

Gyan Bhanot, PhD
Curriculum Vitae, 09/29/2020

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Education: Ph.D. Theoretical Physics; Cornell University, 1979
M.S. Physics; SUNY Stonybrook, 1975
M.Sc. Physics; IIT, Bombay, 1974
B.Sc. Physics, Mathematics, Statistics; M.S. University of Baroda, 1972

Impact Indices from Google Scholar:

Citations: 11667, h-index: 52

Employment/Appointments:

Current: 2006-present: Professor, Rutgers University, Joint appointment in the Department of Molecular Biology & Biochemistry and Department of Physics and Astronomy.
2006-present: Member, Cancer Institute of New Jersey.
09/2019-05/2020: Visiting Scholar, Moores Cancer Center at San Diego Health, UCSD, 3855 Health Sciences Drive, La Jolla CA, 92037.
2013-present: Adjunct Professor, Tata Institute of Fundamental Research, Mumbai, India.
2016-present: Adjunct Professor, International Center for Theoretical Science, Bengaluru, India.

Previous: 2002-2019: Long Term Visitor, Simons Center for Systems Biology, Institute for Advanced Study, Princeton, NJ.
2003-2019: Adjunct Professor, Bioinformatics Program, Boston University
1994-2006, Research Staff Member, IBM Research, Yorktown Hts., NY
2001-2002, Visiting Scientist, Department of Molecular Biology, Princeton U.
1989-1994, Senior Scientist, Thinking Machines Corporation, Cambridge, MA.
Fall 1988, Visiting Professor, Physics Department, University of California at San Diego, CA.
1989-1995, Visiting Faculty, Institute for Advanced Study, Princeton, NJ.
1987-1989, Associate Professor, Physics Department, Florida State University
1986-1989, Senior Scientist, Supercomputer Computations Research Institute, Florida State University, Tallahassee, FL.
1985-1986, Post-doc, ITP, University of California at Santa Barbara, CA.
1982-1983, Post-doc, Theory Division, CERN, Geneva, Switzerland.
1981-1985, Member/post-doc, Institute for Advanced Study, Princeton, NJ.
1979-1981, Post-doc, Physics Department, Brookhaven National Labs.

Current Research Interests:

- **Computational Biology and Cancer Bioinformatics:** Analysis of high throughput SNP, microarray, non-coding RNA and sequencing data from human samples to identify changes responsible for cancer initiation, progression and metastasis. I am working on identifying how gene and protein networks are destabilized/compromised in cancer, understand the role of amplicons, deletions, inherited SNPs and somatic SNPs in disease recurrence, drug resistance and drug sensitivity, identify novel therapeutic targets for pharmaceuticals and assist clinicians in improving patient care and outcome.
- **Immune Checkpoint Therapy:** Most recently, using TCGA and clinical data, we have identified several mechanisms of response to immune checkpoint therapy (ICT: this technique was awarded the 2018 Nobel Prize in Medicine): (i) We discovered the existence of a tumor mutational burden threshold, identifiable in routine clinical assays, that can identify likely responders to ICT in eight solid cancers. (ii) Stomach cancers with an Epstein-Barr-Virus infection have evidence of a blocked immune response and upregulation of checkpoint pathway genes, and are likely to respond to ICT. (iii) In some cancers, high expression of specific endogenous retroviruses (frozen viral relics in the genome) are marker of response.
 - Collaborators: Pablo Tamayo, Jill Mesirov, Ezra Cohen, Silvio Gutkind (UCSD); Shridar Ganesan, Dr. Hossein Khiabani, Dr. Anshuman Panda (Rutgers, CINJ); Dr. W. Kimryn Rathmell, Dr. Aguirre de Cubas (Vanderbilt Ingram Cancer Center); Vessela Kristensen, (Oslo University Radium Hospital), Anupama Yadav (DFCI/Harvard), Sebastian Doniach (Stanford University).
- **Specialized Ribosomes:** We have found that the human ribosome, consisting of an RNA core decorated with 80 ribosomal proteins (RPs), has differential tissue specific mRNA expression of its constituent proteins, suggesting the existence of specialized ribosomes. This ribosomal tissue specificity is also reflected in tumors and in some cases, can stratify tumors into different survival classes.
 - Collaborators: Anshuman Panda (Rutgers, CINJ), Anupama Yadav (DFCI/Harvard), Michael Biehl (U. of Groningen), Sebastian Doniach (Stanford)
- **Translational Medicine:** Analytical Methods and Modeling to identify Optimal Chemotherapy Regimens:
 - Collaborators: Shridar Ganesan, CINJ; Leonardo Santana, U. of Oslo.
- **Big Data and Data Mining:** Algorithms for pattern discovery in large datasets.
 - Collaborators: Michael Biehl (University of Groningen), Barbara Hammer (University of Bielefeld).
- **Pandemics, SARS, MARS, FLU:** Epidemiology and Evolution of viral pandemic strains.
 - Collaborators: Charles DeLisi (Boston University), Kevin Raines (Colombia), Sebastian Doniach (Stanford).

Funding:

Completed: from 2006 to present : various from NCI/NIH, New Jersey Comm. on Cancer Research, J&J

Current/Funded:

1. **Agency:** M2GEN and ORIEN. **PI:** Shridar Ganesan, M.D., Ph.D. **GB Role:** Co-investigator (4.15% salary support). **Title:** “Chromatin abnormalities and endogenous retrovirus expression as a novel biomarker of response to immune checkpoint therapy in low mutation burden cancers.” **Award amount:** \$250,000 per year for 4 years. **Duration:** 06/01/2019-05/31/2023.
2. **Agency:** DoD, **KRCP Grant number:** KC180159, **PI:** Shridar Ganesan, M.D., Ph.D. **GB Role:** Co-investigator (10% salary support). **Title:** “Endogenous retrovirus expression, chromatin abnormalities and response to immune checkpoint blockade in clear cell renal cell cancer.” **Duration:** 4/1/19-3/31/21. **Award Amount:** \$295,875/year.
3. **Funding Agency:** NIH, **PI:** Shridar Ganesan, M.D., Ph. D.; **GB Role:** Co-Investigator, (10% salary support). **Title:** Impact of mutation burden on cancer growth and the immune landscape. **Award RFA:** PKG00246083/PA-19-056(FOA00001530). **Duration:** 1/1/2020 - 12/31/2024, **Funds Requested over 5 years:** \$3,915,079.

Patents Awarded:

1. “Class Network Routing”, US 7,587,516 B2, Sept. 8, 2009;
2. “Method and System for Robust Classification Strategy for Cancer Detection from Mass Spectrometry Data”, US 7,899,625 B2, March 1, 2011;
3. “Efficient Implementation of a Multi-dimensional Fast-Fourier Transform on a Distributed Memory Multi-Node Computer”, US 7,315,877 B2, Jan. 1, 2008;
4. “Optimizing Layout of an Application on a massively Parallel Supercomputer”, US 2006/0101104 A1;
5. “Method of Identifying Robust Clustering”, US 2008/0313135, Dec 18, 2008.

Honors, Awards and Memberships:

1. May 2014-present: General Member of the Aspen Center for Physics.
2. 2013: Team leader of AMG team (Bhanot, Biehl, Dayarian, Hormoz) which was awarded first prize in Sub-challenges 1,2,3 in the sbv Improver Species Translation Challenge <https://www.sbvimprover.com/> at the Symposium in Athens Greece, October 28-31, 2013.
3. 2006 Supercomputing Gordon Bell Award for paper titled: ‘The BlueGene/L Supercomputer and Quantum Chromodynamics’ in the category, “Special accomplishment for innovation in scalable implementation’.
4. Reviewer for: Nature, Scientific Reports, Cell Reports, JCI, IJCCR, Science TM, Molecular Oncology, PLoS Pathogens, Cancer Research. Bioinformatics, PLoS Comp. Bio., PLoS One, Clinical and Vaccine Immunology, Biophysics Journal, PNAS, SIAM Journal of Scientific Computing, AACR, Journal of High Performance Computing, Human Genetics, Transactions on Parallel and Distributed Systems, BMC Bioinformatics, BMC Cancer, Genomics, Nucleic Acid Research, Genome Medicine, ISMB, Annals of NY Academy of Science, British Journal of Cancer, Machine Vision and Applications.

Peer Reviewed Papers:

1. Panda A, Yadav A, Yeerna H, Singh A, Biehl M, Lux M, Schulz A, Klecha T, Doniach S, Khiabani H, Ganesan S, Tamayo P, Bhanot G, Tissue- and development-stage-specific mRNA and heterogeneous CNV signatures of human ribosomal proteins in normal and cancer samples, *Nucleic Acids Research*, Volume 48, Issue 13, 27 July 2020, Pages 7079–7098
2. de Cubas AA, Dunker W, Zaninovich A, Hongo RA, Bhatia A, Panda A, Beckermann KE, Bhanot G, Ganesan S, Karijolich J, Rathmell WK, DNA hypomethylation promotes transposable element expression and activation of immune signaling in renal cell cancer *JCI Insight*. 2020;5(11):e137569. <https://doi.org/10.1172/jci.insight.137569>.
3. Panda A, Rosenfeld JA, Singer EA, Bhanot G, Ganesan S (2020) Genomic and immunologic correlates of LAG-3 expression in cancer, *OncoImmunology*, 9:1, 1756116, DOI: 10.1080/2162402X.2020.1756116
4. Bajpai M, Panda A, Das KM, Bhanot G, Verma A. Tu1160–Gene Expression Signature of the “Point of No Return” in Barrett’s Epithelial Carcinogenesis, 2019, *Gastroenterology* 156 (6), S-967.
5. Santana LM, Ganesan S, Bhanot G, ‘A Quasi Birth-and-Death Model for Tumor Recurrence’, *J. of Theor. Biology* 480 (2019) 175-191.
6. A Panda, MN Stein, G Riedlinger, G Bhanot, S Ganesan. Role for immune checkpoint blockade in *BRCA2*-mutant prostate cancer. 2019, *Journal of Clinical Oncology* 37 (8_suppl), 59-59
7. Singh A, Bhanot G, Khiabani H, TuBA: Tunable biclustering algorithm reveals clinically relevant tumor transcriptional profiles in breast cancer, *GigaScience*, Volume 8, Issue 6, June 2019, giz064, <https://doi.org/10.1093/gigascience/giz064>
8. Smith CC, Beckermann KE, Bortone DS, de Cubas AA, Bixby LM, Lee SJ, Panda A, Ganesan S, Bhanot G, Wallen EM, Milowsky MI, Kim WY, Rathmell WK, Swanstrom R, Parker JS, Serody JS, Selitsky SR, Vincent BG. Endogenous retroviral signatures predict immunotherapy response in clear cell renal cell carcinoma. *J Clin Invest*. 2018 Nov 1;128(11):4804-4820. doi: 10.1172/JCI121476. Epub 2018 Oct 2, PMID:30137025.
9. Panda A, de Cubas AA, Stein M, Riedlinger G, Kra J, Mayer T, Smith CC, Vincent BG, Serody JS, Beckermann KE, Ganesan S, Bhanot G, Rathmell WK, Endogenous retrovirus expression is associated with response to immune checkpoint blockade in clear cell renal cell carcinoma. *JCI-Insight*. 2018 Aug 23;3(16).
10. Rabadan R, Bhanot G, Marsilio S, Chiorazzi N, Pasqualucci L, Khiabani H, On statistical modeling of sequencing noise in high depth data to assess tumor evolution, *J Stat Phys*. 2018 Jul;172(1):143-155. doi: 10.1007/s10955-017-1945-1
11. Panda A, Betigeri A, Subramanian K, Ross JS, Pavlick DC, Ali S, Markowski P, Silk A, Kaufman H, Mehnert J, Sullivan R, Lovly CM, Sosman J, Johnson DB, Bhanot G, Ganesan S. Identifying a clinically applicable mutation burden threshold as a biomarker of response to Immune Checkpoint Therapy in solid tumors, *JCO Precision Oncology* 2017: 1, 1-13
12. Panda A, Mehnert JM, Hirshfield KM, Riedlinger G, Demare S, Saunders T, Kane M, Sokol L, Stein MN, Elizabeth Poplin E, Rodriguez-Rodriguez L, Silk AW, Aisner J, Chan N, Malhotra J, Frankel M, Kaufman HL, Ali S, Ross JS, White EP, Bhanot G, Ganesan S, Immune Activation and Benefit From Avelumab in EBV-Positive Gastric Cancer, *J Natl Cancer Inst*. 2018, 1;110(3):316-320. doi: 10.1093/jnci/djx213.
13. Russell LB, Bhanot G, Kim S-Y, Sinha A, Using Cluster Analysis to Group Countries for Cost-Effectiveness Analysis: An Application to sub-Saharan Africa. (2017) *Medical Decision Making*, 2017 Aug 1:272989X17724773. doi: 10.1177/0272989X17724773. PMID: 28823186

14. Bjørklund SS, Panda A, Kumar S, Seiler M, Robinson D, Gheeya J, Ming Y, Grenaker Alnæs GI, Toppmeyer D, Riis M, Naume B, Børresen-Dale A-L, Kristensen VN, Ganesan S, Bhanot G. (2017) Widespread alternative exon usage in Clinically distinct subtypes of Invasive Ductal Carcinoma. *Scientific Reports* 7, Article 5568(2017), doi:10.1038/s41598-017-05537-0.
15. G. Mukherjee, G. Bhanot, K. Raines, S. Sastry, S. Doniach and M. Biehl, "Predicting recurrence in clear cell Renal Cell Carcinoma: Analysis of TCGA data using outlier analysis and generalized matrix LVQ," 2016 IEEE Congress on Evolutionary Computation (CEC), Vancouver, BC, Canada, 2016, pp. 656-661. doi: 10.1109/CEC.2016.7743855.
16. Yadav A, Radhakrishnan A, Panda A, Singh A, Sinha H, Bhanot G (2016) The Modular Adaptive Ribosome. *PLoS ONE* 11(11): e0166021. doi:10.1371/journal.pone.0166021
17. Mehnert JM, Panda A, Zhong H, Hirshfield K, Damare S, Lane K, Sokol L, Stein MN, a Rodriguez-Rodriguez L, Kaufman HL, Ali S, Ross JS, Pavlick DC, Bhanot G, White EP, DiPaola RS, Lovell A, Cheng J, Ganesan S. Immune activation and response to pembrolizumab in POLE-mutant endometrial cancer, *J Clin. Invest.* 2016;126(6):2334-2340. doi:10.1172/JCI84940.
18. Zhang C, Liu J, Zhao Y, Yue X, Zhu Y, Wang X, Wu H, Blanco F, Li S, Bhanot G, Haffty BG, Hu W, Feng Z, Glutaminase 2 is a novel negative regulator of small GTPase Rac1 and mediates p53 function in suppressing metastasis, *eLife*, 2016;10.7554/eLife.10727
19. Bjørklund S, Kristensen V, Seiler M, Kumar S, Alnæs G, Ming Y, Kerrigan J, Naume B, Sachidanandam R, Bhanot G, Børresen-Dale A-L, Ganesan S, Expression of an estrogen-regulated variant transcript of the peroxisomal branched chain fatty acid oxidase ACOX2 in breast carcinomas, *BMC Cancer* 2015, 15:524. doi: 10.1186/s12885-015-1510-8.
20. Yadav A, Radhakrishnan A, Bhanot G and Sinha H. Differential Regulation of Antagonistic Pleiotropy in Synthetic and Natural Populations Suggests Its Role in Adaptation. *G3: Genes, Genomes, Genetics*, May 1, 2015 vol. 5 no. 5 699-709. doi: 10.1534/g3.115.017020.
21. Pimenta EM, De S, Weiss R, Feng D, Hall K, Kilic S, Bhanot G, Ganesan S, Ran S, Barnes BJ. IRF5 is a novel regulator of CXCL13 expression in breast cancer that regulates CXCR5+ B- and T-cell trafficking to tumor-conditioned media. *Immunol Cell Biol.* 2014 Dec 23. doi: 10.1038/icb.2014.110.
22. Davis CF, Ricketts CJ, Wang M, Yang L, Cherniack AD, Shen H, Buhay C, Kang H, Kim SC, Fahey CC, Hacker KE, Bhanot G, Gordenin DA, Chu A, Gunaratne PH, Biehl M, Seth S, Kaiparettu BA, Bristow CA, Donehower LA, Wallen EM, Smith AB, Tickoo SK, Tamboli P, Reuter V, Schmidt LS, Hsieh JJ, Choueiri TK, Hakimi AA; Cancer Genome Atlas Research Network, Chin L, Meyerson M, Kucherlapati R, Park WY, Robertson AG, Laird PW, Henske EP, Kwiatkowski DJ, Park PJ, Morgan M, Shuch B, Muzny D, Wheeler DA, Linehan WM, Gibbs RA, Rathmell WK, Creighton CJ. The somatic genomic landscape of chromophobe renal cell carcinoma. *Cancer Cell.* 2014 Sep 8;26(3):319-30. doi: 10.1016/j.ccr.2014.07.014. Epub 2014 Aug 21.
23. Hormoz S, Bhanot G, Biehl M, Bilal E, Meyer P, Norel R, Rhrissorakrai K and Dayarian A, "Inter-species Inference of Gene Set Enrichment in Lung Epithelial Cells from Proteomic and Large Transcriptomic Data Sets", *Bioinformatics* Feb 15;31(4):492-500. doi: 10.1093/bioinformatics/btu569. Epub 2014 Aug 24.
24. Biehl M, Sadowski P, Bhanot G, Bilal E, Dayarian A, Meyer P, Norel R, Rhrissorakrai K, Zeller MD, Hormoz S, 'Inter-species prediction of protein phosphorylation in the sbv IMPROVER species translation challenge', *Bioinformatics.* 2015 Feb 15;31(4):453-61. doi: 10.1093/bioinformatics/btu407. Epub 2014 Jul 3.

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26. Wagh K, Bhatia A, Greenbaum BD, Bhanot G, Bird to Human Transmission Biases and Vaccine Escape Mutants in H5N1 Infections. *PLoS One*. 2014 Jul 2;9(7):e100754. doi: 10.1371/journal.pone.0100754. eCollection 2014.
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32. Norton K-A, Namazi S, Barnard N, Fujibayashi M, Bhanot G, Ganesan S, Iyatomi H, Ogawa K, Shinbrot T. (2012) Automated Reconstruction Algorithm for Identification of 3D Architectures of Cribriform Ductal Carcinoma In Situ. *PLoS ONE* 7(9): e44011. doi:10.1371/journal.pone.0044011.
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36. Pathak S, Rege M, Gogtay NJ, Aigal U, Sharma SK, Valecha N, Bhanot G, Kshirsagar NA, Sharma S. (2012) Age-Dependent Sex Bias in Clinical Malarial Disease in Hypoendemic Regions. *PLoS ONE* 7(4): e35592. doi:10.1371/journal.pone.0035592.
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41. Basavanahally A, Ganesan S, Agner S, Monaco J, Feldman M, Tomaszewski J, Bhanot G, Madabhushi A, Computerized Image-Based Detection and Grading of Lymphocytic Infiltration in HER2+ Breast Cancer Histopathology, *IEEE Trans Biomed Eng*. 2010, 57(3):642-53.
42. Liu H, Brannon AR, Reddy A, Alexe G, Seiler M, Arreola A, Oza J, Yao M, Juan D, Liou L, Ganesan S, Levine AJ, Rathmell WK, Bhanot G. Identifying direct mRNA targets of microRNA dysregulated in cancer: with application to clear cell Renal Cell Carcinoma. *BMC Systems Biology* 2010, 4:51.
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44. Reddy A, Brannon AR, Seiler M, Irgon J, Ljungberg B, Zhao H, Brooks JD, Ganesan S, Rathmell WK, Bhanot G. A Predictor for Survival in Intermediate Grade Clear Cell Renal Cell Carcinoma. *BIOCOMP 2009*: 441-447
45. Fatakawala H, Xu J, Basavanahally A, Bhanot G, Ganesan S, Feldman M, Tomaszewski J, Madabhushi A. Expectation Maximization driven Geodesic Active Contour with Overlap Resolution (EMaGACOR): Application to Lymphocyte Segmentation on Breast Cancer Histopathology. *IEEE Trans Biomed Eng*. 2010, 57(7):1676-89. PMID: 20172780
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- Extreme Longevity in Japan. 2008, PLoS ONE, 3(6): e2421. doi:10.1371/journal.pone.0002421. PMID: PMC2408726
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Articles/Posters/Talks Conference Proceedings.

1. **ASCO-SITC Clinical Immuno-Oncology Symposium.** Feb 28-Mar 2, San Francisco, CA, Panda A, Stein MN, Riedlinger G, Bhanot G, Ganesan S. *Role for immune checkpoint blockade in BRCA2-mutant prostate cancer.* J Clin Oncol 37, 2019 (suppl 8; abstr 59). Poster, 2019 (<https://meetinglibrary.asco.org/record/170405/>)

2. **CRI-CIMT-EATI-AACR International Cancer Immunotherapy Conference.** Sept 30 – Oct 3, 2018, New York, NY. Ganesan S, Panda A, Bhanot G. *Pan-Cancer analysis to identify cancers that may benefit most from LAG-3 blockade.* Cancer Immunol Res 2019; 7(2 Suppl): Abstract nr B076. Poster, 2018. DOI: 10.1158/2326-6074.CRICIMTEATIAACR18-B076
3. **2018 ASCO–SITC Clinical Immuno-Oncology Symposium Oral presentation:** San Francisco, January 2018. Panda A, De Cubas A, Beckermann K, Riedlinger G, Stein MN, Mayer TM, Mehnert JM, Rathmell K, Bhanot G, Ganesan S. Expression of endogenous retroviruses and response to immune checkpoint therapy in renal cell cancer. J Clin Oncol 36, 2018 (suppl 5S; abstr 104)., (<https://meetinglibrary.asco.org/record/156440/>)
 ASCO–SITC Clinical Immuno-Oncology Symposium, February 23–25, 2017, Orlando FL. Ganesan S, Bhanot G, ..., Panda A. *Mutation burden as a biomarker of response to immune checkpoint therapy in nine solid cancers.* J Clin Oncol 35, 2017 (suppl 7S; abstract 35). Poster, (<https://meetinglibrary.asco.org/record/140894/>)
4. **SITC Annual Meeting.** Nov 9-13, 2016. National Harbor, MD. Panda A, Mehnert JM, Hirshfield KM, .. Bhanot G et al. *Immune activation and response to the anti-PD-L1 antibody avelumab in a patient with EBV+ metastatic gastric adenocarcinoma.* J Immunother Cancer 2016; 4(Suppl 1):82. Poster, 2016 DOI: 10.1186/s40425-016-0172-7
5. **AACR 107th Annual Meeting.** April 16-20, 2016; New Orleans, LA. Panda A, Betigeri A, Subramanian K, Hirshfield K, Rodriguez L, Ganesan S, Bhanot G. *Predicting response to immune checkpoint therapy using a mutation burden threshold.* Cancer Res 2016; 76(14 Suppl): Abstract nr 1424. Poster, 2016. DOI: 10.1158/1538-7445.AM2016-1424
6. **AACR–NCI–EORTC International Conference on Molecular Targets and Cancer Therapeutics.** Podium presentation, November 5-9, 2015; Boston, MA. Mehnert JM, Panda A, Zhong H, .. Bhanot G, Ganesan S. *Exceptional response to PD-1 antibody treatment in a POLE-mutant endometrial cancer.* Mol Cancer Ther 2015; 14(12 Suppl 2): Abstract nr PR05., 2015 DOI: 10.1158/1535-7163.TARG-15-PR05
7. **Poster, Digestive Disease Week 2019.** May 18-21, 2019. San Diego, CA. Bajpai M, Panda A, Das KM, Bhanot G. *Gene Expression Signature of the “Point of no Return” in Barrett’s Epithelial Carcinogenesis.* Gastroenterology 156 (6), S-967.. DOI: 10.1016/S0016-5085(19)39374-6.
8. **NY Academy of Sciences Symposium ‘Quantitative Approaches in Immuno-Oncology’, Mutations and Immune Checkpoint Therapy Response,** March 1, 2017, New York, NY.
9. **Poster: “Digestive Diseases Week”** organized by the American Gastroenterological Association, Chicago, May 2014. Bajpai M, Seiler M, Alexe G, Bhanot G, Ganesan S, Das KM. *“Genomic Changes Correlate with Transformed Phenotype in a Dynamic in-vitro Model of Barrett’s Carcinogenesis.”*
10. **sbv Improver Symposium:** Bhanot G, Biehl M, Dayarian A, Hormoz S, *Intra- and inter-species phosphorylation prediction and network inference,* Athens, Greece, October 28-31, 2013;
11. **Poster: CSHL Asia Conference on ‘Frontiers in Bioinformatics and Computational Biology’,** September 23-27, 2013. Yadav A, Bhatia A, Zhu C, Tekkedil MM, Gagneur J, Steinmetz LM, Bhanot G, Sinha H, *‘Multi-QTL Interactions Regulating Phenotypic Plasticity’,* Poster won 2nd prize.
12. **12th Annual International Conference on Research in Computational Molecular Biology (RECOMB08).** Mar 30-April 2, 2008, Singapore. H. Liu, G. Alexe, D. Juan, T. Antes, C. Delisi, L. Liou, S. Ganesan, G. Bhanot, *A Procedure to Identify MicroRNA Gene Targets in Human Kidney Cancer,* Poster.

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14. **7th Annual International Workshop on Bioinformatics and Systems Biology**, Tokyo, Japan 2007. Alexe G., G. S. Dalgin, D. Scandfeld, P. Tamayo, J. Mesirov, S. Ganesan, C. DeLisi, G. Bhanot. *Breast Cancer Stratification from Analysis of Micro-array data of Micro-dissected Specimens*” Genome Informatics, 2007 Vol. 18.
15. **ISMB**, Viena, Austria, July 21-25, 2007. Alexe G, G. Bhanot, A. Climescu-Haulica. Accurate classification of cancer phenotypes via an entropy based Monte Carlo method..
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18. **Proceedings of the 2006 ACM/IEEE conference on Supercomputing**. Vranas P., G. Bhanot, M. Blumrich, D. Chen, A. P. Heidelberger, V. Salapura, J. C. Sexton, *The Blue Gene L Supercomputer and Quantum Chromodynamics*, ISBN:0-7695-2700-0
19. **Proceedings of Supercomputing 2005**. Seattle, Nov. 2005. G. Bhanot, J. M. Dennis, J. Edwards, W. Grabowski, M. Gupta, K. Jordan, R. Loft, J. Sexton, A. St-Cyr, S. J. Thomas, H. M. Tufo, T. Voran, R. Walkup, A. Wyszogrodzki, *An Atmospheric General Circulation Model for Blue Gene.*
20. **Proceedings of Supercomputing 2005**, Seattle, Nov. 2005. G. Bhanot, Dong Chen, Alan Gara, James C. Sexton, Pavlos Vranas, *Lattice QCD on BlueGene/L, the Next Generation*.
21. **Proceedings of 53rd ASMS Conference on Mass Spectrometry**, San Antonio, TX June 5-9, 2005. Venkataraghavan B., G. Bhanot, G. Alexe, A. J. Levine, *Mass Spectral Patterns Indicative of Cancer*.
22. **Proceedings of RECOMB 2005**, Cambridge MA, May 14-18 2005. G. Bhanot, G. Alexe, B. Venkataraghavan, R. Ramaswamy, J. Lepre, A. J. Levine, G. Stolovitzky, *Robust meta-analysis of genomic data for cancer diagnosis*.
23. **Proceedings, IEEE Computational Systems Bioinformatics Conference (CSB 2005)** Stanford, CA, August 2005. G. Alexe, G. Bhanot, B. Venkataraghavan, R. Ramaswamy, J. Lepre, A. Levine, G. Stolovitzky, *A robust meta-classification strategy for cancer diagnosis from gene expression data*.
24. **Proceedings of Euro-Par 2005**. G. Almasi, G. Bhanot et al, *Early Experience with Scientific Applications on the Blue Gene/L Supercomputer*. Proceedings: pp. 560-570.
25. **Supercomputing 2005**. G Bhanot, J.M.Dennis, J. Edwards, W. Grabowski, M. Gupta, K. Jordan, R. D. Loft, J. Sexton, A. St-Cyr, S. J. Thomas, H. M. Tufo, T. Voran, R. Walkup, A.A. Wyszogrodzki, *An Atmospheric General Circulation Model for BG/L*.
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27. **Proceedings of Supercomputing 2002**. N. R. Adiga, G. Bhanot et al, *An overview of the BlueGene/L Supercomputer*, pp 1-22.

28. **Proceedings of U. of Georgia workshop on ‘Recent Developments in Computer Simulation Studies in Condensed Matter Physics**, Feb 23-27, 1998. G. Bhanot, *How to Use Multiple CPUs on a Node With Little Effort*.
29. **Proceedings of the ‘Lattice Higgs Workshop’**, Tallahassee, FL 16-18 May, 1988. G. Bhanot, K. Bitar, *Lattice Higgs Mass Bounds and Different Cutoff Schemes*. ed. Berg, Bhanot, Burbank, Creutz and Owens, World Scientific (1988).
30. **Proceedings of the 3rd UC Conference on Statistical Mechanics**, UD Davis, March, 1988 (ed. C. Garrod). G. Bhanot, P. Carter, *Computing Partition Functions*.
31. **Proceedings of the Workshop on Lattice Gauge Theory**, Brookhaven National Laboratory, 14-19 September, 1986. G. Bhanot. *Finite Density Aggregation*, FSU-SCRI-86-72, Nov. 1986.
32. **Proceedings of a workshop at the Florida State University**, eds. D. Duke and J. .F. Owens, (World Scientific, 1985). G. Bhanot, *Critical Properties of Ising Models on Fractals of Dimension $1 < d < 4$* , In “Advances in Lattice Gauge Theory”.
33. **Proceedings of the Workshop on Lattice Gauge Theory**, Argonne National Lab. (1984). G. Bhanot, *Topology in the $O(3)$ Sigma Model in Two Dimensions*.
34. **Proceedings of the 7th John’s Hopkins Workshop on Current Problems in High Energy Physics**, Bonn, (1983). G. Bhanot, *Theta Parameter Monte-Carlo*.
35. **Proceedings of the 1983 Cargese summer school, 1983**. G. Bhanot, *Lattices, Demons and the Microcanonical Ensemble*, In Progress in Gauge Field Theory. eds. G ‘t Hooft et al, NATO ASI Series, (Plenum, 1984). Also presented at the Workshop on Lattice Gauge Theory, Visegrad, Hungary, September, 1983.
36. **Proceedings of the Winter School in Physics**, Mahabaleshwar, India (1983). G. Bhanot, *Numerical Simulations – Canonical and Microcanonical*.
37. **Workshop on non-perturbative field theory and QCD**, ICTP, Trieste (1982). G. Bhanot, *Quenched Reduced Large N Models*, CERN preprint TH-3496.
38. **Proceedings of the VI High Energy Physics Symposium**, Mysore, India (1982). G. Bhanot, *Lattice Gauge Theory, the Monte-Carlo Approach*, CERN preprint TH-3507.

Conferences Organized:

- **ESANN 2017: 25 th European Symposium on Artificial Neural Networks, Bruges, Belgium:** co-organized Session 4: *Biomedical data analysis in translational research: integration of expert knowledge and interpretable models*, April 26-28, 2017.
- **Dagstuhl Seminar 16261: Integration of Expert Knowledge for Interpretable Models in Biomedical Data Analysis**, June 26 – July 1, 2016;
- **IPAM Workshop at UCLA: Translating Cancer Data and Models to Clinical Practice**, February 10 - 14, 2014;
- **Aspen Center for Physics Workshop, Evolutionary Dynamics and Information Hierarchies in Biological Systems**, August 19 - September 9, 2012.
- **DIMACS/MBI US - African BioMathematics Initiative: Workshop on Genetics and Disease Control**, Elmina, Ghana, August 8-12, 2011.
- **Program Committee Member** for SIAM conference on *Computational Science and Engineering*, CSE07, Feb 19-23, 2007, Costa Mesa, CA, <http://www.siam.org/meetings/cse07/>;
- **Organized Mini-Symposium at SIAM CSE07**, Costa Mesa, CA Feb 19-23, 2007: “MS57: *Numerical Techniques in the Study of Complex Biological Phenotypes*.”

Invited Talks:

1. Radium Hospital, Oslo, Norway: Invited talk at Workshop: *Towards in silico-guided clinical trials in cancer*, May 15-16, 2019. Talk Title: *A Quasi Birth-Death Model for Tumor Recurrence*.
2. Radium Hospital, Oslo, Norway. Thursday Seminar May 5, 2019. *Immune Checkpoint Therapy, Mutations and Viruses*.
3. UC San Diego, Moores Cancer Center talk: Jan 10, 2019. *Viruses and Immune Checkpoint Therapy*.
4. Netherlands, U. of Groningen Colloquium, July 17, 2018, *Darwin everywhere and all the time*.
5. Israel, Weizmann Institute Workshop: 'Physicists working on Cancer', July 1-12, 2018, *Treating cancer patients one at a time*.
6. CHES Talk, Rutgers University, May 2, 2018, *Darwin everywhere and all the time*.
7. Norway, Oslo University Hospital, Dept. of Cancer Genetics Mini Symposium, Norway, *Endogenous Retroviruses and response to immune checkpoint therapy*, April 17, 2018.
8. Center for Quantitative Biology Seminar, Rutgers University, *Tissue Specific Ribosomes*, March 27, 2018.
9. India, Tata Institute of Fundamental Research, *Treating Cancer, one person at a time*, January 9, 2018.
10. Rutgers University Physics Department Banquet talk. April 25, 2017, 'Godel, Euler, Cantor: The cool Math that kids could learn in school.'
11. Nashville, TN, Vanderbilt Ingram Cancer Center, Nashville, TN, 'Mutations and Immune Checkpoint Therapy Response', March 29, 2017.
12. 116 Stat. Mech. Conf., December 18-20, 2016, Rutgers University. *Genetics and Personalized Medicine*
13. Florida International University: 27 October, 2016, 'Genetics and Personalized Medicine'
14. Institute for Cancer Research, Oslo University Hospital, April 14, 2016 and International Center for Theoretical Science, Bangalore, Jan. 13, 2016: *Mutations, Immune Checkpoint Therapy and Personalized Medicine*
15. Workshop talk: "Computation as a driver of translational medicine", Catania, Italy, September 28-30, 2015. *Mutations and Immunotherapy*
16. Center for Mitochondrial and Epigenomic Medicine, The Children's Hospital of Philadelphia, 09-24-2015: *Finding all mtDNA Haplogroup Specific Polymorphisms using Recursive PCA*.
17. Proteomics, Rutgers University, 09-21-2015. *Personalized Medicine and Immunotherapy*
18. IISc, Bangalore, Jan 12, 2015. *FLU Pandemics, Past, Present and Future*.
19. CHES, Dept. of Anthropology, Rutgers University, 12-5-2014. *Dietary Pressure and Genetic Adaptation in the Maasai*.
20. Mini-Symposium "Data analysis, learning and related topics" U of Groningen, 11-27-2014: *Proofs from the book: Gödel, Gauss and Cantor – the math they should teach in school*.
21. Workshop: "Intelligent Computation meets bio-medical research: Recent Developments in Computational Biology", Birmingham, UK, 10-9-2014: *Predicting Metastasis, survival and drug efficacy in breast cancer*.
22. CINJ Retreat, RWJMS, Busch Campus, 05-21-2014. *Clinically relevant markers of early recurrence in ovarian cancer*.
23. TIFR – Chai and Why Program, Feb. 2014, St Xaviers College, Mumbai, *FLU Pandemics, past, present and future*.
24. U. of Houston, 03-21-2014. *Transmission Biases and Vaccine Escape Mutants in H5N1*.

25. KITP, University of California at Santa Barbara, January 2013, *The emergence of cooperation.*
26. sbv Improver Symposium in Athens, Greece: October 28-31, 2013. *Understanding the Limits of Rodent Models for Human Biology.*
27. Workshop on “Brain Inspired Computing”, Cetraro, Italy, July 7-11, 2013. *Modeling Emergent Behavior in Dynamical Systems.*
28. Institute for Advanced Simulation at the Forschungszentrum Juelich, June 7 and 12, 2013 *Identifying markers for cancer progression and drug resistance from high throughput data and FLU Pandemics, Mimicry, selection and evolution.*
29. Groningen University, 06-17-2013: *FLU Pandemics, past, present and future.*
30. University of Hawaii Physics Colloquium, April 2013: *Viral Pandemics.*
31. University of Cologne, Germany: 06-19-2013: *How Viruses Evolve and Adapt*
32. 109 th Statistical Mechanics, Rutgers University from May 11-14, 2013. Talk titled: “*Inferring the Evolution of H5N1 and Estimating the Likelihood of Pandemics.*”
33. Workshop on “Cooperation and the Evolution of Multicellularity” at the Kavli Institute of Theoretical Physics, UCSB from January 7 to March 15, 2013. *The Selfish Gene and the Evolution of Cooperation.*
34. Workshop on “*Physics and Mathematics of Cancer*” at the Kavli Institute of Theoretical Physics, UCSB from 21 May to 13 July 2013. *A Physicist’s Approach to Breast Cancer.*
35. Co-organizer of DIMACS workshop entitled “*Biocomputing, Genomics and Epigenomics*”, Rutgers University, September 13, 2012.
36. Co-organizer of workshop “*Bioinformatics Strategies for Integrative Cancer Genomics*”, in IEEE workshop BIBM 2012, Philadelphia, Oct. 4-7, 2012.
37. TIFR – Chai and Why Program, Feb. 2012, Prithvi Theater, Mumbai, *The Selfish Gene and the Evolution of Cooperation.*
38. Workshop on Genetics and Disease Control, Elmina, Ghana, August 8-12, 2011. Talks: *Evolution and mimicry in influenza and other RNA viruses; We are all Africans: Decoding recent human migration history from Mutations; Tutorial: Introduction to the human innate and adaptive immune response.*
39. Department of Genetics, Radium Hospital, Oslo, August 18-19, 2011. Two talks: *Amplicons and Tamoxifen Resistance: Results from Illumina Sequencing; Lactase persistence and lipid pathway selection in the Maasai.*
40. Dagstuhl Seminar: Learning in the context of very high dimensional data: August 21-26, 2011. *Some biology applications for the analytically minded.*
41. Cancer Institute 2011 Retreat, UMDNJ, Piscataway, 05-26-2011. *The YES1 kinase is a therapeutic target in triple negative breast cancer.*
42. Cambridge Research Institute, Cambridge University, UK, 03-28-2011 ‘*Three research vignettes: Amplicons and tamoxifen resistance, Kinase targets for triple negative breast cancer and identifying recent selection in the Maasai using HapMap 3 SNP data.*
43. Bar-Ilan University, Israel, 04-07-2011, *Amplicons and Tamoxifen Resistance in Breast cancer and Identifying signatures of selection in SNP data.*
44. Physics Department, Hebrew University, Jerusalem, July 6, 2008.
45. Bar Ilan University, Ramat Gan, Israel, July 3, 2008.
46. IBSB, Berlin, 9-11 June, 2008: <http://www2.huberlin.de/biologie/irtg/ibsb08/index.php>.
47. 8 th International Workshop on Bioinformatics and Systems Biology (IBSB), Berlin, 2008: G. Bhanot, H. Liu, G. Alexe, D. Juan, T. Antes, S. Ganesan, C. Delisi and L. Liou, “MicroRNA

Diagnostic Panels and Gene Targets in ccRCC". <http://www2.hu-berlin.de/biologie/irtg/ibsb08/index.php>.

48. Poster: RECOMB08, Singapore, 2008: H. Liu, G. Alexe, D. Juan, T. Antes, C. Delisi, L. Liou, S. Ganesan, G. Bhanot, "A Procedure to Identify MicroRNA Gene Targets in Human Kidney Cancer", poster abstract accepted by 12th Annual International Conference on Research in Computational Molecular Biology.
49. University of Hawaii Physics Colloquium, "We are all Africans", March 2008.
50. Invited paper presented at STABIL07, Max Planck Institute for the Physics of Complex Systems. Oct 18, 2007. Title of paper: "PCA and ensemble consensus clustering reveal that high expression of lymphocyte-associated genes in node negative HER2+ breast cancers correlates with lower recurrence rates". <http://www.mpipks-dresden.mpg.de/~stabil07/> and <http://www.mpipks-dresden.mpg.de/~stabil07/program.html>.
51. Max Planck Institute for Computer Science, Saarbruecken, Oct 24, 2007. Title of talk: "mtDNA and the Migration History of Modern Humans".
52. Plenary Speaker, ICCS Conference, Boston MA, Oct 28-Nov 2. 2007. <http://necsi.org/events/iccs7/>; <http://knowledgetoday.org/wiki/index.php/ICCS07>;
53. Poster at "Genome Informatics", Cold Spring Harbor Laboratory, Nov 1-5, 2007 <http://meetings.cshl.edu/meetings/info07.shtml> and http://meetings.cshl.edu/meetings/abstracts/2007info_absstat.html
54. Colloquium speaker, Physics Department, Boston University, Sept. 18, 2007.
55. Invited Public Talk, "Mitochondrial Sequences and the Migration History of Modern Humans", August 29, 2007, at the Aspen Institute, Paepcke Center, sponsored by the Aspen Center for Physics. <http://www.aspenphys.org/lectures-summer%202007.htm>
56. "Population Genetics, Migration, Complex Phenotypes and Cancer Biology", presented at the 'International Workshop on Quantitative Biology', sponsored by the Romanian Cultural Institute, the International Centre of Biodynamics (Romania), The Institute for Complex Adaptive Matter and the Aspen Center for Physics. Bucharest, Romania, May 23, 24, 2007. <http://www.biodyn.ro/html/workshop-prog.pdf>
57. Invited paper: "Breast Cancer Stratification from Analysis of Micro-Array data of Micro-Dissected Specimens", presented at "The Seventh Annual International Workshop on Bioinformatics and Systems Biology", July 31-August 2, 2007, Institute of Medical Science, The University of Tokyo: <http://bonsai.ims.u-tokyo.ac.jp/ibsb2007>
58. Poster: "Accurate classification of cancer phenotypes via an entropy based Monte Carlo method", G. Alexe, G. Bhanot and A. Climescu-Haulica, ISMB 2007, Vienna, 21-25 July, 2007.
59. Poster, Recomb 2006, Venice Italy, April 2-5, 2006 <http://recomb06.dei.unipd.it/>
60. INCOB2006, "Consensus Ensemble Clustering Reveals Novel mtDNA Phylogeny for the N Clade" Dec. 18-20, 2006. New Delhi, India: <http://www.incob2006.in>.
61. Invited Paper, Genographic Conference, Capetown, South Africa, May 5-9, 2006.
62. Paper, ISMB 2006, Fortaleza, Brazil. August 6-10, 2006 <http://ismb2006.cbi.cnptia.embrapa.br/>.
63. Invited paper, 'Robust Diagnosis of Non-Hodgkin Lymphoma Phenotypes Validated on Gene Expression Data from Different Laboratories', The 5th International Workshop on Bioinformatics and Systems Biology <http://www.biologie.hu-berlin.de/~gk/events/ibsb2005/>, Berlin, Germany, August 22-25, 2005
64. IEEE Computer Society, Bioinformatics Conference, CSB2005, Stanford University, Aug 8-12, 2005

65. Two Papers presented at the DIMACS Workshop: “Detecting and Processing Regularities in High Throughput Biological Data” <http://dimacs.rutgers.edu/Workshops/Detecting/>
66. Poster, Conference on Mass Spectrometry, San Antonio, TX 5-9 June, 2005, <http://www.asms.org/Default.aspx?tabid=43>
67. Poster, Joint Annual Meeting of the Interface and the Classification Society of North America: Clustering and Classification http://ilya.wustl.edu/if_csna_2005_meeting/ Washington University School of Medicine St. Louis, Missouri, June 8-12, 2005
68. Poster, RECOMB2005, MIT, Cambridge, MA, May 14-18, <http://www.broad.mit.edu/recomb2005/>.

Books Edited:

1. G. Bhanot, S. Y. Chen and P. Seiden, eds. ‘Some New Directions in Science on Computers’, World Scientific Inc., Singapore (1997).
2. G. Bhanot, B. Berg, M. Burbank, M. Creutz, J. Owens, eds., ‘Lattice Higgs Workshop’, (Proc.), (World Scientific, 1988).

Book Chapters:

1. Reddy A, Kronek L-P, Brannon AR, Seiler M, Ganesan S, Rathmell WK, Bhanot G. *Predicting Cancer Survival Using Expression Patterns*. In “Medical Biostatistics for Complex Diseases” 2010, Editors: Frank Emmert-Streib and Matthias Dehmer, Wiley-VCH, Weinheim, Germany. ISBN: 978-3-527-32585-6.
2. Alexe G, Monaco J, Doyle S, Basavanhally A, Reddy A, Seiler M, Ganesan S, Bhanot G, Madabhushi A. *Towards Improved Cancer Diagnosis and Prognosis using Analysis of Gene Expression Data and Computer Aided Imaging*. In ‘Experimental Biology and Medicine,’ (Maywood), 2009.
3. Bhanot G and Walkup R. Pthreads Programming and Optimization. Chapter 4, IBM Redbook SG24-5611-00: ‘Scientific Applications in RS/6000 SP Environments’, 1999.
4. Bhanot G, Sonnad V, Tamirisa CG. Mixed Models with Pthreads and MPI. In ‘Industrial Strength Parallel Computing,’ Ed. Alice Koniges, Morgan Kaufman Publishers, October, 1999.
5. Bhanot G. Resolution of Some Paradoxes in B-Cell Binding to Antigen: A Computer Study. In ‘New Directions in Statistical Physics: Econophysics, Bioinformatics, and Pattern Recognition’ Springer -DE-ISBN:3540431829, 2004, XVII Edition, Ed. L.Wille.

Teaching:

1. Fall 2016; Fall 2017: Byrne Seminar: Euler, Godel, Cantor and Gauss: The Cool Math You Never Learned in School. Freshmen only (1 credit).
2. Spring 2016: Byrne Seminar: The 10 great inventions of Evolution. Freshmen only (1 credit)
3. Spring 2015-2019: Introduction to Computational Biology for Physicists. Course 01:694:431 (3 credits)
4. Fall 2013-2017, Spring 2019 , “Analytical Methods in Biology’, Rutgers University Special Topics in Molecular Biology Course 01:694:230 (3 credits).
5. Spring 2011: Advanced Course for Biology and Physics PhD students presented at the Tata Institute of Fundamental Research, Bombay, India: “Biology as a physicists playground: introduction to ideas and approaches in population genetics and cancer biology” (4 credits).

6. Fall 2010, 2011: 01:694:420, 01:750:487: Special Topics course, co-listed in Molecular Biology and Physics: “Analyzing Numbers in Biology” (3 credits).
7. Spring, 2009: 01:694:421: Special Topics in Molecular Biology: “Introduction to bioinformatics and evolutionary modeling of human populations” (3 credits).
8. Fall, 2007, 2008: “Biology and Bioinformatics of Cancer”: BioMaPS Special Topics Course (3 credits).
9. Spring 2007: “Human Evolutionary Genetics, Migration, Modeling, Phylogenetic Analysis and Disease”, BioMaPS Special Topics Course (3 credits).

Current Ph.D. Student:

Current PhD Committee Memberships:

Unab Javed, Physics Department, Rutgers University

Ph.D. Advising/Mentoring: *Underlined were Rutgers University students*

2016-2020: Leonardo Santana, Physics Department, Rutgers University

2015-2018: Amartya Singh, Physics Department, Rutgers University,

Currently: Post-doc CINJ (Hossein Lab)

2015-2017: Anshuman Panda, Physics Department, Rutgers.

Currently: Post-doc CINJ (Ganesan Lab)

2012-2016: Anupama Yadav, Tata Institute of Fundamental Research, Mumbai, India.

Currently: Post-doc Dana Farber Cancer Institute (Vidal Lab)

2012-2015: Saumya Gupta, Tata Institute of Fundamental Research, Mumbai, India.

Currently: Post-doc Dana Farber Cancer Institute

2011-2015: Sunniva Bjorklund, Oslo Radium Hospital.

2009- 2013: Kshitij Wagh, Physics Department, Rutgers.

Currently: Scientist, Los Alamos National Lab.

2009-2013: Aatish Bhatia, Physics Department, Rutgers.

Currently: Free Lance Science Writer, NYC

2007-2012: Michael Seiler, BioMaPS Institute, Rutgers University.

2006-2010: Erhan Bilal, BioMaPS institute, Rutgers,

Currently, Research Staff Member, IBM Research, Yorktown Heights.

2011-2012: Dietlind Zuehlke and Tina Geweniger, University of Groningen, Holland.

2007-2012: Greg Miles, Boston Univ.

2003-2006, Gul Kirca-Dalgin, Boston University. Co-advisor with Prof. Delisi. 2005-2006,

2002-2006: R. Vijaya-Satya, University of Central Florida.

1991-94, John D. Weckel, Physics Department, Princeton University. Co-advisor with Prof. Stephen Adler.

1987-1989, Paul Carter, Physics Department, Florida State University.

1986-1989, Roman Salvador, Florida State University. Dr. Salvador went on to a post doc at Caltech and later founded Parasoft Corporation.

1982-1984, Peter Woit, Physics, Princeton University (Mentoring). PhD thesis title:

“Topological Charge in Lattice Gauge Theory”. Advisor: Curtis Callan.. Dr. Woit is currently Professor of Mathematics at Columbia University.

1982-1984, Charles Whitmer, Physics Department, Princeton University, Advisor: Prof. Stephen Adler. Dr. Whitmer co-founded Dynamical Systems Research, Inc. with Dr. Nathan Myhrvold which was acquired by Microsoft. Dr. Whitmer managed the Graphics Interface Group, designed the graphics subsystems for Windows NT and provided software development consulting overseas.

Undergraduate Advising/Mentoring:

2017: Zhangziyi Zhou, “Recursive PCA and non-negative matrix factorization as a method of inferring mtDNA phylogeny.”

2018: Venky Deshpande, “Genomics and Genetics of Olfaction”.

2018-19: Tyler Kletcha, “Specialized Ribosomes.”

2005-2006, Physics/Finance Senior Thesis, Julian Rachlin, Princeton University. Thesis title: “Principal Component Analysis and Extreme Value Theory in Financial Application”. Awarded a special prize for best interdisciplinary thesis:

http://www.physics.princeton.edu/www/jh/finance_and_physics.html

2004-2005, Supervisor for Junior Thesis of Cecilia Muldoon at Princeton University. Thesis title: “Extreme Value Theory Applied to Stock Prediction and Astrophysics”

Post-Doctoral Advising:

1. 2008-2010: Dr. Anupama Reddy, PhD in OR from Rutgers University. Dr. Reddy was a post-doc in my lab for one year. She worked on identifying patterns to predict risk of cancer progression from gene expression data. After working as research faculty at Duke University Medical School she is CEO of an online company: “Prism Analytics” providing bioinformatics services.
2. 2007-2008, Dr. Benjamin Greenbaum, PhD from Columbia University. Currently Assistant Professor at Mt Sinai Medical School.
3. 2007-2008, Dr. Huiqing Liu, Research Assistant Professor in my group. Worked on micro-RNA regulation of mRNA. Currently she is a Staff Scientist at Johnson&Johnson.
4. 2003-2006: Dr. Gabriela Alexe, at IBM TJ Watson Research Center and at IAS Princeton. Currently Research Faculty at the Dana Farber Cancer Institute, Harvard University.
5. Summer, 2007: Dr. Nilay Sethi, MD/PhD student at RWJMS. Worked at CINJ on the identification of subtypes of breast cancer which overexpress the oncogene IKBKE.
6. Summer 2004: Dr. Theron Voran, NCAR and U. of Colorado at Boulder; summer intern at IBM Research. Worked on: “Performance analysis of HOMME Climate Modeling code on the IBM Blue Gene L”.
7. Summer, 2004: Dr. Eoin Lawless, Trinity College Dublin; summer intern at IBM Research. Research topic: “Optimizing Task Layout on the IBM Blue Gene L”.
8. Fall, 2005: Dr. Stefan Krieg, NIC Juelich, Germany; summer intern at IBM Research. Research topic: “Optimizing performance of QCD code on the IBM Blue Gene L Supercomputer”
9. 1991-92: Dr. Jan Lacki, IAS Princeton post-doctoral fellow.
10. 1993. Dr. Ivan Horvath, Physics Department, Brookhaven National Laboratory post doctoral fellow

Master’s Student advising:

1. 2002-2003: Jian-Hua Zhu’s Boston University Master’s Thesis (Advisor was Prof. Delisi). Thesis was based on published paper: “The Importance of Thermodynamic Equilibrium for High

Throughput Gene Expression Arrays”, by Bhanot, Louzoun, Zhu and Delisi, Biophys J. 2003 January; 84(1):124-135.

High School Advising:

2019: Mentored Atharva Kulkarni for Cancer Project: “*Computational analysis to identify gene mutation patterns in primary tumors that can predict recurrence and metastasis*”
<https://news.rutgers.edu/news-release/12-year-old-rutgers-summer-scholar-pursues-cancer-research/20180710#.XdXLQy2ZMdU>

2006-2007: Advisor for Intel Project of Rafi Witten, PHS. “On the stability of three body orbits”

2006-2007: Mentor for Anand Krishnamurti, Bergen Academy (Princeton University Class of 2011)

2005-2006, Advisor for Intel Project of Sauhard Sahi, PHS. “Dynamics of Scale Free and Random Networks”, Semi-Finalist.

Science and Math Club:

Since 1994, I have been conducting a Science and Math Club, currently at the Institute for Advanced Study. The Club members are middle school and high students and their parents from the general community who meet from 10-11:30 AM on Sundays. We discuss diverse topics in the Natural Sciences and Mathematics with a focus on topics not usually covered in a school curriculum. Occasionally we also talk about economics, history, geography etc. Some recent subjects have been Number Theory, Cryptography/Encryption, Godel's Theorem, Special and Genral Relativity, Quantum Mechanics, Proof by Induction, Complex Numbers, the origin of the Universe and the Solar System, Life Cycles of Stars, Dark Matter, The Expansion of the Universe, Cellular Dynamics, Integral and Differential Calculus, Euler's Identity ($e^{i\pi} + 1 = 0$), the recent book by Piketty on Income Inequality, The Euler Characteristic and Platonic Solids, etc. We try to understand complex ideas using simple methods and rational thinking.