**EKTA KHURANA**
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## RESEARCH EXPERTISE

Computational Biology/Bioinformatics, Genomics, Cancer Genomics, Systems Biology

## PROFESSIONAL EXPERIENCE

**Weill Medical College of Cornell University,** New York, NY — From Oct 2014
Assistant Professor (Tenure track)
Sandra and Edward Meyer Cancer Center
Institute for Computational Biomedicine
Department of Physiology and Biophysics

**Yale University,** New Haven, CT — 2012 to Present
Associate Research Scientist
Program in Computational Biology and Bioinformatics
Molecular Biophysics and Biochemistry Department

## PAST POSITION

**Yale University,** New Haven, CT — 2008 to 2012
Postdoctoral Research Associate
Program in Computational Biology and Bioinformatics
Molecular Biophysics and Biochemistry Department
Advisor: Prof. Mark B. Gerstein

## EDUCATION

**University of Pennsylvania,** Philadelphia, PA — 2002 to 2008
Ph. D. in Chemistry (Research area: Computational Biology)
Advisor: Prof. Michael L. Klein
Thesis title: Computational Studies of Natural and Synthetic Ion Channels

**Indian Institute of Technology,** Delhi, India — 2000 to 2002
Masters of Science (Research area: Computational Biology)
Advisor: Prof. B. Jayaram
Thesis title: Chemical Model for Genome Analysis

**St. Stephen's College, Delhi University,** Delhi, India — 1997 to 2000
Bachelors of Science

## RESEARCH ARTICLES

For the latest list please see:
http://homes.gersteinlab.org/people/ekhurana/publications.html

(* These authors contributed equally)
(#Corresponding author)

1. K Talbert-Slagle, KE Atkins, KK Yan, **E Khurana**, M Gerstein, EH Bradley, D Berg, AP Galvani, J Townsend,
   "Cellular Superspreaders: An Epidemiological Perspective on HIV Infection inside the Body", PLoS Pathogens 10, e1004092 (2014)

2. **E Khurana***, Y Fu*, V Colonna*, X Mu*, HM Kang, …..1000 Genomes Project Consortium….. M Rubin, C Tyler-Smith, M Gerstein,
   "Integrative annotation of variants from 1092 humans: application to cancer genomics", Science, 342, 84 (2013)

   *Research Highlight in Nature, 502, 144 (2013) and Nature Genetics, 45, 1273 (2013)*

3. **E Khurana***, Y Fu*, J Chen, M Gerstein
   "Interpretation of genomic variants using a unified biological network approach", PLoS Computational Biology, 9, e1002886 (2013)

4. The **1000 Genomes Project Consortium**
   "An integrated map of genetic variation from 1,092 human genomes", Nature, 491, 56 (2012)

5. The **ENCODE Project Consortium**
   "An integrated encyclopedia of DNA elements in the human genome", Nature, 489, 57 (2012)

6. L Habegger, S Balasubramanian, D Chen, **E Khurana**, A Sboner, A Harmanci, J Rozowsky, D Clarke, M Snyder, M Gerstein,
   "VAT: A computational framework to functionally annotate variants in personal genomes within a cloud-computing environment", Bioinformatics, 28, 2269 (2012)

7. M Gerstein*, A Kundaje*, M Hariharan*, S Landt*, K Yan*, C Cheng*, X Mu*, **E Khurana***, J Rozowsky*, R Alexander*, R Min*, P Alves*, A Abyzov, N Addleman, N Bhardwaj…40 authors…M Snyder,
   "Architecture of the human regulatory network derived from ENCODE data", Nature, 489, 91 (2012)

8. D MacArthur…...**E Khurana**…..M Gerstein, C Tyler-Smith,
   "A systematic survey of loss-of-function variants in human protein-coding genes", Science, 335, 823 (2012)

9. The **ENCODE Project Consortium**
"A User's Guide to the Encyclopedia of DNA elements", PLoS Biology, 9, e1001046 (2011)

10. R Mills…..**E Khurana**….. J Korbel, 1000 Genomes Project,
"Mapping copy number variation by population-scale genome sequencing", Nature, 470, 59 (2011)

11. Z Lu, K Yip, G Wang, C Shou, L Hillier, **E Khurana**, A Agarwal, R Auerbach, J Rozowsky, C Cheng, M Kato, D Miller, F Slack, M Snyder, R Waterston, V Reinke, M Gerstein,
"Prediction and characterization of non-coding RNAs in C. elegans by integrating conservation, secondary structure and high throughput sequencing and array data", Genome Research, 21, 276 (2011)

12. **E Khurana[#],** R DeVane, MD Peraro, ML Klein[#],
"Computational study of drug binding to the membrane-bound tetrameric M2 peptide bundle from influenza A virus", Biochimica et Biophysica Acta- Biomembranes, 1808, 530 (2011)

13. M Gerstein….. **E Khurana**….. modENCODE Consortium… R Waterston,
"Integrative analysis of the Caenorhabditis elegans genome by the modENCODE project", Science, 330, 1775 (2010)

14. The **1000 Genomes Project Consortium**,
"A map of human genome variation from population scale sequencing", Nature, 467, 1061 (2010)

15. **E Khurana,** H Lam, C Cheng, N Carriero, P Cayting, M Gerstein,
"Segmental duplications in the human genome reveal details of pseudogene formation", Nucleic Acids Research, 38, 6997 (2010)

16. M Holford, **E Khurana**, K Cheung, M Gerstein,
"Using semantic web rules to reason on an ontology of pseudogenes", Bioinformatics, 26, i71 (2010)

17. Y Liu, D Zheng, S Balasubramanian, N Carriero, **E Khurana**, R Robilotto, M Gerstein,
"Comprehensive analysis of the pseudogenes of glycolytic enzymes in vertebrates: the anomalously high number of GAPDH pseudogenes highlight a recent burst of retrotranspositional activity", BMC Genomics, 10, 480 (2009)

18. H Lam, **E Khurana**, G Fang, P Cayting, N Carriero, K Cheung, M Gerstein,
"Pseudofam: the pseudogene families database", Nucleic Acids Research, 37, D738 (2009)

19. K Talbert-Slagle, S Marlatt, F Barrera, **E Khurana**, J Oates, M Gerstein, D Engelman, A Dixon, D Dimaio,
"Artificial transmembrane oncoproteins smaller than the bovine papillomavirus E5

protein redefine sequence requirements for activation of the platelet derived growth factor β receptor", Journal of Virology, 83, 9773 (2009)

20. **E Khurana**[#], MD Peraro[#], R DeVane, S Vemparala, WF DeGrado[#], ML Klein, "Molecular dynamics calculations suggest a conduction mechanism for the M2 proton channel from influenza A virus", Proceedings of the National Academy of Sciences USA, 106, 1069 (2009)

21. **E Khurana**[#], R DeVane, A Kohlmeyer, ML Klein, "Probing peptide nanotube self-assembly at a liquid-liquid interface with coarse-grained molecular dynamics", Nano Letters, 8, 3626 (2008)

22. **E Khurana**[#], S Nielsen, B Ensing, ML Klein, "Self-assembling cyclic peptides: molecular dynamics studies of dimers in polar and nonpolar solvents", Journal of Physical Chemistry B, 110, 18965 (2006)

23. **E Khurana**[#], S Nielsen, ML Klein, "Gemini surfactants at the air/water interface: a fully atomistic molecular dynamics study", Journal of Physical Chemistry B, 110, 22136 (2006)

24. S Dutta, P Singhal, P Agrawal, R Tomer, Kritee, **E Khurana**, B Jayaram, "A physicochemical model for analyzing DNA sequences", Journal of Chemical Information and Modeling, 46, 78 (2006)

## REVIEW ARTICLES

1. **E Khurana**[#], "Learning to swim in a sea of genomic data", Genome Biology, 14, 315 (2013) (Invited report on the American Society of Human Genetics meeting, 2013)

2. Y Arinaminpathy*, **E Khurana**[*,#], D Engelman, M Gerstein[#], "Computational analysis of membrane proteins: the largest class of drug targets", Drug Discovery Today, 14, 1130 (2009)

## ACCEPTED CONFERENCE TALKS

1. "Identification of non-coding candidate cancer driver mutations using functional annotation of variants from 1,092 humans", **Precision Medicine: Personal Genomes and Pharmacogenomics meeting, Cold Spring Harbor Laboratory**, New York (2013)
2. "Identification of non-coding candidate cancer driver mutations using functional annotation of variants from 1,092 humans", **Cancer Genomics conference, European Molecular Biology Laboratory**, Heidelberg, Germany (2013)
3. "Integrative annotation of variants from 1,092 humans: application to cancer genomics", **American Society of Human Genetics Meeting**, Boston, MA (2013)
4. "Interpretation of genomic variants using a unified biological network approach", **The Biology of Genomes meeting, Cold Spring Harbor Laboratory**, New York (2013)
5. **"**Amantadine binding with the Influenza A virus M2 ion channel", **CECAM workshop 'Ionic Transport: from Nanopores to Biological Channels',** Lyon, France (2007)
6. "Understanding self-assembling cyclic peptide nanotubes in lipid bilayer by molecular dynamics", **American Chemical Society National Meeting**, San Francisco, CA (2006)
7. **"**Molecular dynamics study of gemini surfactants at the air/water interface", **American Chemical Society National Meeting**, San Francisco, CA (2006)
8. **"**Self-assembly of peptide nanotubes by molecular dynamics study", **American Chemical Society National Meeting**, San Diego, CA (2005)

## INVITED CONFERENCE/SYMPOSIA TALKS

1. "Information in non-coding DNA", **American Association for Cancer Research Annual Meeting**, San Diego, CA (2014)
2. "Integrative computational models for functional interpretation of genomic sequence variants", **Emerging Leaders in Systems-Level Biology Symposium**, Cincinnati Children's Hospital Medical Center, Ohio (2014)

## INVITED INSTITUTE/UNIVERSITY TALKS

1. Wellcome Trust Sanger Institute, Cambridge, UK (2014)
2. London Research Institute, London, UK (2014)
3. Memorial Sloan Kettering Cancer Center, New York, USA (2014)
4. Institute for Systems Genetics, New York University, New York, USA (2014)
5. Cornell University, Ithaca, USA (2014)
6. University of Toronto, Toronto, Canada (2014)
7. University of Montreal, Montreal, Canada (2014)
8. Cincinnati Children's Hospital Medical Center, Cincinnati, USA (2014)
9. Weill Cornell Medical College, New York, USA (2013)
10. University of Calgary, Calgary, Canada (2013)
11. Jackson Laboratory for Genomic Medicine, Farmington, CT, USA (2013)

12. McGill University and Genome Quebec Innovation Center, Montreal, Canada, (2012)
13. Ste Justine University Hospital Research Center, University of Montreal, Montreal, Canada (2011)
14. National Center for Biological Sciences, Bangalore, India (2009)
15. Yale Center for Genomics and Proteomics, New Haven, CT, USA (2009)
16. Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India (2007)

## HONORS AND AWARDS

1. Chosen for **'Emerging Leaders in Systems-Level Biology symposium'** at Cincinnati Children's Hospital Medical Center (2014)
2. Featured as **promising young investigator in genomics** by GenomeWeb (2013)
3. **EMBL Corporate Partnership Fellowship** for Cancer Genomics conference at EMBL, Germany (2013)
4. **Travel Grant** for CECAM Workshop 'Ionic Transport: from Nanopores to Biological Channels' at Lyon, France (2007)
5. **Chair's fund** for Gordon Conference on Computer Aided Drug Design (2007)
6. **Marie Curie fellowship** awarded by International School of Solid State Physics to attend the course 'Computer Simulations in Condensed Matter' at Erice, Italy (2005)
7. **Science Meritorious Award** awarded by Delhi University for academic excellence (1997-1998)

## TEACHING EXPERIENCE

**Yale University**

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|---|---|
| Mentored three undergraduate and seven graduate students in Program of Computational Biology and Bioinformatics | 2008 to Present |

**University of Pennsylvania,** Dept. of Chemistry

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| Teaching Assistants' Training Workshop leader | 2003 to 2005 |
| Teaching Assistant for undergraduate course General Chem. 101 | 2002 to 2003 |

## OTHER PROFESSIONAL CONTRIBUTIONS

**Invited referee**

BMC Systems Biology, Biophysical Journal, BMC Research Notes, Journal of Physical Chemistry, Soft Matter, Proteins and PLoS One

**Participation in outreach activities of 1000 Genomes and ENCODE consortia**

ENCODE Data Tutorial at American Society of Human Genetics meeting, Boston, MA (2013)

1000 Genomes Data Tutorial at American Society of Human Genetics meeting, San Francisco, CA (2012)

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