

Curriculum Vitae



1 Personal

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2 Education

- 2015-2020 **Ph. D** in Medical Physics, Isfahan University of Medical Sciences, Isfahan, Iran.
Title of Thesis: Evaluation of the effect of ultrasound-responsive targeted nanodroplets consisting of methotrexate and iron oxide nanoparticles on breast cancer cells (4T1) radiation sensitivity *in vitro* and *in vivo*.
- 2009-2012 **M.Sc.** in Medical Physics, Mashhad University of Medical Sciences, Mashhad, Iran. **Title of Thesis:** An assessment of dose fractionation on the level of bystander effect induced by radiation.
- 2007-2009 **B.S.** Technology of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran.

3 Work Experience

- 1- September 2021-present, as a **Faculty member:** Radiology Technology Department, Faculty of Paramedical Sciences, Shahrekord University of Medical Sciences, Shahrekord.
- 2- September 2015-2021, as a **tuition trainer:** Radiology Technology Department, Faculty of Paramedical Sciences, Shahrekord University of Medical Sciences, Shahrekord.
- 3- 2013-2015, as an **assistant professor:** Radiology Technology Department, Faculty of Paramedical Sciences, Shahrekord University of Medical Sciences, Shahrekord.
- 4- December 2019- 2021, as a **physicist** at Radiotherapy Department of Parsian Hospital,

Shahrekord, Iran.

- 5- 2018-present, as an **approved trainer** of the Atomic Energy Organization of Iran for radiation protection training courses.
- 6- October 2012- July 2013, **as a radiology technician** in the radiology, MRI, and CT scan Departments of Hajar Hospital, Shahrekord, Iran.

3.1 Skills gained during that period:

- Methods for clinical MR and CT scan imaging
- Radiology imaging
- QC and calibration of treatment machines (Linac)
- Treatment planning and patient simulation
- Dosimetry using chambers (Farmer, Parallel plate) and Radiochromic films
- Linac daily check
- CT Simulation
- Relative dosimetry
- Absolute dosimetry
- Some nanoparticles synthesis
- Samples preparation for TEM, DLS, UV-Vis analysis
- MRI relaxivity measurements
- Cell culture
- In vivo model (mice)- Tumor induction
- Treatment of mice by chemoradiation therapy
- MR Imaging of mice
- Ultrasound Imaging of mice
- MN assay
- Colony assay
- Measurement of apoptosis/necrosis by flow cytometry
- Measurement of cellular uptake of nanoparticles by flow cytometry
- Fluorescence imaging

3.2 Current academic activities

1. Teaching radiology technology courses.
2. Research in radiotherapy and dosimetry.
3. Research in theranostic and radiosensitizers agents.
4. Research in sonodynamic therapy.
5. Research in radiobiology models for estimation of normal tissue risk factors.

4 Teaching Activities, Formation, and Scientific Activities

4.1 Teaching Experience

2013-Present: Shahrekord University of Medical Sciences, Shahrekord, Iran:

- Radiographic Positioning and Procedures 1, (for B.Sc. Radiology technology students)
- Radiographic Positioning and Procedures 2, (for B.Sc. Radiology technology students)

- Radiographic Positioning and Procedures 3, (for B.Sc. Radiology technology students)
- Advanced Imaging Techniques, (for B.Sc. Radiology technology students)
- Physical Principle of Magnetic Resonance Imaging (MRI), (for B.Sc. Radiology technology students)
- MR Imaging, Positioning and Procedures, (for B.Sc. Radiology technology students)
- CT scan Imaging, Positioning and Procedures, (for B.Sc. Radiology technology students)
- Radiobiology, (for B.Sc. Radiology technology students)
- Structure and properties of contrast media in medical imaging, (for B.Sc. Radiology technology students)
- Clinical Internship 1, 2, 3, 4 (Radiology, CT scan and, MRI department), (for B.Sc. Radiology technology students)
- Physical Principles of Medical Instruments (for B.Sc. of Anesthesia students)
- QC of diagnostic medical imaging systems (for B.Sc. Radiology technology students)
- Record and display images in medicine (for B.Sc. Radiology technology students)

2004-2005: Isfahan University of Medical Sciences, Isfahan, Iran

- Radiobiology, (for B.Sc. Radiology technology students)
- Laboratory of physics (for B.Sc. Radiology technology students and MD., and Dentistry)

2004-2005: Arman Parto-Ideal Company (Affiliated with the Atomic Energy Organization of Iran), Isfahan, Iran.

- Radiation Protection and Dosimetry (for radiation workers)
- Principles of shielding design for radiation departments (for radiation workers)

4.2 Workshop Attendance

- One Day workshop on “Principles of radiation dosimetry in radiotherapy”; Reza Radiotherapy & Oncology Center. Mashhad, Iran. November 24th, 2011.
- 3-hours workshop on “Intra Operative Radiotherapy (IORT)”; Mashhad University of Medical Sciences, Mashhad, Iran. September 4-6th, 2012.
- 3-hours workshop on “Treatment Planning in Breast Cancer”; Mashhad University of Medical Sciences, Mashhad, Iran. September 4-6th, 2012.
- 2 Days workshop on “Symposium on ionizing radiation and new techniques for detecting the genetic effects of radiation”. Mashhad University of Medical Sciences, Mashhad, Iran. February 24-25th, 2011.
- 8-hours workshop on “Polymerase Chain Reaction (PCR) & RT-PCR”; 4th International Congress of Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran. September 6-9th, 2011.

- 8-hours workshop on “Single Cell Gel Electrophoresis (SCGE comet) Assay”; 4th International Congress of Biochemistry, Mashhad University of Medical Sciences, Mashhad, Iran. September 6-9th, 2011.
- “Quality control of film-screen mammography”, 10th Iranian Conference on Medical Physics. Imam Khomeini Hospital, Tehran, Iran. November 6-7th, 2014.
- One Day workshop on “The latest regulations of the educational rules of medical and paramedical Faculties”. EDC, Shahrekord University of Medical Sciences, Shahrekord, Iran. September 18, 2013.
- 7 Days workshop on “Quality control of diagnostic radiological instruments”. Atomic Energy Organization of Iran Office of Radiation Protection. APIDS Company, Isfahan, Iran. February, 2018.
- 5 Days workshop on “Advanced Radiation Protection”. Atomic Energy Organization of Iran Office of Radiation Protection. APIDS Company, Isfahan, Iran. July 2-8th, 2018.
- 1 Days workshop on “Laboratory of occupational safety training”, Isfahan University of Medical Sciences, Isfahan, Iran, 2017.
- 6-hours workshop on “fMRI image analysis”. 12th Iranian Congress of Medical Physics, Shahid Beheshti University of Medical Sciences, July 19, 2018.
- 2 Days workshop on “teaching methods”, Mashhad University of Medical Sciences, Mashhad, Iran. March 8-9th, 2015.
- 5-hours workshop on “Learning”, Shahrekord University of Medical Sciences, Shahrekord, Iran, January 6, 2014.

4.3 Conference Attendance

- 9th Iranian Congress of Medical Physics, 19-20 May, 2010. Iran University of Medical Sciences, Tehran, Iran.
- 1st MEFOMP International Conference of Medical Physics, Shiraz, Iran, 2nd-4th of November 2011.
- International Saffron Conference: Herbal medicine of the third millennium, Mashhad University of Medical Sciences, Mashhad, Iran. 13-14 May 2009.
- Knowledge-Based Businesses Seminar. Pharmaceutical Sciences Research Center, Mashhad University of Medical Sciences, 9 February, 2010.
- Scientific-research seminar "Ionizing radiations, sources, detectors and biological effects", Medical Physics Research Center of Mashhad University of Medical Sciences, 8 June 2011.
- “Synchrotron radiation and its applications in medicine”, Medical Physics Research Center of Mashhad University of Medical Sciences, 8 June 2011.
- The third research festival of graduate students of Mashhad University of Medical Sciences, Bouali Research Institute of Mashhad University of Medical Sciences. January 2012.

- The fourth research festival of graduate students of Mashhad University of Medical Sciences, Bouali Research Institute of Mashhad University of Medical Sciences. January 2013.
- 11th Iranian Conference on Medical Physics, Imam Khomeini Hospital Complex, Tehran, Iran. 6-7 November 2014.
- 12th Iranian Conference on Medical Physics, Shahid Beheshti University of Medical Sciences, Tehran, Iran. 19 July 2018.

4.4 Book (in Persian)

- 1- Radiation Protection in Radiotherapy, Dr. Tavakoli MB., Lashkari S, Maghsoodinia F, **Kamran R**, 2016.
- 2- Radiation detection and dosimetry. Dr. Shahbazi D, Kaviani P, Alirezaei Z, Lashkari S, Maghsoodinia F, **Kamran R**, 2017.
- 3- Ultrasound Physics and Instrumentation, Dr. Tavakoli MB, **Kamran R**, Maghsoodinia F, Lashkari S, Jafari S, Alirezaei Z, Fakhimi H, 2019.
- 4- Physical Principles of Medical Instruments, Dr. Tavakoli MB, Maghsoodinia F, **Kamran R**, Kaviani P, Lashkari S, Alirezaei Z. Sepahan Education Institute, 2020.

4.5 Award

- Named as Top student among Radiologic Technology B. Sc, students Paramedical Faculty, Mashhad University of Medical Sciences, 2009.
- Named as Top student among Medical Physics M.Sc, students Medical Faculty, Mashhad University of Medical Sciences, 2012.
- Named as Top student among Ph.D. students in Ph.D. comprehensive exam, 2016.
- Talented student in Mashhad University of Medical Sciences, 2010-2012.

5 Publications

5.1 Published and Accepted Papers

- 1- "Investigation of the bystander effect in MRC5 cells after acute and fractionated irradiation in -vitro". *Journal of Medical Physics*. Volume 39, Issue 2, 2014, Pages 93-97. S. Soleymanifard, M.T.B. Toossi, **R.K. Samani**, S. Mohebbi.
- 2- "MRC5 and QU-DB bystander cells can produce bystander factor and induce radiation bystander effect". *Journal of Medical Physics*. Volume 153, Issue 39, 2014, Pages 192-196. M.T.B. Toossi, S. Mohebbi, **R.K. Samani**, S. Soleymanifard.
- 3- "Comparison of Radiation-Induced Bystander Effect in QU-DB Cells after Acute and Fractionated Irradiation: An In Vitro Study". *Cell journal (Yakhteh)*. Volume 18, Issue 3, 2016, Pages 346-352. S. Soleymanifard, M.T.B. Toossi, **R.K. Samani**, S. Mohebbi.

- 4- "Generating Synthetic Computed Tomography and Synthetic Magnetic Resonance (sMR: sT1w/sT2w) Images of the Brain Using Atlas-Based Method". *Iranian Journal of Medical Physics*. Volume 16, Issue 3, pages 189-194. F Birgani, M.J Birgani, **R.K. Samani**, F Maghsoudinia.
- 5- "Trastuzumab and folic acid functionalized gold nanoclusters as a dual-targeted radiosensitizer for megavoltage radiation therapy of human breast cancer". *European Journal of Pharmaceutical Sciences*. Volume 153, 2020, Pages 105487. **R. Samani**, M. Tavakoli, F. Maghsoudinia, H. Motaghi, S.H. Hejazi, M. Mehrgardi.
- 6- "Induction of a bystander effect after therapeutic ultrasound exposure in human melanoma: In vitro assay". *International Journal of Radiation Research*. Volume 19, Issue 1, 2021. Rezaei M, **Kamran R**, Kazemi M, Shanei A, Hejazi H.
- 7- "Bevacizumab and folic acid dual-targeted gadolinium-carbon dots for fluorescence/magnetic resonance imaging of hepatocellular carcinoma". *Journal of Drug Delivery Science and Technology*. (2020) 102288. F. Maghsoudinia, M.B. Tavakoli, **R.K. Samani**, H. Motaghi, S.H. Hejazi, M.A. Mehrgardi. [https://doi.org/https://doi.org/10.1016/j.jddst.2020.102288](https://doi.org/10.1016/j.jddst.2020.102288).
- 8- "Folic acid-functionalized gadolinium-loaded phase transition nanodroplets for dual-modal ultrasound/magnetic resonance imaging of hepatocellular carcinoma". *Talanta*. F. Maghsoudinia, M. B. Tavakoli, **R. Kamran Samani**, S. H. Hejazi, F. Mehradnia, M. A. Mehrgardi, 2021. Under review.
- 9- "The Effect of Ultrasound Exposure in Combination with Gold Nanoparticles on Colonization of A375 and MCF-7 Bystander Cells", *journal of Isfahan medical school*, 2021 (2021-12-1), Rezaei, M., **Kamran-Samani, R.**, Hejazi, S.H., Shanei, A.
- 10- "Ultrasound responsive Gd-DOTA/doxorubicin-loaded nanodroplet as a theranostic agent for magnetic resonance image-guided controlled release drug delivery of melanoma cancer". *European Journal of Pharmaceutical Sciences*. (2022-7-1), Maghsoudinia, F., Akbari-Zadeh, H., Aminolroayaei, F., Shanei, A., **Samani, R.K***.
- 11- "Superparamagnetic iron oxide nanoparticle-loaded nanodroplets for dual-modal ultrasound/magnetic resonance imaging-guided drug delivery", *New J. Chem.*, 2023, 47, 20193. **Roghayeh Kamran Samani**, Fatemeh Maghsoudinia, Mahdi Asgari, Maryam Atarod, Masoud A. Mehrgardi *d and Mohamad Bagher Tavakoli.
- 12- "Ultrasound-guided chemoradiotherapy of breast cancer using smart methotrexate-loaded perfluorohexane nanodroplets". *Nanomedicine: Nanotechnology, Biology, and Medicine*. 2023 (2-1). **Roghayeh Kamran Samani**, Fatemeh Maghsoudinia,

- Fatemeh Mehradnia, Seyed Hossein Hejazi, Mohsen Saeb, Tayebe Sobhani, Zohreh Farahbakhsh, Masoud A. Mehrgardi, Mohamad Bagher Tavakoli,
- 13- “The Effect of Folic Acid-Targeted Nanocarriers in Ultrasound Imaging-guided Sonodynamic Therapy of Human Cervical Carcinoma (HeLa): in vitro Study”, *Koomesh*, 25(2), pp. 135-144, **Samani, R.K.**, Akbari-Zadeh, H., Aminolroayaei, F., Birgani, F.F., Maghsoudinia, F.
 - 14- Sonodynamic therapy of the breast cancer cells (4T1) using gold nanoclusters-loaded ultrasound-activated nanodroplets, *Journal of Drug Delivery Science and Technology*, 90 (2023) 105125. **Roghayeh Kamran Samani**, Fatemeh Maghsoudinia, Seyed Hossein Masoumi.
 - 15- “Bystander Effect of Sonodynamic Therapy in the presence of Gold Nanoparticles: An in -vitro study”, *International Journal of Radiation Research*, 2023, A. Shanei, **R. Kamran Samani**, H. Akbari -Zadeh, M. Rezaei, M. Kazemi.
 - 16- “Investigation of the expression of P53 gene in bystander cells after therapeutic ultrasound exposure”. *Journal of Kashan University of Medical Sciences*, Volume 23, Issue 4, 2019, Pages 344-351. Rezaei M, **Kamran-Samani R**, Shanei A, Kazemi M, Hejazi SH.

5.2 Conferences Proceedings

1. “The role of dose fractionation in the level of Radiation- Induced Bystander Effect in QU-DB Cells”. Iranian Journal of Medical Physics. Volume 15, Special Issue-12th, 2018, Pages 349. **R.K. Samani**, S. Soleymanifard, M.T.B. Toossi, S. Mohebbi.
2. “Evaluation of the Bystander effect caused ultrasound waves on the MCF-7 cell line”. Iranian Journal of Medical Physics. Volume 15, Special Issue-12th, 2018, Pages 467. M Rezaei, A Shanei, **R Kamran-Samani**, SH Hejazi, M Kazemi.
3. “Generating the synthetic CT (sCT) and Synthetic MR (sMR: sT1w/sT2w) images of the brain using atlas-based method”. Iranian Journal of Medical Physics. Volume 15, Special Issue-12th, 2018, Pages 31. F Birgani, M.J Birgani, **R.K. Samani**, F Maghsoudinia.
4. Assessment of reference levels for cardiac interventional fluoroscopically guided procedures in Isfahan province in IRAN. Fifth international conference on radiation and application in various fields of research-RAD 2017-**Montenegro**. Z Alirezaei, **R Kamran-Samani**, P Kaviani, S Lashkari, F maghsoudinia, P Shokrani.

5. Bystander Cells Could Produce Bystander Factors and Induce Radiation Bystander Effect. International conference on radiation protection in medicine-**Varna, Bulgaria**, 2014. M.T.B. Toossi, S. Mohebbi, **R.K. Samani**, S. Soleymanifard.
6. “An assessment of dose fractionation effect on the level of radiation induced bystander effect in normal cell line” International conference on radiation protection in medicine-**Varna, Bulgaria**, 2014. M.T.B. Toossi, **R.K. Samani**, S. Mohebbi, S. Soleymanifard.
7. “Investigation of the bystander effect in MRC5 cells after acute and fractionated irradiation in - vitro”. Journal of Medical Physics. Volume 39, Issue 2, 2014, Pages 93-97. S. Soleymanifard, M.T.B. Toossi, **R.K. Samani**, S. Mohebbi.
8. “Investigation of dose fractionation effect on the level of radiation induced bystander effect in normal cell line (MRC5)”. 12th Iranian Conference on Medical Physics. 2018. Tehran, Iran. M.T.B. Toossi, **R.K. Samani**, S. Mohebbi, S. Soleymanifard.
9. “Introduction of a new method for dose calculation using the Tissue maximum ratio and Percentage depth dose without the present of scatter factors”. 12th Iranian Conference on Medical Physics. 2018. Tehran, Iran. F Maghsoudinia, M. J Birgani, **R Kaman**, F Birgani.
10. “Effective of saffron in treating menstruation and depressions disruption”. International symposium on Saffron: a Herbal Medicine of 3th Millennium, May, 2009, Mashhad, Iran. S.K. Samani, **R.K. Samani**.
11. “Treating for grave child birth by saffron usage”. International symposium on Saffron: a Herbal Medicine of 3th Millennium, May, 2009, Mashhad, Iran. S.K. Samani, **R.K. Samani**.
12. “Saffron influences on in vitro and in vivo studies”. International symposium on Saffron: a Herbal Medicine of 3th Millennium, May, 2009, Mashhad, Iran. **R.K. Samani**, S.K. Samani.
13. “Complication and poisonous of saffron”. International symposium on Saffron: a Herbal Medicine of 3th Millennium, May, 2009, Mashhad, Iran. S.K. Samani, **R.K. Samani**.

5.3 Student Conferences Proceedings

1. “Investigation of the effect of dose fractionation on the radiation bystander phenomenon”. The third research festival of graduate students of Mashhad University of Medical Sciences, **poster**, 2011.
2. “Evaluating the effect of time on the incidence of radiation bystander effect”. The third research festival of graduate students of Mashhad University of Medical Sciences, **poster**, 2011.

3. “Evaluation of the effect of sequential radiations on normal lung cell line as bystander cells: *in vitro* study”. The fourth research festival of graduate students of Mashhad University of Medical Sciences, **Lecture**, 2012.
4. “Estimation of second-order bystander effect in both normal and tumor lung cell lines”. The fourth research festival of graduate students of Mashhad University of Medical Sciences, **poster**, 2012.

5.4 Research projects

1. Evaluation of the effect of perfluorohexane ultrasound-responsive nanodroplets consist of gold nanoclusters on sonodynamic therapy of the breast cancer cells (4T1): *in vitro* study. Shahrekord University of Medical Sciences, Shahrekord, Iran. **IR.SKUMS.REC.1400.252**.
2. Synthesis, characterization and evaluation of the effect of docetaxel-loaded sono-sensitive perfluorocarbon nanodroplets coated with albumin and targeted with trastuzumab antibody on treatment of SK-BR3 breast cancer cell line, Shahrekord University of Medical Sciences, Shahrekord, Iran. **IR.SKUMS.REC.1401.196**.
3. Evaluation of folic acid targeted gadolinium@ perfluorohexane nanodroplets on the megavoltage X-ray treatment efficiency of Hepatocellular Carcinoma (Hepa 1-6): *In vitro* assay, **IR.AJUMS.REC.1402.185**.
4. Evaluation of doxorubicin-loaded manganese oxide nanoparticle functionalized by glutamine amino acid for MRI-guided chemotherapy of breast cancer (4T1) *in vitro*. z Jundishapur University of Medical Sciences, Ahvaz. **IR.AJUMS.REC.1402.015**.
5. Evaluation of dual targeted gold nanoclusters with trastuzumab antibody and folic acid on the megavoltage radiation therapy efficiency on the breast cancer cells (SK-BR3), Isfahan University of Medical Sciences, Isfahan, Iran. **Grant NO.** 198159.2019.
6. Synthesis and evaluation of ultrasound responsive nanodroplets consist of dotarem (Gd-DOTA) and doxorubicin for ultrasonic controlled release drug delivery in diagnosis and treatment of hepatocellular carcinoma (Hepa1-6). Isfahan University of Medical Sciences, Isfahan, Iran. **Grant NO.**198331. 2020.
7. Determine the bystander effect caused by sonodynamic treatment on the A375 cell line. Isfahan University of Medical Sciences, Isfahan, Iran. **Grant NO.** 397150.2018.
8. Evaluation the effect of bystander cells by ultrasound waves in the presence of gold nanoparticles on *in vivo*. Isfahan University of Medical Sciences, Isfahan, Iran. **Grant NO.** 198022. 2020.
9. Evaluation of targeted Gd-CDs nanoparticles with bevacizumab antibody and folic acid for Fluorescence/magnetic resonance imaging of hepatocellular carcinoma (Hepa1-6) *in vitro*. Isfahan University of Medical Sciences, Isfahan, Iran. **Grant NO.** 198171. 2020.

10. Assessment of garlic extract and dimethylsulfoxide effects on the level of radiation-induced bystander effect. Mashhad University of Medical Sciences, Mashhad, Iran. **Grant NO.** 910061. 2014.
11. An estimation of second order bystander effects of normal and tumoral human lung cell line. Mashhad University of Medical Sciences, Mashhad, Iran. **Grant NO.** 900376. 2014.

Executive and other activities

1. Active member of the executive group of the Talent Office of Mashhad University of Medical Sciences, 2008.
2. Membership of the organizing team of the "Student empowerment" conference of Mashhad University of Medical Sciences, 2008.
3. Active member of the sisters' dormitory cultural council, 2008.
4. Member of the swimming team, Mashhad University of Medical Sciences, 2011.
5. Champion of team sports competitions, Mashhad University of Medical Sciences, 2009.