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# EDUCATION:

Ph. D. Biochemistry, University of Illinois at Urbana-Champaign (UIUC) 1997 - 2002

Dissertation: *Mutagenesis and spectroscopic studies on cytochrome bd quinol oxidase of Escherichia coli.*

B. S. Bioscience and Biotechnology, Tsinghua University, China 1991 - 1996

**RESEARCH INTERESTS:**

My research is focused on developing and applying translational bioinformatics methods to identify disease genes, pathways, and biomarkers with applications in cancers, neurodegenerative diseases, and other types of diseases. Our lab also focuses on bioinformatic data analysis tools as well as applies computational pathology on H&E image data analysis for cancer subtyping and prognosis.

# RESEARCH EXPERIENCE:

**Assistant Professor**– Department of Medical and Molecular Genetics, Indiana University, School of Medicine 2017-present

* Translational bioinformatics research on neurodegenerative diseases and cancers
* Integrative multi-modal data analysis and machine learning approach for disease mechanistic study, disease subtyping and biomarker identification
* Computational pathological analysis on H&E images for cancer subtyping and prognosis
* Software and pipeline development for integrative omic data mining, network analysis, and computational pathology image analysis

**Research Scientist –** Regenstrief Institute 2018- present

**Assistant Research Professor**– Department of Biomedical Informatics, The Ohio State University 2015-2017

* Developed network-based pan-cancer research program to understand cancer physiology and provide therapeutic targets
* Developed gene co-expression network guided tool for functional copy number variance discovery
* Mined condition-specific networks to provide candidates for disease pathway study, biomarker identification and drug development
* Mined functional relationships of somatic mutated genes of cancer patients to assist patient stratification and biomarker discovery
* Integrated various types of NGS data for cancer biomarker and drug discovery

**Research Scientist** – Department of Biomedical Informatics, OSU 2014-2015

* Developed various pipelines and algorithms for mining and analyzing large exome-seq data for cancer genetic variance discovery in breast and endometrial cancers.
* Mined gene co-expression networks for functional copy number variance discovery.
* Developed network approaches for integrating both genetic and phenotypic alterations for disease pathway discovery.
* Developed single cell RNA-seq data analysis pipeline for neural developmental and neurological disease studies.

**Postdoctoral Researcher** – OSUCCC Biomedical Informatics Shared Resources 2009-2014

* Analyzed next generation sequencing (NGS) data including ChIP-seq, RNA-seq, and exome sequencing.
* Developed frequent gene co-expression network mining pipeline on cancer microarray data to identify cancer prognosis biomarker candidates.

**Volunteer Researcher -** OSUCCC Biomedical Informatics Shared Resources 2008

* Identified co-expressed gene network in multiple types of cancers using microarray data. Simulated of genome mapping for bisulfite-seq experiments.

**Postdoctoral Researcher** - F. Robert Tabita Group 2004-2005

Department of Microbiology, The Ohio State University

* Studied DNA binding property of the LysR family member CbbR protein using surface plasmon resonance (SPR).

**Postdoctoral Research Associate** - Robert B. Gennis Group2002-2004

Department of Biochemistry, University of Illinois at Urbana-Champaign

Designed and generated protein-binding DNA aptamer to facilitate protein crystallization.

* Cloned and expressed hypothetical channel protein, studied its role in pathogenicity and drug resistance in *Salmonella* *enterica* Serovar *Typhimurium.*

### Graduate Research Assistant - Robert B. Gennis Group 1997-2002

### Department of Biochemistry, University of Illinois at Urbana-Champaign

* Structure and function relationship studies on cytochrome *bd* quinol oxidase in *E. coli* using spectroscopic and mutagenesis techniques.
* Developed expertise in enzyme functional analysis using a variety of spectroscopic instruments as well as expertise in molecular biology techniques.

# PROFESSIONAL ACTIVITIES:

* Journal Associate Editor for Fronter in Genetics 2021-present
* Journal Associate Editor for BMC Medical Genomics 2019-present
* Program Committee member for:
  + 2011 Bioinformatics and Biomedicine (BIBM) Next Generation Sequencing Workshop,
  + 2014, 2016, 2017 ACM conference on Bioinformatics Computational Biology and Health Informatics (ACM BCB),
  + 2015, 2016 International Conference on Intelligent Biology and Medicine (ICIBM)
  + 2018 International Conference on Genome Informatics (GIW)
  + 2018, 2019, 2020 AMIA Summit on Translational Bioinformatics
* Reviewer for various journals and conferences including
  + Nature Communications, Nature Microbiology, Nature Communications Biology
  + Scientific Reports
  + Bioinformatics
  + PLoS One, Frontier in Genetics
  + BMC Bioinformatics, BMC Medical Genomics, BMC Genomics
  + ACM conference on Bioinformatics Computational Biology and Health Informatics (ACM-BCB)
  + ACM/IEEE Transaction on Computational Biology and Bioinformatics, International Conference on Intelligent Computing (ICIC)

# RESEARCH AWARDS:

* The Marco Ramoni Distinguished Paper Award (AMIA Summit on Translational Bioinformatics) - 2016
* Distinguished Paper Award (AMIA Summit on Translational Bioinformatics) – 2010

**TEACHING EXPERIENCE:**

* Director for graduate course G700 Heredity in Biomedical Science, IUSM 2019- present
* Various undergraduate/graduate courses guest lecturer, IUSM, IUB, IUPUI 2017- present
* Training sessions on various bioinformatics tools, OSU 2010 - 2017
* Lecturer for Mathematical Biology Institute Summer Program, OSU 2011, 2012
* Teaching assistant in Physical Biochemistry, UIUC 2000-2002
* Teaching assistant in Biochemistry, UIUC 1999
* Teaching assistant in Chemistry, UIUC 1997

# PUBLICATIONS:

**BOOK CHAPTER**

1. **Epigenome-Wide Association Studies**, Chapter: Workflow to Mine Frequent DNA Co-methylation Clusters in DNA Methylome Data, Springer Nature, ISBN: 978-1-0716-1993-3, 2022.
2. **Practical Guide to ChIP-seq Data Analysis**, CRC Press, ISBN: 9780429487590, 2 November 2018.

**PEER-REVIEWED JOURNAL PAPERS (in reversed chronical order):**

1. X. Zhan, Y. Liu, A. J. Jannu, S. Huang, W. Wei, B. Ye, P. Pandya, K. Pollok, J. Renbarger, K. Huang, **J. Zhang**, “Identify the potential driver genes for gene fusion-negative rhabdomyosarcoma”, *Frontier in Oncology*, Volume 13 (2023) | doi:10.3389/fonc.2023.1080989.
2. Liu, H. Wu, D. Robertson, **J. Zhang**, “Text mining and portal development for gene-specific publications on Alzheimer's disease and other neurodegenerative diseases”, *BMC Suppl.*, *in press*.
3. Z. Huang, W. Shao, Z. Han, A. M. Alkashash, C. De la Sancha, A. V. Parwani, H. Nitta, Y. Hou, T. Wang, P. Salama, M. Rizkalla, **J. Zhang**, Kun Huang\*, Z. Li\*, “Artificial Intelligence Reveals Features Associated with Breast Cancer Neoadjuvant Chemotherapy Response from Multi-stain Histopathologic Images”, *NPJ Precision Oncology,* 7:14, (2023) |doi:10.1038/s41698-023-00352-5 (\*co-corresponding author)
4. P. H. Pandya, A. J. Jannu, *et al*…, J. Zhang\*, K. E. Pollok\*, “Integrative Multi-OMICs Identifies Therapeutic Response Biomarkers and Confirms Fidelity of Clinically Annotated, Serially Passaged Patient-Derived Xenografts Established from Primary and Metastatic Pediatric and AYA Solid Tumors”, *Cancers*, 2023, 15(1), 259. |doi:10.3390/cancers15010259. (\*co-corresponding author).
5. P. Martinez, H. Patel, Y. You, N. Jury, A. Perkins, A. Lee-Gosselin, X. Taylor, Y. You, G. V. Di Prisco, X. Huang, S. Dutta, A. Wijeratne, J. Redding-Ochoa, S. S. Shahid, J. F. Codocedo, S. Min, G. E. Landreth, A. L. Mosley, Y. Wu, D. McKinzie, J. Rochet, **J. Zhang†**, B. K. Atwood, J. Troncoso, C. A. Lasagna-Reeves, “Bassoon contributes to tau-seed propagation and neurotoxicity”, *Nature Neurosciences* (2022) |doi:10.1038/s41593-022-01191-6.
6. \* L. Alsaleh, C. Li, J. Couetil, Z. Ye, K. Huang, **J. Zhang**, C. Chen, T. S. Johnson, “Spatial transcriptomic analysis reveals associations between genes and cellular topology in breast and prostate cancers”, *Cancers,* 2022, 14(19), 4856 |doi:10.3390/cancers14194856.
7. Y. Liu, T. Wang, B. Duggan, M. Sharpnack, K. Huang, **J. Zhang**, X. Ye, T. S. Johnson, “SPCS: A Spatial and Pattern Combined Smoothing Method for Spatial Transcriptomic Expression”, *Brief Bioinfor.* 2022 Apr 4; bbac116. |doi: 10.1093/bib/bbac116.
8. X. Taylor, P. Cisternas, N. Jury, P, Martinez, X. Huang, Y. You, J. Redding-Ochoa, R. Vidal, **J. Zhang**, J. Troncoso, Cristian A. Lasagna-Reeves, "Activated Endothelial Cells Induce a Distinct Type of Astrocytic Reactivity", *Communications Biology*, volume 5, Article number: 282 (2022)| doi: 10.1038/s42003-022-03237-8.
9. T. S. Johnson, Y. Liu, T. Wang, B. Duggan, X. Ye, **J. Zhang**, K. Huang, “SPCS: A Spatial and Pattern Combined Smoothing Method for Spatial Transcriptomic Expression”, *Briefings in* *Bioinformatics*, 2022 Apr 4; bbac116 | doi: 10.1093/bib/bbac116.
10. Y. Wu, M. Cheng, S. Huang, Z. Pei, Y. Zuo, J. Liu, K. Yang, Q. Zhu, **J. Zhang**, H. Hong, D. Zhang, K. Huang, L. Cheng, W. Shao, “Recent Advances of Deep Learning for Computational Histopathology: Principles and Applications”, *Cancers,* 2022, 14, 1199. | doi.org/10.3390/cancers14051199
11. T. S. Johnson, C. Y. Yu, Z. Huang, S. Xu, T. Wang, C. Dong, W. Shao, M. A. Zaid, Y. Wang, C. Bartlett, Y. Zhang, Y. Liu, K. Huang, and **J. Zhang**, “Diagnostic Evidence GAuge of Single cells (DEGAS): a flexible deep transfer learning framework for prioritizing cells in relation to disease”, *Genome Medicine*, 14:11 (2022) |doi.org/10.1186/s13073-022-01012-2.
12. Z. Liu, T. S. Johnson, W. Shao, M. Zhang, **J. Zhang**\* and K. Huang\*, “Optimal transport- and kernel-based early detection of mild cognitive impairment patients based on magnetic resonance and positron emission tomography images”, *Alzheimer’s Research & Therapy,* (2022) 14:4 |doi.org/10.1186/s13195-021-00915-3. (\*co-corresponding authors)
13. X. Huang, K. Huang, T. Johnson, M. Radovich, **J. Zhang\*,** J. Ma, Y\*. Wang\*, “ParsVNN: Parsimony Visible Neural Networks for Uncovering Cancer-Specific and Drug-sensitive Genes and Pathways”, *Nucl. Acid Res. in Genomics and Bioinformatics*, Vol.3, Issue 4, Dec. 2021, lqab097 |doi.org/10.1093/nargab/lqab097. (\*co-corresponding author)
14. Y. Liu, X. Ye, C. Y. Yu, W. Shao, J. Hou, W. Feng, **J. Zhang**, X. Ye, K. Huang, “TPSC: a module detection method based on topology potential and spectral clustering in weighted networks and its application in gene co-expression module discovery”, *BMC Bioinformatics*, Vol. 22:111, 2021 |doi: 10.1186/s12859-021-03964-5.
15. Z. Lu, X. Zhan, Y. Wu, J. Cheng, W. Shao, D. Ni, Z. Han, **J. Zhang,** Q. Feng, K. Huang, “BrcaSeg: A Deep Learning Approach for Tissue Quantification and Genomic Correlations of Histopathological Images”, *Genomics, Proteomics & Bioinformatics*, preprint online 17 July 2021. |doi: 10.1016/j.gpb.2020.06.026.
16. W. Shao, T. Wang, Z. Huang, Z. Han, **J. Zhang**, K. Huang, “Weakly Supervised Deep Ordinal Cox Model for Survival Prediction from Whole-slide Pathological Images”, *IEEE Transaction on Medical Imaging*, 2021, Jul 15; PP |doi: 10.1109/TMI.2021.3097319.
17. C. Xu, S. Sun, T. S. Johnson, R. Qi, S. Zhang, **J. Zhang**, K. Yang, “The glutathione peroxidase Gpx4 in Treg cells restrains lipid peroxidation and ferroptosis to sustain Treg activation and suppression of antitumor immunity”, *Cell reports*, 35(11), 15 June 2021, 109235 | doi:10.1016/j.celrep.2021.109235.
18. T. Wang, W. Shao, Z. Huang, H. Tang, **J. Zhang**, Z. Ding, K. Huang, “MOGONET Integrates Multi-omics Data Using Graph Convolutional Networks Allowing Patient Classification and Biomarker Identification”, *Nat. Comm.,* 12, 3445 (2021) |doi:10.1038/s41467-021-23774.w
19. Y. Liu, X. Ye, X. Zhan, C. Y. Yu, **J. Zhang**, K. Huang, “TPQCI: A Topology Potential-Based Method to Quantify Functional Influence of Copy Number Variations”, *Methods*, S1046-2023(21)00107-9 (2021) |doi:10.1016/j.ymeth.2021.04.015.
20. S. Storey, Z. Zhang, Z. Luo, D. Von Ah, M. Metzger, **J. Zhang**, A. Jakka, K. Huang, “Association of Comorbid Diabetes with Clinical Outcomes and Healthcare Utilization in Colonrectal Cancer Survivors”, *Oncol. Nurs. Forum,* 2021 Mar 1;48(2):195-206|doi: 10.1188/21.ONF.195-206.
21. T. S. Johnson, S. Xiang, T. Dong, M. Cheng, T. Wang, K. Yang, D. Ni, K. Huang, **J. Zhang**, “Combined Differential Expression and Differential Co-expression Analysis on Gene Networks Reveals Changes in Cell Population Largely Explain Core Microglia Genes’ Up-expression in Alzheimer’s Disease Brains”, *Sci. Rep.*, 2021 Jan. 11;11:353 |doi: 10.1038/s41598-020-79740-x.
22. S. K. Sieberts, J. Schaff, M. Duda, et al., **J. Zhang**, et al., L. Omberg, “Crowdsourcing Digital Health Measures to Predict Parkinson’s Disease Severity: The Parkinson’s Disease Digital Biomarker DREAM Challenge”, *NPJ Digital Medicine*, 4(53), 2021.
23. J. Cheng, Y. Liu, W. Huang, W. Hong, L. Wang, X. Zhan, Z. Han, D. Ni, K. Huang, **J. Zhang**, “Computational Image Analysis Identifies Histopathological Image Features Associated with Somatic Mutations and Patient Survival in Gastric Adenocarcinoma”, *Front. Oncol.,* 31 March 2021 | doi:10.3389/fonc.2021.623382.
24. Z. Huang, Z. Han, T. Wang, P. Salama, K. Huang, and **J. Zhang,** “TSUNAMI: Translational Bioinformatics Tool Suite for Network Analysis and Mining”, *Genomics Proteomics and Bioinformatics*, Mar. 2021|doi: 10.1016/j.gpb.2019.05.006.
25. T. S. Johnson, S. Xiang, B. R. Helms, Z. B. Abrams, P. Neidecker, R. Machiraju, Y. Zhang, K. Huang, and **J. Zhang**, “Spatial Cell Type Composition in Human Normal and Alzheimer Brains is Revealed Using Integrated Mouse and Human Single Cell RNA Sequencing”, *Sci. Rep.*, 2020 Oct. 22; 10(1), 18014 |doi:10.1038/s41598-020-74917-w.
26. V. S. Jadhavi, P. B. C. Lin, T. Pennington, G. V. Di Prisco, A. J. Jannu, G. Xu, M. Moutinho, **J. Zhang,** B. K. Atwood, S. S. Puntambekar, S. J. Bissel, A. L. Oblak, G. E. Landreth, B. T. Lamb, “Trem2 Y38C Mutation and Loss of Trem2 Impairs neuronal Synapses in Adult Mice”, *Mol. Neurodegen.*, 15(62), 2020 |doi:10.1186/s13024-020-00409-0.
27. W. Shao, T. Wang, L. Sun, T. Dong, Z. Han, Z. Huang, **J. Zhang**, D. Zhang, and K. Huang, **“**Multi-task Multi-modal Learning for Joint Diagnosis and Prognosis of Human Cancers”, *Med. Imaging Analysis*, 2020 Oct; 65:101795 |doi: 10.1016/j.media.2020.101795.
28. P. Cisternas, X. Taylor, A. Perkins, O. Maldonado, E. Allman, R. Cordova, Y. Marambio, B. Munoz, T. Pennington, S. Xiang, **J. Zhang**, R. Vidal, B. Atwood, and C. A. Lasagna-Reeves, “Vascular Amyloid Accumulation Alters The GABAergic synapse and Induces Hyperactivity in A Model of Cerebral Amyloid Angiopathy”, *Aging Cell*, 2020 Sep 10; e13233 |doi: 10.1111/acel.13233.
29. X. Taylor, P. Cisternas, Y. You, Y. You, S. Xiang, **J. Zhang**, R. Vidal, and C. A. Lasagna-Reeves, “A1-Reactive Astrocytes and A Loss of TREM2 Are Associated with An Early State of Pathology in A Mouse Model of Cerebral Amyloid Angiopathy”, *J.* *Neuroinflammation*, 2020 Jul 25;17(1):223 |doi: 10.1186/s12974-020-01900-7.
30. L. Sun\*, **J. Zhang**\*, W. Chen\*, Y. Chen, X. Zhang, M. Yang, M. Xiao, F. Ma, Y. Yao, M. Ye, Z. Zhang, K. Chen, F. Chen, Y. Ren, S. Ni, Xi Zhang, Z. Yan, Z. Sun, H. Zhou, H. Yang, S. Xie, M E. Haque, K. Huang, and Y. Yang, “Attenuation of SMARCA4 and ERK-ETS Signaling Suppress Dopaminergic Degeneration in Drosophila Parkinson’s Disease Models”, *Aging Cell*, 2020;19:e13210 |doi: 10.1111/acel.13210. (\*co-first author).
31. J. Cheng, Z. Han, R. Mehra, W. Shao, M. Cheng, Q. Feng, D. Ni, K. Huang, L. Cheng, and **J. Zhang**, “Computational Analysis of Pathological Images Enables A Better Diagnosis of TFE3 Xp11.2 Translocation Renal Cell Carcinoma”, *Nat. Comm.*, (2020)11:1778 |doi:10.1038/s41467-020-15671-5.
32. Z. Lu, S. Xu, W. Shao, Y. Wu, **J. Zhang**, Z. Han, Q. Feng, K. Huang, “Deep-Learning-Based Characterization of Tumor-Infiltrating Lymphocytes in Breast Cancers from Histopathology Images and Multiomics Data”, *JCO Clin Cancer Inform.* 2020 May; 4:480-490 |doi: 10.1200/CCI.19.00126.
33. W. Shao, S. Xiang, Z. Zhang, K. Huang, **J. Zhang**, “Hyper-graph Based Sparse Canonical Correlation Analysis for The Diagnosis of Alzheimer’s Disease from Multi-dimensional Genomic Data”, *Methods*, 2020 Apr 28; S1046-2023(20)30021-9 |doi: 10.1016/j.ymeth.2020.04.008.
34. Z, Huang, T. Johnson, Z. Han, B.R. Helm, S. Cao, C. Zhang, P. Salama, M. Rizkalla, C. Y. Yu, J. Cheng, S. Xiang, X. Zhan, **J. Zhang**, and K. Huang, “Deep Learning-based Cancer Survival Prognosis from RNA-seq Data: Approaches and Evaluations”, *BMC Medical Genomics*, **13**, 41 (2020) |doi:10.1186/s12920-020-0686-1.
35. W. Shao, Z. Han, J. Cheng, L. Cheng, T. Wang, L. Sun, Z. Lu, **J.** **Zhang**, D. Zhang, and K. Huang, “Integrative Analysis of Pathological Images and Multi-dimensional Genomic Data for Early-stage Cancer Prognosis”, *IEEE Trans Med Imaging.*vol. 39, no. 1, pp. 99-110, Jan. 2020 |doi: 10.1109/TMI.2019.2920608.
36. E. Kouba, A. Lopez-Beltran, R. Montironi, F. Massari, K. Huang, M. Santoni, M. Chovanec, M. Cheng, M. Scarpelli, **J. Zhang**, A. Cimadamore, and L. Cheng, “Liquid Biopsy in The Clinical Management of Bladder Cancer: Current Status and Future Developments”, *Exp. rev. Mol. Diag.*, 17 Oct 2019 |doi: 10.1080/14737159.2019.1680284.
37. B. R. Helm, X. Zhan, P. H. Pandya, M. E. Murray, K. E. Pollok, J. L. Renbarger, M. J. Ferguson, Z. Han, Dong N, **J. Zhang**, and K. Huang, “Gene Co-expression Networks Restructured by Gene Fusion in Rhabdomyosarcoma Cancers”, *Genes* (Basel). 2019 Aug 30;10(9). pii: E665 |doi: 10.3390/genes10090665.
38. T. Wang, T. S. Johnson, W. Shao, Z. Lu, B. R. Helm, **J. Zhang\*,** and K. Huang\*, “BERMUDA: A Novel Deep Transfer Learning Method for Single-cell RNA Sequencing Batch Correction Reveals Hidden High-resolution Cellular Subtypes”, *Genome Biology*, (2019) 20:165 |doi: 10.1186/s13059-019-1764-6.(\*co-correspondent author)
39. Y. Han; X. Ye, C. Wang, Y. Liu, S. Zhang, W. Feng, K. Huang, and **J. Zhang**, “Integration of Molecular Features with Clinical Information for Predicting Outcomes for Neuroblastoma Patients”, *Biol. Direct,* 2019 Aug 23;14(1):16 |doi: 10.1186/s13062-019-0244-y.
40. X. Zhan, J. Cheng, Z. Huang, Z. Han, B. Helm, X. Liu, **J. Zhang**, T. Wang, D. Ni, and K. Huang, “Correlation Analysis of Histopathology and Proteogenomics Data for Breast Cancer", *Mol. & Cel. Proteomics*, 2019, Aug 9; 18(8 suppl. 1): S37-S51 |doi: 10.1074/mcp.RA118.001232.
41. T. Wang, **J. Zhang**, and K. Huang, “Generalized Gene Co-expression Analysis Via Subspace Clustering Using Low-rank Representation”, *BMC Bioinformatics,* 20(Suppl. 7):196 |doi:10.1186/s12859-019-2733-5, 2019.
42. T. S. Johnson, T. Wang, Z. Huang, C. Y. Yu, Y. Wu, Y. Han, Y. Zhang, K. Huang, and **J. Zhang**, “LAmbDA: Label Ambiguous Domain Adaptation Dataset Integration Reduces Batch Effects and Improves Subtype Detection”, Bioinformatics, 2019, Nov. 1; 35(22):4696-4706. |doi: 10.1093/bioinformatics/btz295.
43. Z. Huang, X. Zhan, S. Xiang, T. Johnson, B. Helm, C.Y. Yu, **J. Zhang**, P. Salama, M. Rizkalla, Z. Han, and K. Huang “SALMON: Survival Analysis Learning with Multi-Omics Neural Networks on Breast Cancer”, *Front Genet.* 2019 Mar 8; 10:166. |doi: 10.3389/fgene.2019.00166.

# T. Wang, T. Johnson, J. Zhang, and K. Huang, “Topological Methods for Visualization and Analysis of High Dimensional Single-Cell RNA Sequencing Data”. *Pacific Symp Biocomput.* 2019; 24:350-361.

1. Y. Han, X. Ye, J. Cheng, W. Feng, S. Zhang, Z. Han, **J. Zhang**, and K. Huang, “Integrative Analysis Based on Survival Associated Co-expression Gene Modules for Predicting Neuroblastoma Patient’s Survival Time”, *Biol. Direct*, 2019 Feb 13;14(1):4. |doi: 10.1186/s13062-018-0229-2.
2. S. Xiang, Z. Huang, H. Wang, Z. Han, C. Y. Yu, D. Ni, K. Huang, and **J. Zhang**, “Condition-Specific Gene Co-expression Network Mining Identified Key Pathways and Regulators in Alzheimer’s Disease”, *BMC Med. Genomics* 2018 Dec 31;11(Suppl 6):115. |doi: 10.1186/s12920-018-0431-1.
3. W. Hankey, Z. Chen, M. Bergman, M. Fernandez, B. Hancioglu, X. Lan, A. Jegga, **J. Zhang**, V. Jin, B. Aronow, Q. Wang, and J. Groden, “Chromatin-associated APC Regulates Gene Expression in Collaboration with Canonical WNT Signaling and AP-1”, *Oncotarget,* 2018 Jul 27;9(58):31214-31230.
4. W. Hankey, M. McIlhatton, K. Ebede, B. Kennedy, B. Hancioglu, **J. Zhang**, G. Brock, K. Huang, and J. Groden, “Mutational Mechanisms That Activate Wnt Signaling and Predict Outcomes in Colorectal Cancer Patients”, *Cancer Research,* 2018 Feb 1;78(3):617-630 |doi: 10.1158/0008-5472.CAN-17-1357.

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# J. Cheng\*, J. Zhang\*, Y. Han, X. Wang, X. Ye, Y. Meng, A. Pawani, Z. Han, Q. Feng, and K. Huang, “Integrative Analysis of Histopathological Images and Genomic Data for Predicting Clear Cell Renal Cell Carcinoma Prognosis”, *Cancer Res.*, 2017 Nov; 77(21): e91-e100. (\*co-first authors)

# J. Zhang, and K. Huang, “Pan-cancer Analysis of Frequent DNA Co-methylation patterns Reveals Consistent Epigenetic Landscape Changes in Multiple Cancers”, *BMC Genomics*, 2017 Jan 25;18(Suppl 1):1045 |doi: 10.1186/s12864-016-3259-0.

1. J. R. Karras, M. Schrock, B. Batar, **J. Zhang**, K. La Perle, T. Druck, K. Huebner. “Fhit Loss-Associated Initiation and Progression of Neoplasia In Vitro”. *Cancer Sci*. 2016, Nov; 107(11): 1590-1598.
2. J. A. Deiuliis, R. Syed, D. Duggineni, J. Rutsky, P. Rengasamy, **Zhang J**, K. Huang, B. Needleman, D. Mikami, K. Perry, et al. “Visceral Adipose MicroRNA 223 Is Upregulated in Human and Murine Obesity and Modulates the Inflammatory Phenotype of Macrophages”, *PLoS One* 2016 Nov 3; 11(11): e0165962.
3. **J. Zhang**, Z. Abrams, J. D. Parvin, and K. Huang. “Integrative analysis of somatic mutations and transcriptomic data to functionally stratify breast cancer patients”, *BMC Genomics*, Aug 22;17 Suppl 7:513. doi: 10.1186/s12864-016-2902-0.
4. Z, Han, **J. Zhang,** G. Sun, G. Liu, K. Huang, “A Matrix Rank Based Concordance Index for Evaluating and Detecting Conditional Specific Co-expressed Gene Modules”. *BMC Genomics*. 2016 Aug 22;17 Suppl 7: 519.
5. **J. Zhang**, and K. Huang, “Normalized lmQCM: An Algorithm for Detecting Weak Quasi-Cliques in Weighted Graph with Applications in Gene Co-Expression Module Discovery in Cancers”. *Cancer Inform*. 2016 Jul 24;13(Suppl 3):137-46.
6. S. Shroff \***, J. Zhang\***, and K. Huang, “Gene Co-Expression Analysis Predicts Genetic Variants Associated with Drug Responsiveness in Lung Cancer”, *AMIA Joint Summits Transl Sci Proc.* 2016 Jul 20; 2016: 32-41. (\* equal contributions, Winner of the *Marco Ramoni Distinguished Paper award*)
7. C. Paisie, M. Schrock, J. Karras, **J. Zhang**, S. Miuma, I. Ouda, C. Waters, J. Saldivar, T. Druck, and K. Huebner, “Exome-wide Single-base Substitutions in Tissues and Derived Cell Lines of The Constitutive Fhit Knockout Mouse”, *Cancer Science*, 2016 Apr. 107(4): 528-35 |doi: 10.1111/cas.12887, 2016.
8. P. Gasparini, M. Fassan, L. Cascione, G. Guler, S. Balci, C. Irkkan, C. Paisie, F. Lovat, C. Morrison, **J.** **Zhang**, A. Scarpa, C. M. Croce, C. L. Shapiro, and K. Huebner, “Androgen Receptor Status Is A Prognostic Marker in Non-basal Triple Negative Breast Cancers and Determines Novel Therapeutics Options”. *PLoS One*: Feb 5; 9(2): e88525, 2014 | doi: 10.1371/journal.pone.0088525.
9. S. Miuma, J. C. Saldivar, J. Karras, C. E. Waters, Y. Wang, V. Jin, J. Sun, T. Druck, **J. Zhang**, K. Huebner, “Fhit Deficiency-induced Global Genome Instability Promotes Mutation and Clonal Expansion”, *PloS One*, Nov.14; 8(11): e80730, 2013 |doi: 10.1371/journal.pone.0080730
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**PEER-REVIEWED CONFERENCES PRESENTATIONS, PUBLICATION AND ABSTRACTS:**

1. J. Couetil, T. Johnson, **J. Zhang**, K. Huang, “DEGAS: Mapping clinical metrics to spatial transcriptomics with deep learning”, International Society for Computational Biology (ISCB) Rocky Mountain Bioinformatics Conference 2021, Dec.2-4, Snowmass, CO.
2. J. Liu, D. Robertson H. Wu, **J. Zhang**, “Text mining and portal development for gene-specific publications on Alzheimer's disease”, The 6th International Workshop on Semantics-Powered Health Data Analytics (SEPDA 2021).
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4. Z. Liu, W. Shao, **J. Zhang**, M. Zhang, K. Huang, “HDMI: Transfer Learning via Optimal Transportation for Integrative Cancer Patient Stratification”, International Joint Conference on Artificial Intelligence (IJCAI) 2021, Aug 21st-26th, Montreal, Canada.
5. B. Duggan, Y. Liu, T. Wang, J. Zhang, T. S. Johnson, X. Ye, K. Huang, “Differential Gene Expression and Functional Enrichment Analysis of Smoothed PDAC Spatial Transcriptomics Slides”, *Proceedings of IMPRS*, Vol. 4 No. 1 (2021) |doi: 10.18060/25896.
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8. S. Xiang, D. Ni, K. Huang, **J.** **Zhang**, “Mining of differentially co‐expressed gene modules reveals perturbed functional network and key regulators in Alzheimer's disease brains”, *Alzheimer's and Dementia*, 2020 Dec Nov;16(S3): e047095. Doi: 10.1002/alz.047095.
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27. Y. Xiang\*, **J. Zhang\***, K. Huang, “Mining tissue-tissue gene co-expression network for tumor microenvironment study and biomarker prediction”, International Conference on Bioinformatics, 2013. (\*equal contributions).
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## RECENT GRANTS:

* + - 1. NIH R21 Identify and study the roles of key genes and proteins in subpopulations of Alzheimer’s disease patients with uncoupled neurofibrillary tangles (Role: Contact PI, 07/01/2022-06/30/2024)
      2. NCI ITCR A deep-transfer-learning framework to transfer clinical information to single cells and spatial locations in cancer tissues (Role: MPI, 07/01/2022 – 06/30/2025)
      3. NIH R01 DMS/NIGMS 1: Topological Study on Histological Images and Spatial Transcriptomics (Role: MPI, 09/01/2022 – 08/31/2025)
      4. IUSCCC TMM Big Data Grant, AI-based characterization of the tumor microenvironment of melanoma (Role: PI, 07/2021-06/2022)
      5. NIH U54 Pilot Integrate genomic data analysis of pediatric sarcomas to identify functional CNVs and driving regulators (Role: PI, 06/2019-05/2020)

1. NIA R01 Tau-seed protein interactome and its role in neurodegenerative tauopathies (Role: Co-I, 09/2020-08/2025)
2. NIA U54 Alzheimer’s Disease Drug Discovery Center (Role: Co-I, 09/2019-08/2024)
3. American Cancer Society Internal Research Grant (Role: contact PI, 06/2018-05/2019)
4. NCI ITCR U01 Informatics Links between Histological Features and Genetics in Cancers (Role: co-I, 05/2015 – 04/2018)