

## Farshad Farshidfar, M.D., Ph.D.

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### Current Status

**2018-present:** Post-doctoral Fellow, Stem Cell Biology and Regenerative Medicine, Stanford University

### Research Skills

Biomedical skills: Biomarker development process, Univariate data analyses, Multivariate data analyses, High-throughput genomic and next-gen sequencing data analysis (variant calling and variant analysis, CNA, methylation studies, expression analysis (RNA-Seq, micro-array, miRNA)), Epigenomic data analysis, R programming, Shiny standalone application development, pathway analyses, Clinical data management systems (e.g. REDCap), clinical trials (process, regulations, data management)

Software: Umetrics SIMCA, IBM SPSS, R programming, High-performance (parallel) computing, TIBCO Spotfire, KNIME Analytics Platform, RapidMiner, NIST Mass Spectral Database, Ingenuity pathway analysis (IPA), Cytoscape, TCGA data mining, Linux, MS Office (suite) and MS project

### Education

- **PhD in Medical Science-Cancer Biology**

**2010-2016:** Cumming School of Medicine, University of Calgary, Alberta, Canada

- **Option in Entrepreneurship and Innovation**

**September 2014-April 2015:** Haskayne School of Business and Hunter Centre for Entrepreneurship and Innovation, University of Calgary

- **Thesis:** Metabolomic Profile as a Biomarker for Colorectal Cancer

- **Doctor of Medicine (MD) – General Medicine**

**2000-2008:** School of Medicine, Tehran University of Medical Sciences (TUMS), Tehran, Iran

### Research Experience

**2016 - 2018:** Post-doctoral Fellow, Dept. of Oncology, University of Calgary, Canada

**2010 - 2016:** Research assistant, Department of Oncology, University of Calgary, Canada

### Awards / Honors

**2018:** Howard Research Excellence Award, Charbonneau Cancer Research Institute

**2018:** Second poster prize, Charbonneau's Annual Research Symposium

**2017:** Arnie Charbonneau Cancer Research Postdoctoral Fellowship (for 2 years)

**2017:** Research Enhancement Program Award, Office of the Associate Dean Research (OADR), University of Calgary

**2013:** CIHR Institute of Cancer Research Travel Award

**2012 and 2013:** Alex R. Cummings Trainee Travel Award (2 times)

**2012:** Alberta Cancer Foundation graduate scholarship (for 2 years)

**2011:** Best oral presentation award, SACRI trainee research day, University of Calgary, Canada

**1999:** Silver Medal, National Biology Olympiad, Young Scholars Club, Ministry of Education, Tehran, Iran

**2000:** National Exam for Universities Entrance, Admission in the Tehran University of Medical Sciences, ranked 112 among about 500,000 competitors.

### Patents

Farshidfar F., Weljie AM., Kopciuk K., Vogel HJ., Bathe OF., **Metabolite Markers for Diagnosing Metastatic Cancer, May 2012, published**

Farshidfar F., Weljie AM., Kopciuk K., Vogel HJ., Bathe OF., **A Validated Metabolomic Signature for Colorectal Cancer, Dec 2015, pending**

(Multiple other patent applications in genomic technologies and diagnostics are in progress.)

## Professional Membership

**The Stanford ADC Consulting Club:** 2019-present  
**American Association for Cancer Research (AACR):** March 2012-present  
**American Society of Clinical Oncology (ASCO):** January 2011-present  
**Sigma-Xi, The Scientific Research Society,** May 2016-present  
**Islamic Republic of Iran Medical Council,** Family physician member 2008-present  
**American Heart Association / American Stroke Association,** 2008-2012

## Publications

- Ueasilamongkol P, Khamphaya T, Guerra MT, Rodrigues M, Gomes DA, Kong Y, et al. **Type 3 inositol 1,4,5-trisphosphate receptor is increased and enhances malignant properties in cholangiocarcinoma.** *Hepatology.* 2019
- Amin S, Rattner J, Keramati MR, Farshidfar F, McNamara MG, Knox JJ, et al. **A strategy for early detection of response to chemotherapy drugs based on treatment-related changes in the metabolome.** *PLoS One.* 2019;14(4):e0213942
- Rattner J, Farshidfar F, Bathe OF, **Gas Chromatography-Mass Spectrometry and Analysis of the Serum Metabolomic Profile Through Extraction and Derivatization of Polar Metabolites,** *Methods Mol Biol.* 2019;1928:235-249.
- van Dijk DPJ, Krill M, Farshidfar F, et al, **Host phenotype is associated with reduced survival independent of tumour biology in patients with colorectal liver metastases.** *J Cachexia Sarcopenia Muscle.* 2018 Oct 31.
- Marchand, C., F. Farshidfar, J. Rattner, et al. (2018). **A Framework for Development of Useful Metabolomic Biomarkers and Their Effective Knowledge Translation.** *Metabolites* 8(4): 59.
- Peng X\*, Chen Z\*, Farshidfar F\*, Xu X, Lorenzi PL, Wang Y, et al. **Molecular Characterization and Clinical Relevance of Metabolic Expression Subtypes in Human Cancers.** *Cell Reports.*23(1):255-69.e4. (\* Authors contributed equally).
- Liu Y, Sethi NS, Hinoue T, Schneider BG, Cherniack AD, Sanchez-Vega F, et al, **Comparative Molecular Analysis of Gastrointestinal Adenocarcinomas,** *Cancer Cell.*33(4):721-35.e8.
- Thorsson V, Gibbs DL, Brown SD et al, **The Immune Landscape of Cancer,** *Immunity,* 2018.
- Farshidfar F, Kopciuk K, Hilsden R, McGregor S, Mazurak V, Buie WD, MacLean A, Vogel HJ, Bathe OF, **A Quantitative Multimodal Metabolomic Assay for Colorectal Cancer,** *BMC Cancer.* 2018 Jan 4;18(1):26.
- Farshidfar F, Zheng S, Gingras MC, Newton Y, Shih J, Robertson AG, Hinoue T, Hoadley KA, Gibb EA, Roszik J, Covington KR, Wu CC, Shinbrot E, Stransky N, Hegde A, Yang JD, Reznik E, Sadeghi S, Pedamallu CS, Ojesina AI, Hess JM, Auman JT, Rhie SK, Bowlby R, Borad MJ; Cancer Genome Atlas Network., Zhu AX, Stuart JM, Sander C, Akbani R, Cherniack AD, Deshpande V, Mounajjed T, Foo WC, Torbenson MS, Kleiner DE, Laird PW, Wheeler DA, McRee AJ, Bathe OF, Andersen JB, Bardeesy N, Roberts LR, Kwong LN., **Integrative Genomic Analysis of Cholangiocarcinoma Identifies Distinct IDH-Mutant Molecular Profiles.** *Cell Reports.* 2017 Mar 14;18(11):2780-2794.
- Falegan OS, Ball MW, Shaykhtudinov RA, Pieroraio PM, Farshidfar F, Vogel HJ, Allaf ME, Hyndman ME., **Urine and Serum Metabolomics Analyses May Distinguish between Stages of Renal Cell Carcinoma.,** *Metabolites.* 2017 Feb 3;7(1).
- McConnell YJ\*, Farshidfar F\*, Weljie AM, Kopciuk KA, Dixon E, Ball CG, Sutherland FR, Vogel HJ, Bathe OF., **Distinguishing Benign from Malignant Pancreatic and Periampullary Lesions Using**

**Combined Use of <sup>1</sup>H-NMR Spectroscopy and Gas Chromatography-Mass****Spectrometry**, *Metabolites*. 2017 Jan 13;7(1). (\* Authors contributed equally)

Dowlatabadi R, Farshidfar F, Zare Z, Pirali M, Rabiei M, Khoshayand MR, Vogel HJ, **Detection of adulteration in Iranian saffron samples by 1H NMR spectroscopy and multivariate data analysis techniques**, *Metabolomics* (2017) 13: 19.

Sheff JG, Farshidfar F, Bathe OF, Kopciuk K, Gentile F, Tuszynski J, Barakat K, Schriemer DC., **Novel allosteric pathway of Eg5 regulation identified through multivariate statistical analysis of HX-MS ligand screening data**, *Mol Cell Proteomics*. 2017 Mar;16(3):428-437.

Farshidfar F, Weljie AM, Kopciuk KA, Hilsden R, McGregor SE, Buie WD, et al. **A validated metabolomic signature for colorectal cancer: exploration of the clinical value of metabolomics**. *Br J Cancer*. 2016 Sep 27;115(7):848-57.

Hao D, Sarfaraz MO, Farshidfar F, Bebb DG, Lee CY, Card CM, David M, Weljie AM, **Temporal characterization of serum metabolite signatures in lung cancer patients undergoing treatment**, *Metabolomics* 2016, 12 (3), 1-9.

Bathe OF, Farshidfar F, **From Genotype to Functional Phenotype: Unraveling the Metabolomic Features of Colorectal Cancer**, *Genes*, 2014 Jul 22;5(3):536-60.

Farshidfar F, Weljie AM, Kopciuk K, Buie D, MacLean A, Dixon E, Sutherland FR, Molckovsky A, Vogel HJ, Bathe OF, **Serum Metabolomic Profile as a Means to Distinguish Stage of Colorectal Cancer**, *Genome Med*. 2012 May 14; 4(5):42.

Moini M; Rasouli MR; Khaji A; Farshidfar F; Heidari P; **Patterns of extremity traumas leading to amputation in Iran: results of Iranian National Trauma Project**, *Chinese Journal of Traumatology*, 2009 Apr; 12(2):77-80.

Nasiri S; Gafuri A; Karamnejad M; Farshidfar F; **Four port-site recurrences of gall bladder cancer after laparoscopic cholecystectomy**. *ANZ Journal of Surgery*, 2009 Jan; 79(1-2):75-6

Esmaili N; Chams-Davatchi C; Valikhani M; Farshidfar F; Parvaneh N; Tamizifar B; **Treatment of pemphigus vulgaris with mycophenolate mofetil as a steroid-sparing agent**, *European Journal of Dermatology*, 2008 Mar-Apr; Volume 18, Number 2, 159-64

Zafarghandi MR; Akhlaghi H; Shojaiefard A; Farshidfar F; **Sciatic Nerve Compression Resulting From Posttraumatic Pseudoaneurysm of the Superior Gluteal Artery: A Case Report and Literature Review**. *Journal of Trauma*, 2008 Feb 12

Ghaninezhad H; Motlagh MS; Farshidfar F; **Telangiectatic erythematous cutaneous reaction to cardiac pacemaker and role of physical factors**, *EADV: Proceedings of the 15th Congress of the European Academy of Dermatology and Venereology*, Oct 2006: 627-629

**Presentations**

**Discrete Chromosomal Regions Associated with Tumor Prognosis in Breast Cancer**, poster presentation, Canadian Cancer Research Conference, Vancouver, Canada, November 5-7 2017

**Elevated C-reactive protein, low muscle mass, and low visceral adipose tissue are associated with reduced overall survival in patients with resectable colorectal liver metastases**, van Dijk et al, ESPEN 2017, 9 - 12, September 2017, Hague, Netherlands

**An overall workflow for the development of a multivariate model for prognostication of cancers**, "Cell Symposia:Technology. Biology. Data Science.", Berkeley, CA, USA, October 9-11 2016

**Targeted analysis of progressive metabolic perturbations in colorectal cancer in colorectal adenoma: Potential for a serum metabolomics-based colorectal cancer screening test**, poster presentation, American Society of Clinical Oncology-Gastrointestinal Diseases conference (ASCO-GI), San Francisco, USA, January 16-18 2014

- Identification of Metabolites for Targeted Analysis for Early Detection of Colorectal Cancer**, poster presentation, Canadian Cancer Research Conference (CCRC), Toronto, Canada, November 3-6 2013
- Trend of change in metabolism during the progression of colorectal cancer**, oral presentation, Alberta Cancer Foundation Conference, Banff, Alberta, Canada, November 1-3rd 2012
- Metabolomic profile of colorectal cancer patients shows reproducibility in pre-operative and intra-operative conditions**, oral presentation, The Metabolomics Society 8th Annual Meeting, Washington DC., United States, June 25-28th 2012
- Serum Metabolomic Profile in Colorectal Liver Metastasis is Distinct and Reflective of Underlying Tumoral Biologic Activities**, Southern Alberta Cancer Research Institute trainee research day, First oral presentation award, Calgary, Alberta, September 30th 2011
- Serum Metabolomic Profile of Colorectal Liver Metastases**, Oral presentation, Alberta Cancer Foundation Research Conference, Banff, Canada, November 2010
- Epidemiologic Features of Facial Injuries among Motorcyclists Using AIS**, Poster Presentation in Trauma 2006 Conference, Queensland, Australia, September-October 2006
- Telangiectatic Erythematous Cutaneous Reaction to a Cardiac Pacemaker and Role of Physical Factors: a Case Report**, Presentation at 15th Congress of the European Academy of Dermatology and Venereology, Rhodes, Greece, October 2006
- Telemedicine in Practice**, Presentation at First International Symposium on Telemedicine and Electronic Health, Tehran, Iran, November 2006
- fMRI Data Analysis Methods-A Comprehensive Review**, fMRI Experience 8 Meeting, Melbourne, Australia, June 2006
- A review on fMRI data analysis methods**, Poster presentation at The Second Scientific Conference for Medical Students in the GCC Countries, UAE University, UAE, January 2004
- Essentials of Telemedicine & Telecare**, Poster presentation at The Second Scientific Conference for Medical Students in the GCC Countries, UAE, 2004

### **Extra-Curricular activities**

- Co-chair, Association for Industry-Minded Professionals at Stanford (AIMS)**, 2018-present
- Designer and Team Lead**, "Get Ready to Get Hired" graduate recruitment workshop series, Faculty of Medicine, University of Calgary, September-October 2013 and 2014
- Mentor**, Centre for International Students and Study Abroad (CISSA) mentorship program, University of Calgary, September 2014-September 2015
- Faculty of 1000 Specialist**, Student representative at the University of Calgary, September 2013-present
- Co-chair**, Medical Science Students Association (MDSC-SA), University of Calgary, June 2013-June 2014
- Chair**, Medical Science Students Association (MDSC-SA), University of Calgary, June 2012-June 2013
- Seminar Coordinator and member of the executive committee**, Medical Science Students Association (MDSC-SA), University of Calgary, June 2011-June 2012
- Presentations Judge and volunteer**, Alberta Graduate Conference, Calgary, Alberta, Canada May 2011
- Network administrator and Programmer**, Chancellor's Office, Tehran University of Medical Sciences, 2002-2008
- Website Programmer**, Research Administration Office, Vice Chancellor for Research, Tehran University of Medical Sciences, 2007
- Editor of the First Electronic Bulletin of Tehran University of Medical Sciences**, TUMS International Relations Bulletin, a monthly publication 2003-2005
- Prospectus of Tehran University of Medical Sciences**, Editorial Staff, 2005

## Ongoing education

**“Epigenomic Data Analysis” Bioinformatics Canada course,**  
Bioinformatics Canada, McGill University, June 2017

**“Data Management for Clinical Research” online course,**  
Vanderbilt University and Coursera, June-July 2014

**“Design Thinking for Business Innovation” online course,**  
University of Virginia and Coursera, November-December 2013

**“Organizational Analysis” online course**  
Stanford University and Coursera, October-December 2013

**University of Calgary Leadership Certificate-Team leadership**  
University of Calgary student success center, October 2011

**Teaching Assistant Preparedness Workshop**  
University of Calgary teaching and learning center, September 2011

**Proteomics Workshop**  
Tenth International Congress of Biochemistry,  
Iranian Clinical Proteomic Society, Iranian Proteomic Research Center, Tehran, Iran, November 2009

**IPM-POLYTECHNIQUE-WPI Workshop on Bioinformatics and Biomathematics**  
Institute for Studies in Theoretical Physics and Mathematics, April 2005, Tehran

**The Second Scientific Conference for Medical Students in the GCC Countries**  
UAE University, UAE, January 2004

**Emergency Medicine Leadership Workshop**  
Tehran University of Medical Sciences in collaboration with the George Washington University, Penn State University, Oregon Health and Science University, Johns Hopkins University and Loma Linda University, March 2003

## General Interests

- Human-centered design for innovation in human-machine interface in AI systems
- Critical thinking methods in intelligent design for biomedical research projects
- Optimal approaches in thought process and problem solving