

## Arash Javeri MD, PhD

Assistant Professor and Senior Research Scientist

Department of Medical Biotechnology

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### EDUCATION

- **Ph.D.**, Faculty of Medicine, The University of Sydney, Sydney, Australia 2004-2009
  - Field of study: Skin cancer
  - Thesis title: Role of human 8-oxoguanine-DNA glycosylase 1 and Cockayne syndrome B enzymes in UVA-induced genetic damage in human skin
  - Supervisor: Prof. Gary M. Halliday
  - Thesis submission date: August 29, 2008, degree awarded: June 4, 2009.
- **Master of Medicine** in Reproductive Health Sciences and Human Genetics, The University of Sydney, Sydney, Australia 2000-2002
- **M.D.**, Shahid-Beheshti University of Medical Sciences, Tehran, Iran 1989-1996

### RESEARCH INTERESTS

- Reprogramming of cancer cells by miRNAs
- The role of miRNAs in carcinogenesis
- Reprogramming of somatic and mesenchymal stem cells by miRNAs (mirPS)
- Neurogenic and cardiogenic differentiation of adult stem cells
- Reconstruction of human skin models

### CURRENT POSITION

**Assistant Professor and Senior Research Scientist**

2009-present

National Institute of Genetic Engineering and Biotechnology, Tehran, Iran

### CURRENT RESEARCH ACTIVITIES

- The synergistic effect of miR-16 and miR-34a on tumor suppression in human breast cancer.
- The multimodal effect of mature miR-195 on human colon cancer.
- Reprogramming of human breast, skin and colon cancer cells by miR-302/367 cluster.
- Reconstruction of an engineered human skin model for research and clinical applications.
- Reprogramming and induction of apoptosis in breast and colon cancer cells by miR-302/367 cluster and miR-16.
- Studying the effect of acetylsalicylic acid (ASA) and valproic acid on reprogramming of breast cancer cells by miR-302/367 cluster.
- Dopaminergic differentiation of human ADSCs on decellularized rat brain tissue after reprogramming by miR-302/367 cluster.
- Generation of human induced pluripotent stem cells from adipose tissue-derived stem cells (ADSCs) by miR-302/367 cluster.

## **PREVIOUS POSITIONS AND RESEARCH ACTIVITIES**

### **PhD Student and Casual Academic Tutor**

**2004-2008**

Discipline of Dermatology, Bosch Institute, Sydney Cancer Center, The University of Sydney, NSW, Australia

- Study of the role of hOGG1 and CSB genes and proteins in DNA damage and repair following UV irradiation using a reconstructed model of human skin
- Study of MHC Class II immune cells in human epidermis in regards to application of vitamin D and solar-simulated UV (collaboration)
- Worked as a PBL (Problem Based Learning) tutor with medical students in different fields of medicine including: gastrointestinal disorders, cardiology, neurology, respiratory disorders, nephrology and reproductive science

### **Research Scientist**

**2002 - 2004**

The Research Center for Gastroenterology and Liver Diseases (RCGLD), Taleghani Hospital, Tehran, Iran

- Investigation of the relation between Epstein-Barr and HPV 16 and 18 infection, and esophageal squamous cell carcinoma
- NOD2/CARD15 mutational analysis in patients with Crohn Disease

### **Research Scientist**

**2003 - 2004**

The National Research Institute of Tuberculosis and Lung Disease (NRITLD), Tehran, Iran.

- Study of the genetic polymorphisms of GST M1, T1, and P1 genes in melanoma, BCC of skin and non-small cell carcinoma of lung

## **TEACHING EXPERIENCE**

**2011-present**

### **Courses**

Principles and practice of animal cell culture and tissue engineering at the National Institute of Genetic Engineering and Biotechnology, Tehran, Iran.

## **SUPERVISORY EXPERIENCE (MSc and PhD students)**

- The main supervisor of one PhD student.
  - o Project title: The effect of miR-302/367 cluster overexpression on pluripotency factors in human adipose tissue-derived stem cells and differentiation of these cells to dopaminergic neurons.
- The main supervisor thirteen masters' students. Thesis titles:
  - o Neural differentiation of adipose tissue –derived stem cells after co-culture with embryonic stem cells.
  - o The impact of miR-302 overexpression on invasion and angiogenesis markers in colon and skin cancer cell lines.
  - o The impact of miR-302 overexpression on pluripotency and apoptotic markers in colon and skin cancer cell line.

- The role of valproic acid in dopaminergic neuronal differentiation of human adipose tissue-derived stem cells.
  - The role of ascorbic acid in reprogramming of breast cancer cells by miR-302 cluster.
  - Investigation of the effect of miR-302/367 cluster and miR-16 on proliferation and apoptosis in breast cancer cell lines.
  - Investigation of DNA base excision repair in cancer cell lines treated with MTH1 inhibitors.
  - The effect of ascorbic acid on the expression of apoptosis and angiogenesis markers in breast cancer cells reprogrammed by miR-302/367 cluster.
  - The effect of miR-302/367 cluster overexpression on TGF- $\beta$  signaling pathway in human breast cancer cells.
  - The role of valproic acid in miRNA-induced reprogramming of human breast cancer cell lines.
  - The effect of acetylsalicylic acid on reprogramming of breast cancer cells by miR-302/367 cluster.
  - The effect of miR-16 and miR-34a on proliferation and invasion of human breast cancer cell lines.
  - The effect of miR-1 and miR-34a on apoptosis and invasion of human breast cancer cell lines.
- The study advisor of one PhD and nine masters' students.

## **WORKSHOPS**

- Lecturer at the first International Workshop on Stem Cell Biotechnology. National Institute of Genetic Engineering and Biotechnology, Feb. 2014, Tehran, Iran.
  - Gene expression analysis by real-time PCR
  - Applications of flow cytometry in cell biology
  - Tissue engineering and nanobiotechnology
- Lecturer at the first workshop on stem cells and tissue engineering, Bojnurd University of Medical Sciences, 2012, Bojnurd, Iran.
  - Tissue engineering, clinical applications of stem cells, induced pluripotent stem cells and cloning therapy
- Lecturer at the first workshop on animal cell culture, Sharif University of Technology, 2011, Tehran, Iran.
  - Principles of animal cell culture and preservation

## **TECHNICAL PROFICIENCY**

- |                                            |                                       |
|--------------------------------------------|---------------------------------------|
| ▪ Cell and tissue culture                  | ▪ Laser capture microdissection (LCM) |
| ▪ Embryonic and adult stem cell culture    | ▪ Comet assay                         |
| ▪ Reconstruction of a human skin model     | ▪ IHC and ICC                         |
| ▪ miRNA-induced somatic cell reprogramming | ▪ Flow cytometry                      |
| ▪ Quantitative real-time PCR               | ▪ Western blotting                    |
| ▪ High resolution melt (HRM) analysis      | ▪ Vector cloning and transfection     |
|                                            | ▪ Hypoxia assay                       |

- siRNA and miRNA-induced gene knockdown
- miRNA quantitation by real-time PCR
- Methylation-specific PCR
- PCR, RT-PCR

## HONORS AND AWARDS

The Endeavour International Postgraduate Research Scholarship (EIPRS), and the International Postgraduate Award (IPA), The University of Sydney, Sydney, Australia, March 2005-July 2008.

## GENE DISCOVERIES

Mus musculus natriuretic peptide precursor A variants NPPA-M1, M2 and M3 (Nppa) mRNA, complete cds, alternatively spliced; Accession numbers KC526925-7.

## LANGUAGE PROFICIENCY

English (Academic IELTS score: 7.5), Persian

## BIOINFORMATICS SKILLS

- Gene and protein analysis by Invitrogen's Vector NTI
- DNA sequence analysis by Sequence Scanner (Applied Biosystems) and Mutation Surveyor (Softgenetics)
- Image analysis by NCBI's ImageJ
- Statistical analysis by GraphPad Prism and SPSS
- Flow cytometric analysis by FlowJo
- REST 2009 (Corbett Research, Qiagen) for analysis of qPCR data

## JOURNAL PUBLICATIONS

\* *Corresponding author*

Maadi H, Moshtaghian A, Taha MF, Mowla SJ, Kazeroonian A, Haass NK, **Javeri A\***. (2016) Multimodal tumor suppression by miR-302 cluster in melanoma and colon cancer. *Int J Biochem Cell Biol.* 2016 Nov 10. pii: S1357-2725(16)30335-1. doi: 10.1016/j.biocel.2016.11.004.

Khaledi N, Fayazmilani R, Gaeini AA, **Javeri A.** (2016) Progressive Resistance Training Modulates the Expression of ACTN2 and ACTN3 Genes and Proteins in the Skeletal Muscles. *American Journal of Sports Science and Medicine*, 2016, Vol. 4, No. 2, 26-32.

Taha MF, **Javeri A**, Majidizadeh T, Valojerdi MR. (2016) Both BMP4 and serum have significant roles in differentiation of embryonic stem cells to primitive and definitive endoderm. *Cytotechnology*, 2016, 68(4):1315-24.

Taha MF\*, **Javeri A\***. (2015) The expression of NPPA splice variants during mouse cardiac development. *DNA and Cell Biology*, 2015 Jan;34(1):19-28. doi: 10.1089/dna.2014.2600.

Bahmani L, Taha MF, **Javeri A\***. (2014) Coculture with embryonic stem cells improves neural differentiation of adipose tissue-derived stem cells. *Neuroscience*, 2014 July 11, 272: 229-239.

Khaleghi M, Taha MF\*, Jafarzadeh N, **Javeri A\***. (2014) Atrial and ventricular specification of adipose tissue derived stem cells (ADSC) is stimulated by different doses of BMP4. *Biotechnology Letters*, 2014 Dec;36(12):2581-9. DOI: 10.1007/s10529-014-1637-8.

Jafarzadeh N, **Javeri A**, Khaleghi M, Taha MF\*. (2014) Oxytocin improves proliferation and neural differentiation of adipose tissue-derived stem cells. *Neuroscience Letters*. 2014 Apr 3;564:105-10. doi:10.1016/j.neulet.2014.02.012.

Taha MF\*, **Javeri A**, Kheirkhah O, Majidizadeh T, Khalatbary AR. (2014) Neural differentiation of mouse embryonic and mesenchymal stem cells in a simple medium containing synthetic serum replacement. *Journal of Biotechnology*, 172: 1– 10.

Taha MF\*, **Javeri A**, Rohban S, Mowla SJ. (2014) Upregulation of pluripotency markers in adipose tissue-derived stem cells by miR-302 and leukemia inhibitory factor. *BioMed Research International*, 2014;2014:941486. doi: 10.1155/2014/941486.

**Javeri A\***, Ghaffarpour M, Taha MF, Houshmand M. (2013) Downregulation of miR-34a in breast tumors is not associated with either p53 mutations or promoter hypermethylation while it correlates with metastasis. *Medical Oncology*, 2013 Mar;30(1):413.

Taha MF\*, Valojerdi MR, Hatami L, **Javeri A**. (2012) Electron microscopic study of mouse embryonic stem cell-derived cardiomyocytes. *Cytotechnology*, 2012 Mar;64(2):197-202.

**Javeri A**, Lyons JG, Huang XX, Halliday G\*. (2011) Downregulation of Cockayne syndrome B protein reduces human 8-oxoguanine DNA glycosylase-1 expression and repair of ultraviolet radiation induced 8-oxo-7,8-dihydro-2'-deoxyguanine. *Cancer Science*, 102(9):1651-8.

Damian D\*, Kim YJ, Dixon K, Halliday G, **Javeri A**, Mason R. (2010) Topical calcitriol protects from UV-induced genetic damage but suppresses immunity in humans. *Experimental Dermatology*, 2010 Aug;19(8):e23-30.

**Javeri A**, Huang XX, Bernerd F, Mason R, Halliday GM\*. (2008) Human 8-oxoguanine-DNA glycosylase 1 protein and gene are expressed more abundantly in the superficial than basal layer of human epidermis. *DNA Repair*, 7:1542-1550.

Derakhshan F\*, Naderi N, Farnood A, Firouzi F, Habibi M, Rezvani MR, **Javeri A**, Bahari A, Balaii H, Rad MG, Aghazadeh R, Zali MR. (2008) Frequency of three common mutations of CARD15/NOD2 gene in Iranian IBD patients. *Indian Journal of Gastroenterology*, 27(1):8-11.

**Javeri A**, Huang XXJ, Halliday GM\*. Melanoma and UV Signature Mutations. (2005) *The Melanoma Letter*, (23) 4:1-2.

Farnood A\*, Naderi N, Firouzi F, Rezvani MR, **Javeri A**, Bahari A, Aghazadeh R, Habibi M, Zali MR. (2005) The frequency of three common mutations of CARD15/NOD2 gene in Iranian IBD patients. *Medical Science Journal of Islamic Azad University*, 2005, 15(3): 107-112.

Bakayev VV\*, Mohammadi F, Bahadori M, Sheikholslami M, **Javeri A**, Masjedi MR, Velayati AA. (2004) Arylamine N-acetyltransferase 2 slow acetylator polymorphisms in unrelated Iranian individuals. *European Journal of Clinical Pharmacology*, 60: 467-471.

## **BOOKS**

*Principles of Animal Cell Culture and Tissue Engineering*, by Masoumeh Fakhri Taha PhD and Arash Javeri MD, PhD. Publisher: National Institute of Genetic Engineering and Biotechnology (NIGEB), Tehran, Iran. First Edition, November 2016, ISBN: 978-964-8516-098.

## **PROCEEDINGS OF THE CONFERENCES**

Atashkar N, **Javeri A**, Taha MF. Valproic acid reverses the epithelial to mesenchymal transition and induces apoptosis in miR-302/367-transfected human breast cancer cells. *13<sup>th</sup> Congress on Stem Cell Biology and Technology, Royan Institute, September 2017, Tehran, Iran.*

Forouzan Jahromi Z, Taha MF, **Javeri A**. miR-195 induces apoptosis and modulates expression of some invasion and angiogenesis genes in human colon cancer. *Cancer Cell Biology, the 2nd IASBS Symposium in Biological Sciences*. November 10-11, 2016, Zanjan, Iran. Oral presentation and winner of the best poster.

Ahmadalizadeh Khansar M, **Javeri A**, Taha MF. Embryonic Stem Cell-Specific miR-302/367 Cluster Modulates Transforming Growth Factor- $\beta$  Signaling Pathway in Human Breast Cancer Cells. *12<sup>th</sup> Congress on Stem Cell Biology and Technology, Royan Institute, September 2016, Tehran, Iran.*

Hoseinbeyki M, **Javeri A**, Taha MF. MiR-16 augments the effect of miR-302/367 cluster on reprogramming and inhibition of cell cycle in breast cancer cells. *2<sup>nd</sup> International and 14<sup>th</sup> Iranian Genetics Congress, May 21-23, 2016, Tehran, Iran.* Oral presentation and winner of the best poster.

Faghieh H, **Javeri A**, Taha MF. The Impact of Early Subcultures on Gene Expression Profile and Resistance to Some Toxic Conditions in Human Adipose Tissue-Derived Stem Cells. *12<sup>th</sup> Congress on Stem Cell Biology and Technology, Royan Institute, September 2016, Tehran, Iran.*

Ramezankhani B, **Javeri A**, Taha MF. The Role of Ascorbic Acid in Reprogramming of Breast Cancer Cells by miR-302/367 Cluster. *Royan International Twin Congress, September 2-4, 2015, Tehran, Iran.*

**Javeri A**, Taha MF, Bahmani L. Coculture with Embryonic Stem Cells Improves Neural Differentiation of Adipose Tissue-Derived Stem Cells. *Royan International Twin Congress, September 3-5, 2014, Tehran, Iran.*

Khaledi N, Fayazmilani R, **Javeri A**. The role of ACTN2 gene expression after damaging exercise in slow-twitch muscles. *19th Annual Congress of the ECSS 2014, Netherland, Amesterdam; July 2014.*

Taha MF, **Javeri A**. The Expression of NPPA Splice Variants During Cardiac Differentiation of Mouse Mesenchymal and Embryonic Stem Cells. *Royan International Twin Congress, September 3-5, 2014, Tehran, Iran.*

Maadi H, Moshtaghian A, Taha MF, **Javeri A**. ES cell-specific miR-302 Reprograms Skin and Colon Cancer Cells, and Modulates Apoptosis, Metastasis and Angiogenesis Markers. *Royan International Twin Congress, September 3-5, 2014, Tehran, Iran.*

**Javeri A**. The Role of Non-coding RNAs in Cellular Reprogramming and Stem Cell Maintenance. Invited speaker to the first *Comprehensive National Congress of Novel Findings in Biology, May 2014, Tehran, Iran.*

**Javeri A**. Reconstruction of Artificial Human Skin for Research and Therapeutic Purposes. *The First National Congress on Application of Biomaterials in Regenerative Medicine. National Institute of Genetic Engineering and Biotechnology, Feb. 2014, Tehran, Iran.*

Bahmani L, **Javeri A**, Taha MF. Neural Differentiation of Adipose Tissue-Stem Cells Is Improved Following Coculture with Embryonic Stem Cells. *Cell J (Yakhteh) 2013; Volume 15, Supplement 1. Royan International Twin Congress, The 9th Royan Congress on Stem Cell Biology and Technology. Tehran, Iran.*

Khaleghi M, Taha MF, **Javeri A**, Jafarzadeh N. The Effects of Bone Morphogenetic Protein-4 on Cardiomyocyte Differentiation of Mouse. *Cell Journal (Yakhteh) 2013; Volume 15, Supplement 1. The 9th Royan Congress on Stem Cell Biology and Technology. Tehran, Iran.*

Bahmani L, **Javeri A**, Taha MF. ADSCs/ESCs Co-culture: a novel approach to increase the proliferation of ADSCs. *The 3rd International Student Biotechnology Congress, 6-8 May 2013; Tehran, Iran.*

Zahra Zamanzadeh, Taha MF, **Javeri A**. Pluripotency features in adipose tissue-derived stem cells. *The 3rd International Student Biotechnology Congress, 6-8 May 2013; Tehran, Iran.*

Soheilifar MH, Taha MF, **Javeri A**. Transdifferentiation of Human Adipose Tissue-Derived Stem Cells to Dopaminergic Neurons. *Royan International Twin Congress, The 9th Congress on Stem Cell Biology and Technology, September 2013, Tehran, Iran.*

Jafarzadeh N, Taha MF, **Javeri A**. Oxytocin improves neuronal differentiation of adipose tissue-derived stem cells. *Royan International Twin Congress, The 9th Congress on Stem Cell Biology and Technology, September 2013, Tehran, Iran.*

Bahmani L, **Javeri A**, Taha MF. Retinoic acid promotes neural differentiation of mouse adipose tissue-derived stem cells. *The 17th International Congress of Biology. September 2012; Kerman, Iran.*

Jafarzadeh N, Taha MF, **Javeri A**, Khaleghi M. The effects of oxytocin on neural differentiation from mouse adipose tissue-derived stem cells. *The 17th International Congress of Biology. September 2012; Kerman, Iran.*

Khaleghi M, Taha MF, **Javeri A**, Jafarzadeh N. The effects of bone morphogenetic protein-4 (BMP-4) on cardiomyocyte differentiation of mouse adipose tissue-derived stem cells. *The 17th International Congress of Biology. September 2012; Kerman, Iran.*

Kheirkhah O, Taha MF, **Javeri A**, Khalatbari Jafari A. Neural differentiation of adipose tissue-derived stem cells in low-serum media. *First Annual Conference on Neural Stem Cells, October 26-30, 2011, Tehran, Iran.*

**Javeri A**, Lyons JG, Halliday GM, Huang XX. Human 8-oxoguanine DNA glycosylase-1 and Cockayne syndrome B proteins and their interaction are necessary for DNA repair after UV irradiation in human skin. *Presentation at the 5<sup>th</sup> Australian Health and Medical Research Congress (AHMRC), 14th-18th November 2010, Melbourne, Australia.*

**Javeri A**, Huang XX, Bernerd F, Mason RS, Halliday GM. hOGG1 protein and gene are expressed more abundantly in the superficial than basal layer of human skin epidermis. *Oral presentation at the 5<sup>th</sup> annual conference of the Australian Society for Dermatology Research (ASDR), May 21-22, 2008, Sydney, Australia.*

**Javeri A**, Huang XX, Bernerd F, Mason RS, Halliday GM. hOGG1 protein and gene are expressed more abundantly in the superficial than basal layer of human skin epidermis. *Oral presentation at the 12<sup>th</sup> Congress of the European Society for Photobiology, Bath, UK, Sep. 1-6, 2007.*

Halliday GM, Huang XX, Bernerd F, **Javeri A**. Suberythemal ultraviolet A and B both induce p53 mutations. *Presentation at the 15<sup>th</sup> International Congress on Photobiology, Dusseldorf, Germany, 18-23 June, 2009.*

Halliday GM, **Javeri A**, Agar N, Jones A, Russo P, Barnetson R.St.C. Poor expression of OGG1 at the base of human skin may cause higher levels of UVA-induced DNA damage at this layer. *Proceedings of the 3rd international conference on oxidative stress in skin medicine and biology, Andros, Greece, 21-24 September 2006. Page 19.*

**Javeri A**, Huang XX, Lyons G, Mason RS, Halliday GM. hOGG1 protein and gene are expressed more abundantly in the superficial than basal layer of human skin epidermis. *The 5<sup>th</sup> College of Health Sciences Research Conference, From Cell to Society, Leura, Blue Mountains, Sydney, Australia, Nov 9-10, 2006.*



**Javeri A**, Huang XXJ, Mason R, Halliday GM. Stratification of hOGG1 protein and hOGG1 gene expression in the epidermal layer of human skin. *Presented in Mutagenesis and Experimental pathology Society of Australasia (MEPSA), October 2005, Adelaide, Australia.*

Ghaziani T, Sendi H, **Javeri A**, et al. Absence of EBV, HPV 16 and 18 DNA in patients with esophageal squamous cell carcinoma. *The Annual Congress of Gastroenterology and Liver Diseases, 2003, Tehran, IRAN.*

پریا موتمن صالحی، طاهره فروتن، آرش جاوری، معصومه فخرطه\*. بررسی تاثیر عصاره سیتوپلاسمی سلول های بنیادی جنینی بر بیان مارکرهای پرتوانی در سلول های بنیادی بافت چربی انسانی (مقاله کامل). دومین همایش ملی کاربردی در علوم شیمی، زیست شناسی، زمین شناسی. ۲۹ بهمن ۱۳۹۳. [www.CBGconf.ir](http://www.CBGconf.ir).