MOHAMMAD **MASOUDI**

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DATE AND PLACE OF BIRTH

17 June 1983, Tehran, Iran

EDUCATION AND COURSEWORK

2020	**Ph.D.**: Molecular Cell Biology **The University of Tokyo** — Tokyo, Japan
2013	**Research Student**: Pathology, Immunology and Microbiology **The University of Tokyo**— Tokyo, Japan
2012	**Coursework**: Biochemistry **University of Tehran** — Tehran, Iran
2008	**M.Sc.**: Molecular Cell Biology **Shiraz University** — Shiraz, Iran
2005	**B.Sc.**: Molecular Cell Biology **Shiraz University** — Shiraz, Iran
2001	**High School Diploma**: Sciences **Almahdi High School** — Tehran, Iran

WORK HISTORY

2021 to current	**Assistant Professor** — Institute for Advanced Studies in Basic Sciences, Zanjan, Iran
2020 to 2021	**Postdoctoral Researcher** — Royan Institute, Tehran, Iran
2009 to 2010	**Institute of Medicinal Plants** — Karaj, Iran
2008 to 2009	**Pars Gene Co.Ltd** — Tehran, Iran

MEMBERSHIPS

2013 to 2020	**Japanese Cancer Association (JCA)**
2012 to 2020	**Academic Society of Iranians in Japan (ASIJ)**

HONORS AND AWARDS

2023	**Dr. Kazemi Ashtiani award**, Iran's National Elites Foundation
2022	**Young Assistant Professor award**, Vice-Presidency for Science and Technology
2020	**Dr. Shahriari award**, Iran's National Elites Foundation
2020 to 2021	**Iran's National Elites Foundation postdoctoral research fellowship**, Royan Institute
2013 to 2017	**Japanese government MEXT scholarship**, The University of Tokyo
2013	**Dr. Nooruddin Hadavi award,** young researcher, Iran Academy of Medical Sciences
2012 to 2013	**Japanese government MEXT scholarship**, The University of Tokyo
2008	**Valedictorian**, Shiraz University
2005 to 2008	**Member of Gifted Students Office**, Shiraz University
2005	**Admission without entry exam to graduate school,** Shiraz University

COURSES TAUGHT

Advanced Cell Biology
Cancer Biology
Cell Culture
Biochemistry of Protein and Nucleic Acids
Biochemistry of Carbohydrates and Lipids
General Biology for Physics
Biology of Cytoskeleton (for B.Sc.)
Basics of Cell Culture (for B.Sc.)

RESEARCH PROJECTS

Genome-scale CRISPR-Cas9 screening for gemcitabine modulators in pancreatic cancer (doctoral thesis)

Pancreatic cancer is known as the most lethal common cancer and chemotherapy is its standard treatment. Gemcitabine is widely used as the first line standard drug for treatment of pancreatic cancer while its effect is still modest. Using a genome-scale CRISPR-Cas9 knockout library that targets 19,050 human genes by means of 123,411 sgRNAs we searched for the genes that were involved in gemcitabine modulation in pancreatic cancer cell line Panc1. Using massively parallel next-generation sequencing analysis lists of the genes that act

as gemcitabine sensitizers or are involved in its mechanism of action were acquired. We showed that *SH3D21* is a novel gemcitabine sensitizer and endocytosis is involved in gemcitabine uptake. In addition, a query of the genes that were essential for the survival of Panc1 cells was obtained where MYC pathway appeared as an essential pathway for Panc1 cells survival.

Development of double target CRISPR-Cas9 system

The CRISPR systems that had been developed all were able to target only one gene at once. However, in some studies like genetic interaction studies we need to have two genes disrupted in a cell at the same time. I developed a CRISPR sgRNA-delivering vector that can be used in human cells to manipulate two genes simultaneously.

Deciphering mechanism underlying nucleus-cytoplasm shuttling of SHP2 oncoprotein

SHP2 is a tyrosine phosphatase deregulation of which is involved in human disorders including cancers. It had been shown that SHP2 was localized in both nucleus and cytoplasm when the cells were in low-density condition while it was localized mainly in the cytoplasm when cells were in high-density condition. The mechanism underlying this nuclear-cytoplasmic pattern of SHP2 localization was unknown. We showed that SHP2 makes direct interaction with YAP/TAZ Hippo pathway effector proteins and is shuttled between cytoplasm and nucleus by these two proteins.

Genetic polymorphisms of *GSTO2*, *GSTT1* and *GSTM1* and risk of gastric, breast and colorectal cancers (master thesis)

Glutathione s-transferases (GSTs) are a superfamily of proteins that are involved in phase II detoxification and any disruption in their function may be involved in human disorders including cancers. We investigated the association of genetic polymorphisms of *GSTO2*, *GSTT1* and *GSTM1* with the risk of gastric, breast and colorectal cancers. We found that *GSTO2* 142 DD genotype was associated with decreased risk of gastric cancer in individuals without history of cancer in their first-degree relatives; and *GSTO2* 142 NN genotype was associated with elevated risk of colorectal cancer in patients with history of cancer in their first-degree relatives.

Genetic diversity of rainbow trout in Iran

Rainbow trout with different origins had been imported and dispersed to different farms all around Iran for decades and origin of the fish of some farms were unknown. In a project funded by Iranian Fishery Organization we collected samples from active farms in Iran, besides known controls, and produced their phylogenetic tree using RAPD-PCR method to estimate the origin of the fish in each active farm.

Genotoxicity of Gastrolan, an herbal medicine

Herbal medicine is a part of Iran's traditional medicine and often is considered as a safer option compared to synthetic drugs. We showed that Gastrolan, an herbal medicine used as a carminative drug, increased chromatid break in cultured human lymphocytes and rat bone marrow.

The effect of altitude and latitude on sex ratio at birth in Iran

It had been reported that the sex ratio at birth, ratio of males to total live birth, decreased with increase in latitude in Europe while the observation by the same author was reversed in North America. Since the order of the mountains in Europe and North America were reversed it seemed to us that those observations were because of the effect of altitude not latitude. We tested this hypothesis in Iran, which has a mixed pattern of mountains, and observed that sex ratio at birth escalated by increase in altitude and did not show association with latitude.

Depression and disappointment among Shiraz University students (done as an undergraduate student)

We measured depression and disappointment among 300 Shiraz University undergraduate students and assessed their relation with different factors including parents' education and occupation. We found that students whose mothers were housewife and had university education, college and higher, had the best mental condition regarding depression and disappointment.

SKILLS

Wet lab skills: Molecular biology, cell biology, CRISPR-Cas technology, next-generation sequencing, western blotting, immunohistochemistry, fluorescence microscopy, mouse embryonic stem cell derivation from blastocyst, molecular cloning, co-immunoprecipitation, flowcytometry, luciferase assay, protein purification, real-time PCR, karyotyping

Dry lab skills: Python programming, Linux command line, R, SPSS, Excel

INTERNATIONAL CONFERENCE PRESENTATION

1. **Masoudi, M.**, Aburatani, H. (Nov 2020). **How false positives can be misleading in functional studies using CRISPR-Cas9. *16th National Congress of Biochemistry and 7th International Congress of Biochemistry and Molecular Biology.*** Tehran, Iran.(oral presentation)

2. **Masoudi, M.**, Tsutsumi, R., Hayashi, T., Takahashi, A., Hatakeyama, M. (Dec, 2013). **Regulation of SHP2-YAP interaction by differential splicing of *YAP* mRNA. *The 4th JCA-AACR special joint conference, the latest advances in gastric cancer research: from basic science to therapeutics*.** Tokyo, Japan. (poster presentation)

PUBLICATIONS

1. **Masoudi, M.**, Torabi, P., Judson-Torres, R.L., Khodarahmi, R., Moradi, S. (2024). **Natural resistance to cancer: A window of hope. *Int. J. Cancer.*** 154,1131-1142.

2. Sadeghi, H., **Masoudi, M.**, Torabi, P., Rezaeiani, S., Movahedi, F., Pahlavan, S., Moradi, S. (2023). **Conditioned media from human pluripotent stem cell–derived cardiomyocytes inhibit the growth and migration of lung cancer cells. *J. Cell. Biochem.*** 124, 446-458.

3. **Masoudi, M.** (2021). **Lessons from a genome-wide CRISPR-Cas9 screening: what researchers should know before start. *EXCLI Journal.*** 20, 1615-1620.

4. **Masoudi, M.**, Seki, M., Yazdanparast, R., Yachie, N., Aburatabi, H. (2019). **A genome-scale CRISPR/Cas9 knockout screening reveals *SH3D21* as a sensitizer for gemcitabine. *Sci Rep*.** 9, 19188.

5. Tsutsumi, R., **Masoudi, M.**, Takahashi, A., Fujii, Y., Hayashi, T., Kikuchi, I., Satou, Y., Taira, M., Hatakeyama, M. (2013). **YAP and TAZ, Hippo signaling targets, act as a rheostat for nuclear SHP2 function. *Dev Cell*.** 26, 658-665.

6. **Masoudi, M.**, Saadat, I., Omidvari, S., Saadat, M. (2011). **Association between N142D genetic polymorphism of *GSTO2* and susceptibility to colorectal cancer. *Mol. Biol. Rep*.** 7, 4309-4313.

7. **Masoudi, M.**, Saadat, I., Omidvari, S., Saadat, M. (2010). **Additive effects of genetic variations of xenobiotic detoxification enzymes and DNA repair gene *XRCC1* on the susceptibility to breast cancer. *Breast Cancer Res. Treat.*** 120, 263-265.

8. **Masoudi, M.**, Saadat, I., Omidvari, S., Saadat, M. (2009). **Genetic polymorphisms of *GSTO2*, *GSTM1*, and *GSTT1* and risk of gastric cancer. *Mol. Biol. Rep*.** 36, 781-784.

9. **Masoudi, M.**, Saadat, M. (2008). **Arsenic, GSTO2 ASN142ASP polymorphism, health and treatment. *EXCLI Journal*.** 7, 115-118.

10. Saadat, M., **Masoudi, M.**, Zendehboody, Z. (2007). **Genotoxicity of Gasterolan (an herbal product) on chromosomes of cultured human lymphocytes and rat bone marrow. *J. Pharmacol. Toxicol.*** 2, 304-306.

11. **Masoudi, M.**, Saadat, M. (2007). **Altitude, latitude and sex ratio at birth in Iran. *J. Epidemiol. Community Health*.** 61, 172-175.