Dr. Damiano FANTINI, Ph.D.

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Goals and Interests   *#Data_Science   #Health-care   #Cancer_Biology   #Genomics*

My research integrates bioinformatics, molecular biology, and software development. My work is aimed at gathering genomics-driven insights in the biology of cancer and other human diseases. My career goal is to work in the field of Health-care Data Science and leverage -omics and biomedical Big Data to develop predictive models of clinical outcomes and patient responses.

Current Position

2016 →   Translational Bridge Postdoctoral Fellow *(Joshua Meeks' Lab)*
***Feinberg School of Medicine, Northwestern University**, Chicago, IL, USA*
▪ Completed the first genomic characterization (RNAseq and whole exome sequencing) of a carcinogen-induced mouse model of muscle-invasive bladder cancer ▪ Developed a software for mutational signature analysis, a genomic analytic approach aimed at dimensionality reduction and identification of mutational processes active in cancer ▪ Developed a pipeline for mining genomic data from *The Cancer Genome Atlas* (TCGA) that revealed a previously unreported correlation between APOBEC3B expression and mutation burden in human bladder cancer ▪ Identified hotspot mutations of the human *KMT2C* gene in human cancers and assessed their correlation with poor clinical outcomes ▪ Investigated the molecular determinants responsible for sensitivity or resistance to immune checkpoint inhibitors, *EZH2* inhibitors, and *PARP* inhibitors by combining RNAseq, biochemistry and cell biology techniques ▪

Research Experience

2013 – 2016   Postdoctoral Scholar *(Pradip Raychaudhuri's lab)*
*Biochemistry and Molecular Genetics Dept., **University of Illinois, Chicago**, IL, USA*
2010 – 2012   Eurotalents Postdoctoral Research Fellow *(Juan Pablo Radicella's lab)*
*Genetic Instability Research lab (LRIG), **Atomic Energy Commission (CEA), France***
2006 – 2010   PhD Candidate, *(Gianluca Tell's lab)*
*Molecular Biology Lab, **University of Udine, Italy***

Education

2016   Certificate in **Data Science**
University of California at Irvine Extension,510 E Peltason Dr, Irvine, CA 92697, USA
2010   **Ph.D.** in Biomedical and Biotechnological Sciences
University of Udine, Piazzale Kolbe 4, 33100, Udine, Italy
2006   **M.S.** in Medical Biotechnology, University of Trieste (Italy), summa cum laude
University of Trieste, Piazzale Europa 1, 34127 Trieste, Italy
2004   **B.S.** in Biotechnology, University of Trieste (Italy), summa cum laude
University of Trieste, Piazzale Europa 1, 34127 Trieste, Italy

Fellowships and Awards

2018   NU Translational Bridge Fellowship for Immunotherapy
2017   NU Postdoctoral Professional Development Travel Award
2010 – 2012   CEA-Eurotalents Research Fellowship
2009   Italian Proteomics Association National Conference Travel Award

Teaching and Leadership

2017 →   **Instructor** of the "**Machine Learning Assisted Clinical Medicine**" course, available at Experfy (Harvard Innovation Lab, www.experfy.com)
2017 →   **Co-leader** of the "NUKaggle" break-out group (analysis of Kaggle datasets using Python and Tensorflow), during the Data Science Nights at Northwestern University
2008 – 2015   Coordinated work of several undergraduate and graduate students in both Dr. Pradip Raychauduri lab (UIC) and Prof. Gianluca Tell lab (University of Udine, Italy)

Selected Peer Reviewed Publications

1. **Fantini D**, Vidimar V, Yu Y, CondelloS, Meeks J. MutSignatures: An R Package for Extraction and Analysis of Cancer Mutational Signatures. Submitted.
2. Wang L, Zhao Z, Ozark PA, **Fantini D**, Marshall SA, et al. Resetting the Epigenetic Balance of Polycomb and COMPASS Function at Enhancers for Cancer Therapy. ***Nature Medicine***. Accepted for publication, 2018
3. **Fantini D**, Glaser A, Rimar K, Wang Y, Schipma M, et al. A Carcinogen-induced Mouse Model Recapitulates the Molecular Alterations of Human Muscle Invasive Bladder Cancer. ***Oncogene***. 2018 Apr;37(14):1911-1925
4. Huang S, **Fantini D**, Merrill BJ, Bagchi S, Guzman G, et al. DDB2 Is a Novel Regulator of Wnt Signaling in Colon Cancer. ***Cancer Research***. 2017 Dec 1;77(23):6562-6575
5. Glaser A, **Fantini D**, Shilatifard A, Schaeffer E, Meeks J. The evolving genomic landscape of urothelial carcinoma. ***Nature Review Urology***. 2017 Feb 7;14(4):215-229
6. **Fantini D**, Huang S, Asara JM, Bagchi S, Raychaudhuri P. Chromatin association of XRCC5/6 in the absence of DNA damage depends on the XPE gene product DDB2. ***Molecular Biology of the Cell***. 2017 Jan 1;28(1):192-200
7. Bravard A, Auvré F, **Fantini D**, Bernardino-Sgherri J, Sissoëff L, et al. The prion protein is critical for DNA repair and cell survival after genotoxic stress. ***Nucleic Acids Research***. 2015 Jan;43(2):904-16
8. **Fantini D**, Moritz E, Auvré F, Amouroux R, Campalans A, et al. Rapid inactivation and proteasome-mediated degradation of OGG1 contribute to the synergistic effect of hyperthermia on genotoxic treatments. ***DNA Repair (Amst)***. 2013 Mar 1;12(3):227-37

A complete list of my published research papers is available on PubMed

Programming and Statistical skills

- 4+ year experience in **R** and **Bioconductor** for statistical analysis, machine learning, NGS analysis, and data visualization
- Author and maintainer of **R extensions** and **R Shiny apps** for biomedical data retrieval, analysis, and visualization, which are available on CRAN (*colorhcplot*, *easyPubMed*, *TCGAretriever*, and *mutSignatures*), GitHub (*cellSignalingTools*, *businessPubMed*), or AWS (*hotspotter*)
- Good knowledge of **bioinformatic tools** (*IGV*, *BLAST*, *Clustal Omega*, *cbioportal.org*, *Oncomine.org*) and image quantitation and handling software (*ImageJ*)
- Proficient in **Python**, and **UNIX shell scripting**. Working knowledge of **Java**, **PHP**, and **MySQL**
- Experience with **Linux** and *Windows* Operating Systems, and Amazon **EC2 Cloud Computing**
- **StackOverflow** user (total reputation of 1,468; top 4% in 2017)

Lab techniques and skills

- RNA-seq, WES, and **NGS data analysis** and visualization (IGV, R, Bioconductor)
- Cell and molecular biology techniques, including nucleic acid isolation, fluorescence confocal microscopy, and cell survival assays
- Proteomics, protein isolation, and purification techniques

Soft skills

- Team working, collaborative attitude, learning agility, delivering under stress

References

Dr. Joshua J MEEKS. Department of Urology, Northwestern University, 303 E. Chicago Ave. 16-703, Chicago, IL 60611 (United States). Phone: +1 312-695-8146. E-mail: joshua.meeks@northwestern.edu

Dr. Stephen Miller. Director of the Interdepartmental Immunobiology Center, 300 E Superior, Tarry 6-713, Chicago, IL 60611 (United States). Phone: +1 312-503-7674. E-mail: s-d-miller@northwestern.edu

Dr. Pablo RADICELLA. Atomic Energy Commission (CEA), Route du Panorama, 92265, Fontenay-aux-Roses (France). Phone: +33 1-46548857. E-mail: pablo.radicella@cea.fr

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