CURRICULUM VITAE

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EDUCATION

1984.9-1989.7 M.D., Department of Medicine, The Third Military Medical College, China

1993.9-1996.7 M.S., Department of Hematology, The Third Military Medical College, China

1998.9-2001.8 Ph.D., Institute of Hematology, People's Hospital, Health Sciences Center, Beijing University, China

ACADEMIC APPOINTMENTS

2002.10 – 2004.4 Postdoctoral Fellow, Department of Pathology, School of Medicine, Wayne State University, Detroit, Michigan

2004.4 – 2007.3 Postdoctoral Research Fellow, Department of Surgery, School of Medicine, University of Louisville

2007.3 – 2010.2 Instructor, Department of Surgery, School of Medicine, University of Louisville

2010.3 – present Assistant Professor, Department of Surgery, School of Medicine, University of Louisville

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

1998 –present Member of the Chinese Medical Society

2006 –present Member of the American Association for Cancer Research (AACR)

2006 –present Member of the American Association for the Advancement of Science (AAAS)

2017 –present Member of Louisville Women in Medicine and Science (L-WIMS)

HONORS AND AWARDS

1984-1989 Winner of the Excellent Student Award at the Third Military Medical College, China

2000 Medical Education Scholarship of the United Laboratories, Beijing University, China

2001 Outstanding Postgraduate Student, Beijing University, China

2001 Excellent Doctorate Dissertation, People's Hospital, Beijing University, China

2003 The Third Place Prize of Excellent Doctorate Dissertation, Beijing University, China

2005 American Association for Cancer Research (AACR) Scholar-in-Training Award

2012 Second Place, Junior Faculty Award, 11th Annual James Graham Brown Cancer Center Retreat, Olmsted, Louisville, Kentucky

2013 First Place, National Cancer Institute Cancer Education Program Research Award, Barry S. (presenter), Hao H (mentor), Research Louisville 2013, Louisville, Kentucky

2014 Second Place, National Cancer Institute Cancer Education Program Research Award, Patel D. (presenter), Hao H (mentor) Research Louisville 2014, Louisville, Kentucky

EDUCATIONAL ACTIVITIES

1995-1996 Course lecturer for medical school students in "Internal Medicine," The Third Military Medical College, China

Medical School Students Trained:

2005-2006 Maria T Bowling and Christina Snodgrass
Project: E2F-1 induces melanoma cell apoptosis via PUMA up-regulation and Bax translocation.

2010 summer Joanna Ohlendorf (2nd year medical school student), NCI R25 Cancer Education Program
Project: Identifying exosomal miRNA signatures in malignant melanoma cells.

2012 summer Daniel Kmetz (2nd year medical school student), NCI R25 Cancer Education Program (in Distinction in Research Track)
Project: Identifying urine exosome miRNA signatures in melanoma patients.

2013 summer Samantha Barry (2nd year medical school student), NCI R25 Cancer Education Program (in Distinction in Research Track)
Project: Identifying serum exosome miRNA signatures in melanoma patients.

2014 summer Deepa Patel (2nd year medical school student), NCI R25 Cancer Education Program (in Distinction in Research Track)
Project: Inhibition of melanoma metastases by targeting regulator of G protein signaling 2 (RGS2).

2015 summer Jingjing Xiao, NCI R25 Cancer Education Program (undergraduate)
Project: Differential expression of ABCB5 in BRAF inhibitor-resistant melanoma cell lines.

2016 spring Independent study/research (elective course) for 4th year medical school student

2017 summer Logan Carney (2nd year medical school student), NCI R25 Cancer Education Program
Project: Exosomal miRNAs as diagnostic tools in melanoma patients.

2019 summer Derek Manefee (1st year medical school student), NCI R25 Cancer Education Program
Project: Age-Associated Sentinel Lymph Node Status in Melanoma Patients.

Department of Surgery Resident Trained:

2007 – 2008 Beatrix Slomiany

2014 Michael Egger and Charlie Kimbrough
Project: Unique Genes in Tumor-Positive Sentinel Lymph Nodes Associated with Nonsentinel Lymph Node Metastases in Melanoma.

Postdoctoral Visiting Scholar Trained:

2010-2011 Canmin Chen (Medical Doctor)
Project: E2F-1- and E2Ftr-mediated apoptosis: the role of DREAM and HRK.

2016 Jifu Qu (Medical Doctor)
Project: Exosomal miRNA expression in different stages of melanoma patients.

Ph.D. Candidate Trained:

2004-2006 Jorge G. Gomez-Gutierrez
Project: E2F1 cancer gene therapy.

GRANTS AND CONTRACTS

CURRENT:

1. Kentucky Biomedical Research Infrastructure Network (KBRIN) Next Generation Sequencing project 5/1/2019-4/30/2020
Circulating tumor DNA as a tool for melanoma recurrence.
The goal of this project is to identify the specific genetic alterations of circulating tumor DNA in melanoma patients with recurrence through exome sequencing. The Pilot data will be used to compete for extramural funding from the National Institute of Health.
Role: Multiple Principal Investigators (Hongying Hao and Kelly McMasters)

2. NIH/NCI R25CA134283 PI: Hein DW 9/14/2011-3/31/2022
University of Louisville Cancer Education Program (Participation years: 2011 to present)
The long-term objective of the University of Louisville Cancer Education Program is to recruit, educate, and motivate outstanding undergraduate and professional students to pursue further training and future careers in cancer research.
Role: Participating faculty mentor

COMPLETED GRANTS:

1. Title: Exosome miRNA as diagnostic tools of melanoma.
NIH Research Evaluation and Commercialization Hub (REACH, U01HL127518, PI Bates P).
The project is to introduce a dynamic, minimally invasive exosome technology to detect melanoma recurrence.
Period: 9/1/2017-2/28/2019
Role: Multiple Principal Investigators (Hongying Hao and Kelly McMasters)

2. Title: National Science Foundation AWARE: ACCESS (Accelerating Women and Underrepresented Entrepreneurs: Accelerate Entrepreneurial Success) program
Period: 8/1/2018-4/30/2019

Switch-based miRNA detection and exoRNA technology for melanoma recurrence.
This program provides funding, networking, training and other support to innovators and entrepreneurs. The goal is to help women and underrepresented innovators and entrepreneurs to the commercialization path.
Role: Principal Investigator

3. Title: Comparative gene expression analysis in melanocytes driven by tumor cell-derived exosomes.
Funding Agency: Kentucky Biomedical Research Infrastructure Network (KBRIN)
Period: 2016.1 – 2016.12.
Role: Multiple Principal Investigators (Hongying Hao and Kelly McMasters).

4. Title: Develop a Prognostic Scoring System in Node-Negative Melanoma Patients.
Funding Agency: Melanoma Research Foundation.
Period: 2010.1 – 2012.12.
Role: Co-Investigator (PI: McMasters KM).

5. Title: Develop a Prognostic System Incorporating Gene Signatures in Melanoma Patients with Positive Sentinel Lymph Nodes (SLNs).
Funding Agency: University of Louisville Clinical & Translational Science Pilot Grant Program Innovative Award.
Period: 2010.7 – 2011.12.
Role: Co-Investigator (PI: McMasters KM)).

6. Title: Develop Gene Expression Signatures to Predict Prognosis in Melanoma Patients with Tumor-Negative Sentinel Lymph Nodes.
Funding Agency: University of Louisville Intramural Collaborative Matching Grant.
Period: 2009.7 – 2010.7.
Role: Principal Investigator

EDITORIAL WORK

2008 - present Associate Editor, *Gene Therapy and Molecular Biology*

2008 - present Editorial Board Reviewer, *Journal of Experimental & Clinical Cancer Research*

2010 - present Editorial Board Reviewer, *Annals of Surgical Oncology*

2010 - present Editorial Board Reviewer, *BMC Cancer*

2013 - present Editorial Board Reviewer, *PLoS One*

2013 - present Editorial Board Reviewer, *Biological Chemistry*

2016 - present Editorial Board Reviewer, *Medical Science Monitor*

2018 - present Editorial Board Reviewer, *Experimental Cell Research*

2018 - present Editorial Board Reviewer, *Cancer chemotherapy and Pharmacology*

ABSTRACTS AND PRESENTATIONS

National/international meetings

1. **Hao H**, Zhang Y. Relationship of P53 gene and its abnormalities with hematologic cancer. 3rd Annual Meeting on Tumor Markers--Basic Research of Tumor Immunology and Molecular Biology. Chinese Anti-Cancer Association, Chinese Society of Tumor Markers. 1995, China
2. **Hao H**, Zhang P, Zhang Y and Wang S. The role of bcl-2 in K562 cell apoptosis. 6th Congress of Chinese Society of Experimental Hematology. Chinese Association of Pathophysiology. 1997, China
3. Zhang P, **Hao H**, Zhang Y and Wang S. The electronic microscope observation of apoptotic cells. 6th Congress of Chinese Society of Experimental Hematology. Chinese Association of Pathophysiology. 1997, China
4. **Hao H**, Dong Y, Bowling MT, Zhou HS and McMasters KM. PUMA as a mediator in E2F-1-induced Cancer Cell Apoptosis. Molecular Targets and Cancer Therapeutics—An AACR-NCI-EORTC international conference (#2494), November 2005, Philadelphia, Pennsylvania.
5. **Hao H**, Dong Y, Bowling MT, Zhou HS and McMasters KM. Targeting of NF-κB pathway following the combined treatment of E2F-1 and doxorubicin in melanoma cells. The 97th Annual meeting of AACR (American Association for Cancer Research), April 2006, Washington D.C.
6. **Hao H**, Chen C, Slomiany B, Gomez-Gutierrez JG, Zhou HS and McMasters KM. Truncated E2F-1-induced apoptosis is mediated by Hrk that is functionally involved with p32 and DREAM. The Annual meeting of AACR (American Association for Cancer Research), April 2008, San Diego, California.
7. Rao X, Gomez-Gutieerez JG, **Hao H**, McMasters KM and Zhou HS. Cyclin E overexpression induced by adenovirus oncoprotein E1b55K. The Annual meeting of AACR (American Association for Cancer Research), April 2008, San Diego, California.
8. Gomez-Gutieerez JG, Rao X, **Hao H**, Zhou HS and McMasters KM. Construction and characterization of adenoviral vectors encoding E2F truncated gene under regulation of Tet-Off system. The Annual meeting of AACR (American Association for Cancer Research), April 2008, San Diego, California.
9. **Hao H**, Ohlendorf J, Taylor D, Gomez-Gutierrez J, Zacharias W, McMasters KM. Identifying exosomal mRNA, microRNA and protein signatures in melanoma cells. The Annual meeting of AACR (American Association for Cancer Research), April 2011, Orlando, Florida
10. Egger ME, Gomez-Gutierrez JG, **Hao H**, Zhou HS, and McMasters KM. Viral-mediated gene therapy in combination with Temozolomide in melanoma. (American College of Surgeons' 98th Annual Clinical congress (Sep 30 - Oct 4, 2012, Chicago, IL)
11. Egger ME, Xiao D, **Hao H**, Pan J, Rai SN, Cambon AC, Waigel S, Zacharias W and McMasters KM. Unique Genes in Tumor-positive Sentinel Lymph Nodes Associated with Non-Sentinel Lymph Node Metastases in Melanoma. 2013 SSO Cancer Symposium

Local/regional meetings

1. **Hao H**, Dong Y, Zheng X, Rao X, Gomez-Gutierrez JG, Zhou HS and McMasters KM. The role of Mcl-1 on E2F-1 induced apoptosis in melanoma cell lines. James Graham Brown Cancer Center Third Annual Retreat (#28). September 2004, Louisville, Kentucky
2. **Hao H**, Dong Y, Zheng X, Rao X, Gomez-Gutierrez JG, Zhou HS and McMasters KM. The role of Mcl-1 on E2F-1 induced apoptosis in melanoma cell lines. Research Louisville (#PRF14). October 2004, Louisville, Kentucky
3. **Hao H**, Dong Y, Bowling MT, Zhou HS and McMasters KM. PUMA as a mediator in E2F-1-induced Cancer Cell Apoptosis. James Graham Brown Cancer Center Fourth Annual Retreat (#24). September 2005, Louisville, Kentucky
4. **Hao H**, Chen C, Gomez-Gutieerez JG, Rao X, Zhou HS and McMasters KM. HRK mediation of truncated E2F-1-induced apoptosis is regulated by p32 and DREAM (# F-16). 2008, Research Louisville

5. **Hao H**, Chen C, Gomez-Gutieerez JG, Rao X, Zhou HS and McMasters KM. HRK mediation of truncated E2F-1-induced apoptosis is regulated by p32 and DREAM. James Graham Brown Cancer center 7th Retreat (#35), October 2008, Louisville, Kentucky
6. Rao X, Gomez-Gutieerez JG, Garcia-Garcia A, **Hao H**, McMasters KM and Zhou HS. Developing Adenoviral Vectors for Encoding Therapeutic Genes Toxic to Host Cells: Comparing Binary and Single Inducible Vectors Expressing Truncated E2F-1 (#RA-67). October 2009, Research Louisville.
7. Gomez-Gutieerez JG, Garcia-Garcia A, **Hao H**, Rao X, Oca-Luna R, Zhou HS and McMasters KM. Truncated E2F-1 delivered by inducible adenoviral vector induces strong apoptosis in cancer cells and significantly suppresses tumor growth (#30). James Graham Brown Cancer Center 8th Retreat, November 2009, Louisville, Kentucky
8. Ohlendorf J, **Hao H**, Taylor D, Gomez-Gutierrez J, Zacharias W, McMasters KM. Identifying exosomal mRNA, microRNA and protein signatures in melanoma cells. 2010, Research Louisville
9. Rao XM, Gomez-Gutierrez J, Rodriguez-Rocha H, **Hao H**, McMasters KM, Zhou HS. Enhancement of E2Ftr-mediated tumor suppression by oncolytic adenovirus in lung cancer cells. 2010, Research Louisville
10. **Hao H**, Ohlendorf J, Taylor D, Gomez-Gutierrez J, Zacharias W, McMasters KM. Identifying exosomal mRNA, microRNA and protein signatures in melanoma cells. (#40) James Graham Brown Cancer Center 9th Retreat, November 2010, Louisville, Kentucky
11. Rao XM, Gomez-Gutierrez J, Rodriguez-Rocha H, **Hao H**, McMasters KM, Zhou HS. Enhancement of E2Ftr-mediated tumor suppression by oncolytic adenovirus in lung cancer cells.(#84) James Graham Brown Cancer Center 9th Retreat, November 2010, Louisville, Kentucky
12. Kmetz D, Xiao D, Egger M, Weigel S, Zacharias W, **Hao H**, and McMasters KM. Identifying urine exosome miRNA profiles in melanoma patients. Sep 2012, Research Louisville
13. Xiao D, **Hao H**, Pan J, Rai S, Egger M, Cambon A, Chen Y, Waigel W, Zacharias W, and McMasters KM. Sentinel lymph node gene panel to predict prognosis in node-positive melanoma patients. Sep 2012, Research Louisville
14. Egger M, **Hao H**, Zhou H, McMasters KM, and Gomez-Gutierrez JG. Viral-mediated gene therapy in combination with temozolomide in melanoma. Sep 2012, Research Louisville
15. **Hao H,** Xiao D, Pan J, Rai S, Egger M, Cambon A, Chen Y, Waigel W, Zacharias W, and McMasters KM. Sentinel lymph node gene panel to predict prognosis in node-positive melanoma patients. Oct 2012, 11th Annual James Graham Brown Cancer Center Retreat
16. Egger M, **Hao H**, Zhou H, McMasters KM, and Gomez-Gutierrez JG. Viral-mediated gene therapy in combination with temozolomide in melanoma. Oct 2012, 11th Annual James Graham Brown Cancer Center Retreat
17. Xiao D, **Hao H** and McMasters K. Melanoma exosomes promote epithelial-to-mesenchymal transition in normal melanocytes. 2013 Research Louisville
18. Barry S, Xiao D, Taylor D, Waigel S, Zacharias W, **Hao H** and McMasters K. Identifying serum exosome microRNA signatures in melanoma patients. 2013 Research Louisville (1st place of summer student research award)
19. Egger ME, Xiao D, **Hao H**, Pan J, Rai SN, Cambon AC, Waigel S, Zacharias W and McMasters KM. Unique Genes in Tumor-positive Sentinel Lymph Nodes Associated with Non-Sentinel Lymph Node Metastases in Melanoma. 2013 Research Louisville
20. **Hao H**, Xiao D and McMasters KM. Melanoma exosomes promote epithelial-to-mesenchymal transition in normal melanocytes. 2013 James Graham Brown Cancer Retreat
21. Patel D, XiaoD, **Hao H**, and McMasters KM. Inhibition of melanoma metastases by targeting regulator of G protein signaling 2 (RGS2). 2014 Research Louisville (2nd place of summer student research award)
22. Xiao J, **Hao H**, and McMasters KM. Targeting ATP-binding cassette transporter (ABCB5) in BRAF inhibitor resistant resistant melanoma. 2015 Research Louisville
23. Carney L, **Hao H**, Pan J, Rai S, McMasters KM. Identifying serum exosomal microRNA signatures as diagnostic tools in melanoma patients. 2017 Research Louisville

PUBLICATIONS

1. **Hao H**. Research progress on leukemia inhibitory factor. Foreign Medicine (Section of Transfusion and Hematology), 1994, 17(4): 225-228
2. Zhang P, **Hao H**, Wang S, Zhang Y and Lu D. The expression of bcl-2 gene during apoptosis of HL-60 cells induced by etopside. Journal of Beijing Medical University, 1997, 29(5): 403-405
3. **Hao H**, Zhang P, Zhang Y and Wang S. DNA nick in situ assay in cell apoptosis. Chinese Journal of Pathophysiology, 1999, 9(3): 756-757
4. **Hao H**, Li H, Zhao J and Wang H. Role of bcl-2 in K562 cell apoptosis induced by etopside. Medical Journal of the Chinese People's Armed Police Forces, 1999, 10(4): 199-201
5. **Hao H**, Teng Z and Lu D. Apoptotic effect of tetra-arsenic tetra-sulfide on acute promyelocytic leukemia cell line NB4. Chinese Journal of Pharmacology and Toxicology, 2002, 16(1): 37-40
6. **Hao H**, Teng Z and Lu D. Study on the role of PML-RARα in NB4 cell apoptosis induced by arsenic trisulfide. Chinese Journal of Experimental Hematology, 2002, 10(2): 108-111
7. **Hao H**, Teng Z and Lu D. Analysis to the change of gene expression pattern by cDNA microarray in NB4 cells treated with arsenic sulfides. Journal of Peking University (Health Science), 2002, 34(4): 395-396
8. Wang M, Zheng X, Rao X, **Hao H**, Dong Y, McMasters KM, and Zhou HS. Adenoviral vector systems for gene therapy. Gene Ther Mol Biol 2005 (9): 291-300.
9. Teng Z, Zhang P, Zhu H, **Hao H**, Qin X, Xu H and Lu D. Mechanism of tetra-arsenic tetra-sulfide in inducing apoptosis of acute promyelocytic leukemia cells. Beijing Da Xue Xue Bao. 2006; 38(3): 236-8
10. Gomez-Gutierrez JG, Souza V, **Hao H,** Oca-Luna R, Dong Y, Zhou HS, McMasters KM. Adenovirus-Mediated Gene Transfer of FKHRL1 Triple Mutant Efficiently Induces Apoptosis in Melanoma Cells. Cancer Biol. Ther., 2006 Jul; 5(7):875-883.
11. **Hao H**, Dong Y, Bowling MT, Zhou HS and McMasters KM. Alteration of gene expression in melanoma cells following combined treatment with E2F-1 and Doxorubicin. Anticancer Res., 2006 May-Jun; 26(3A): 1947-56.
12. Dong Y, Phelps A, Yang H, Jamshidi-Parsian A, Chen C, **Hao H**, Gomez-Gutierrez JG, Zhou HS and McMasters KM. Induction of apoptosis signal-regulating kinase 1 by E2F-1 may not be essential for E2F-1-mediated apoptosis in melanoma cells. Tumor Biology, 2007; 28 (2): 111-22.
13. **Hao H**, Dong Y, Bowling MT, Gomez-Gutierrez JG, Zhou HS and McMasters KM. E2F-1 induces melanoma cell apoptosis via PUMA up-regulation and Bax translocation. BMC Cancer, 2007 Jan 30; 7: 24
14. Zheng X, Rao X, Gomez-Gutierrez JG, **Hao H**, McMasters KM and Zhou HS. Adenovirus E1B55K region is required to enhance cyclin E expression for efficient viral DNA replication. J Virology 2008, 82(7): 3415-27
15. Gomez-Gutierrez JG, Rao X, Garcia-Gracia A, **Hao H**, McMasters KM and Zhou HS. Developing adenoviral vectors for encoding therapeutic genes toxic to host cells: comparing binary and single inducible vectors expressing truncated E2F-1. Virology 2010, 397(2): 337-45
16. Gomez-Gutierrez JG, Garcia-Gracia A, **Hao H**, Rao XM, Montes de Oca-Luna R, Zhou HS, McMasters KM. Adenovirus-mediated expression of truncated E2F-1 suppresses tumor growth in vitro and in vivo. Cancer 2010; 116 (18): 4420-32
17. **Hao H**, Chen C, Rao XM, Gomez-Gutierrez JG, Zhou HS, McMasters KM. E2F-1- and E2Ftr-mediated apoptosis: the role of DREAM and HRK. J Cell Mol Med. 2012; 16(3):605-15. doi: 10.1111/j.1582-4934.2011.01338.x.
18. Gomez-Gutierrez JG, Egger ME, **Hao H**, Zhou HS, McMasters KM. Adenovirus-mediated expression of mutated forkhead human transcription like-1 suppresses tumor growth in a mouse melanoma xenograft model. Cancer Biol Ther. 2012; 13(12):1195-204. doi: 10.4161/cbt.21349. PMID: 22892845
19. Xiao D, Ohlendorf J, Chen Y, Taylor DD, Rai SN, Waigel S, Zacharias W, **Hao H***, McMasters KM*. Identifying mRNA, microRNA and protein profiles of melanoma exosome. PLoS One. 2012; 7(10):e46874. doi: 10.1371/journal.pone.0046874. (*** corresponding author**)
20. Xiao D, Barry S, Kmetz D, Egger M, Pan J, Rai S, Qu J, McMasters KM and **Hao H**. Melanoma cell-derived exosomes promote epithelial-mesenchymal transition in primary melanocytes through

paracrine/autocrine signaling in the tumor environment. Cancer Letters. 2016; 376(2): 318-27.doi:10.1016/j.canlet.2016.03.050 PMC 27063098
21. **Hao H**, Xiao D, Pan J, Qu J, Egger ME, Waigel S, Sanders MAG, Zacharias W, Rai S, McMasters KM. Sentinel lymph node genes to predict prognosis in node-positive melanoma patients. Ann Surg Oncol. 2017; 24 (1): 108-116. doi: 10.1245/s10434-016-5575-7. PMID: 27663566
22. Egger ME, Xiao D, **Hao H**, Kimbrough CW, Pan J, Rai SN, Cambon AC, Waigel SJ, Zacharias W, McMasters KM. Unique Genes in Tumor-Positive Sentinel Lymph Nodes Associated with Nonsentinel Lymph Node Metastases in Melanoma. Ann Surg Oncol. 2018 25(5): 1296-1303. doi: 10.1245/s10434-018-6377-x.
23. Xiao J, Egger ME, McMasters KM, and **Hao H**. Differential expression of ABCB5 in BRAF inhibitor-resistant melanoma cell lines. BMC Cancer. 2018; 18(1):675. doi: 10.1186/s12885-018-4583-3.

BOOK CHAPTERS

Hao H, Zhou HS and McMasters KM. Chemosensitization of tumor cells: inactivation of nuclear factor κB associated with chemosensitivity in melanoma cells after the combination treatment of E2F-1 and adriamycin. In: Walther W (Ed.): Gene therapy of Cancer (2nd edition) in the series "Methods in Molecular Medicine", published by the Humana Press, Totowa, NJ, USA, 2009, 542: 301-313