

CURRICULUM VITAE

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EDUCATION AND TRAINING

Undergraduate

1982-1986 Lanzhou University B.S. 1986 Biochemistry
Lanzhou, China

Graduate

1992-1995 Hebei Medical University M.S. 1995 Biochemistry
Shijiazhuang, China

Post-Graduate

1997-2000 Hebei Medical University, Ph.D. 2000 Biochemistry and
Shijiazhuang, China Molecular Biology

APPOINTMENTS AND POSITIONS

Academic

1986-1987 Assistant Department of Biochemistry
Professor Lanzhou Medical University
Lanzhou, China

1987-1995 Assistant Department of Biochemistry and Molecular Biology
Professor Hebei Medical University
Shijiazhuang, China

1995-2000 Lecturer Department of Biochemistry and Molecular Biology
Hebei Medical University
Shijiazhuang, China

01/2001-10/2001 Professor Department of Biochemistry and Molecular Biology
Hebei Medical University
Shijiazhuang, China

2001-2005	Postdoctoral Fellow	Department of Medicine, National Jewish Medical and Research Center, Denver, Colorado
2005-08/2006	Instructor	Department of Medicine National Jewish Medical and Research Center Denver, Colorado
08/2006-09/2018	Research Assistant Professor	Department of Medicine Pulmonary, Allergy, and Critical Care Medicine University of Pittsburgh Pittsburgh, PA
09/2018-present	Research Assistant Professor	Department of Environmental and Occupational Health Graduate School of Public Health University of Pittsburgh Pittsburgh, PA

CERTIFICATION AND LICENSURE

Specialty Certification

2001 Professor Hebei Medical University

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

1997-2001 Chinese Society of Biochemistry and Molecular Biology
1999-2001 Chinese Medical Association
2003-2006 American Society for Biochemistry and Molecular Biology
2008-2014 American Thoracic Society

HONORS

1998 Awarded “Sun Zuomin” prize at Hebei Medical University
1999 Outstanding Ph.D student at Hebei Medical University
2000 Awarded “Sun Zuomin” prize at Hebei Medical University
2001 Awarded Hebei Scientific and Technological Progress- First Prize

PROFESSIONAL ACTIVITIES

Teaching Courses Taught

Years Taught	Course Number: Title	Hours of Lecture, credits Average Enrollment	Role in course Primary/Coordinator
1986-2000	Biochemistry (undergraduates)	100 hours/year 200 students	Primary
1997-2000	Molecular Biology (graduates)	60 hours/year 80 students	Primary

Other Teaching (lectures, tutorials and continuing education courses)

Date(s)	Type of Teaching	Title
1997-2000	Biochemistry	Primary teacher

Supervision of Post-Doctoral Students, Residents, and Fellows

Dates Supervised	Name of Student	Position of Student
2012-2014	Tetsuya Watanabe	Postdoctoral fellow
2012-2014	Takeshi Hattori	Postdoctoral fellow
2014-2017	Hideki Inoue	Postdoctoral fellow
2017-2020	Mingzhu Jin	Visiting scholar

Mentoring of Graduate Students in Field Placements

Dates	Name of Student	Degree/Program Description	Field Site
2019-2020	Qi Wei	PhD candidate	Asthma mechanism

Research and Training

Grants and Contracts Received

Co-Investigator on Grants

Years Inclusive	Grant and/or Contract Number and Title	Source	Annual Direct Costs	% Effort
1992-1996	<i>Effects of excessive iodine intake on thyroid, brain and kidney in mice</i> (PI: Guishan Yin)	Natural Science Fund of Hebei Province		50%

1996-1999	<i>Expression and Regulation of NOS gene</i> (PI: Jinkun Wen)	Natural Science Fund of China and Hebei Province	50%
1997-2001	<i>Role of MMP-2 and TIMP-1 in the development of vascular restenosis</i> (PI: Jinkun Wen)	Natural Science Fund of China and Hebei Province	60%
1996-2010	<i>TGF-beta2 and IL-4Ralpha Pathway Interactions in Asthma</i> (AI-40600) (PI: Sally Wenzel)	NIH/NIAID	50%
2006-2011	<i>Inflammation of Myofibroblasts and Loss of Elastic Recoil in Severe Asthma</i> (HL-69174) (PI: Wenzel)	NIH/NHLBI	50%
2010-2015	<i>Amplification of IL-4Ralpha signaling pathways in human airways through 15 LO1</i> (5 R01 AI040600) (PI: Sally Wenzel)	NIAID	40%
2011-2018	<i>Implications and Stability of Clinical and Molecular Phenotypes of Severe Asthma</i> (U10 HL109152) (PI: Sally Wenzel)	NIH	40%
2015-2020	<i>Immune Airway-Epithelial Interactions in Steroid-Refractory Severe Asthma</i> (5 P01 AI106684) (PI: Ray A/ Wenzel S)	NIAID	50%
2020-2021	<i>Human Airway Epithelial Cell Inhibitory Responses to SARS-CoV-2 are Dependent on MUC4β and its Sialylation Status</i> (PIs: Wenzel S/ Zhou X)	Pitt-CTSI	20%
2020-2025	<i>Priority Score 22: Percentile 2% Mucin sialylation drives epithelial cell senescence and severe asthma</i> (PIs: Wenzel/Boucher)	NIH R01 (pending)	70%

PUBLICATIONS

Refereed Articles

1. **Zhou X**, Yin G. Experimental studies on effects of excessive iodine intake on morphology and function of kidney in mice. *Chinese Journal of Preventative Medicine*. 1996 Nov;30 (6):340-2.
2. **Zhou X**, Yin G, Qi J, Zhao J. The Effects of Excess Iodine on Brain Development and the Levels of Serum Free Thyroid Hormone. *Journal of Hebei Academy of Sciences*. 1997;14 (3): 46-48.
3. **Zhou X**, Wen J, Han M. The Change of MMP-2 Gene Expression and Collagen Turnover during Vascular Restenosis Development. *Chinese Journal of Biochemistry and Molecular Biol*. 1999;15 (06): 997-1001.
4. **Zhou X**, Wen J, Han M. Effects of IL-1beta and TNF-alpha on MMP-2 and Osteopontin Gene Expression of Rat Vascular Smooth Muscle Cells. *Chinese Journal of Atherosclerosis*. 1999;7 (4): 292-295.
5. **Zhou X**, Wen J, Han M. The Change of Plasma Tissue Plasminogen Activator and Its Inhibitor Activity and Collagen Turnover during Vascular Restenosis Development. *Chinese Journal of Atherosclerosis*. 2000;8 (2): 96-98.
6. Han M, Wen J, Li X, **Zhou X**. Comparison of Gene Expression pattern and Migration at Different Phase of Cell Cycle in Vascular Smooth Muscle Cell Stimulated by Cytokines. *Chinese Journal of Biochemistry and Molecular Biol*. 2000;16 (06): 809-813. ISSN: 1007-7626.}
7. **Zhou X**, Wen J, Han M. Effects of Serum from HuoXueHuayu Chinese Medicine on Vascular Smooth Muscle Cell Migration Related Gene Expression. *Journal of Hebei Medical University*. 2000;21 (4): 217.
8. Wenzel SE, Trudeau JB, Barnes SM, **Zhou X**, Cundall MJ, Westcott JY, McCord K, Chu HW. TGF-beta and IL-13 synergistically increase eotaxin-1 production in human airway fibroblasts. *J Immunol*. 2002 Oct 15;169 (8): 4613-9.
9. Han M, Wen J, **Zhou X**. Effect of yiqi huoxue huayu recipe on vascular collagen turnover and relevant gene expression. *Chinese Journal of Integrated Traditional Chinese and Western Medicine*. 2004 Feb;24 (2):136-9.
10. **Zhou X**, Trudeau JB, Schoonover KJ, Lundin JI, Barnes SM, Cundall MJ, Wenzel SE. Interleukin-13 augments transforming growth factor-beta1-Induced tissue inhibitor of metalloproteinase-1 expression in primary human airway fibroblasts. *Am J Physiol Cell Physiol*. 2005 Feb;288 (2):C435-42.

11. Kotaru C, Schoonover KJ, Trudeau JB, Huynh ML, **Zhou X**, Hu H, Wenzel SE. Regional fibroblast heterogeneity in the lung: implications for remodeling. *Am J Respir Crit Care Med*. 2006 Jun 1;173 (11):1208-15.
12. **Zhou X**, Hu H, Huynh ML, Kotaru C, Balzar S, Trudeau JB, Wenzel SE. Mechanisms of tissue inhibitor of metalloproteinase 1 augmentation by IL-13 on TGF-beta 1-stimulated primary human fibroblasts. *J Allergy Clin Immunol*. 2007 Jun;119 (6):1388-97.
13. **Zhou X**, Wu W, Hu H, Milosevic J, Konishi K, Kaminski N, Wenzel SE. Genomic differences distinguish the myofibroblast phenotype of distal lung fibroblasts from airway fibroblasts. *Am J Respir Cell Mol Biol*. 2011 Dec;45 (6):1256-62.
14. **Zhou X**, Hu H, Balzar S, Trudeau JB, Wenzel SE. MAPK regulation of IL-4/IL-13 receptors contributes to the synergistic increase in CCL11/eotaxin-1 in response to TGF-beta1 and IL-13 in human airway fibroblasts. *J Immunol*. 2012 Jun 15;188 (12):6046-54
15. Watanabe T, Fajt ML, Trudeau JB, Voraphani N, Hu H, **Zhou X**, Holguin F, Wenzel SE. Brain-Derived Neurotrophic Factor Expression in Asthma. Association with Severity and Type 2 Inflammatory Processes. *Am J Respir Cell Mol Biol*. 2015 Dec;53 (6):844-52.
16. Inoue H, Hattori T, **Zhou X**, Etling EB, Modena BD, Trudeau JB, Holguin F, Wenzel SE. Dysfunctional ErbB2, an EGF receptor family member, hinders repair of airway epithelial cells from asthmatic patients. *J Allergy Clin Immunol*. 2019; 143 (6):2075-2085
17. **Zhou X**, Kinlough CL, Hughey RP, Jin M, Inoue H, Etling E, Modena BD, Kaminski N, Bleecker ER, Meyers DA, Jarjour NN, Trudeau JB, Holguin F, Ray A, Wenzel SE. Sialylation of MUC4β N-glycans by ST6GAL1 orchestrates human airway epithelial cell differentiation associated with type-2 inflammation. *J Clin Invest Insight*. 2019 Mar 7; 4(5)
18. Li Z, Zeng M, Deng Y, Zhao J, **Zhou X**, Trudeau JB, Goldschmidt E, Moore JA, Chu H, Zhang W, Yin S, Liu Z, Di YP, Lee SE, Wenzel SE. Nasal polyps 15-lipoxygenase 1 promotes CCL26/Eotaxin3 expression through ERK activation. *J Allergy Clin Immunol*. 2019 Jul 10. 144(5):1228-1241

Books and Book Chapters

1. Kong D, **Zhou X** and Yang X. (2001) Biochemistry- Questions and Answers. Hebei Medical University Press. Chief Editor
2. Wen J, Han M, **Zhou X**. (1999) Principle and Protocols of Medical Molecular Biology. Shanghai Science Popularization Press. Authored One Chapter
3. Zhu D, Duan H, **Zhou X**. (2002) Current Medical Methodology Techniques (I, II). People's Medical Publishing House. Authored One Chapter

4. Li E, **Zhou X**. (1996) New Development of Basic Medical Research-TianJin Science Technology Press. Authored One Chapter

Published Abstracts

1. **Zhou X**, Schoonover KJ, Barnes SM, Cundall MJ, Wenzel SE. Synergistic Increase in Eotaxin-1 Production Through TGF-beta1 and IL-13 Activated STAT6 Pathway in Primary Human Airway Fibroblasts. The FASEB Journal; 2003. A1357, 865.3.
2. Cundall MJ, **Zhou X**, Schoonover KJ, Barnes SM, Wenzel SE. The Synergistic Increase in Eotaxin-1 Production in Response to TGF-beta1 and IL-13 is Primarily Transcriptionally Regulated and Involves New Protein Synthesis. The FASEB Journal; 2003. A662, 407.19.
3. **Zhou X**, Trudeau JB, Lundin JI, Hu H, Cundall MJ, Chu HW and Wenzel SE. IL-13 Augmentation of TGF-beta1-induced TIMP-1 Expression is Regulated by PI3K/Akt Pathway in Primary Human Airway Fibroblasts. ATS; 2004; Orlando, FL. A266.
4. **Zhou X**, Hu H, Balzar S, Trudeau JB and Wenzel SE. Mechanisms of the Synergistic Increase in Eotaxin-1 by IL-13 and TGF-beta1 in Primary Human Airway Fibroblasts. ATS; 2005; San Diego, CA. A737.
5. Huynh ML, **Zhou X**, Kotaru C, Lundin J, Hu H, and Wenzel SE. Bronchoalveolar Lavage Fluid (BALF) from Severe Asthmatics Suppresses Clearance of Apoptotic Cells by Normal Human Bronchoalveolar Macrophages. ATS; 2005; San Diego, CA. A904.
6. **Zhou X**, Hu H, Wenzel SE (2007). Eotaxin-1 augmentation by TGF-beta1 in IL-13 stimulated human airway fibroblasts is regulated by ERK and PI3K-Akt pathways. ATS.
7. **Zhou X**, Hu H, Ghoshhajra M, Trudeau JB and Wenzel SE. Differences of Smads and JNK MAPK pathways in airway and distal lung fibroblasts. ATS; 2008; Toronto, Ontario, Canada. A497.
8. **Zhou X**, Hu H, Trudeau JB, Balzar S and Wenzel SE. IL-4/Ralpha Induced PI3K Limits Eotaxin-1 Expression through Effects on the STAT-6 Pathway in primary Human Airway Fibroblasts. ATS; 2009; San Diego, CA.
9. **Zhou X**, Wu W, Hu H, Konishi K, Milosevic J, Kaminski N, Wenzel SE. Gene expression profiles differentiate human airway from parenchymal fibroblasts. ATS; 2010; New Orleans, LA.
10. Wu W, **Zhou X**, Hu H, Konishi K, Milosevic J, Kaminski N, Wenzel SE. Characterization of airway- and distal lung fibroblasts using systems biology approaches. ATS; 2010; New Orleans, LA.
11. **Zhou X**, Hu H and Wenzel SE. MEK-ERK Pathway Contributes to the Eotaxin1 Synergy Through STAT6 Activation in the Presence of IL-13 And TGF-beta1 in Primary Human Airway Fibroblasts. ATS; 2011; Denver, CO.

12. **Zhou X**, Trudeau JB, Wenzel SE. Epithelial Human Epidermal Growth Factor Receptor 2 (ErbB2) Is Increased In Severe Asthma. ATS; 2012; San Francisco, CA.
13. **Zhou X**, Hu H, Hattori T, Trudeau JB and Wenzel SE. Decreases in Human Bronchial Epithelial Cell ErbB2 Activation are associated with IL-13 induced Increases in MUC4beta Glycosylation and Decreases in MUC4beta Core Protein. Gordon Research Conference; 2013; Andover, NH.
14. Hattori T, **Zhou X**, Trudeau JB, Wenzel SE. MUC4 protein is increased in Severe Asthmatic Bronchial Epithelial Cells. ATS; 2013; Philadelphia, PA.
15. Watanabe T, Trudeau JB, Voraphani N, **Zhou X**, Wenzel SE. Increased Brain Derived Neurotrophic Factor (BDNF) expression in Asthma and its regulation by IL-13 in Human Bronchial Epithelial Cells (HBEC). ATS; 2013; Philadelphia, PA.
16. Hattori T, **Zhou X**, Trudeau JB, Wenzel SE. IL-13 Inhibits Wound Repair of Asthmatic Bronchial Epithelial Cells. ATS; 2014; San Diego, CA.
17. Inoue H, Hattori T, **Zhou X**, Hu H, Trudeau JB, Wenzel SE. Asthmatic airway epithelial cells exhibit delayed wound closure and cell proliferation, effects enhanced by IL-13. ATS; 2015; Denver, CO.
18. **Zhou X**, Kinlough CL, Hughey RP, Inoue H, Fajt M, Etling E, Trudeau JB, Martin LP, Wasil K, Holguin F, Wenzel SE. ST6GAL1-dependent MUC4beta N-glycosylation is Associated with Asthma Severity and Type-2 Inflammation. Keystone Symposia Conference; 2017; Keystone, CO.
19. Inoue H, **Zhou X**, Trudeau JB, Wenzel SE. ErbB2 phosphorylation is impaired in asthmatic airway epithelial cells upon wound healing. ATS; 2017; Washington, D.C. B22.
20. **Zhou X**, Kinlough C, Hughey RP, Inoue H, Etling E, Trudeau J, Holguin F, Wenzel SE. ST6GAL1-dependent MUC4 β N-glycosylation is Associated with Type-2 Inflammation and asthma Severity. Chinese Thoracic Society (CTS); 2017; Fuzhou, China.
21. **Zhou X**, Kinlough CL, Hughey RP, Jin M, Inoue H, Etling E, Modena BD, Kaminski N, Trudeau JB, Holguin F, Ray A, Wenzel SE. ST6GAL1 Orchestrates Human Airway Epithelial Cell Type-2 Differentiation. Pittsburgh International Lung Conference; 2018; Pittsburgh, PA.