

# Curriculum Vitae

## EDUCATION

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2025 ~ present	MS	<b>Biostatistics</b> Case Western Reserve University Cleveland, OH
2005 ~ 2011	Ph. D	<b>Computational Biology</b> College of Life Sciences, University of Chinese Academy of Sciences (GUCAS), Beijing, China
2001 ~ 2005	BS	<b>Biological Sciences</b> College of Life Sciences, Henan Normal University, Henan, China

## RESEARCH EXPERIENCE

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<b>Research Scientist</b> Department of Quantitative Health Sciences Lerner Research Institute Cleveland Clinic, Cleveland, OH	<i>Mar.2018 -present</i>
➤ Research focused on analyzing the –omics data and signaling pathways from Severe Asthma Research Program (SARP) project. Also analyzed sequencing data from high altitude-Ethiopian population project and PVDOMICS project.	

<b>Research Fellow</b> Pathology & Laboratory Medicine Institute Cleveland Clinic, Cleveland, OH	<i>May.2015 – Feb.2018</i>
➤ Research focused on studying monoclonal antibody for acute myeloid leukemia (AML). C-type lectin-like molecule-1 (CLL1) is mainly expressed on blast cells in bone marrow and blood. The efficiency of CLL1 antibody is evaluated in vitro and in vivo. The humanized monoclonal antibody-drug conjugate (ADC) will be put in clinical trial. ➤ Study combination effects of ibrutinib and midostaurin on FLT3-ITD mutant AML cells.	

<b>Postdoctoral Fellow</b> Department of Radiology Wake Forest School of Medicine, Winston Salem, NC	<i>Mar.2012 – May.2015</i>
➤ Research focused on studying the effect of temporal combination of growth factors on mesenchymal stem cells-driven bone regeneration, investigating the interaction between myeloma stem cells and bone marrow stromal cells, the drug resistance of myeloma stem cells, and identifying genes and pathways involved in drug resistance and cell migration/invasion.	

**Research Assistant***Sep.2005 – Jul. 2011*

College of Life Sciences

University of Chinese Academy of Sciences, Beijing, China

Research focused on characteristics of protein-protein interface and predicting hot spots in protein-protein interface based on data mining.

- Constructed a rough set-based multiple criteria linear programming approach (RS-MCLP) to predict protein interaction hot spots.
- Developed a method combining sequence/structure features and support vector machines to predict hot spots.
- Designed a support vector regression-based method to predict the affinity of peptide-SM5-1 antibody.
- Monoclonal antibody screening based on phage display technique.

**RESEARCH INTERESTS**

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- Systems biology and computational biology.

**PUBLICATIONS**

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1. Samar Farha\*, Bo Hu\*, **Ruoying Chen**, John Barnard, Suzy Comhair, Gustavo Heresi, Joseph Parambil, Adriano Tonelli, Gerald Beck, Erika Berman-Rosenzweig, Hilary DuBrock, J. Emanuel Finet, Robert P. Frantz, Gabriele Grunig, Anna R. Hemnes, Nicholas Hill, Evelyn Horn, Christine Jellis, Jane A. Leopold, Margaret M. Park, Franz P. Rischard, W.H. Wilson Tang, Mitchell A. Olman, Serpil C. Erzurum, Raed A. Dweik and the PVDOMICS Study Group. Endotypes of Vascular Health Predict Transplant-free Survival in Pulmonary Hypertension. (*submitted to Circulation Research*).
2. Anny Mulya, Allison Janocha, Michael V. Novotny, Andrew Reichard, Emma Hamm, **Ruoying Chen**, Jacob T. Mey, Laura Peterson, Lori Mavrakis, Suzy A.A. Comhair, John P. Kirwan, Victor Darley-Usmar and Serpil C Erzurum. Asthma-Associated Shifts in Mitochondrial Bioenergetics and Cellular Metabolism. (*submitted to Nature Comm*).
3. Weiling Xu Kewal Asosingh, Allison J. Janocha, Evan Madden, Nicholas Wanner, Dylan Trotter, Michael V. Novotny, Anny Mulya, **Ruoying Chen**, Samar Farha, Serpil C. Erzurum. Mitochondrial arginase 2 regulates hematopoietic and cardiovascular adaptation to hypoxia. *Blood Vessels, Thrombosis & Hemostasis (Accepted)*
4. Kristina T. Kumpf, Samuel T. Wilkinson, Bo Hu, **Ruoying Chen**, Kamini Krishnan, Shinjon Chakrabarti, Taeho Greg Rhee, Tiffany Grezmk, Sanjay J. Mathew, Gerard Sanacora, James W. Murrough, Fernando S. Goes, Katherine A. Collins, Brian S. Barnett, Amit Anand. Comparing the Cognitive Effects of Repeated Intravenous Ketamine and Electroconvulsive Therapy in Patients with Treatment-Resistant Depression: A Secondary Analysis of the ELEKT-D Trial. *J Clin Psychiatry* 2025 Sep 3:86(4)
5. Weiling Xu, Yun Soo Hong, Bo Hu, Suzy A. A. Comhair, Allison J. Janocha, Joe G. Zein, **Ruoying Chen**, Deborah A. Meyers, David T. Mauger, Victor E. Ortega, Eugene

- R. Bleecker, Mario Castro, Loren C. Denlinger, John V. Fahy, Elliot Israel, Bruce D. Levy, Nizar N. Jarjour, Wendy C. Moore, Sally E. Wenzel, Benjamin Gaston, Chunyu Liu, Dan E. Arking, Serpil C. Erzurum, the National Heart, Lung, and Blood Institute (NHLBI) Severe Asthma Research Program (SARP), TOPMed mtDNA Working Group in NHLBI Trans-Omics for Precision Medicine (TOPMed) Consortium. Mitochondrial DNA Copy Number Variation in Asthma Risk, Severity, and Exacerbation. *J Allergy Clin Immunol* 2025;155:1224-35..
- 6. **Ruoying Chen**, Micheala A Aldred , Weiling Xu , Joe Zein , Peter Bazeley , Suzy A Comhair , Deborah A Meyers, Eugene R Bleecker , Chunyu Liu , Serpil C Erzurum , Bo Hu , NHLBI Severe Asthma Research Program SARP. Comparison of whole genome sequencing and targeted sequencing for Mitochondrial DNA. *Mitochondrion* Volume 58, May 2021, Pages 303-310.
  - 7. Xiaoxian Zhao, Juraj Bodo, **Ruoying Chen**, Lisa Durkin, Andrew J. Souers, Darren C. Phillips, Eric D. Hsi. Inhibition of Cyclin-Dependent Kinase 9 Synergistically Enhances Venetoclax Activity in Mantle Cell Lymphoma. *eJHaem* 2020;1:161-169.
  - 8. Weiling Xu, Suzy A. A. Comhair, **Ruoying Chen**, Bo Hu, Yuan Hou, Yadi Zhou, Lori A. Mavrakis, Allison J. Janocha, Ling Li, Dongmei Zhang, Belinda B. Willard, Kewal Asosingh, Feixiong Cheng & Serpil C. Erzurum. Integrative proteomics and phosphoproteomics in pulmonary arterial hypertension. *Scientific Reports* (2019) 9: 18623.
  - 9. Ping Jiang, **Ruoying Chen**, Xiaoxian Zhao, Eric Hsi, and Jagath R. Junutula CLT030-ADC, a Leukemic Stem Cell-Targeting CLL1 Antibody-Drug Conjugate for Treatment of Acute Myeloid Leukemia. *Blood Adv*. 2018 Jul 24;2(14):1738-1749.
  - 10. Hua Tan\*, **Ruoying Chen**\*, Wenyang Li, Weiling Zhao, Yuanyuan Zhang, Yunzhi Yang, Jing Su, and Xiaobo Zhou. A systems biology approach to studying the molecular mechanisms of osteoblastic differentiation under cytokine combination treatment. *npj Regenerative Medicine* (2017) 2:5; doi:10.1038/s41536-017-0009-0, (Nature Partner Journals, \* contributed equally to this work).
  - 11. **Ruoying Chen**, Hong Zhao, Dan Wu, Chen Zhao, Weiling Zhao, and Xiaobo Zhou. The role of SH3GL3 in myeloma cell migration/invasion, stemness and chemo-resistance. *Oncotarget*. 2016 Nov 8;7(45):73101-73113.
  - 12. Dan Wu, Xinyi Guo, Jing Su, **Ruoying Chen**, Dmitriy Berenzon, Martin Guthold, Keith Bonin, Weiling Zhao, and Xiaobo Zhou. CD138-negative myeloma cells regulate mechanical properties of bone marrow stromal cells through SDF-1/CXCR4/AKT signaling pathway. *Biochimica et Biophysica Acta* 1853(2015)338-347.
  - 13. **Ruoying Chen**, Wenjing Chen, Sixiao Yang, Di Wu, Yong Wang, Yingjie Tian, Yong Shi. Rigorous assessment and integration of the sequence and structure based features to predict hot spots. *BMC Bioinformatics* 2011,12:311-324.
  - 14. **Ruoying Chen**, Zhiwang Zhang, Di Wu, Peng Zhang, Xinyang Zhang, Yong Wang , Yong Shi. Prediction of protein-protein interaction hot spots using rough set-based multiple criteria linear programming. *Journal of Theoretical Biology* 269 (2011) 174–180.
  - 15. Yong Shi, **Ruoying Chen**, Jia Wan, Xinyang Zhang. A novel MCQP approach for predicting the distance range between interface residues in antibody-antigen complex. *Communications in Computer and Information Science*. CCIS 35 (2009) 643–648.

- 16. Ruoying Chen**, Zhiwang Zhang, Yong Shi, Di Wu, Xinyang Zhang. A study of protein-protein interaction sites using rough set-based multiple criteria linear programming. The 20th International Conference on Multiple Criteria Decision Making 2009.

## HONORS AND AWARDS

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- President Scholarship, Graduate University of Chinese Academy of Sciences, 2011.
- Second class Scholarship of Henan Normal University, 2002~2005
- 3<sup>th</sup> Prize, Competition of Composition in memory of the 80<sup>th</sup> anniversary of HNU (2003).
- First Place in Entrance Examination, College of Life Sciences, Henan Normal University (HNU), 2001.

## TECHNICAL AND EXPERIMENTAL SKILLS

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- Molecular biology techniques such as PCR/Real-time PCR, Microarray, Western blotting, DNA recombination, Gene knockdown and overexpression, DNA sequencing, screening phage display library, Reverse phase protein array.
- Immunological assays including Fluorescence microscope, Flow cytometry, Immunohistochemistry, ELISA.
- Mouse models
- Past level-3 Test of Network Technology
- Perl Scripting
- Matlab, R, SAS, SPSS.
- Multi-omics analysis.
- Skilled in tools: BLAST, PSI-BLAST, CLUSTALW, Chromas, Rasmol.

## SUPERVISORY SKILLS

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- Training graduate students and technicians in the molecular biology and cell biology.
- Teaching methodology and experiment design, analysis data and troubleshooting.

## ACTIVITIES

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- Conference organizer: the 20th International Conference on Multiple Criteria Decision Making 2009. Chengdu, China.
- Conference organizer: the 7th International Conference on Computational Science 2007. Beijing, China.
- Conference organizer: Xiangshan Conference (2006.5)