CURRICULUM VITAE

Valentin Dinu

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EDUCATION

Yale University, New Haven, Connecticut
PhD, Computational Biology and Bioinformatics, May 2007
Dissertation topic: "Informatics Approaches to Translational Research: Management and Analysis of Clinical and High Density Genomic Data"
Advisors: Perry L. Miller, Hongyu Zhao, Prakash Nadkarni, Paul M. Lizardi
Supported by National Library of Medicine Biomedical Informatics Training Grant, 2004-2007

Harvard University, Cambridge, Massachusetts
AB, *Magna Cum Laude with Highest Honors* in Physics and Mathematics, June 2000

ACADEMIC APPOINTMENTS

- Associate Professor of Biomedical Informatics, College of Health Solutions, Arizona State University, August 2014 – present
- Program Director, Master of Science in Biomedical Informatics Degree Program, 1/2019 – present
- Assistant Professor, Department of Biomedical Informatics, Arizona State University, August 2007 – August 2014
- Associate Professor and founding member, ASU-Mayo Center for Innovative Imaging (AMCII), January 2018 – present
- Associate Professor, Center for Personalized Diagnostics, Biodesign Institute, ASU, May 2010 – present
- Associate Professor, Department of Basic Medical Sciences, University of Arizona College of Medicine, Phoenix, January 2009 – present
- Adjunct Associate Investigator, Neurogenomics Division, Translational Genomics Research Institute (TGen), January 2008 – 2011
- Research Affiliate, Department of Health Sciences Research, Mayo Clinic, September 2013 – present.
- Graduate Research Assistant and Teaching Assistant (6 semesters), Computational Biology and Bioinformatics, Yale University, September 2003 – May 2007

- Course Assistant (6 Semesters), Mathematics Departments, Harvard University, September 1996 – May 1999
- Research Assistant, Physics Department, Harvard University, October 1995 – August 1996

INDUSTRY APPOINTMENTS

- Analyst, AQR Capital Management, LLC., New York, New York, March 2003 – August 2003
- Software Engineer, Quant Group, Kiodex, Inc., New York, New York, June 2001 – February 2003
- Software Consultant, Trilogy Software, Inc., Austin, Texas, July 1999 – April 2001
- Software Consultant, IBM, Gaithersburg, Maryland, May 1997 – August 1997

HONORS

2012 - 2014 Nominated in the "Top 40 Investigators" at Arizona State University based on research funding for the previous 12 months, as reported in the "Monthly Research & Sponsored Projects Chartbook" prepared by the Office of Knowledge Enterprise Development (OKED) at ASU.

PEER-REVIEWED JOURNAL PUBLICATIONS

1. Tchoukalova YD, Phung TN, Kennedy MM, Miranda-Grandjean D, Becquer E, Chen L, Zhang N, Dinu V, Wilson MA, Lott DG (2024). Idiopathic Subglottic Stenosis Is Associated With More Frequent and Abnormal Squamous Metaplasia. *Ann Otol Rhinol Laryngol*. 133(2):214-223.

2. Arora A, Jack K, Kumar AV, Borad M, Girardo ME, De Filippis E, Yang P, Dinu V (2023). Genome-Wide Association Study of Gallstone Disease Identifies Novel Candidate Genomic Variants in a Latino Community of Southwest USA. *J Racial Ethn Health Disparities*.

3. Salem NM, Jack KM, Gu H, Kumar A, Garcia M, Yang P, Dinu V (2023). Machine and deep learning identified metabolites and clinical features associated with gallstone disease. *Computer Methods and Programs in Biomedicine Update*. 3:100106.

4. Peter B, Bruce L, Finestack L, Dinu V, Wilson M, Klein-Seetharaman J, Lewis CR, Braden BB, Tang YY, Scherer N, VanDam M, Potter N (2023). Precision Medicine as a New Frontier in Speech-Language Pathology: How Applying Insights From Behavior Genomics Can Improve Outcomes in Communication Disorders. *Am J Speech Lang Pathol*. 32(4):1397-1412.

5. Ahmadinejad N, Troftgruben S, Wang J, Chandrashekar PB, Dinu V, Maley C, Liu L (2022). Accurate Identification of Subclones in Tumor Genomes. *Molecular Biology and Evolution*. 39(7).

6. Saul M, Dinu V (2021). Family Rank: A graphical domain knowledge informed feature ranking algorithm. *Bioinformatics*.

7. Lancaster HS, Liu X, Dinu V, Li J (2020). Identifying interactive biological pathways associated with reading disability. *Brain and Behavior*. 10(8):e01735.

8. Hingorani P, Dinu V, Zhang X, Lei H, Shern JF, Park J, Steel J, Rauf F, Parham D, Gastier-Foster J, Hall D, Hawkins DS, Skapek SX, Labaer J, McEachron TA (2020). Transcriptome analysis of desmoplastic small round cell tumors identifies actionable therapeutic targets: a report from the Children's Oncology Group. *Scientific Reports*. 10(1):12318.

9. Elhabyan A, Elyaacoub S, Sanad E, Abukhadra A, Elhabyan A, Dinu V (2020). The role of host genetics in susceptibility to severe viral infections in humans and insights into host genetics of severe COVID-19: A systematic review. *Virus Research*. 289:198163.

10. Nandakumar R, Dinu V (2020). Developing a machine learning model to identify protein-protein interaction hotspots to facilitate drug discovery. *PeerJ*. 8:e10381.

11. Peter B, Dinu V, Liu L, Huentelman M, Naymik M, Lancaster H, Vose C, Schrauwen I (2019). Exome Sequencing of Two Siblings with Sporadic Autism Spectrum Disorder and Severe Speech Sound Disorder Suggests Pleiotropic and Complex Effects. *Behav Genet*. 49(4):399-414.

12. Li C, Dinu V (2018). miR2Pathway: A novel analytical method to discover MicroRNA-mediated dysregulated pathways involved in hepatocellular carcinoma. *Journal of Biomedical Informatics*. 81:31-40.

13. Li C, Liu L, Dinu V (2018). Pathways of topological rank analysis (PoTRA): a novel method to detect pathways involved in hepatocellular carcinoma. *PeerJ*. 6:e4571.

14. Kras KA, Langlais PR, Hoffman N, Roust LR, Benjamin TR, De Filippis EA, Dinu V, Katsanos CS (2018). Obesity modifies the stoichiometry of mitochondrial proteins in a way that is distinct to the subcellular localization of the mitochondria in skeletal muscle. *Metabolism*. 89:18-26.

15. Day SE, Coletta RL, Kim JY, Campbell LE, Benjamin TR, Roust LR, De Filippis EA, Dinu V, Shaibi GQ, Mandarino LJ, Coletta DK (2016). Next-generation sequencing methylation profiling of subjects with obesity identifies novel gene changes. *Clinical Epigenetics*. 8:77.

16. Lee PV, Dinu V (2015). BitTorious volunteer: server-side extensions for centrally-managed volunteer storage in BitTorrent swarms. *BMC Bioinformatics*. 16:364.

17. Huentelman MJ, Muppana L, Corneveaux JJ, Dinu V, Pruzin JJ, Reiman R, Borish CN, De Both M, Ahmed A, Todorov A, Cloninger CR, Zhang R, Ma J, Gallitano AL (2015). Association of SNPs in EGR3 and ARC with Schizophrenia Supports a Biological Pathway for Schizophrenia Risk. *PloS one*. 10(10):e0135076.

18. Brown JR, Dinu V (2015). Ratios and Housekeeper Normalization. *Journal of Biometrics and Biostatistics*. 6(252):2.

19. Mielke CJ, Mandarino LJ, Dinu V (2014). AMASS: a database for investigating protein structures. *Bioinformatics*. 30(11):1595-1600.

20. Lee PV, Dinu V (2014). BitTorious: global controlled genomics data publication, research and archiving via BitTorrent extensions. *BMC Bioinformatics*. 15(1):424.

21. Kocher JP, Quest DJ, Duffy P, Meiners MA, Moore RM, Rider D, Hossain A, Hart SN, Dinu V (2014). The Biological Reference Repository (BioR): a rapid and flexible system for genomics annotation. *Bioinformatics*. 30(13):1920-1922.

22. Bradley BS, Loftus JC, Mielke CJ, Dinu V (2014). Differential expression of microRNAs as predictors of glioblastoma phenotypes. *BMC Bioinformatics*. 15(1):21.

23. Huang K, Yellapantula V, Baier L, Dinu V (2013). NGSPE: A pipeline for end-to-end analysis of DNA sequencing data and comparison between different platforms. *Computers in Biology and Medicine* 43(9):1171-1176.

24. Brown JR, Dinu V (2013). High performance computing methods for the integration and analysis of biomedical data using SAS. *Computer Methods and Programs in Biomedicine*. 112(3):553-562.

25. Gallitano AL, Tillman R, Dinu V, Geller B (2012). Family-based association study of early growth response gene 3 with child bipolar I disorder. *Journal of Affective Disorders*. 138(3):387-396.

26. Briones N, Dinu V (2012). Data mining of high density genomic variant data for prediction of Alzheimer's disease risk. *BMC Medical Genetics*. 13:7.

27. Brown JR, Stafford P, Johnston SA, Dinu V (2011). Statistical methods for analyzing immunosignatures. *BMC Bioinformatics*. 12:349.

28. Kriseman J, Busick C, Szelinger S, Dinu V (2010). BING: biomedical informatics pipeline for Next Generation Sequencing. *Journal of Biomedical Informatics*. 43(3):428-434.

29. Li C, Li Y, Zhang X, Stafford P, Dinu V (2009). ICRPfinder: a fast pattern design algorithm for coding sequences and its application in finding potential restriction enzyme recognition sites. *BMC Bioinformatics*. 10:286.

30. Xiang B, Li A, Dinu V, Nowak NJ, Zhao H, Li P (2008). Analytical and clinical validity of whole-genome oligonucleotide array comparative genomic hybridization for pediatric patients with mental retardation and developmental delay. *American Journal of Medical Genetics*. 146A(15):1942-1954.

31. Dinu V, Zhao H, Miller PL (2007). Integrating domain knowledge with statistical and data mining methods for high-density genomic SNP disease association analysis. *Journal of Biomedical Informatics*. 40(6):750-760.

32. Dinu V, Nadkarni P (2007). Guidelines for the effective use of entity-attribute-value modeling for biomedical databases. *International Journal of Medical Informatics*. 76(11-12):769-779.

33. Dinu V, Miller PL, Zhao H (2007). Evidence for association between multiple complement pathway genes and AMD. *Genetic Epidemiology*. 31(3):224-237.

34. Dinu V, Nadkarni P, Brandt C (2006). Pivoting approaches for bulk extraction of Entity-Attribute-Value data. *Computer Methods and Programs in Biomedicine*. 82(1):38-43.

Peer Reviewed Articles: Submitted

1. Carrion J, Nandakumar R, Shi X, Gu H, Kim Y, Raskind WH, Peter B, Dinu V. A data-fusion approach to identifying developmental dyslexia from multi-omics datasets. bioRxiv. 2023. Epub 2023/03/14. doi: 10.1101/2023.02.27.530280. PubMed PMID: 36909570; PMCID: PMC10002702

2. Nandakumar R, Shi X, Gu H, Kim Y, Raskind WH, Peter B, Dinu V. First joint exome and metabolome analysis in dyslexia implicates immune system deficits and dysregulated sensory perception.

3. Peter, B., Hogan, T., Dinu, V., Liu, L., Alt, M., Green, S., Cowan, N., Schrauwen, I., Naymik, M., Sacchetta, M., Vose, C., Deshpande, K., Guido, J., Bruce, L., Gray, S. Whole genome sequencing reveals chromosomal rearrangements involving CTNNA3 and 22q11.2 in a child with severe developmental language disorder, dyslexia, and sequential processing deficit.

4. Raaz, C., Bruce, L., Ganapathiraju, M., Klein-Seetharaman, J., Liu, L., Dinu, V., Peter, B. Exome sequencing and functional gene analysis in three de novo cases with childhood apraxia of speech: Genetic heterogeneity converging on functional gene networks implicated in autism spectrum disorder and the early developing cerebellum

5. Hope Sparks Lancaster, Valentin Dinu, Jing Li, Jeffrey R Gruen, The GRaD Consortium. Genetic and Demographic Predictors of Latent Reading Ability in Two Cohorts

6. Linan M, Wang J, Dinu V. Pan-Cancer Exploration of mRNA Mediated Dysregulated Pathways in the Cancer Genomics Cloud. bioRxiv. 2019:599225. doi: 10.1101/599225.

Selected Conference Proceedings, Accepted Posters and Invited Talks

1. Phelps B, Ghoris YAF, Prasad K, Yang P, Dinu V. Artificial Intelligence and Digital Health Symposium. Mayo Clinic Florida; 2024; Jacksonville, FL.

2. Cochran M, Lee M, Hernandez J, Li T, Wang P, Rau C, Dinu V, Filippis ED. Twelve weeks of ω-3PUFA supplementation modulates adipose tissue miRNA signature in individuals with obesity. Arizona Physiological Society's (AZPS) Annual Meeting; 2022; Scottsdale, AZ.

3. Nandakumar R, Dinu V, Shi X, Gu H, Kim Y, Raskind WH, Peter B. First joint exome and metabolome analysis in dyslexia implicates immune system deficits and dysregulated sensory perception. American Society of Human Genetics Annual Conference (ASHG 2021); 2021; Virtual Meeting: American Scociety of Human Genetics.

4. Linan M, Dinu V. Pan-Cancer Dysregulated Pathways and PolyTherapy AI. Cancer Genomics Cloud Seven Bridges Virtual Webinar Series; 2021; Virtual Webinar.

5. Yang P, Crosby K, Salem N, Sun Y, Dinu V. Bioinformatics Approaches for Metabolomics Data Analysis for Gallstone Disease in Latinx Individuals. Mayo Clinic Cancer Center; 2021; Phoenix, AZ.

6. Linan M, Wang J, Dinu V. POTRA: Pathway Analysis of Cancer Genomics Data in the Cloud. Pacific Symposium on Biocomputing (PSB 2019); 2019; Waimea, HI.

7. Lancaster H, Liu X, Dinu V, Li J. Sparse machine learning model and pathway analysis reveal novel genetic associations with dyslexia. Behavior Genetics; 2019: Springer, 233 Spring St, New York, NY 10013 USA.

8. Nandakumar R, Dinu V. Developing a Machine Learning Model to Identify Protein-Protein Interaction Hotspots to Facilitate Drug Discovery. Intel International Science and Engineering Fair; 2018; Pittsburgh, PA.

9. Mahesh S, Dinu V. Model-Based Aggregative Grouping Of SNVs. ASU-Mayo Clinic Research Symposium; 2018; Scottsdale, AZ.

10. Bonilla Y, Dinu V, Wilson- Sayres M, Anderson K. PoTRA for Analysis of Breast Cancer Gene Expression Pathways. ASU-Mayo Clinic Research Symposium; 2018; Scottsdale, AZ.

11. Hingorani P, McEachron T, Park J, Steel J, Gastier-Foster JM, Rodriguez-Galindo C, Skapek S, Hawkins DS, LaBaer J, Dinu V. RNA profiling of desmoplastic small round cell tumors (DSRCTs) using next-generation sequencing2016: American Society of Clinical Oncology.

12. Lee P, Dinu V. BitTorious: Global controlled genomics data publication, research and archiving via BitTorrent extensions. ASU - Mayo Clinic Scientific Symposium; 2015; Phoenix, AZ.

13. Day SE, Kim JY, Coletta RL, Campbell LE, Roust LR, Dinu V, Mandarino LJ, Coletta DK. Next Generation Sequencing Methylation Profiling Interactions with Genetic Variation from Lean and Obese Subjects. Diabetes; 2015: American Diabetes Association, 1701 N Beauregard St, Alexandria, VA 22311-1717 USA.

14. Tangen SE, Campbell LE, Linan MK, Roust LR, Dinu V, Mandarino LJ, Coletta DK. Next Generation Sequencing Methylation Profiling and Whole Human Genome Microarray Analysis in Skeletal Muscle from Lean and Obese Subjects. Diabetes; 2014: American Diabetes Association, 1701 N Beauregard St, Alexandria, VA 22311-1717 USA.

15. Sivaprakasam K, Yellapantula V, Teng M, LaBaer J, Hingorani P, Dinu V. Analysis and Visualization of DSRCT Cancer Genomic Data. ASU - Mayo Clinic Scientific Symposium; 2014; Phoenix, AZ.

16. Miranda DN, Coletta DK, Dinu V, Tsina-Jinnie D, Ortega R, Ryder J, Mandarino LJ, Shaibi GQ. Gene Expression Changes following a Diabetes Prevention Program for Obese Latino Youth. Diabetes; 2012: American Diabetes Association, 1701 N Beauregard St, Alexandria, VA 22311-1717 USA.

17. Singraur A, Velmurugan K, Te J, Bordner A, Dinu V, Miller L. Computational Design of peptide Inhibitors for class B G protein coupled receptors. ASU - Mayo Clinic Scientific Symposium; 2010; Phoenix, AZ.

18. Kriseman J, Busick C, Szelinger S, Craig D, Dinu V. BING: Biomedical Informatics Pipeline For Next Generation Sequencing. Translational Genomics Research Institute Yearly Retreat; 2009; Phoenix, AZ.

19. Kriseman J, Busick C, Gonzalez G, Dinu V. RxExplorer: Identification of Novel Uses of Existing Drugs by Leveraging Biological Knowledge. Translational Genomics Research Institute Yearly Retreat; 2009; Phoenix, AZ.

20. Gallitano AL, Todorov A, Dinu V, Selvaraj S, Cloninger CR, Todd R, Milbrandt J. Evaluating the influence of EGR3, an environmentally-regulated immediate early gene, on the risk to develop schizophrenia. Keystone Conference; 2009; Keystone, CO.

21. Kriseman J, Saleh T, Dinu V. Next Generation Translational Bioinformatics. Translational Genomics Research Institute Yearly Retreat; 2008; Phoenix, AZ.

RESEARCH AWARDS

Since joining ASU in fall 2007, I have received personal external funding in excess of **$8 million** (investigator recognition) in new research awards from a mix of federal and private foundation sources such as the National Institutes of Health, Department of Health and Human Services, Department of Defense, Hyundai Hope on Wheels Foundation, Virginia G. Piper Foundation and Mayo Clinic. The scale of these funded projects can be inferred from the fact that the total award amount received exceeds **$42 million**.

Active Sponsored Research Projects

1. NIH R25 1R25HG012330-01, 09/09/2022 - 06/30/2027
Training in Genomics Research (TiGeR)
The Training in Genomics Research (TiGeR) program provides financial support for each student in the program to fully cover their tuition and educational research-related expenses as well as health insurance, travel expenses to conferences and stipends. The program is geared toward underrepresented and minority students who have undergraduate degrees in computer science, mathematics or statistics and little to no previous experience working with genomics data sets, but who are now seeking training in genomics and bioinformatics.
PIs: Sree Kanthaswamy, Valentin Dinu; Role: MPI
Amount: $ 1,242,739

2. US Department of Veterans Affairs (VA), 10/10/2024 - 09/30/2025
Healthcare Informatic Data Integration and Interoperability
The aim of the project is to develop Medical Imaging Standardization Protocols including HL7 in collaboration with the VA.
PIs: Teresa Wu, Valentin Dinu; Role: MPI
Amount: $ 381,154

Completed Sponsored Research Projects

1. Mayo Clinic Research Collaboration Grant, 1/2024 – 12/2024
Ancestry and Genotype-Based Genetic Studies of Asthma and COPD Disease Risk and Progression
This is a new contract to continue a project aimed at using genome-wide genetic data, geocoding, and environmental data to understand the genetic underlyings of asthma, COPD, and lung function.
PI: Valentin Dinu
Amount: $ 28,193

2. CHS Pilot Grant, 9/2023 – 12/2024
Investigating Reasons for Native Americans Experiencing 8-fold Higher Mortality than Whites from Gallbladder Cancer (GbCa): A Pilot Study in Arizona
The goal is to explore and establish a feasible method for testing our hypothesis that delays in diagnosis and treatment significantly contribute to the racial disparity in GbCa mortality.
PI: Valentin Dinu
Amount: $ 30,000

3. Mayo Clinic Research Collaboration Grant, 5/2022 – 5/2023 (year 1)
Ancestry and Genotype-Based Genetic Studies of Asthma and COPD Disease Risk and Progression
The aim is to use genome-wide genetic data, geocoding, and pollution exposure data from deeply phenotyped asthma and COPD cohort to leverage ancestry based genetic analytical approaches and GWAS, inclusive of interaction analyses, to understand the genetic architecture of asthma, COPD, and lung function.
PI: Valentin Dinu
Amount: $ 28,197

4. Mayo Clinic Research Collaboration Grant, 5/2022 – 12/2022
Uncovering reasons for Native Americans experiencing 8-fold higher mortality than Whites from gallbladder cancer (GbCa): A pilot study in Maricopa County, Arizona
Development and application of analytical methods for multi-omics data to identify biological markers associated with Gallbladder.
PI: Valentin Dinu
Amount: $9,993

5. NIH K01 DA042828-01A1, 08/15/2017 - 07/31/2022
Gene-Environment Interplay Underlying Negative Family Environments and Family-Based Interventions in Early Adolescent Substance Use
The goal of the project is to investigate how the interplay between genetic and negative family influences contributes to early adolescent substance use and how the efficacy of family-based intervention efforts for adolescent substance use may vary by children's genetic predisposition.
PI: Kit Elam; Role: Co-Mentor
Amount: $ 664,888

6. Mayo Clinic Research Collaboration Grant, 6/2021 – 12/2021
Deep learning methods for drug repurposing
Development of deep learning methods to repurpose drugs or drug combinations for 1) lung cancer; 2) multiple myeloma; 3) vesicating agents. This includes compile and preprocess of public available omics dataset, development of new methods, and utilizing of existing methods.
PI: Valentin Dinu
Amount: $28,358

7. ASU/Mayo Clinic Seed Grant, 1/2020 – 6/2021
Characterizing Leading Risk Factors Contributing to the Racial Disparity of Gallbladder Cancer Incidence Rate in Maricopa County, Arizona
This pilot study has two Aims: Aim-1 to identify modifiable risk factors contributing to the persistent racial disparity of gallbladder cancer (GbCa) incidence, and Aim-2 to characterize a prominent risk factor for GbCa, namely, gallstone disease. The overarching goal of the two interrelated aims is to lay a foundation for developing effective strategies in early diagnosis and timely treatment of GbCa in high-risk populations.
PIs: Valentin Dinu (100% from ASU), Ping Yang (100% from Mayo)
Amount: $50,000

8. Mayo Clinic Research Collaboration Grant, 5/2021 – 12/2021
Deep learning approach for understanding of gene regulation
The aim of the project is to develop a deep learning model to predict enhancers, promoters and enhancer-transcription factor interactions. The model will be validated on curated knowledge and applied to genome wide prediction on lung, and other tissues
PI: Valentin Dinu
Amount: $26,828

9. Seven Bridges Cancer Genomic Cloud/National Cancer Institutes Cloud Computing Credit Award, 1/2020 – 1/2021
A GPU Accelerated Chemoinformatic Integrative Pipeline Massive Multi-Omics Pathway and Drug Network Analysis in Disease
The project aims to develop a deep learning integrated genomics pipeline with GPU accelerated workflows (CWL on the CGC) that scientists can efficiently and effectively explore aberrant genomic landscapes and dysregulated pathways in disease for drug target discovery, synergy and repurposing. The Seven Bridges Cancer Genomic Cloud (CGC) computing environment is one of the three cancer genomic data cloud computing environments funded by the National Cancer Institutes.
PIs: Margaret Linan, Valentin Dinu (multi-PI)
Amount: $ 5,000

10. NIH F32HD089674, 08/01/2017 - 7/31/2020
Genotype-Phenotype Associations in Reading Disorders
The study investigates associations between genetic factors and reading disorders, which affect 4% to 9 % of school-age children in the USA.
PI: Hope Lancaster; Role: Co-Sponsor, Co-Investigator
Amount: $ 183,350

11. Mayo Clinic Research Collaboration Grant, 8/2020 – 12/2020
Deep learning approach for understanding of gene regulation
The aim of the project is to jointly mentor a ASU PhD student to develop bioinformatics deep learning models to predict interactions between genomic enhancers and transcriptions factors and their targets.
PI: Valentin Dinu
Amount: $19,587

12. Mayo Clinic Research Collaboration Grant, 8/2019 – 1/2020
ATAC-seq Analysis and Applications to Cancer Research
The aim of the project is to perform next generation sequencing data analysis on whole genome, whole exome and RNA-seq data; perform single cell RNA-seq data analysis; and develop novel algorithms to integrate these data for network construction.
PIs: Valentin Dinu
Amount: $6,514

13. Seven Bridges Cancer Genomic Cloud/National Cancer Institutes 4/2018 – 3/2019
PoTRA: Pathways of Topological Rank Analysis of Cancer Data in the Seven Bridges Cancer Genomics Cloud
The aim of the project is to port our analytical method, PoTRA (Pathways of Topological Pathway Analysis), based on the Google Search PageRank Algorithm, to the Seven Bridges Cancer Genomic Cloud computing environment, which is one of the three cancer genomic data cloud computing environments funded by the National Cancer Institutes.
PI: Valentin Dinu
Amount: $ 10,000

14. Banner-ASU Neuroscience Scholars 2019 Summer Program, 5/2019 – 8/2019
Metabolomics and Genomics of Dyslexia
The aim of this project is to identify metabolomics biomarkers and genetic variants associated with this condition. Metabolic and exome sequence data of patients with and without dyslexia was analyzed to identify biomarkers and biological pathways associated with dyslexia. This can lead to a better understanding of the molecular factors involved in the etiology of this condition.
PIs: Valentin Dinu and Beate Peter (multi-PI)
Amount: $ 1,000

15. JumpStart: ASU College of Health Solutions Seed Grant Program, 5/2018 – 5/2019
The Regulatory Role of Non-coding RNAs in Liver Cancer
The goal is to perform a comprehensive analysis of the TCGA LIHC HCC (hepatocellular carcinoma, or liver cancer) RNAseq data to identify long non-coding RNAs and circular RNAs involved in HCC etiology.
PI: Valentin Dinu
Amount: $ 18,000

16. JumpStart: ASU College of Health Solutions Seed Grant Program, 5/2018 – 5/2019
Genetic variants associated with cerebellar dysfunction in dyslexia

The goal is to identify genomic variants involved in the individuals with dyslexia by exome sequencing.
PI: Beate Peter; Role: Co-Investigator
Amount: $ 15,066

17. Dignity Health/Banner Neurological Institute - Biostatistics and Bioinformatics Support Contract, 5/2018 – 8/2018

Bioinformatics and analytical expertise for the OPEN-UP clinical study which assesses the efficiency of venous stenting in patients with Idiopathic intracranial hypertension.
PI: Valentin Dinu
Amount: $ 19,933

18. Mayo Clinic - Arizona State University Alliance for Health Care 2018 Faculty Summer Residency Program, 5/2018 - 8/2018

The goal of the residency is to apply our recently developed analytical method, PoTRA (Pathways of Topological Pathway Analysis), based on the Google Search PageRank Algorithm, to analyze cancer genomic data.
PI: Valentin Dinu
Amount: $ 31,581

19. NIH 1R01DK094013-01, 8/2012 – 7/2017

Epigenetics and the Origin of Muscle Insulin Resistance in Humans
The goal is to explore global patterns of changes in DNA methylation in metabolically well-characterized insulin sensitive and resistant individuals and to determine whether these changes can explain alterations in gene expression and protein abundance in insulin resistance associated with obesity and type 2 diabetes.
PI: Dawn Coletta; Co-PIs: Larry Mandarino, Christian Meyer, Valentin Dinu (5%)
Amount: $ 1,896,182

20. HHS/BARDA HHS0100201000008C, 1/2010 – 6/2015

Integrated Biodosimetry System For High Throughput Medical Care After Radiologic And Nuclear Events
The main objective is to develop a prototype system capable of processing thousands of blood samples per day for gene expression analysis to identify the exposure to radiation. FDA approval for this system will be sought. The gene expression association with radiation is measured using microarray, RNASeq and qPCR approaches. A multi-gene model will estimate the level of radiation exposure for each sample.
PI: Joshua LaBaer; Co-PIs: Mitch Magee, Garrick Wallstrom, Valentin Dinu (25%)
Amount: $34,685,397

21. Hyundai Hope on Wheels Foundation/ Phoenix Children's Hospital, 9/2012 – 9/2015

Unraveling the Biology of Desmoplastic Small Round Cell Tumors
Comprehensive approach using whole genome DNASeq, exome DNASeq and RNAseq to identify genomic biomarkers associated with Desmoplastic small round cell tumor (DSRCT) aimed at understanding the biology and identifying relevant molecular therapeutic targets.
PI: Pooja Hingorani (Phoenix Children's Hospital)

ASU PI: Valentin Dinu (50%); co-PI: Joshua LaBaer
Amount: $250,000 (ASU budget: $220,000).

22. ASU/Mayo Clinic Seed Grant, 1/2013 – 12/2014
Idiopathic Subglottic Stenosis Tissue and Deep Sequencing Study
The goal of this project is to apply deep genomic sequencing techniques to study the etiology of idiopathic subglottic stenosis (ISGS), a severely debilitating disease requiring multiple surgeries and possibly a permanent tracheostomy. There are currently no known causes for this condition.
PIs: Valentin Dinu (100% from ASU), David Lott (100% from Mayo)
Amount: $40,000 (ASU budget: $31,736)

23. Virginia G. Piper Foundation, 4/2012 – 6/2013
Next-generation optical sensing and informatics for genomic sequencing
The purpose of the project is to develop informatics and imaging based-approaches that can significantly increase the productivity of genome sequencing platforms. Our approaches may remove a critical bottleneck in the speed and cost at which the genomes of individual persons can be sequenced, making genomic testing available on a wide-scale basis for large populations of patients.
PI: Valentin Dinu (100%)
Amount: $169,861

24. ASU/Mayo Clinic Seed Grant, 1/2012 –11/2013
BOA: a Server of Integrated Biological Reference Annotations for Clinical and Life Science 'omics' Application
The goal of this project is to develop a portal system for the federated access to various annotation data sources for high-throughput genomics and clinical data.
PIs: Valentin Dinu (100% from ASU), Jean Pierre Kocher (100% from Mayo)
Amount: $40,000 (ASU budget: $20,000)

25. CureSearch/Children's Oncology Group/Phoenix Children's Hospital, 3/2011 – 2/2013
Comprehensive Genomic Analyses of Desmoplastic Small Round Cell Tumors
Use of high throughput sequencing technologies to identify DNA and RNA biomarkers associated with Desmoplastic small round cell tumor (DSRCT).
PI: Pooja Hingorani (Phoenix Children's Hospital)
ASU PI: Valentin Dinu (50%); co-PI: Joshua LaBaer
Amount: $50,000 (ASU budget: $50,000).

26. DOD/DTRA FRBAA09320029, 3/2011 – 2/2012
A Scalable technology for monitoring health status and surveying infections
The goal is to develop a microarray based approach for monitoring the status of the immune system. Immunosignatures can be used for early diagnosis and disease classification and monitoring.
PI: Stephen Johnston; co-PIs: Neal Woodbury, Phillip Stafford; Informatics expert: Valentin Dinu
Amount: $3,900,000

27. NIH HHSN276201100141P, 1/2011 – 12/2011

Genomics Sequence Data Bioinformatics Analysis
Analysis of human data from next generation genomic sequencing and genome-wide association studies of diabetes, obesity, and related traits to identify areas exhibiting positive selection and disease association.
PI: Valentin Dinu (100%)
Amount: $30,000

28. ASU/Mayo Clinic Seed Grant, 1/2010 – 12/2010
Computational Design of Peptide Inhibitors for Class B G Protein-Coupled Receptors
The goal of this project is to develop new computational methods to design peptide inhibitors of class B GPCRs and to validate the methodology by experimentally testing designed inhibitors of the prototypical class B GPCR, the secretin receptor.
PIs: Valentin Dinu (100% from ASU), Andrew Bordner (100% from Mayo)
Amount: $40,000 (ASU budget: $20,000)

Under Review Research Proposals

1. Arizona Biomedical Research Commission, 5/2025 – 4/2028
Characterizing Leading Risk Factors Contributing to the Racial Disparity of Gallbladder Cancer Incidence Rate in Arizona
The aim of the project is to identify the top three modifiable risk factors that contribute to the persistent racial disparity of gallbladder cancer (GbCa) incidence. This study will help develop and disseminate educational materials benefiting Native Americans and Hispanics in high-disparity regions, analyze the disparity at the etiology and intervention levels, identify actionable targets and set forth a focused research agenda to reduce the incidence and mortality of GbCa in high risk-populations in Arizona.
PIs: Valentin Dinu and Ping Yang
Amount: $ 749,645

2. Mayo Clinic/Arizona Biomedical Research Commission, 7/2025 – 6/2028
Identification of Type 2 Diabetes miRNA and Genes Signatures in the Arizona Latino Population
The aim of the project is the identification of specific miRNA(s) unique to Arizona Latinos of Mexican heritage along with an initial mapping of specific loci associated with type 2 diabetes (T2DM) within this population. Evaluation of miRNA signature and genomic data will allow development of early risk score assessment for T2DM within this community independent of conventional risk factors.
PI: James Hernandez. Role: ASU PI
Amount: $ 44,802

Not Funded Proposals

2024 - 2022 –

1. Flinn Foundation, 1/2025 – 6/2026
Metabolomic Profiling to Address Racial Disparity of Gallbladder Cancer
The aim of this project is to develop a metabolomic assay that will help with the early diagnosis of gallbladder cancer.
PI: Valentin Dinu
Amount: $ 100,000

2. NSF, 12/2023 – 11/2026
Genome-Phenome Analysis Methods for Diverse Species Studies
The aim of this project is the development, application, and deployment of analytical methods designed to test associations between individual or sets of genomic factors and phenotypes among different species.
PI: Nicholas Schork (TGen); Role: ASU PI
Amount: $ 299,810

3. NSF NRT, 3/2023 – 3/2028
NRT-HDR: Graduate Training Program in Research Software Engineering
The underlying goal of this project is to educate a group of graduate trainees from the natural and data sciences in techniques for large-scale computational simulation and modern practices of research software engineering.
PI: Reed Cartwright; Role: Co-PI/PD.
Amount: $ 3,000,000

4. DoD Defense Health Program in Rare Cancers Research, 7/2023 – 6/2026
Pinpointing Factors Leading to Sex and Racial Disparities in Gallbladder Cancer
Our objective is to provide evidence for a sex- and race-specific, prioritized strategy for identifying biological markers that will promote early detection and reduce Gallstone Disease morbidity and Gallbladder Cancer mortality.
PI: Valentin Dinu
Amount: $ 441,061

5. NIH/ OD-OSC OT2, 6/2022 – 5/2026
Solving Cancer Disparities Through Open AI/ML: Synthetic Data Generation from Cancer Registries, Electronic Health Records, Geospatial Data, and Social Determinants of Health
A massive (909 page) NIH Common Fund Bridge to Artificial Intelligence (Bridge2AI) OT2 proposal that includes participants from multiple educational, non-profit research, healthcare, and industry partners. I am one of 4 PIs in this Multi-PI proposal, leading or co-leading 3 of 7 modules: Tool Development and Optimization ($20M budget), Workforce and Skills Development ($9M budget), and Teaming Module.
PIs: Valentin Dinu, Marta Jankowska, Patricia L Mabry, Victoria L Seewaldt.
Amount: $ 78,584,219

2021-

6. NIH/Common Fund U54 12/2021 – 11/2026
Artificial Intelligence and Bioinformatics Innovation: An Integrative Collaborative Center for Nutrition for Precision Health
A joint Mayo Clinic – ASU collaboration with the aim to develop Artificial Intelligence methods, tools and infrastructure that address the analytical needs of the NIH Nutrition for Precision Health Consortium
PIs: Valentin Dinu, Jean-Pierre Kocher (contact PI), Dorothy Sears
Amount: $ 8,509,448

7. NIH/NLM T15 7/2021 – 6/2026
BIOMINDS: ASU Biomedical Informatics and Data Science Research Training Program
The ASU BIOMINDS research training program will develop future generations of biomedical informaticians and data scientists. These work forces will lead and contribute to translational biomedical research, patient care, healthcare delivery systems, community, population, and public health.
PIs: Valentin Dinu, Dongwen Wang (contact PI), Matthew Scotch
Amount: $ 5,886,792

8. NIH 4/2021 – 4/2025
The Arizona Coalition for the Comprehensive Evaluation of Long-COVID (ACCEL)
A multi-institution partnership for integrated clinical and scientific studies on post-acute sequelae of SARS-CoV2 Infection (PASC)
PI: George Poste; Role: Key Personnel
Amount: $ 99,505,627

9. NIH/NICHD R01 4/2021 – 4/2026
Deciphering genetic, environmental, cognitive, and health-related aspects of dyslexia using Artificial Intelligence
The goal of this project is to create the first integrated framework of dyslexia in a single study, taking into account genetic and environmental risks and associated health impairments to characterize distinct dyslexia profiles and predictors, by leveraging novel multilevel artificial intelligence (AI) analysis methods.
PI: Beate Peter; Role: Co-Investigator
Amount: $ 2,0774,055

10. NIH/NLM R01 7/2021 – 6/2026
PolyTherapy AI: Interactive Artificial Intelligence for Multi-omics Combination Drug Treatment
The aim of the project is to create an interactive quantum-enabled artificial intelligence computing platform entitled PolyTherapy AI that can use multi-omics, clinical and biomedical resources to predict efficient and safe combination drug therapies.
PIs: Valentin Dinu (contact PI) and Marinka Zitnik (Harvard University PI)
Amount: $ 3,995,859

2020 -

1. NIH/NCI R21 4/2021 – 3/2023
Pinpointing Factors Leading to Sex Disparities in Gallbladder Cancer Burden
Gallbladder cancer (GbCa), the most frequent malignancy of the biliary tract, is a non-sex organ malignancy with a doubled incidence rate in women compared to men and highly fatal due to its insidiously late stage when diagnosed. This proposal has two independent Aims: Aim-1 to identify modifiable risk factors contributing to the persistent sex disparity of GbCa incidence, and Aim-2 to characterize metabolomic-wide and genome-wide a prominent risk factor for GbCa, namely, gallstone disease (also named cholelithiasis).
PIs: Valentin Dinu (contact PI) and Ping Yang (Mayo Clinic PI)
Amount: $ 441,440.00

2. NIH/NLM R21 4/2021 – 3/2023
Deep Learning Platforms to Integrate Multi-Omics Data for COVID-19 Patient Symptom Severity and Drug Treatment Prediction
The project aims to develop a set of informatics methods to integrate 3D structures of proteins, and genomic, transcriptomic, and drug data for predicting pathogenesis and severity of COVID-19 by utilizing datasets from the public domain and the Mayo Clinic. The methods will improve the prediction of symptom severity in patients and will allow us to repurpose drugs as potential treatments. These methods will be validated by using our internal genomic, drug, and clinical data from Mayo Clinic, and will be compiled into tools to benefit researchers, clinicians, and patients.
PIs: Valentin Dinu and Junwen Wang (contact)
Amount: $ 448,128

3. NIH/NINDS UG3 4/2021 – 4/2023
Deep Learning Platforms to Integrate Multi-Omics Data for COVID-19 Patient Symptom Severity and Drug Treatment Prediction
Cervical spondylotic myelopathy (CSM) is the most common cause of spinal cord dysfunction in adults. Large gaps remain in our understanding of CSM progression, the response to treatment at various stages of the disease, and the ideal treatment for individual patients. The goal of this project is to determine which patients benefit most from surgical intervention and to understand the most appropriate surgical techniques for individual patients.
PIs: Valentin Dinu (ASU PI) and Jay Turner (St. Joseph's Hospital and Medical Center, contact PI)
Amount: $ 3,382,938

4. ASU Graduate College Faculty Fellows 2020-21 Program, 8/2020 – 5/2021
Integration of Virtual Reality, Wearable Technologies and Genomic Big Data Bioinformatics Approaches for Precision Medicine
Introduce Virtual Reality (VR), Wearable Technologies and Direct-to-Consumer (DTC) Genetic Testing to enhance the experience of students of Translational Bioinformatics
PI: Valentin Dinu
Amount: 10,000

5. Amazon Web Services (AWS) Academic Research Partnership 2021 Program, 3/2020 – 3/2021

The goal is to create an artificial intelligence (AI) bioinformatics analytical pipeline that can utilize AWS EC2, AWS Lambda and AWS API Gateway for data reformatting and analytics, RedShift for data management and analysis, AWS CloudFormation and Amazon Neptune for network visualizations, analytics, SageMaker for GPU accelerated network data analysis and the application of two novel deep learning algorithms DeepPolyTherapy and DeepRxTox, and Sumerian for data visualizations.
PI: Valentin Dinu
Amount: 87,582

6. Mayo Clinic and Arizona State University Alliance for Health Care 2020 Faculty Summer Residency Program, 5/2020 – 8/2020

The aim of the summer residency is to further develop collaborations between ASU and the Mayo Clinic in the field of Artificial Intelligence (AI) for Biomedicine. Dr. Valentin Dinu and the Mayo Clinic collaborators will work on developing and refining methods and tools for applying deep learning techniques for biological network analysis. These AI analytical approaches can be applied to various areas such as drug repurposing, drug discovery, precision medicine, etc. The ultimate goal of this work is to improve patient care and translational science.
PI: Valentin Dinu
Amount: $30,000 (estimate)
Note: 2020 program canceled due to COVID-19 pandemic

7. Spring 2020 COVID-19 Grant Program: ASU College of Health Solutions Seed Grant Program, 5/2020 – 5/2021

Artificial Intelligence for COVID-19 Genomics and Proteomics Data Analysis for Improved Diagnosis and Treatment
The aim of the project is to develop, refine and apply Artificial Intelligence (AI) methods to analyze multiple types of COVID-19-related -omics data (from genomics to proteomics). Individuals infected with the SARSCoV- 2 virus present a variety of phenotypes, from asymptomatic to mild to severe and/or death.
PI: Valentin Dinu
Amount: $ 20,000

8. I have also participated in four other "limited" proposal grant submissions that did not advance beyond internal ASU CHS review:
    a. ASU Women and Philanthropy, 9/2020; role: PI, budget: 100,000
    b. ASU President's Postdoctoral Fellowship Program 12/2020; 2 applications; role: co-Investigator; one application for Precision Health, with Matt Buman and colleagues; one application for Speech and Hearing Sciences, with Shelley Gray and colleagues;
    c. ASU Graduate Assistantship Program for Under-Represented Students 12/2020, role: co-Investigator, with Dongwen Wang and colleagues.

2019 –

1. ASU Faculty Fund for Teaching Excellence and Student Success 2/2019 – 5/2020

Integration of Virtual Reality, Wearable Technologies and Genomic Big Data Bioinformatics Approaches for Precision Medicine
Introduce Virtual Reality (VR), Wearable Technologies and Direct-to-Consumer (DTC) Genetic Testing to enhance the experience of students of Translational Bioinformatics
PI: Valentin Dinu
Amount: 10,000

2. NIH/NINDS, 4/2019 – 3/2022
Complement Activation in Stroke: Translating C3a Receptor Antagonist as a Therapy
Investigate the role of C3aRA therapy after stroke to improve functional outcomes and accentuate the benefits of reperfusion therapies in a broad stroke population.
PI: Andrew Ducruet (Barrow Neurological Institute/Dignity Health); Role: Co-Investigator, ASU PI
Amount: $53,473 (ASU sub-contract)

2018 –

1. Chan Zuckerberg Initiative 2/1/2019 – 2/1/2024
Technological and educational underpinnings of microscopic imaging for cancer diagnosis, prognosis and treatment
The goal of the project is to develop a medical imaging resource for research and education as part of the ASU-Mayo Center for Innovative Imaging (AMCII) initiative at ASU and Mayo Clinic, focused on cancer diagnosis, prognosis and treatment.
PI: Teresa Wu; co-PIs: Valentin Dinu; Jing Li, Jorge Caviedes
Amount: $ 1,167,257

2. NIH/NCI U01 7/2018 – 6/2021
PoTRA: Pathways of Topological Rank Analysis of Cancer Data in the Genomics Cloud
The goal of the project is to develop an analytical method called Pathways of Topological Rank Analysis (PoTRA), based on the Google Search PageRank algorithm, to detect biological pathways involved in cancer.
PI: Valentin Dinu; co-PIs: Li Liu, Jean-Pierre Kocher, Karen Anderson
Amount: $ 1,392,116

3. Dignity Health and Arizona State University Collaborative Strategic Initiatives Program
Idiopathic Intracranial Hypertension Deep Sequencing Study
Perform for the first time deep genomic sequencing in idiopathic intracranial hypertension (IIH) to explore disease etiology and identify genomic biomarkers associated with IIH.
PIs: Valentin Dinu (ASU PI), Felipe Albuquerque (DH PI)
Amount: $ 248,803

4. Google Faculty Research Award 2018 5/2018 – 4/2019
PoTRA: Pathways of Topological Rank Analysis of Cancer Data in the Google Genomics Cloud
The goal of the project is to deploy in the Google Cloud Platform a new analytical method called Pathways of Topological Rank Analysis (PoTRA), based on the Google Search PageRank algorithm, to detect biological pathways involved in cancer.

PI: Valentin Dinu
Amount: $ 62,134

5. Prognostic Roles of Rare Mutations in Cancers 5/2018 – 5/2019
Generate preliminary data on the evolutionary trajectory and prognostic roles of rare somatic mutations in cancer, using multi-species dog and human tumor genomic sequence data.
PI: Li Liu; Role: Co-Investigator
Amount: $ 20,000

6. Arizona Alzheimer's Disease Core Center Grant 7/2018 – 6/2019
NoTRA: Neuronetworks of Topological Rank Analysis using Google Search PageRank Algorithm for Alzheimer's Disease
The goal of the project is to adapt the Google Search PageRank algorithm to analyze genomic and neuroimaging data from Alzheimer's disease samples and cognitively normal individuals to identify biological pathways, biomarkers, and brain regions involved in Alzheimer's disease.
PI: Valentin Dinu
Amount: $ 44,047

TEACHING

Fall 2024
- BMD 502 Foundations BMI Methods I
- BMI 593 BMI Applied Project
- MED 450 Leadership and Professionalism
- BMI 799 Dissertation
- BMI 792 Research
- BMI 482 Capstone I
- BMI 483 Capstone II
- BMI 584 Internship
- CHS 492 Honors Directed Study
- CHS 494 Undergraduate Research

Summer 2024
- BMD 502 Foundations BMI Methods I
- BMI 792 Research

Spring 2024
- BMD 550 Translational Bioinformatics
- BMI 550 Translational Bioinformatics
- BMI 593 BMI Applied Project
- CHS 493 Honors Thesis
- BMI 484 Internship

- BMI 483 Capstone
- BMI 792 Research
- BMI 799 Dissertation

Fall 2023
- BMD 502 Foundations BMI Methods I
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 792 Research
- BMI 799 Dissertation
- CHS 492 Honors Directed Study

Summer 2023
- BMD 502 Foundations BMI Methods I
- BMI 792 Research

Fall 2022
- BMD 502 Foundations BMI Methods I
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 799 Dissertation
- BMI 792 Research
- BMI 482 Capstone I
- BMI 483 Capstone II
- BMI 584 Internship
- CHS 492 Honors Directed Study
- CHS 494 Undergraduate Research

Summer 2022
- BMD 502 Foundations BMI Methods I
- BMI 792 Research

Spring 2022
- BMD 550 Translational Bioinformatics
- BMI 550 Translational Bioinformatics
- BMI 484 Internship
- BMI 483 Capstone
- CHS 493 Honors Thesis
- BMI 792 Research
- BMI 799 Dissertation

Fall 2021
- BMD 502 Foundations BMI Methods I
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 799 Dissertation

- BMI 482 Capstone
- BMI 483 Capstone
- CHS 492 Honors Directed Study
- CHS 494 Undergraduate Research

Summer 2021
- BMD 502 Foundations BMI Methods I
- BMI 484 Internship

Spring 2021
- BMD 550 Translational Bioinformatics
- BMI 550 Translational Bioinformatics
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 484 Internship
- BMI 483 Capstone
- BMI 799 Dissertation

Fall 2020
- BMD 502 Foundations BMI Methods I
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 484 Internship
- BMI 799 Dissertation
- CHS 494 Undergraduate Research

Summer 2020
- BMD 502 Foundations BMI Methods I
- BMI 502 Foundations BMI Methods I
- BMI 484 Internship

Spring 2020
- BMD 550 Translational Bioinformatics
- BMI 550 Translational Bioinformatics
- BMI 593 BMI Applied Project – the culminating experience for BMI MS students
- BMI 484 Internship
- BMI 483 Capstone
- BMI 799 Dissertation

Fall 2019
- BMD 502 Foundations BMI Methods I
- BMI 484 Internship
- BMI 799 Dissertation
- *During Fall 2019 I also mentored 15 students for applied projects/capstone/etc., which is the equivalent of teaching one course.

Summer 2019

- BMI 792 Research
- BMI 484 Internship

Spring 2019
- BMI 550 Translational Bioinformatics
- BMD 550 Translational Bioinformatics
- BMI 484 Internship

Fall 2018
- BMD 502 Foundations BMI Methods I
- BMI 461 Advanced Topics in BMI
- BMI 502 Foundations BMI Methods I
- BMI 484 Internship
- BMI 590 Reading and Conference
- BMI 799 Dissertation

Summer 2018
- BMI 792 Research
- BMI 484 Internship

Spring 2018
- BMI 550 Translational Bioinformatics
- BMD 550 Translational Bioinformatics
- BMI 799 Dissertation
- BMI 792 Research
- BMI 593 Applied Project
- BMI 493 Honors Thesis
- BMI 484 Internship

Fall 2017
- BMD 502 Foundations BMI Methods I
- BMI 502 Foundations BMI Methods I
- BMI 593 Applied Project
- BMI 792 Research
- BMI 484 Internship

Summer 2017
- BMI 792 Research
- BMI 484 Internship

Spring 2017
- BMI 550 Translational Bioinformatics
- BMD 550 Translational Bioinformatics
- BMI 592 Research

Fall 2016
- BMD 502 Foundations BMI Methods I
- BMI 502 Foundations BMI Methods I
- BMI 598 Biostatistics with Computational Applications (temporary teaching until permanent instructor was identified)
- BMI 592 Research
- BMI 593 Applied Project
- BMI 790 Reading and Conference

Summer 2016
- BMI 790 Reading and Conference
- BMI 792 Research

Spring 2016
- BMI 790 Reading and Conference
- BMI 592 Research

Fall 2015
- BMI 790 Reading and Conference
- BMI 593 Applied Project
- BMI 592 Research

Summer 2015
- BMI 790 Reading and Conference
- BMI 792 Research

Spring 2015
- BMI 790 Reading and Conference
- BMI 592 Research

Fall 2014
- BMI 101 Introduction to Bioinformatics
- BMI 790 Reading and Conference

Spring 2014
- BMI 550 Translational Bioinformatics

Fall 2013
- BMI 502 Methods in Biomedical Informatics (Data Mining Module)
- BMI 501 Introduction to Biomedical Informatics (two-week Bioinformatics module)
- BMI 790 Reading and Conference

Spring 2013
- BMI 550 Translational Bioinformatics
- BMI 790 Reading and Conference

Fall 2012
- BMI 502 Methods in Biomedical Informatics
- BMI 501 Introduction to Biomedical Informatics (two-week Bioinformatics module)
- BMI 590 Reading and Conference

Spring 2012
- BMI 550 Translational Bioinformatics
- BMI 590 Reading and Conference

Fall 2011
- BMI 502 Methods in Biomedical Informatics
- BMI 501 Introduction to Biomedical Informatics (two-week Bioinformatics module)
- UA College of Medicine Phoenix Biomedical Informatics module on Data management and Databases + lecture on Bioinformatics
- BMI 590 Reading and Conference
- BMI 790 Reading and Conference

Spring 2011
- BMI 591 Applied Data Mining in Biomedicine
- BMI 515 Applied biostatistics in Medicine and Informatics (lectures on statistics for genomics data analysis lectures)
- BMI 590 Reading and Conference

Fall 2010
- BMI 502 Methods in Biomedical Informatics
- BMI 501 Introduction to Biomedical Informatics (lectures on statistics for genomics data analysis)
- UA College of Medicine Phoenix Biomedical Informatics module on Data management and Databases + lecture on Bioinformatics

Spring 2010
- BMI/CSE 591 Translational Bioinformatics
- BMI 591 Applied biostatistics in Medicine and Informatics (lectures on statistics for genomics data analysis)
- BDE 702 Biological Design (lectures on genome wide association studies)

Fall 2009
- BMI 501 Introduction to Biomedical Informatics
- BMI 591 Applied biostatistics in Medicine and Informatics (lectures on statistics for genomics data analysis)
- BMI 502 Methods in Biomedical Informatics (lectures on database modeling)
- UA College of Medicine Phoenix Biomedical Informatics module on Data management and Databases + lecture on Bioinformatics

Summer 2009
- BMI 590 Reading and Conference

Spring 2009
- BMI/CSE 591 Translational Bioinformatics
- BDE 702 Biological Design (lectures on genome wide association studies)
- UA College of Medicine Phoenix lecture on Bioinformatics

Fall 2008
- BMI 501 Introduction to Biomedical Informatics
- BMI 502 Methods in Biomedical Informatics (lectures on database modeling)
- UA College of Medicine Phoenix lecture on Bioinformatics

Spring 2008
- BMI/CSE 591 Translational Bioinformatics
- BMI 505 Methods in Biomedical Informatics (lectures on genomics databases)

Fall 2007
- BMI 501 Introduction to Biomedical Informatics (lectures on bioinformatics)
- BMI 502 Methods in Biomedical Informatics (lectures on database modeling)
- UA College of Medicine Phoenix lecture on Bioinformatics

ADVISING AND MENTORING

Research Advising and Mentoring

PhD Students Graduated as Committee Chair:
1. Michelle Winerip (12/2021)
   Dissertation: "Statistical Methods for Analysis of Genomic Data with Applications in Oncology"
   Post graduation: Senior Biostatistician, Caris Life Sciences, Phoenix, AZ.
2. Preston Lee (12/2018, BMI)
   Dissertation: "Automated Injection of Curated Knowledge Into Real-Time Clinical Systems CDS Architecture for the 21st Century"
   Post graduation: Chief Systems Architect, US Dept of Veterans Affairs (VA), Phoenix, AZ; Chief Technology Officer, Logica Corp (CTO), Graphite Health (CTO).
3. Karthigayini Sivaprakasam (5/2018, BMI)
   Dissertation: "A Novel Approach to the Comparative Genomic Analysis of Canine and Human Cancers"
   Post graduation: Computational Biologist, UT Southwestern Medical Center, Dallas, TX.
4. Shobana Sekar (5/2018, BMI)
   Dissertation: "Circular RNA Characterization and Regulatory Network Prediction in Human Tissue"
   Post graduation: Post Doctoral Fellow, Mayo Clinic, Rochester, MN
5. Chaoxing Li (12/2017, SOLS)

Dissertation: "Topological Analysis of Biological Pathways: Genes, MicroRNAs and Pathways Involved in Hepatocellular Carcinoma"
Post graduation: Entrepreneur, China

6. Sen Peng (12/2015, BMI)
   Dissertation: "Integrative Analysis of Genomic Aberrations in Cancer and Xenograft Models"
   Post graduation: Bioinformatics Scientist, Translational Genomics Research Institute (TGen), Phoenix, AZ; Faculty Associate, College of Health Solutions, ASU
7. Venkata Yellapantula (12/2014, BMI)
   Dissertation: "Informatics approaches for integrative analysis of disparate high-throughput genomic datasets in cancer"
   Post graduation: Bioinformatics Postdoctoral Researcher, Washington University, St. Louis, MO.
   Current: Assistant Professor of Clinical Pathology (tenure track), Keck School of Medicine, University of Southern California (USC), Los Angeles, CA
8. Sheetal Shetty (5/2014, BMI)
   Dissertation: "Structural Variant Detection: A Novel Approach"
   Post graduation: Bioinformatics Postdoctoral Researcher, Complex Adaptive Systems Initiative (CASI), ASU, Tempe, AZ.
9. Justin Brown (5/2012, BMI)
   Dissertation: "Computational Approaches for Addressing Complexity in Biomedicine"
   Post graduation: Scientist, HTG Molecular, Tucson, AZ; CEO, JRB Analytics, Phoenix, AZ.
10. Jeffrey Kriseman (5/2012, BMI)
    Dissertation: "An Informatics Approach to Establishing a Sustainable Public Health Community"
    Post graduation: Informatics Scientist, Southern Nevada Health District; Branch Chief Division of Notifiable Diseases and Healthcare Information at Centers for Disease Control and Prevention (CDC), Atlanta, GA; Chief Data and Informatics Officer at Tennessee Department of Health, Nashville, TN; current: Chief Scientist, Booz Allen Hamilton, Atlanta, GA.

PhD Students Graduated as Committee Member:

1. Rekha Mudappathi (BMI, 12/2023, with Li Liu and Zhifu Sun)
   Dissertation: Unveiling Cellular Heterogeneity, Genetic Regulation, and Protein Trafficking Dynamics Via Novel Integrative Multi-Omic Approaches
2. Verah Nyarige (BMI, 12/2022, with Junwen Wang and Li Liu)
   Dissertation: Novel Bioinformatics Methods for Co-expression Analysis of Single Cell RNA Sequencing and Circular RNA Sequencing Time Series Data
3. Pramod Chandrashekar (12/2020, BMI)
   Dissertation: Fine Mapping Functional Noncoding Genetic Elements Via Machine Learning
   Post graduation: Postdoctoral Research Associate, University of Wisconsin - Madison
4. Navid Ahmadinejad (12/2019, BMI)
   Dissertation: Discovering Subclones and Their Driver Genes in Tumors Sequenced at Standard Depths
   Post graduation: Bioinformatics Scientist, Illumina, La Jolla, CA
5. Katon Kras (12/2017, SOLS)

Dissertation: Functional and Proteome Differences in Skeletal Muscle Mitochondria Between Lean and Obese Humans
Post graduation: Biology Teacher, Chaparral High School, Scottsdale, AZ

6. Xin Guan (6/2017, BMI)
   Dissertation: Novel Methods of Biomarker Discovery and Predictive Modeling using Random Forest
   Post graduation: Scientist, Intel, Chandler, AZ
7. Samantha Tangen (4/2017, SOLS)
   Dissertation: Investigation of DNA Methylation in Obesity and its Underlying Insulin Resistance
   Post graduation: Postdoctoral Fellow, NIDDK, NIH, Phoenix, AZ
8. Hu Duan (12/2015, Biological Design PhD Program, Center for Innovations in Medicine)
   Dissertation: Early Detection and Treatment of Breast Cancer By Random Peptide Array In neuN Transgenic Mouse Model
   Post graduation: Research Associate, Biodesign Institute, ASU, Tempe, AZ
9. Gazi Islam (9/2013, BMI)
   Dissertation: "Informatics Approach to Improving Surgical Skills Training"
   Post graduation: Technology Development Engineer, Intel Corporation, Hillsboro, OR
10. Clinton Mielke (7/2013, Biological Design PhD Program)
    Dissertation: "Towards a Systems Biology Understanding of Metabolic Disorder"
    Post graduation: Founder and CEO, Infinome, Phoenix, AZ; Data Scientist Memory and Aging Center, UCSF, San Francisco, CA
11. Muskan Kukreja (8/2012, Biological Design PhD Program)
    Dissertation: "Analysis of Immunosignaturing Case Studies"
    Post graduation: Bioinformatics Scientist at Prognosys Biosciences, San Diego, CA; Senior Data Scientist at Microsoft
12. Mithra Vankipuram (6/2012, BMI)
    Dissertation: "Understanding Adaptive Behaviors in Complex Clinical Environments"
    Post graduation: Research Scientist, HP Labs, Palo Alto, CA

Current PhD Students:

1. Amit Arora (BMI)
2. Khadijah Jack (BMI)
3. Yasmine Korte Baca (BMI)
4. Emma Stinson (BMI)
5. Hai Chen (BMI, with Li Liu)
6. Meredith Abrams (BMI, with Dongwen Wang)

MS Students Graduated as Committee Chair/Project Supervisor:

1. Timothy Buyer (12/2024, BIDS)
   Determining Pancreatic Cancer Disease State with KRAS
   Post graduation: Scientist at Biodesign Institute, ASU
2. Youstina Ghoris (Health Informatics 5/2024)
   Exploring Factors deriving sex and racial Disparities of Gallbladder Cancer burden in Arizona state
   Post graduation: Clinical Research Coordinator, Sheikh Shakhbout Medical City
3. Sidney Benich (12/2023, BMI)
   Project: Determining Optimal Progression Free Survival Methods

Post graduation: Bioinformatics Engineer at Data-Farber Cancer Institute

4. Jackson Carrion (5/2023, BMI 4+1)
   Project: A data-fusion approach to identifying developmental dyslexia from multi-omics datasets
   Post graduation: Computational & Systems Biology PhD Student, Massachusetts Institute of Technology (MIT)
5. Sri Mahitha Gudavalli (12/2022, BMI)
   Project: Data Formats and Standards in different Wearable Devices
6. Gautam Sai Nakka (12/2022, BMI)
   Project: Evaluation on the utilization of Pharmacogenomic data in pharmacies across few states in United States of America
7. Harika Maganti (12/2022, BMI)
   Project: Identifying the variance at the sequence level with a variant calling pipeline
8. Felix Madrid (5/2022, BMI)
   Project: Investigating quality control metrics in next generation sequencing data of family groups
   Post graduation: Bionformatics Scientist, TGen
9. Yihui Sun (5/2021, BMI)
   Project: Metabolomics Data Analysis of Gender Disparity for Gallstone Disease in Latinx Individuals
   Post graduation: Bionformatics Scientist, UCSF
10. Nourah Salem (5/2021, Health Informatics)
    Project: Identification of Metabolites and Clinical Features Associated with Gallstones in Gallbladder Cancer Patients Using Machine Learning
    Post graduation: PhD candidate, University of Colorado (PhD advisor: Larry Hunter)
11. Francisco Campa (5/2021, BMI)
    Project: Genome Wide Associate Analysis in Latino Individuals
12. Anweysha Bhowmik (12/2019, BMI)
    Project: Analyzing the Genomics of Dyslexia with the help of Exome Data
    Post graduation: Bionformatics Scientist, ASU, applying for PhD
13. Yuri Bonilla (7/2018, BMI)
    Project: PoTRA Analysis of Breast Cancer Biological Pathways
    Post graduation: Epidemiology Data Analyst at GTN Technical Staffing and Consulting, Phoenix, AZ
14. Matt Shabilla (12/2017, BMI)
    Project: Conducting Electronic Patient Outcome Surveillance in Combination with Infectious Disease Genotyping
    Post graduation: Informatics Scientist, Fry Laboratories, Scottsdale, AZ
15. Marcus Naymick (5/2016, BMI)
    Thesis: An Integrative Analysis of Borderline Type II Diabetes in Obese Humans
    Post graduation: Bioinformatics Scientist at the Translational Genomics Research Institute (TGen), Phoenix, AZ
16. Mark Teng (12/2015, BMI)
    Thesis: Next Generation RNA-Sequencing Analysis on the Desmoplastic Small Round Cell Tumor
17. Eric Holden (5/2015, BMI)

Thesis: Statistical and Pathway Analysis of Epigenetic Markers Differentiating Lean and Obese Individuals
Post graduation: IT Data Analytics Developer at Scripps Health

18. Alexis Christoforides (5/2014, BMI)
Thesis: VariantDB: A prototype scheme for structured storage and analysis of large-scale genomic variant results
Post graduation: Software Developer, Xamarin, Boston, MA
19. Sen Peng (5/2013, BMI)
Thesis: Identification and characterization of aberrant variants associated with non small cell lung carcinoma
Post graduation: PhD candidate, BMI, ASU
20. Stuart Stein (12/2012, BMI)
Thesis: "Identification of Novel One-Carbon Pathway Gene Variants as Stroke Risk Markers: Combined Data Mining, Logistic Regression, Pathway Analysis, and Functional and RNA Splicing Analysis"
Post graduation: CEO of NeuroSonicks LLC (medical device company), Orange County, CA
21. Immanuel Purushothaman (8/2012, BMI)
Thesis: A Bioinformatics Approach for Discovering Distinctions Between High and Low Risk HPV Sequences as Potential Sites Significant to Oncogenicity; Global HPV Databank: A comprehensive, centralized, source for retrieval of Human Papillomavirus nucleotide and protein data
Post graduation: Bioinformatics Scientist at the Biodesign Institute, Tempe, AZ; Bioinformatician, Icahn School of Medicine at Mount Sinai, New York, NY
22. Karthik Velmurugan (8/2012, BMI)
Thesis: Bioinformatics analysis of copy number variation events in tamoxifen resistant and sensitive MCF-7 sub clones
Post graduation: Bioinformatics Scientist at the Biodesign Institute, Tempe, AZ; PhD Candidate, Bioinformatics, Virginia Tech
23. John Penn (12/2010, Computational Biosciences CBS)
Thesis: Utilizing Proteomic Knowledge of Drusen to Identify Regions of Interest for GWA Study of Single Nucleotide Polymorphisms
Post graduation: Bioinformatics Scientist at Transgenomic Inc, Seattle, WA; Manager, NGS Data Analysis at Regeneron Genetics Center, New York
24. Natalia Briones (5/2010, Computational Biosciences CBS)
Thesis: Data mining of high density genomic variant data for prediction of Alzheimer's disease risk
Post graduation: Bioinformatics Scientist at the Biodesign Institute, Tempe, AZ
25. Siddarth Selvaraj (12/2009, Computational Biosciences CBS)
Thesis: Rule based mining of High Throughput Sequence data to discover MicroIndels
Post graduation: Bioinformatics Analyst at the National Institutes of Health (NIH), Bethesda, MD; Founder and CEO, Arima Genomics, San Diego, CA
26. Tyler Izatt (12/2009, Computational Biosciences CBS)
Thesis: SolPicker: Designing a software suite for picking oligo probes
Post graduation: Bioinformatics Scientist at the Translational Genomics Research Institute TGen, Phoenix, AZ
27. Charles Li (5/2009, BMI)

Thesis: Informatics for managing genomic mutations in application to cancer vaccine and synthetic biology
Post graduation: Bioinformatics Scientist at the Biodesign Institute, Tempe, AZ

MS Students Graduated as Committee Member:

1. Ai-Sawan Jongsuksawas (12/2016, BMI)
   Thesis: Exploring common autoantibodies derived from NAPPA screening studies in Breast Cancer, Diabetes, and Lung Cancer Populations
   Post Graduation: CHIR, ASU; Analytic Consultant at Humana, Louisville, KY.
2. Karen O'Connor (12/2015, BMI)
   Thesis: Pharmacovigilance on Twitter? Mining Tweets for Adverse Drug Reactions
3. Rachel Ginn (5/2015, BMI)
   Thesis: Mining Twitter for Adverse Drug Reaction Mentions: A Corpus and Classification Benchmark
   Post graduation: Clinical Performance Analyst, Banner Health, Phoenix, AZ
4. Saman Jirjies (5/2015, BMI)
   Thesis: Open Source Implementation of Jacquez's Q Statistics for Space-Time Clustering in Case-Control Studies
   Post graduation: Programmer Analyst at Healthways, Scottsdale, AZ
5. Robert Rivera (12/2014, BMI)
   Thesis: Automatic identification and quantification of the "ring effect" on NAPPA images
   Post graduation: Medical student, Medical College of Wisconsin
6. Shobana Sekar (5/2014, BMI)
   Thesis: Study of Batch-to-Batch Reproducibility in Nucleic Acid Programmable Protein Array (NAPPA)
   Post graduation: PhD Candidate, BMI, ASU
7. Rob Lauder (11/2013, BMI)
   Thesis: Evaluation of Unstructured Reports from HealthMap as a Leading Indicator for West Nile Virus Cases Reported by the CDC
   Post graduation: Data Analyst, Mercer, Tempe, AZ
8. Abhinav Bhargava (8/2013, BMI)
   Thesis: Seizures localization using 3-D object detection algorithm
   Post graduation: Oracle Database Consultant, Robert Half, San Francisco, CA
9. Kiran Mankar (10/2012, BMI)
   Thesis: Experiences and Challenges of implementing electronic interfaces with EHR: results from a 2012 IIS Program Manager's survey
   Post graduation: Clinical Informatics Analyst, Versant Holdings, Charlotte, NC
10. Ashutosh Singraur (5/2012, BMI)
    Thesis: A Novel Data Mining Approach to Predict Geographical Metadata Using Sequence Data
    Post graduation: Analyst, Contineo Health, Austin, TX
11. Pierina Ortiz (5/2012, BMI)
    Thesis: Use of the Bayesian Skyline Plot to Inform a Prediction Model of Zoonotic Infection in Animal Host
    Post graduation: Informatics Analyst at Health Services Advisory Group, Mesa, AZ; Health Informatics Analyst, Blue Cross Blue Shield of Arizona

12. Jing Lu (5/2012, BMI)
    Thesis: A 3-Layered Census Information Retrieving System
    Post graduation: Performance Architecture – Programmer Intern, Samsung Austin R&D Center, Austin, TX; Senior Software Engineer, Walmart Labs
13. Sheela Kanwar (10/2010, Computer Science CS)
    Thesis: BioEve : User Interface Framework bridging information extraction and information retrieval
    Post graduation: Software Engineer, Intel
14. Aaron Ashby (7/2009, BMI)
    Thesis: The effects of pre-operative warm-up on skills in operating room
    Post graduation: PhD candidate, BMI, ASU; System Engineer, Ventana Medical Systems
15. Radhika Nair (7/2009, Computer Science CS)
    Thesis: Semantic classification and dependency parsing enabled automated bio-molecular event extraction from text
    Post graduation: Quality Engineer, Progressive Insurance; Lead Member of Technical Staff, Quality Engineering, salesforce.com

Current MS Students:

1. Brittany Phelps (BIDS)
2. Kavya Prasad (BIDS)
3. Sayantani Mukherjee (BIDS)
4. Gerry Fernandez (TiGeR – BDS)

Past Undergraduate Student Advisees:

1. Ethan Leiter-Weintraub (BMI) – Chair for Barrett College Honors Thesis; Ethan served as President of the Students of BMI SoBMI organization (10/2022 – 2024)
2. Rohit Nandakumar - first mentored when he was High School Student, then he became Undergraduate in the Barrett College Honors BMI Program, and then President of the Society of BMI Students – SoBMI (11/2016 – 5/2022)
3. James Foley (BMI Senior, Capstone Research Project on Cancer NGS data analysis and databases, 8/2021 – 12/2022)
4. Hannah Kaufman (BMI, ASU, Research Advisee 8/2022 – 12/2022)
5. Matthew Lee (BMI Senior, Research Collaboration Project with Mayo Clinic, 1/2021-7/2021)
6. Emma Roberts (BMI Senior, ASU, Capstone Project, 8/2018 – 5/2019)
7. Bryce Turner (BMI, ASU, Capstone Project, 8/2018 – 5/2019)
8. Tres Benton (BMI, ASU, Capstone Project, 1/2019 – 12/2019)
9. Tracy Guan (BMI, ASU, Capstone Project, 1/2019 – 12/2019)
10. Maria Predtechenskaya (Computer Science, ASU, Capstone Project, 1/2019 – 12/2019)
11. Maryam Vahdati (Computer Science, ASU, Capstone Project, 1/2019 – 12/2019)
12. Camrie Madsen (Computer Science, ASU, Capstone Project, 1/2019 – 12/2019)
13. Christian Go (Computer Science, ASU, Capstone Project, 1/2019 – 12/2019)
14. Sunny Mahesh (CS, ASU Barret Honors College, Senior Thesis 5/2018)
    Thesis: “Expansion and Application of Pathways of Topological Rank Analysis (PoTRA) to Various Cancers”
    Post Graduation: MS Graduate Student, Biomedical Informatics, Harvard University

15. Micah Rappazzo (Biochemistry, ASU Barrett Honors College, Senior Thesis 11/2013)
    Thesis: "Next-Generation Sequencing for DNA Methylation Profiling in Blood and Skeletal Muscle"
    Post Graduation: JD Candidate, Emory University School of Law (2014 – 2017); Current: IP Litigation Associate, Kirkland & Ellis, New York, NY
16. Eileen Leaser (Biochemistry Major, University of Arizona Honors College, 5/2012 – 8/2012)
17. Chris Busick (School of Life Sciences/Bioinformatics, ASU, 7/2008 – 7/2010)
18. Dan Neri (Computer Science Senior, ASU, Capstone Project, 8/2009 – 4/2010)
19. Thomas Kieffer (Computer Science Senior, ASU, Capstone Project, 8/2009 – 4/2010)
20. Ameer Ayoub (Computer Science Senior, ASU, Capstone Project, 8/2009 – 4/2010)
21. Jonathan Phipps (Computer Science Senior, ASU, Capstone Project, 8/2009 – 4/2010)
22. John Bailey (Computer Science Senior, ASU, Capstone Project, 8/2009 – 4/2010)

Current Undergraduate Student Advisees:

1. Roberto Ruiz Felix (BMI) (9/2024 – present)

Past Post-Doctoral Fellow Advisees:

1. Hope Lancaster (Arizona State University, 8/2016 – 5/2020)

Area: Genotype-Phenotype Associations in Reading Disorders, funded by a NIH F32 grant
Post completion: Research Scientist, Boys Town National Research Hospital, Omaha, Nebraska

2. Ke Huang (NIDDK, 5/2011 – 8/2013)

Area: Bioinformatics for Next Generation Genomics Sequencing Analysis
Post completion: Scientist, Medical Science & Computing, LLC, a contractor company for National Institute of Allergy and Infectious Diseases (NIAID), working as a computational genomics specialist in the Bioinformatics and Computational Biosciences Branch, NIAID, working as architect of the NIAID Centralized Sequencing Initiative NGS data processing framework in support of the NIAID Genomics Research Integration System (GRIS)

Past Medical School Student Advisee:

3. David Hsieh (University of Arizona College of Medicine, Phoenix, 3/2011 – 1/2013)

Scholarly Project: "The organization and role of international collaboration in research production"
This project was given one of the four Scholarly Project Awards for the UA COM graduating class of 2013.

Past High School Student Advisee:

1. Rohit Nandakumar (Honors Science Research, Basha High School, Chandler AZ; 11/2016 – present)

2018 Research Project: "Developing a Machine Learning Model to Identify Protein-Protein Interaction Hotspots to Facilitate Drug Discovery". This project was awarded the 1st place in Computational Biology and Bioinformatics and the Grand Prize Award at the Arizona Science and Engineering Fair, April 2018. This result qualified Rohit to participate in the Intel International

Science and Engineering Fair in May 2018. It also led to Rohit being awarded one of Arizona Technology Council's four 2018 Future Innovators of the Year awards, awarded at the Arizona Governor's Celebration of Innovation in November 2018. Rohit joined ASU Barrett Honors College in Fall 2018 and graduated from the BMI program.
2017 Research Project: "Developing an Enhanced Algorithm for Identifying Drugs for Repositioning: Expanding the Arsenal to Combat Disease". This project was awarded 3rd Place - Computational Biology and Bioinformatics at the Arizona Science and Engineering Fair (AzSEF), April 2017.

BMI Graduate Student Academic Advising and Mentoring:
Andrea Gillespie, Howard Lanus, Joseph Heiler, Lee Benson, Eric Buckland, Margaret Linan, Michelle Winerip, Eric Holden, Blaine Taylor, Alexis Christoforides, Prabal Khanal, Preston Lee, Stuart Stein, Venkata Yellapantula, Karthik Velmurugan, Mithra Vankipuram, Fabian Spinnenhirn, Nate Sutton, Ashutosh Singraur, Sheetal Shetty, Kavitha Mukund, Tarek Saleh, Bryan Hendrikson, Soumya Panchanathan.

SOFTWARE DEVELOPMENT

- Pathway/SNP: Software Application for Management and Analysis of Genome Wide association data
- BING: Biomedical informatics pipeline for Next Generation Sequencing
- ICRPfinder: a fast pattern design algorithm for coding sequences and its application in finding potential restriction enzyme recognition sites
- NgspeAnalysis: a Pipeline for End-to-End analysis of DNA Sequencing Data
- DressUp: an End-to-End Pipeline Tool for Processing of Next-Generation RNA Sequencing Data Sets
- AMASS: A Database for Investigating Protein Structures
- BitTorious: An open source BitTorrent tracker and user management portal, supporting automatic RSS feed generation, role-based management, and real-time network monitoring for secure management and distribution of large biomedical data sets
- PoTRA: PageRank-based algorithm that uses pathway topology to detect pathways involved in disease
- Mir2Pathway: PageRank-based method that can be used to rank disease risk of miRNA-mediated biological pathways
- PolyTherapy AI: A GPU Accelerated Pipeline and Cancer Portal for Massive Combination Therapy Prediction

SERVICE

ASU Committee Membership
- BMI Academic Programs Committee – APC (2019 – present; past chair 1/2022 – 12/2022 and 2016 – 2017)
- BMI Graduate Admissions Committee – GAC (ad-hoc reviewer and interviewer: 2019 – present; past chair 8/2018 – 7/2019 and 2010 – 2011; member 2009 – 2015)
- CHS Faculty Evaluation Committee (2024 – present)
- BMI/BMD/HI Academic Program Review Committee (2020 – 2021)

- CHS Faculty Recruiting Committee – Ad-hoc (2019 – 2022)
- CHS Community Outreach Committee (2020 – 2021)
- CHS Personnel committee, ad-hoc, tenure application reviews (2018 – 2020; 2019 chair)
- CHS JumpStart Grant Review (2018 – 2020)
- CHS COVID-19 Seed Grant Review (2020)
- BMI Graduate Admissions Committee – GAC (past chair 8/2018 – 7/2019 and 2010 – 2011; member 2009 – 2015)
- CHS Faculty Mentor committee (2018 – 2019)
- BMI Personnel committee (2014 – 2018)
- BMI Recruiting committee (2009 – 2015; 2017 – 2018)
- CHS Associate Dean for Faculty Affairs Search Committee (2017 – 2018)
- Curriculum committee, College of Health Solutions (2014 – 2016)
- Academic Standards and Grievance Committee, College of Health Solutions (2014)
- Graduate curriculum/Academic Programs committee (2007 – 2010)
- Undergraduate curriculum committee (2007 – 2008)
- Adjunct and Affiliated Faculty committee (2008 – 2009, chair)

Professional Service and Community Engagement

- Scientific Reviewer:
    - NIH Scientific Review Panels and Study Sections
    - Journal of Biomedical Informatics
    - BMC Bioinformatics (journal)
    - BMC Genomics (journal)
    - Computers in Biology and Medicine (journal)
    - Human Genetics (journal)
    - EURASIP Journal on Bioinformatics and Systems Biology
    - Oxford University Press
    - American Medical Informatics Association (AMIA conference)
- Volunteer Advisor (Bioinformatics), Framing New Pathways to Medical Discovery for Families, Students and Teachers, Arizona Science Center (2009 – 2014)
- Mentor, American Medical Informatics Association
- Faculty Mentor, Bioinformatics in Medicine Student Interest group at the Mayo Clinic School of Medicine, Arizona (2019 – present)