Arash Papi

Researcher

00989165484492

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Arash. Papi4492@gmail.com www.linkedin.com/in/arash-papi

Interest

Meet Arash, a graduate in medical imaging with a strong passion for researching the field of cancer cellular and molecular imaging. He firmly believes in the potential of designing targeted theranostic probes to enhance diagnostic capabilities and treatment outcomes. Arash is additionally intrigued by inventing practical methods for drug tracking, cancer metabolic imaging, and efficient progress monitoring of treatment through imaging techniques. His ultimate goal is to push the boundaries of cellular and molecular imaging and contribute to drug development, ensuring that cancer patients receive the most effective diagnosis and treatment available.

Experience	
Full member of The International Society for Magnetic Resonance in Medicine (ISMRM)	Mar 2023 - Present
Nanotechnology Research Center, Pharmaceutical Technology Institute, Mashhad University of Medical Sciences, Mashhad, Iran	Feb 2021 - present
Education	
Mashhad University of Medical Sciences	

Vlashhad University of Medical Sciences

• MS.c of Medical Imaging Technology

Modules included:

Physics (optical imaging and impedance, diagnostic radiology, MRI, CT-scan imaging, Ultrasound Imaging, nuclear medicine imaging). Techniques and Protocols(1&2) (Magnetic Resonance Imaging, CT-scan imaging, nuclear medicine imaging). Principles of dosimetry – Basics of signal and system – Medical image processing – Digital radiography imaging techniques – Combined imaging

Thesis Title:

Targeted magnetic resonance imaging by designing and synthesizing peptide-labeled superparamagnetic nanoparticles in **Her2**+ cancer cell

Islamic Azad University of Borujerd

• BSc in Medical radiation engineering

Modules included:

- 1. Basic lessons: general mathematics(1&2)-General Physics(1&2)- Differential Equations Computer Basics General Chemistry
- 2. Main Courses: Organic Chemistry Nuclear science and technology Thermodynamics and statistical mechanics Materials Science – Biology – Physiology – Anatomy – Mathematics Engineering – Electrodynamics – Modern physics and quantum – Fundamentals of Electrical Engineering – Nuclear physics – General biochemistry – Linear Algebra
- 3. Specialized courses: Radiobiology and Radiation Protection Medical Imaging Dosimetry and Dose Calculation Linear Measurement and Control Systems – Radiation Therapy and Treatment Design – Basics of Image Processing – Medical Radiation Devices – Nuclear Reactor Technology – Monte Carlo and nuclear codes – Radionuclides -Radioisotopes and radiopharmaceuticals - Electronics – Control of linear systems – Laser in medicine – Special topics in radiation engineering.

Sep 2016 - Feb 2019

Sep 2010 - April 2015

Publications

Authorship – Persian

- <u>Papi A</u>, Rostamzadeh A, Gadi B, Yusofund M, Papi Z "Principle of Radiology, Radiotherapy and Sonology for Midwifery" (2019) Heidary Book Publications, 978-600-489-222-3.
- Afshari D, Papi Z, Rostamzadeh A, <u>Papi A</u> "Neuropathological Assessment with MRI" (2019) Heidary Book Publications, 978-600-489-241-4.

Articles

- IInvestigation of Specific Targeting of Triptorelin-Conjugated Dextran-Coated Magnetite Nanoparticles as a Targeted Probe in GnRH+ Cancer Cells in MRI
- Synthesis and evaluation of SPION@CMD@Ser-LTVSPWY peptide as a targeted probe for detection of HER2+ cancer cells in MRI
- Effect of polycaprolactone/carbon nanotube scaffold implantation along with liposomal ellagic acid in hippocampal synaptogenesis after spinal cord injury
- Alleviation of acetaminophen-induced liver failure using silibinin nanoliposomes: An in vivo study

Skills

laboratorial

Synthesis of nanoparticles and characterization (Nano liposome – Magnetic nanoparticles) - vibrating-sample magnetometer (VSM) – Transmission electron microscopy (TEM) – Fourier-transform infrared spectroscopy (FTIR) –Xray diffraction (XRD) – Dynamic light scattering (DLS) -Cell culture and animal models

Clinical

Medical imaging (Magnetic resonance imaging (MRI) – CT Scan – Radiography)

• other

Research writing - Problem-Solving

Research projects

- 1. Targeted magnetic resonance imaging by designing and synthesizing peptide-labelled superparamagnetic nanoparticles in **Her2**+ cancer cell
- 2. Investigating the improvement of contrast through nanocomplex containing bismuth nanoparticles conjugated with peptide in human breast tumoral cells an in vitro study.
- 3. Study of DIR, MRS protocols in diagnosis of migraine headaches in magnetic resonance imaging.
- 4. In-vitro evaluation of peptide-labelled bismuth nanoparticles as sensitizing in targeted radiotherapy.
- 5. Investigating the presence of diagnostic nanocomplex containing gold nanoparticles conjugated with peptide in human breast tumoral cells through computed tomography.
- 6. Designing and synthesizing iron oxide superparamagnetic nanoparticles conjugated with triptorelin peptide for targeted imaging in MRI in cancer cells **GnRH+**.
- 7. Evaluation of the effect of gold liposomal nanoparticles on radiosensitivity of breast cancer cells in vitro radiation therapy
- 8. Evaluating the therapeutic efficacy of silymarin nanoliposomes and local radiation in melanoma tumour-bearing C57\BL6 mice
- 9. Synthesis and characterization of intracellular iron oxide magnetic nanoparticles as a labelling method to track cell fate with MRI and MPI imaging modalities
- 10. Synthesis, characterization, and study of iron-containing nanoliposomes as a positive contrast agent in magnetic resonance imaging of animal tumour models.
- 11. The effects of combination therapy of Camellia sinensis and Rosmarinus officinalis and Thymus on multi-drug resistance bacteria strains
- 12. Synthesis and evaluation of Fe3O4 @ GPTMS @ Triptorelin nanocomplex as a contrast agent in molecular diagnosis of prostate cancer by magnetic resonance imaging.

• In-silico computational

Molecular docking and Molecular Dynamics (Schrödinger – GROMACS – AutoDock Vina – Chimera - Molegro Virtual Docker – Discovery Studio – PyMOL- LigPlus...)

ChemOffice (*ChemDraw – Chem3D*)

Software

(Microsoft Office - IBM SPSS Statistics - Origin Pro - GraphPad-)

International Institute of New Sciences (I.I.N.S) 009888037442 info@iins.ir

Systems biology & bioinformatics & drug design

Certificate No: 212731 Issue Date: 18-Apr-2021

Include details: 48-hour practical training course

Selecting and validating the drug targets performing BLAST and multiple sequence alignment analysis * Predicting the physicochemical properties of a ligand molecule * Predicting the pharmacokinetic (ADME) parameters of a ligand molecule * Evaluating drug-likeness of a ligand molecule according to the lipinsk's rule of five * Developing a local library of ligands and preparing the ligands for virtual screening * Virtual screening of the ligands by molecular docking * Virtual screening of the ligands by pharmacophore modeling * Virtual screening of the ligands by QSAR analysis.

School of oncology & tumor therapy design

Certificate No: 212736 Issue Date: 18-Apr-2021

Include details: 28-hour practical training course

Introduction to cellular and molecular oncology* key molecular mechanism of carcinogenesis * Practical guide to cancer bioinformatics resources * Practical holistic and systems oncology * cancer genome analysis and prediction of carcinogenic variances * Cancer transcriptome and differential gene expression analysis * Reconstruction and analysis of cancer biomolecular networks, bioinformatics guided identification of cancer biomarkers* System biology guided identification of cancer drug targets * System for bioinformatics to cancer synergistic therapy design

Drug Delivery Systems Design

Certificate No: 213528 Issue Date: 22-Dec-2022

Include details: 36-hour practical training course

Performing molecular dynamics simulations by GROMACS package under Linux * Performing molecular dynamics simulations of drug and surfactant molecules * Performing molecular dynamics simulations of carrier and drug aggregation * Performing molecular dynamics simulations of drug encapsulation into a carrier * Predicting the size of a spherical aggregate by computing the radius of gyration (Rg) * predicting the morphology of an aggregate by computing the principal moments of inertial (PMI)* Predicting the solvent accessible surface area (SASA) of a carrier/drug aggregate * Predicting of drug carrier interaction using radial distribution function (RDF) * Analyzing the energetics of drug-carrier interaction * Predicting solvation of drug in the carrier *Predicting the drug loading capacity of a carrier * Predicting the carrier aggregation and drug encapsulation kinetics * Predicting the localization of the drug in the carrier using RDF * Visualizing the results of molecular dynamics simulation using VMD package.

TUMS Preclinical Core Facility00982188978745info@tpcf.ir

• participated in a two days theoretical and practical workshop on "Principles of the care and use of laboratory animals"

Certificate No: 241-4210091804 13-Dec-2023

Duration of training: 10 hour

- Participated in the TPCF international workshop titled as: Cell Labeling with FDG Radiopharmaceutical Certificate No: 236-4210091804 19-Dec-2023 Duration of training: 8 hour
- Participated in the TPCF Imaging School: Magnetic Resonance Imaging (MRI) and its applications Certificate No: 175-4210091804 Date: from 29/12/2021 to 09/03/2022 Duration of training: 12 hour
- Participated in the TPCF international workshop titled as: High-Field Animal MRI; Challenges and Promises
 Certificate No: 168-4210091804 2-Oct-2021
 Duration of training: 4 hour

• Persian (Native)

language

• English (Professional working proficiency)

Reference

- Dr. Mahmoud Reza Jaafari, PhD is a Professor in the Department of Pharmaceutical Nanotechnology and Head of
 Nanotechnology Research Center at Mashhad University of Medical Sciences.
 Jafarimr@mums.ac.ir
- Dr. Ameneh Sazgarnia, PhD is a Professor in the Department of Medical Physics and member of Medical Physics Research Center at Mashhad University of Medical Sciences.
 sazgarniaa@mums.ac.ir
- Dr. Hossein Eshghi, PhD is a Professor in the Department of chemistry at Ferdowsi University of Mashhad and member of Iranian Chemical Society.
- Dr. Hamidreza Saligheh Rad, PhD is an Assistant Professor in the Department of Biomedical Engineering & Medical Physics, School of Medicine h-salighehrad@tums.ac.ir
- Dr. Fatemeh Gheybi, PhD is an Assistant Professor in the Department of Nanomedicine and member of Nanotechnology Research Center at Mashhad University of Medical Sciences.
 gheybif@mums.ac.ir



CERTIFICATE OF MEMBERSHIP

THIS IS TO CERTIFY THAT

Arash Papi, M.Sc

is a current member of the International Society for Magnetic Resonance in Medicine. The Society is a non-profit professional association devoted to furthering the development and application of magnetic resonance techniques in medicine and biology. With an international membership over 8,000+ memberships, the Society holds annual scientific meetings and sponsors other major educational and scientific workshops.

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ANNE-MÀRIE KAHROVIC Executive Director



Iranian Institute of New Sciences (IINS)

CERTIFICATE

OF ACHIEVEMENT

Certificate No: 212731 Issue Date: 04-18-2021

This certificate is hereby bestowed upon

Arash Papi

for participating in a 48-hour practical training course entitled

Sytems Biology & Bioinformatics & Drug Design

held by the Iranian Institute of New Sciences (IINS) in Summer 2020 during which the participant managed to develop the following skills:

Selecting and validating the drug targets Performing BLAST and multiple sequence alignment analysis Predicting the secondary structure of a protein Predicting, validating and refining the tertiary structure of a protein Calculating the physicochemical properties of a ligand molecule Predicting the pharmacokinetic (ADME) parameters of a ligand molecule Evaluating the drug-likeness of a ligand molecule according to the Lipinski's rule of five Developing a local library of ligands and preparing the ligands for virtual screening Virtual screening of the ligands by molecular docking Virtual screening of the ligands by QSAR analysis

Dr. Meysam Mobasheri

The President of IINS



No. 283, Asadabadi Street, Tehran, Iran |+98 21 88037442 | info@iins.ir



Iranian Institute of New Sciences (IINS)

CERTIFICATE

OF ACHIEVEMENT

Certificate No: 212736 Issue Date: 04-18-2021

This certificate is hereby bestowed upon

Arash Papi

for participating in a 28-hour practical training course entitled

School of Oncology & Tumor Therapy Design

held by the Iranian Institute of New Sciences (IINS) in Summer 2020 during which the participant managed to develop theoretical knowledge and practical skills in the following main areas :

> Introduction to cellular & molecular oncology Key molecular mechanism of carcinogenesis Practical guide to cancer bioinformatics resources Principles of holistic and systems oncology Cancer genome analysis and prediction of carcinogenic variances Cancer transcriptome and differential gene expression analysis Reconstruction and analysis of cancer bimolecular networks Bioinformatics-guided identification of cancer biomarkers Systems biology guided identification of cancer drug targets

> From systems bioinformatics to cancer synergistic therapy design

Dr. Meysam Mobasheri The President of IINS



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International Institute of New Sciences (IINS)

CERTIFICATE

OF ACHIEVEMENT

Certificate No: 213703 Issue Date:12-22-2022

This certificate is hereby bestowed upon

Arash Papi

for participating in a 36-hour practical training course entitled

Drug Delivery Systems Design

held by International Institute of New Sciences (IINS) in Autumn 2021 during which the participant managed to develop the following skills:

Performing molecular dynamics simulation by GROMACS package under Linux OS Performing molecular dynamics simulation of drug and surfactant molecules Performing molecular dynamics simulation of carrier and drug aggregation Performing molecular dynamics simulation of drug encapsulation into a carrier Predicting the size of a spherical aggregate by computing the radius of gyration (Rg) Predicting the morphology of an aggregate by computing the principal moments of inertial (PMI) Predicting the solvent accessible surface area (SASA) of a carrier/drug aggregate Prediction of drug-carrier interaction using radial distribution function (RDF) Analyzing the energetics of drug-carrier interaction Predicting solvation of drug in the carrier Predicting the carrier aggregation and drug encapsulation kinetics Predicting the localization of the drug in the carrier using RDF Visualizing the results of molecular dynamics simulation using VMD package

Dr, Meysam Mobasheri The President of

No. 283, Asadabadi Street, Tehran, Iran | (98/21/88037442 | info@ims.if



Certification

This is to certify that

Arash Papi

participated in Theoretical and Practical Workshop on: "Cell Labeling with FDG Radiopharmaceutical"

at TUMS Preclinical Core Facility (TPCF)

Date: 19th December 2023 Duration of Training: 8 hrs

Dr. Chsan Sharif-Daghalet

Research and Technology Deputy



Mohammad Ste Director

Certification This is to certify that Arash Papi participated in the **TPCF Imaging School:** Magnetic Resonance Imaging (MRI) and its applications Date: from 29/12/2021 to 09/03/2022 Duration of Training: 12 hrs Dr. Chsan Sharif Paghateh Director **Research and Technology Deputy** 175-4210091804



This is to certify that

Arash Papi

Participated in the TPCF International Workshop titled as: High-Field Animal MRI; Challenges and Promises

> Date: 2nd of October 2021 Duration of Training: 4 hrs

Dr. Chsan Sharif-Daghaleh

Research and Technology Deputy



Director







This is to certify that

Arash Papi

Participated in the

6th International TPCF Preclinical Imaging Symposium

(TPIS2023)

8 & 9 November, 2023

Dr. Chsan Sharif Daghatch . 5

Research and Technology Deputy



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