

Pegah Khosravi

Postdoctoral Associate

Weill Cornell Medicine, New York

CONTACT INFORMATION

Tel: +1 (929)393-7074
pek2012@med.cornell.edu
www.pkhosravi.com

ACADEMIC APPOINTMENTS

2017-present: Postdoctoral Associate at Institute for Computational Biomedicine, Department of Physiology and Biophysics, Weill Cornell Medical College, NY, USA. PI: Dr. Iman Hajirasouliha.

2014-2017: Postdoctoral Research Fellow at School of Biological Sciences of Institute for Research in Fundamental Sciences (IPM), Tehran, Iran. PI: Prof. Mehdi Sadeghi.

2012-2013: Visiting Researcher at Donnelly Center for Cellular and Biomolecular Research, Department of Molecular Genetics, University of Toronto, Toronto, Ontario, Canada. PI: Prof. Gary Bader.

EDUCATION

University of Tehran, Tehran, Iran
Ph.D., Bioinformatics, September 2014
Thesis Title: Dynamical analysis of cellular networks via studying interaction and hub types
Advisors: Prof. Bahram Goliaei, Prof. Gary Bader

University of Mazandaran, Sari, Iran
M.Sc., Plants Breeding, November 2007
Thesis Title: Producing new roses by chromosome doubling
Advisor: Dr. Maryam Jafarkhani Kermani

University of Bahonar, Kerman, Iran
B.Sc., Agronomy and Plants Breeding, November 2003
Thesis Title: Effect of different levels of nitrogen fertilizer on yield and yield components of triticale
Advisor: Prof. Mehri Safari

SCHOLARSHIP

2012-2013: Research scholarship from Iranian Ministry of Science

INTELLECTUAL PROPERTY

Integrated framework for evaluating human embryos using artificial intelligence (AI) deep convolutional network. Provisional US patent Application No. 62/715,518, Filed August 7, 2018.

MEDIA COVERAGE

Worldwide media coverage of research project in 2019 such as the Wall Street Journal, CNN, Health Canal, MedicalXpress, The Medical News, Medindia, Becker's Hospital Review, Wired.com, Bioportfolio, and Lab Manager for the paper was published in NPJ Digital Medicine-Nature.

MANAGEMENT
EXPERIENCE

2010-2014: CEO and Cofounder of a Bioinformatics start-up company, “Zist Dadeh Gostar”, Tehran, Iran.

PUBLICATIONS

Journals:

1. **Khosravi, P.**, Kazemi, Zhan, Q., Toschi, M., Malmsten, J., Cooper, L., Hickman, C., Meseguer, M., Rosenwaks, Z., Elemento, O., Hajirasouliha I., Deep Learning Enables Robust Assessment and Selection of Human Blastocysts after In-vitro Fertilization, *npj digital medicine-Nature* (2019), 4;2:21.
2. **Khosravi, P.**, Kazemi, E., Imielinski, M., Elemento, O., Hajirasouliha I., Deep Convolutional Neural Networks Enable Discrimination of Heterogeneous Digital Pathology Images, *EBioMedicine* (2018), 27: 317-328.
3. Habibi, M., **Khosravi, P.**, Disruption of the Protein Complexes from Weighted Complex Networks, *IEEE/ACM transactions on computational biology and bioinformatics* (2018).
4. Asgari, Y., **Khosravi, P.**, Zabihinpour, Z., Habibi, M., Exploring candidate biomarkers for lung and prostate cancers using gene expression and flux variability analysis, *Integrative Biology* (2018), 10:113-120.
5. Aghdam, R., Baghfalaki, T., **Khosravi, P.**, Ansari, E. S., The Ability of Different Imputation Methods to Preserve the Significant Genes and Pathways in Cancer, *Genomics, Proteomics & Bioinformatics* (2017), 15: 396-404.
6. Emamjomeh A., Robat E. S., Zahiri J., Solouki M., **Khosravi P.**, Gene co-expression network reconstruction: a review on computational methods for inferring functional information from plant-based expression data, *Plant Biotechnology Reports* (2017), 1:6.
7. Aghdam, R., **Khosravi, P.**, Ansari, E. S., Comparative Analysis of Gene Regulatory Networks Concepts in Normal and Cancer Groups, *Bioinformatics and Biocomputational Research* (2016), 1: 42-45.
8. **Khosravi P.**, Gazestani V.H., Pirhaji L., Law B., Sadeghi M., Bader G., Goliaei B., Inferring interaction type in gene regulatory networks using co-expression data, *Algorithm for molecular Biology* (2015), 10:23.
9. **Khosravi P.**, Gazestani V.H., Akbarzadeh M., Mirkhalaf S., Sadeghi M., Goliaei B., Comparative analysis of prostate cancer gene regulatory networks via hub type variation, *Avicenna Journal of Medical Biotechnology* (2015), 7: 8-15.
10. Montojo J., **Khosravi P.**, Gazestani V.H., Bader G., Goliaei B., SIREN Cytoscape plugin: Interaction Type Discrimination in Gene Regulatory Networks, *arXiv* (2015), arXiv:1512.05067.
11. **Khosravi P.**, Gazestani V.H., Asgari Y., Law B., Sadeghi M., Goliaei B., Network-based approach reveals Y chromosome influences prostate cancer susceptibility, *Computers in Biology and Medicine* (2014), 54:24-31.
12. **Khosravi P.**, Zahiri J., Gazestani V.H., Mirkhalaf S., Akbarzadeh M., Sadeghi M., Goliaei B., Analysis of candidate genes proposes the role of Y chromosome in human prostate cancer, *Iranian Journal of Cancer Prevention* (2014), 7:17-21.
13. Hosseinpour B., Bakhtiarizadeh M.R., **Khosravi P.**, Ebrahimie E., Predicting distinct organization of transcription factor binding sites on the promoter regions; a new genome-based approach to expand human embryonic stem cell regulatory network. *Gene* (2013), 531:212-9.
14. Kavand S., Kermani M. J., Haghazari A., **Khosravi P.**, and Azimi M. R., Micropropagation and medium-term conservation of *Rosa pulverulenta*. *Acta Scientiarum* (2011), 33:297-301.
15. Kermani M. J., **Khosravi P.**, Kavand S., Optimizing in vitro propagation of *Rosa persica*. *Iranian Journal of Genetics and Plant Breeding* (2010), 1:44-51.

16. **Khosravi P.**, Kermani M. J., Nematzadeh G. A., Bihamta M. R., Yokoya K., Role of mitotic inhibitors and genotype on chromosome doubling of *Rosa*. *Euphytica* (2008), 160:267-275.
17. **Khosravi P.**, Kermani M. J., Nematzadeh G. A., Bihamta M. R., A Protocol for Mass Production of *Rosa hybrida* cv. Iceberg through in Vitro Propagation. *Iranian Journal of Biotechnology* (2007), 5:100-104.

Conferences:

1. **Khosravi P.**, Kazemi, E., Imielinski, M., Elemento, O., Hajirasouliha I., Classification of Tumor Images using Deep Convolutional Neural Networks, RECOMB-CCB 2018 conference, Paris, France, 2018.
2. Zaninovic, N. **Khosravi P.**, Hajirasouliha, I., Malmsten, J.E., Kazemi, E., Zhan, Q., Toschi, M., Elemento, O., Rosenwaks, Z., Assessing human blastocyst quality using artificial intelligence (AI) convolutional neural network (CNN), Fertility and Sterility Conference, Colorado, USA, 2018.
3. Jannesari M., Habibzadeh, M., Aboulkheyr, H., **Khosravi P.**, Elemento, O., Totonchi, M., Hajirasouliha, I., Breast Cancer Histopathological Image Classification: A Deep Learning Approach, IEEE International Conference on Bioinformatics and Biomedicine, Madrid, Spain, 2018.
4. **Khosravi P.**, Ebrahimie E., Does the overall shape of gene networks differ between cancer and normal states? Towards a comprehensive understanding of cancer system biology by meta-analysis of various cancer transcriptomes, RECOMB/ISCB conference on Regulatory and System Genomics with DREAM challenge, Philadelphia, USA, 2015.
5. **Khosravi P.**, Gazestani V.H., Law B., Bader G.D., Sadeghi M., Comparative analysis of co-expression networks reveals molecular changes during the cancer progression, The IUPESM World Congress on Medical Physics and Biomedical Engineering, Toronto, Canada, 2015.
6. **Khosravi P.**, Gazestani V.H., Sadeghi M., Goliaei B., Bader G., Dynamical analysis of prostate cancer gene regulatory networks, Montreal-Toronto Retreat, Montreal, Quebec, Canada, 2013.
7. **Khosravi P.**, Pirhaji L., Gazestani V.H., Sadeghi M., Hosseini Salekdeh G., Goliaei M., New method to distinguish between inhibitory and activatory interactions in gene regulatory networks, Computational biophysics & simulation, Annual Meeting of the German Biophysical Society, GÖTTINGEN, Germany, 2012.
8. Kavand S., Kermani M. J., Haghazari A., Azimi M. R., **Khosravi P.**, In vitro propagation of *Rosa orientalis* and *Rosa canina*, Fifth international symposium on rose research and cultivation, Gifu, Japan, 2009.
9. Kermani M. J., kavand S., Haghazari A., **Khosravi P.** Establishment of 14 Iranian wild rose species in tissue culture environment, IVCHB, Sixth International Symposium on In Vitro Culture and Horticultural Breeding, Brisbane, Australia, 2008.
10. Kavand S., Kermani M. J., Haghazari A., **Khosravi P.**, Optimizing *in vitro* proliferation of *Rosa. Pulverulenta*, IVCHB, Sixth International Symposium on In Vitro Culture and Horticultural Breeding, Brisbane, Australia, 2008.
11. **Khosravi P.**, Kermani M. J., Nematzadeh G. A., Ghanadha M. R., Investigating the interactive effect of BAP and NAA on the growth of *Rosa hybrid* cv. Iceberg, 11th IAPTC&B (International Agricultural Plant Tissue culture and Biotechnology) Congress Beijing, China, 2006.
12. **Khosravi P.**, Kermani M. J., Nematzadeh G. A., Ghanadha M. R., Reducing the vitrification if *in vitro* rose species, *Rosa persica*, in tissue culture, 11th IAPTC&B (International Agricultural Plant Tissue culture and Biotechnology) Congress Beijing, China, 2006.

SELECTED
PRESENTATIONS

- Clinical image analysis using artificial intelligence, CUNY/WCM Big Data to Biomedical Informatics (BD2BMI) program, Weill Cornell Medicine, New York, June (2019).
- Deep neural networks reliably assess human blastocyst quality and assist in predicting implantation success upon in vitro fertilization, Biological Data Science meeting, Cold Spring Harbor Laboratory, New York, November (2018).
- Classification and mutation prediction from non-small cell lung cancer histopathology images using deep learning, Englander Institute for Precision Medicine, New York, November (2018).
- Assessment of Human Embryo Images using Deep Convolutional Neural Networks, BBRWG Meeting, New York, October (2018).
- Classification of Digital Pathology Images using Deep Neural Networks, Bridging the Gap: Machine Learning in Medicine, Ithaca, New York, September (2018).
- Deep neural networks enable discrimination of histopathology images, Zuckerman Research Center, Memorial Sloan Kettering Cancer Center, New York, December (2017).
- Construction and comparison of gene expression networks through normal and cancer states, Bilkent University, Ankara, Turkey, December (2016).
- From gene expression profile to network analysis, 4th Workshop on Computational Biology, Institute for Research in Fundamental Sciences, Tehran, Iran, March (2015).

PAPER REVIEWER

Gene Reports, International Journal of Biomathematics, Computers in Biology and Medicine, Integrative Biology, International Journal of Biological Macromolecules, PLOS ONE, BioSystems, Bioinformatics, Gene, Journal of Cellular and Molecular Medicine, Plant Science, Applied Sciences, and IEEE Transactions on Medical Imaging

TEACHING
EXPERIENCE

- Lecturer on Machine Learning at New York City College of Technology, New York, USA (2019)
- Mentoring three summer students and four rotation students at Weill Cornell medicine, New York, USA (2017-2019)
- R and Python tutoring (2017-2019)
- Co-advisor of three PhD students at Institute for Research in Fundamental Sciences, Tehran, Iran (2014-2017)
- Lecturer on “High-throughput Data Analysis” and “Analyzing PPI Networks in Cytoscape” at summer school in Bioinformatics, Institute for Research in Fundamental Sciences, Tehran, Iran (2014-2017)
- MATLAB tutoring (2012-2014)
- English Language tutoring (2009-2012)
- Genetics and Statistics at Azad University, Tehran, Iran (2007-2009)

TECHNICAL SKILLS Linux bash, MATLAB, R, and Python programming languages
 Cytoscape, TensorFlow, and PyTorch frameworks

LANGUAGE English, Farsi

LABORATORY SKILLS Tissue culture, DNA extraction, PCR, Flow cytometry, Cytogenetics, and
 Fluorescence microscopy

REFERENCES

Dr. Iman Hajirasouliha, Assistant Professor at Institute for Computational Biomedicine, Weill Cornell Medical College, New York, NY, USA. Email: imh2003@med.cornell.edu

Prof. Olivier Elemento, Professor at Caryl and Israel Englander Institute for Precision Medicine, Weill Cornell Medical College, New York, NY, USA. Email: ole2001@med.cornell.edu

Prof. Gary Bader, Professor at Computational Network Biology laboratory at the University of Toronto, Toronto, Canada. Email: gary.bader@utoronto.ca

Dr. Lee Cooper, Associate Professor at Computational Pathology, Northwestern University, Illinois, USA. Email: lee.cooper@northwestern.edu

Dr. Hani Goodarzi, Assistant Professor at Department of Biochemistry and Biophysics, University of California, San Francisco, CA, USA. Email: hani.goodarzi@ucsf.edu