling techniques.
  - Deciphering the biochemical pathways involved in tumorigenesis of cancer stem cells by designing innovative proteomic experiments.
  - Design and construction of nanoparticles for co-delivery of breast cancer-specific drugs.
  - Investigating the synergistic effect of drugs in breast cancer treatment.
- Director of some research projects focused on proteome profiling of stem cells to make applicable suggestions for tissue engineering platforms.
- Director of some research projects focused on the development of microfluidic devices for drug dosing and drug monitoring.
- Have some expertise in environmental dosimetry due to a period of collaboration with AEOI.

HSR and educational research projects

- To propose a comprehensive approach for postgraduate student's admission in Medical base sciences at Iran's medical universities; ongoing project.

Publications

Book compilation

1. **Technology to aid the early detection of cancer: A review on the CTC detection techniques, from conventional methods to the advent of the microfluidic Lab-On-Chip devices.** ISBN: 978-600-155-070-6; 2016, In Persian.
   Verification link on the National Library of Iran site:

http://opac.nlai.ir/opac-prod/search/briefListSearch.do?command=FULL_VIEW&id=4144377&pageStatus=0&sortKeyValue1=sortkey_title&sortKeyValue2=sortkey_author

2. **Chernobyl accident: A consequence of cold war.** ISBN: 978-600-91012-7-6; 2011, In Persian. Verification link on the National Library of Iran site: http://opac.nlai.ir/opac-prod/search/briefListSearch.do?command=FULL_VIEW&id=2088576&pageStatus=0&sortKeyValue1=sortkey_title&sortKeyValue2=sortkey_author

Book translation

1. **Gene cloning and DNA analysis: An Introduction. Translations into Persian against English.2017** Verification link on the National Library of Iran site: http://opac.nlai.ir/opac-prod/search/briefListSearch.do?command=FULL_VIEW&id=4849404&pageStatus=0&sortKeyValue1=sortkey_title&sortKeyValue2=sortkey_author

Journal articles

1. B. Rahimi, M. Panahi, H. Lotfi, M. Khalili, A. Salehi, N. Saraygord-Afshari, E. Alizadeh, **Sodium selenite preserves rBM-MSCs' stemness, differentiation potential, and immunophenotype and protects them against oxidative stress via activation of the Nrf2 signaling pathway**, BMC Complementary Medicine and Therapies 23(1) (2023) 1-21.
2. N. Saraygord-Afshari, S. Ghayem, R. Foudazi, M. Safa, **Drivers of consumers' behavioral intention toward private umbilical cord blood banking: a review**, Cell and Tissue Banking 24(3) (2023) 651-661.
3. Mohammad Reza Nasiraee, Shabnam Shahrivari, Soheila Sayad, Hoda Mahdavi, Neda Saraygord-Afshari, Zeinab Bagheri, **An agarose-alginate microfluidic device for the study of spheroid invasion, ATRA inhibits CAFs-mediated matrix remodeling**, Cytotechnology (2023) 1-15.
4. E. Choupani, M.M. Gomari, S. Zanganeh, S. Nasseri, K. Haji-allahverdipoor, N. Rostami, Y. Hernandez, S. Najafi, N. Saraygord-Afshari, **Newly Developed Targeted Therapies Against Androgen Receptor in Triple-Negative Breast Cancer: A Review**, Pharmacological Reviews 75 (2) (2023) 309-327.
5. E. Choupani, Z. Madjd, N. Saraygord-Afshari, J. Kiani, A. Hosseini, **Combination of androgen receptor inhibitor enzalutamide with the CDK4/6 inhibitor ribociclib in triple negative breast cancer cells**, Plos one 17(12) (2022) e0279522.
6. S. Shahrivari, N. Aminoroaya, R. Ghods, H. Latifi, S.A. Afjei, N. Saraygord-Afshari, Z. Bagheri, T**oxicity of trastuzumab for breast cancer spheroids: Application of a novel on-a-chip concentration gradient generator**, Biochemical Engineering Journal 187 (2022) 108590.
7. A. Sohrabi, N. Saraygord-Afshari, M. Roudbari, **The Application of Bi-clustering and Bayesian Network for Gene Sets Network Construction in Breast Cancer Microarray Data**, Middle East Journal of Cancer (2022).
8. G. Rahimi, B. Rahimi, M. Panahi, S. Abkhiz, N. Saraygord-Afshari, M. Milani, E. Alizadeh, **An overview of Betacoronaviruses-associated severe respiratory syndromes, focusing on sex-type-specific immune responses**, International immunopharmacology 92 (2021) 107365.

9. B. Rahimi, M. Panahi, N. Saraygord-Afshari, N. Taheri, M. Bilici, D. Jafari, E. Alizadeh, **The secretome of mesenchymal stem cells and oxidative stress: challenges and opportunities in cell-free regenerative medicine**, Molecular Biology Reports 48(7) (2021) 5607-5619.
10. M.S. Farahani, N. Saraygord-Afshari, M.M. Farajollahi, **Optimizing the Preparation Procedure of Recombinant PSCA, as a Practical Biomarker in Prostate Cancer**, Iranian Journal of Biotechnology 19(2) (2021) e2631.
11. M. Panahi, B. Rahimi, G. Rahimi, T. Yew Low, N. Saraygord-Afshari, E. Alizadeh, **Cytoprotective effects of antioxidant supplementation on mesenchymal stem cell therapy**, Journal of cellular physiology 235(10) (2020) 6462-6495.
12. P.Y. Lee, N. Saraygord-Afshari, T.Y. Low, **The evolution of two-dimensional gel electrophoresis-from proteomics to emerging alternative applications**, Journal of Chromatography A 1615 (2020) 460763.
13. M.M. Gomari, N. Saraygord-Afshari, M. Farsimadan, N. Rostami, S. Aghamiri, M.M. Farajollahi, **Opportunities and challenges of the tag-assisted protein purification techniques: Applications in the pharmaceutical industry**, Biotechnology Advances 45 (2020) 107653.
14. S. Shahrivari, Z. Bagheri, N. Saraygord-Afshari, H. Latifi, **Three-Dimensional Cell Cultures in Anticancer Drug Researches: From Traditional Methods to Emerging Microfluidic Technology**, Journal of Isfahan Medical School 37(535) (2019) 845-856.
15. N. Saraygord-Afshari, M. Naderi, H. Naderi-Manesh, **Probable Influence of Fasting on the Dry Eye Syndrome Occurrence by Integrating Data Published on Tear Proteome Change in Fasting People, Patients with Diabetes, Smokers, and Dry Eye Patients**, Qurʾān va ṭib (Quran and Medicine) 3(3) (2018) 175-182.
16. H. Abbasi, N. Saraygord-Afshari, N. Mohammadi, M.M. Farajollahi, R. Falak, I**mproving proteome coverage for HS578T breast cancer cell-line due to efficient interfering removal**, Journal of Isfahan Medical School 36(471) (2018) 216-220.
17. N.E. Roudi, N. Saraygord-Afshari, M. Hemmaty, **Protein nano-cages: Novel carriers for optimized targeted remedy**, F1000Research 6 (2017) 1541.
18. Mahboobeh Shahrabi-Farahani, Nasiseh Taromi, Neda Saraygord-Afshari*, Mohammad-morad Farajollahi; **Diagnosis of Prostate Cancer, from Conventional Methods Towards the New Promising CTCs**; Alborz University Medical Journal, 2016, 5(1): 53-58.
19. N. Saraygord-Afshari, H. Naderi-Manesh, M. Naderi, **Increasing proteome coverage for gel-based human tear proteome maps: towards a more comprehensive profiling**, Biomedical Chromatography 29(7) (2015) 1056-1067.
20. Z. Pashandi, N. Saraygord-Afshari, H. Naderi-Manesh, M. Naderi, **Comparative proteomic study reveals the molecular aspects of delayed ocular symptoms induced by sulfur mustard**, International journal of proteomics 2015 (2015).
21. N. Saraygord-Afshari, H. Naderi-Manesh, M. Naderi, **Enhanced reproducibility of the human gel-based tear proteome maps in the presence of di-(2-hydroxyethyl) disulfide**, Biotechnology and Applied Biochemistry 61(6) (2014) 660-667.
22. N. Saraygord-Afshari, H. Naderi-manesh, M. Naderi, **Evaluation of the chaotropes, ionic, nonionic and zwitterionic detergents as tear proteome solubilizers during the IEF process**, Modares Journal of Biotechnology 3(2) (2012) 67-78.

23. N. Saraygord-Afshari, F. Abbasisiar, P. Abdolmaleki, M. Ghiassi-Nejad, A. Attarilar, **Determination of 90Sr in milk and milk powder in Tehran and estimation of annual effective dose**, The Environmentalist 31(3) (2011) 308-314.
24. N. Saraygord-Afshari, . Naderi-manesh, M. Naderi, **Effect of reductant concentration on gel based proteomic analysis of the human tear proteome**, clinical biochemistry, pergamon-elsevier science ltd the boulevard, langford lane, kidlingto, 2011, pp. S317-S317.
25. Neda Saraygord-Afshari, Fereshteh Abbasisiar, Parviz Abdolmaleki* and Mahdi Ghiassi-Nejad; **Determination of ^{40}K concentration in milk samples consumed in Tehran-Iran and estimation of its annual effective dose;** Iranian journal of radiation research, 2009; 7 (3):159-164.

Conference Presentations (Invited Speaker)

1. **Recent scientific revolutions and the development of personal dentistry;** The 9th dental congress; Olympic hotel, Tehran, Iran; **2018.**
2. **Different OMICS technologies and their determinant role in the progressive development of systems biology and new medicine;** 3rd Congress on novel and innovative laboratory technology Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2015.**

Selected Conference Oral & Poster Presentations

1. **Application of mesenchymal stem cell-based gene therapy in personalized treatment of gastrointestinal cancers;** The 2nd international personalized medicine congress of Iran; Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2018**, (Oral).
2. **Microfluidic 3D cell-Culture platforms for drug response monitoring: potential applications for individualized cancer treatment;** International congress on biomedicine (ICB); Milad tower conference hall, Tehran, Iran; **2017**, (Oral).
3. **Oxidative stress and mitochondrial dysfunctions in personalized cancerous signaling pathway;** The 2nd international personalized medicine congress of Iran; Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2018**, (Poster).
4. **The emergence of micro-isolator devices for high throughput exosome analysis: A technological leap towards personalized cancer treatment;** The 2nd international personalized medicine congress of Iran; Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2018**, (Poster).
5. **Personal tumor neoantigens and cancer immunotherapy;** The 2nd international personalized medicine congress of Iran; Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2018**, (Poster).
6. **Personalized micro-RNA profiling and their individualized theranostic applications in cancer treatment;** The 2nd international personalized medicine congress of Iran; Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran; **2018**, (Poster).
7. **Enhancing extraction efficiency of heterologously expressed recombinant prostate stem cell antigen in *E.coli*;** The 2nd conference on protein and peptide sciences; Isfahan university, Isfahan, Iran; **2016**, (Poster).

8. **The art of Metastasis-On-Chip platforms to create metastasis models and developing cancer understandings;** 9th International congress on laboratory and clinics; Imam Khomeini International Conference Hall; Tehran, Iran, **2017**, (Poster).
9. **Application of microfluidics for high-throughput proteome analyses; 4th Congress on Novel & Innovative Laboratory Technologies,** Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran, **2016**, (Poster).
10. **MALDI Imaging Mass Spectrometry and advances in the diagnosis of cancer;** 4th Congress on Novel & Innovative Laboratory Technologies, Razi international conference hall, Iran University of Medical Sciences, Tehran, Iran, **2016**, (Poster).

Patents

1. **A valve less circular-star-shaped microfluidic concentration gradient generator device with the capability to be linked to the 2D and 3D cell culture chambers.** Application number: 140050140003004375; Patent number: 105840; Publication date: 2021/8/23.
2. **A compact Microfluidic gradient maker, with the capability to be linked to the cell culture chambers**. Inventors: Shabnam Shahrivari, Neda Saraygord-Afshari, Zeinab Bagheri, Hamid Latifi; Application number: 139850140003009807; Patent number: 104235; Publication date: 2020/1/22.

Teaching experiences

University programs

1. **Protein engineering**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
2. **Computational and systems biology**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
3. **Bioengineering and Biotechnology**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
4. **Practical genetic engineering**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
5. **Scaffolding in tissue engineering**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
6. **Electrochemistry**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
7. **Principles of research methodology**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
8. **Bioethics**, IUMS, Department of medical biotechnology, a course of Ph.D. program.
9. **Methods for research in neuroscience,** IUMS, Department of medical neuroscience, a course of Ph.D. program.
10. **Molecular and cellular biology**, IUMS, Department of Immunology, a course of Ph.D. program.
11. **Bioinformatics,** IUMS, Department of tissue engineering, a course of Ph.D. program.

12. **Bioinformatics,** IUMS, Department of molecular medicine, a course of Ph.D. program.
13. **Advanced Biochemistry,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
14. **Immunochemistry,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
15. **Nanobiotechnology,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
16. **Bioinformatics,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
17. **Advanced techniques in biotechnology,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
18. **Biological safety, ethics and rights,** IUMS, Department of medical biotechnology, a course of M.Sc. program.
19. **Molecular and cellular biology**, IUMS, Department of hematology, a course of M.Sc. program.
20. **Molecular and cellular biology**, IUMS, Department of immunology, a course of M.Sc. program.
21. **Molecular and cellular biology,** IUMS, Department of radiobiology, a course of M.Sc. program.
22. **Medical information systems,** IUMS, Department of operating room, a course of M.Sc. program.
23. **Cellular biology,** IUMS, Department of radiology, a course of B.Sc. program.
24. **Biophysics,** IUMS, Department of Medical laboratory scientist, a course of B.Sc. program.
25. **Biophysical chemistry,** Islamic azad university, Department of biology, a course of B.Sc. program.
26. **Biophysics,** Islamic azad university, Department of biology, a course of B.Sc. program.
27. **Radiation biology,** Islamic azad university, Department of biology, a course of B.Sc. program.

Workshops

1. **Artificial Intelligence (AI) in medical sciences,** IUMS, Education Development Center (EDC), A national workshop.
2. **Problem based learning (PBL),** IUMS, Faculty of allied medical sciences, a course for faculty members.
3. **How to write a research proposal?** IUMS, Faculty of allied medical sciences, a course for masters and Ph.D. students.
4. **Proteomics,** Tarbiat Modares University, Faculty of biological sciences, a course for masters and Ph.D. students.
5. **Proteomics,** Held in The 17th National & 5th International Iranian Biology Conference.

As an Editorial Board

- Pharmacogenomics and Omics Technologies Journal

Membershipsp

- Iranian Proteomics Society (IPS)
- Iranian Biology Society

Honors and Awards

- Ranked 1st in the 23th vernacular Festival of IQNA; division of essay writing; **2018**.
- Ranked 1st in Tarbiat Modares Universit, Tehran, Iran, Ph.D. graduate class of **2012**.
- Ranked 1st in Tarbiat Modares Universit, Tehran, Iran, Ph.D. entrance exam, **2006.**
- Outstanding graduate student of the Tarbiat Modares Universit, Tehran, Iran, M.Sc. class of **2006.**
- Ranked 1st in Razi University, Kermanshah, Iran, B.Sc. graduate class of **2003**.
- Attaining the 92nd Rank in the National Comprehensive Examination for the Arts Group **1999.**
