

# Curriculum Vitae and Bibliography

## John R Hawse IV, PhD

### Personal Information

Place of Birth: Orange, VA  
Citizenship: United States of America  
Work Address: Mayo Clinic Rochester  
200 First St SW  
Rochester, MN 55905-0001  
507-284-4268  
Email Address: Hawse.John@mayo.edu

### Present Academic Rank and Position

**Full Faculty Privileges in Biochemistry & Molecular Bio.** - Mayo Clinic 10/2012 - Present  
Graduate School of Biomedical Sciences, Mayo Clinic College of Medicine and Science  
**Associate Consultant II-Research** - Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, Minnesota 08/2013 - Present  
**Associate Professor of Biochemistry and Molecular Biology** - Mayo Clinic College of Medicine and Science 05/2017 - Present

### Education

West Virginia University, Morgantown, West Virginia - BS, Biology. Grade Point Average 3.62 on a 4.0 scale. Magna Cum Laude. 08/1997 - 05/2001  
West Virginia University, Morgantown, West Virginia - Ph.D., Biochemistry and Molecular Biology. Grade Point Average 3.95 on a 4.0 scale. 05/2001 - 05/2004  
Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, Minnesota, Rochester, Minnesota - Post Doctoral Fellowship 07/2004 - 07/2007  
Mayo Clinic Center for Translational Science Activities, Rochester, Minnesota - Certificate, Clinical and Translational Science 01/2013

### Honors and Awards

**Magna Cum Laude** - West Virginia University 2001  
**Young Investigator Travel Award** - American Association for Research in Vision and Ophthalmology 2002  
**Young Investigator Travel Award** - Association for Research in Vision and Ophthalmology 2002  
**Training Grant-DK 07352** - National Institutes of Health 2004 - 2006  
**Kendall-Mayo Fellowship** - Mayo Clinic 2007 - 2009  
**Selected oral presentation** - San Antonio Breast Cancer Symposium 2008  
**Kirschstein Training Grant Award, NIH-F32-AR 53983-1** - Mayo Clinic Cancer Center 2011

### Previous Professional Positions and Major Appointments

**Undergraduate Research Assistant** - West Virginia University, Morgantown, West Virginia 2000 - 2001  
**PhD Student** - West Virginia University, Morgantown, West Virginia 2001 - 2004  
**PhD Fellow** - Florida Atlantic University, Boca Raton, Florida 2003 - 2004  
**Post-Doctoral Research Fellow** - Department of Biochemistry and Molecular 2004 - 2006

Biology, Mayo Clinic, Rochester, Minnesota

<b>Senior Post-Doctoral Research Fellow</b> - Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, Minnesota	2006 - 2007
<b>Assistant Professor in Biochemistry and Molecular Biology</b> - Mayo Clinic College of Medicine and Science	06/2007 - 04/2017
<b>Associate Consultant I-Research</b> - Department of Biochemistry and Molecular Biology, Mayo Clinic, Rochester, Minnesota	08/2008 - 08/2013

## Professional and Community Memberships, Societies, and Services

### Professional Memberships and Services

American Society for Bone and Mineral Research	
Member	2004 - Present
Abstract Reviewer	2014 - Present
Young Investigator Subcommittee	
Member	2006 - 2016
Chair	2013 - 2016
Association for Research in Vision and Ophthalmology	
Member	01/2001 - 01/2004
Endocrine Society	
Member	2011 - Present
San Antonio Breast Cancer Symposium	
Member/Attendee	2008 - Present
The Endocrine Society	
Abstract Reviewer	2014 - Present
Poster Judge	2016 - Present
The Translational Breast Cancer Research Consortium	
Member	2013 - Present
The Translational Breast Cancer Research Consortium, Triple Negative Working Group	
Member	2016 - Present
The Translational Breast Cancer Research Consortium	
Endocrine Resistance Working Group	
Member	2013 - Present

### Study Sections

ANR French Research Agency	
Grant Reviewer	2010 - Present
Breast Spore Pilot Projects	
Grant Reviewer	2014 - Present
DoD Breast Cancer Research Program	
Ad Hoc Member Study Sections	2015 - Present
Edward C. Kendall Research Fellowship in Biochemistry	
Reviewer of Grant Applications	2013 - Present
National Institutes of Health	
Ad Hoc Tumor Cell Biology Study Section	
Ad Hoc Member Study Sections	2015 - Present
National Cancer Institute	
Mayo Clinic Breast Cancer Spore P50 CA116201 (James Ingle PI)	

Member, Research Committee	2011 - Present
Ovarian Spore Pilot Projects	
Grant Reviewer	2016 – Present
Pancreatic Spore Pilot Projects	
Grant Reviewer	2018-Present

## Journal Responsibilities

### Journal Editorial Responsibilities

Gene	
Associate Editor	2013 - Present

### Journal Other Responsibilities

BBA Molecular Cell Research	
Manuscript Reviewer	2013 - Present
Biomarker Insights	
Manuscript Reviewer	2015 - Present
BMC Musculoskeletal Disorders	
Manuscript Reviewer	2012 - Present
Bone	
Manuscript Reviewer	2007 - Present
Breast Cancer Research	
Manuscript Reviewer	2010 - Present
Breast Cancer Research and Treatment	
Manuscript Reviewer	2015 - Present
British Journal of Medicine and Medical Research	
Manuscript Reviewer	2012 - Present
Cancer Management and Research	
Manuscript Reviewer	2012 - Present
Cell Death & Disease	
Manuscript Reviewer	2016 - Present
Cell Death and Differentiation	
Manuscript Reviewer	2017 - Present
Cellular Physiology and Biochemistry	
Manuscript Reviewer	2013 - Present
Differentiation	
Manuscript Reviewer	2016 - Present
Drug Design, Development and Therapy	
Manuscript Reviewer	2016 - Present
Experimental Cell Research	
Manuscript Reviewer	2005 - Present
Gene	
Manuscript Reviewer	2010 - Present
Human Genetics	
Manuscript Reviewer	2007 - Present
International Journal of Biochemistry and Cell Biology	
Manuscript Reviewer	2010 - Present
Journal of Bone and Mineral Research	
Manuscript Reviewer	2014 - Present
Journal of Cellular Biochemistry	

Manuscript Reviewer	2005 - Present
Journal of Cellular Physiology	
Manuscript Reviewer	2011 - Present
Journal of Dermatological Science	
Manuscript Reviewer	2013 - Present
Journal of Investigative Medicine	
Manuscript Reviewer	2012 - Present
Journal of Proteome Research	
Manuscript Reviewer	2014 - Present
Mini-reviews in Medicinal Chemistry	
Manuscript Reviewer	2012 - Present
Molecular Biology Reports	
Manuscript Reviewer	2010 - Present
Molecular Cancer Research	
Manuscript Reviewer	2017 - Present
Molecular Vision	
Manuscript Reviewer	2004 - Present
Nature Reviews Clinical Oncology	
Manuscript Reviewer	2012 - Present
Nucleic Acids Research	
Manuscript Reviewer	2016 - Present
Oncogene	
Manuscript Reviewer	2015 - Present
Oncotarget	
Manuscript Reviewer	2015 - Present
PLoS ONE	
Manuscript Reviewer	2010 - Present
Proceedings of the National Academy of Sciences of the United States of America	
Manuscript Reviewer	2008 - Present
Scientific Reports	
Manuscript Reviewer	2016 - Present
Stem Cells	
Manuscript Reviewer	2015 - Present
Steroids	
Manuscript Reviewer	2012 - Present
Toxicology and Applied Pharmacology	
Manuscript Reviewer	2012 - Present

## Educational Activities

### Curriculum and Course Development

BMB Journal Club	2015 - Present
Co-Director	
Mayo Clinic Graduate School	
BMB WIP	2015 - Present
Co-Director	
Mayo Clinic Graduate School	
Cancer Biology I	2016 - Present

Co-Director  
Mayo Clinic Graduate School

Cancer Biology II  
Co-Director  
Mayo Clinic Graduate School  
2016 - Present

Hormones and Cancer  
Director  
Mayo Graduate School  
2017 - Present

### Teaching Intramural

Principals of Biology - Biology 115 Laboratory  
46 students (freshman and sophomore)  
West Virginia University  
West Virginia  
2001

Histology - Biology 441 Laboratory  
30 students(sophomore, junior and senior)  
West Virginia University  
West Virginia  
2002

The Living Cell - Biology 219  
Guest Lecture, 223 students (sophomore and junior)  
West Virginia University  
West Virginia  
2002

Hormones and Cancer  
Lecturer  
Mayo Clinic Graduate School  
2010 - Present

Genome Biology  
Lecturer  
Mayo Clinic Graduate School  
2014 - Present

Cancer Bio I  
Lecturer  
Mayo Clinic Graduate School  
2016 - Present

Cancer Bio II  
Lecturer  
Mayo Clinic Graduate School  
2016 - Present

### Mentorship

Jones, Tressa (Research Assistant)  
**Description:** Role of Metallothioneins in Protection of Lens Cells Against Oxidative Stress  
**Current Status:**  
**Outcome:**  
01/2002 - 12/2002

Crowell, Tracy (Research Assistant)  
**Description:** Identification of Methionine Sulfoxide Reductases in the Human Lens  
**Current Status:** Research Associate at Florida Atlantic University  
**Outcome:**  
04/2003 - 06/2004

DeAmicis-Tress, Candida (Research Assistant)  
**Description:** Identification of Human Lens Cell Differentiation Pathways, Florida Atlantic University  
**Current Status:**  
**Outcome:**  
10/2003 - 06/2004

Bender, Grant (Summer Student)  
05/2005 - 08/2005

<b>Description:</b> Regulation of Gene Expression in Human Osteoblast Cells by TGF $\beta$ Inducible Early Gene-1, Mayo Clinic College of Medicine. <b>Current Status:</b> Mayo Clinic Radiology <b>Outcome:</b>	
Hemmingsen, Amanda (Summer Student) <b>Description:</b> Role of TGF $\beta$ Inducible Early Gene-1 in Osteoblasts (2005) and Estrogen Receptor Isoform Specific Induction of TGF $\beta$ Inducible Early Gene-1 in Osteoblasts (2006), Mayo Clinic College of Medicine <b>Current Status:</b> University of Minnesota <b>Outcome:</b>	05/2005 - 01/2006
Pearson, Kerry (Summer Student) <b>Description:</b> Identification of Gene Expression Differences in Fibroblasts Isolated from Mouse Tail Tendons of Wild-Type and TGF $\beta$ Inducible Early Gene-1 Null Mice, Mayo Clinic College of Medicine <b>Current Status:</b> West Virginia School of Osteopathic Medicine <b>Outcome:</b>	05/2006 - 08/2006
Allen, Julianne (Summer Student) <b>Description:</b> <b>Current Status:</b> Medical Student <b>Outcome:</b>	05/2009 - 08/2009
Reese, Jordan (Ph.D. Student) <b>Description:</b> Anti-cancer effects of estrogen receptor beta in triple negative breast cancer. <b>Current Status:</b> Post-Doctoral Fellow <b>Outcome:</b>	01/2013 - 03/2017
Barnett, Maryia (Summer Undergraduate Research Fellow) <b>Description:</b> Roles of estrogen receptor beta variants in breast cancer. <b>Current Status:</b> Research Scientist, UC Berkley <b>Outcome:</b>	05/2014 - 08/2014
Safgren, Stephanie (Committee Member) <b>Description:</b> <b>Current Status:</b> Ph.D. Student <b>Outcome:</b>	07/2014 - Present
Bernstein, Aaron (Summer Undergraduate Research Fellow) <b>Description:</b> Development and characterization of novel endocrine resistant breast cancer model systems. <b>Current Status:</b> Undergraduate Student at Penn State University <b>Outcome:</b>	05/2015 - 08/2015
Mueller, Kirsten (Ph.D. Student) <b>Description:</b> Tumor suppressive effects of estrogen receptor beta in the breast. <b>Current Status:</b> Ph.D. Student <b>Outcome:</b>	02/2016 - Present
Jones, Calley (Ph.D. Student) <b>Description:</b> Identification and characterization of genes involved in the development and maintenance of endocrine resistant breast cancer. <b>Current Status:</b> Ph.D. Student <b>Outcome:</b>	03/2016 - Present
Kubo, Hana <b>Description:</b> <b>Current Status:</b> Ph.D. Student at Northwestern University <b>Outcome:</b>	05/2017 - 08/2017
Rillo, Isaac <b>Description:</b> <b>Current Status:</b> Student at Saint John's University, MN <b>Outcome:</b>	06/2017 - 08/2017

Emch, Michael (Ph.D. Student) <b>Description:</b> <b>Current Status:</b> Ph.D. Candidate <b>Outcome:</b>	01/2018 - Present
Acero Bedoya, Santiago (Undergraduate Student) <b>Description:</b> <b>Current Status:</b> Student at Otterbein College <b>Outcome:</b>	05/2018 - 08/2018
Hinkle, Megan (Undergraduate Student) <b>Description:</b> <b>Current Status:</b> Student at Mercer University <b>Outcome:</b>	05/2018 - 08/2018

## **Institutional/Departmental Administrative Responsibilities, Committee Memberships and Other Activities**

### **Mayo Clinic**

AC/SAC Council Co-Chair	2016 - 2018
AC/SAC Council, Dep. of BMB Member	2013 - Present
Department of Biochemistry and Molecular Biology SAC and AC Council Co-Chair	2013 - 2014
Department of Education Administration Mayo Clinic College of Medicine Mayo Graduate School Department of Biochemistry and Molecular Biology Ph.D. Admissions Committee Co-Director	2014 - Present
Mayo Foundation for Medical Education and Research Summer Undergraduate Research Fellow Program Department of Biochemistry & Molecular Biology Co-Director	2015 - Present

### **Mayo Clinic in Rochester**

Department of Biochemistry and Molecular Biology Member	2004 - Present
Cell Biology Member	2014 - Present
Education Committee Member	2014 - Present
Graduate Education Program Co-Director	2015 - Present
Molecular Biology Journal Club Director	2015 - Present

## **Presentations Extramural**

### **National or International**

#### **Invited**

Role of TGF-beta Inducible Early Gene-1 (TIEG1/KLF10) in Mediating Estrogen and TGF-beta Signaling. FASEB: Biology and Pathobiology of Kruppel- Like Factors (KLFs).	08/2010
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Steamboat Springs, Colorado

KLF10/TGF-beta Inducible Early Gene-1 Mediates both Estrogen and Canonical Wnt Signaling Pathways in Bone. 08/2012  
 FASEB: Biology and Pathobiology of Kruppel- Like Factors (KLFs).  
 Snowmass, Colorado

TIEG1 mediates Wnt signaling in bone. 08/2014  
 FASEB: Biology and Pathobiology of Kruppel- Like Factors (KLFs).

Roles of KLF10 in mediating estrogen and Wnt signaling in bone. 2014  
 FASEB: Biology and Pathobiology of Kruppel- Like Factors (KLFs).  
 Snowmass, Colorado

Mechanisms by which KLF10 mediates estrogen and Wnt signaling in the skeleton 01/2015  
 University Medical Center Gottingen University  
 Gottingen, Germany

Novel therapeutics for endocrine sensitive breast cancer 01/2015  
 Cancer Research UK Cambridge Institute  
 Cambridge, United Kingdom

Mechanisms by which KLF10 mediates estrogen and Wnt signaling in the skeleton 01/2015  
 University Medical Center Hamburg-Eppendorf  
 Hamburg, Germany

Therapeutic targeting of estrogen receptor beta in triple negative breast cancer 05/2015  
 Translational Breast Cancer Research Consortium  
 Dallas, Texas

Role of KLF10 in immune cells and their impact on bone homeostasis 08/2016  
 KLF and Sp Transcription Factors in Disease and Regenerative Medicine  
 Snow Mass, Colorado

Estrogen Receptor Beta and Triple Negative Breast Cancer 04/2018  
 University of Houston

### **Regional**

#### **Invited**

The Role of Endoxifen in Breast Cancer 08/2008  
 Friday Morning Breast Conference

The Anti-Estrogenic Effects of Endoxifen are Enhanced in Breast Cancer Cells Expressing ER-beta 10/2009  
 Mayo Clinic Rochester Breast DOG

Endoxifen, Estrogen Receptors alpha and beta and Resistance to Endocrine Therapy 02/2010  
 Breast Cancer SPORE Scientific Symposium

Role of Estrogen Receptors alpha and beta in the Diagnosis and Treatment of Breast Cancer 05/2012  
 Breast Cancer SPORE Seminar Series

Novel therapeutics for endocrine sensitive breast cancer 12/2012  
 Cell Biology Interest Group

Therapeutic targeting of estrogen receptor beta in triple negative breast cancer 06/2015  
 Breast DOG  
 Mayo Clinic; Rochester, Minnesota

#### **Oral**



Role of the Transcription Factors, TIEG, ER-alpha and ER-beta, in Bone and Breast Disease.

03/2011

Biochemistry and Molecular Biology Seminar Series

Update on K12 Related Projects

10/2012

Mayo Clinic K12 Lecture Series

## Research Interests

My research program focuses on steroid receptor functions in normal physiology and disease states as well as how these receptors can be therapeutically targeted. Much of the laboratories focus centers on breast cancer with an emphasis on the expression and functions of estrogen receptor alpha, estrogen receptor beta and the glucocorticoid receptor. We also have ongoing projects in the areas of ovarian cancer, T-cell biology, bone homeostasis, airway smooth muscle function and skeletal muscle metabolism, all of which relate to steroid hormone actions in these tissues. These specific projects are listed below in more detail:

1. Estrogen receptor beta and breast cancer: We have a number of ongoing studies related to the expression patterns of ER $\beta$  across all sub-types of breast cancer and determination of how ER $\beta$  expression impacts the natural course of disease, response to therapy and overall patient outcomes. At the molecular level, we are investigating how ER $\beta$  elicits anti-cancer effects in triple negative breast cancer with a focus on the mechanisms by which it suppresses the oncogenic activities of TGF $\beta$  and NF $\kappa$ B signaling. Our findings have led to the development of a phase II clinical trial that is expected to open at leading cancer centers around the country in early 2019.
2. Endocrine resistance in ER $\alpha$ + breast cancer: We have developed multiple novel cell model systems representing various forms of endocrine resistance and have employed genome-wide CRISPR based screen to elucidate specific genes and their associated pathways that contribute to the development of resistance, or that can be manipulated to either reverse or treat endocrine resistant forms of the disease. From this screen, we identified glucocorticoid receptor signaling and the Jak/Stat pathway among our top hits and are currently pursuing these from a molecular and therapeutic standpoint.
3. Management of cisplatin resistant ovarian cancer: We conducted a high throughput screen of epigenetic regulators using novel cisplatin resistant and cisplatin sensitive ovarian cancer cell lines. Results of this screen identified approximately 20 compounds which elicited significantly more potent effects in cisplatin resistant cells compared to sensitive cells. Through additional studies, we have narrowed our focus to 5 compounds and have shown that these are also effective in multiple PDX models generated from patients with cisplatin resistant ovarian cancer. Present studies are aimed at understanding the molecular mechanisms by which these compounds inhibit proliferation/growth with the goal of moving the best drug into the clinic in the near future.
4. Impact of KLF10 on T-cell differentiation and function: We have demonstrated that loss of KLF10 expression within CD4+ T-cells alters the lineage commitment and differentiation in a sex specific manner. Specifically we have shown that in female mice, deletion of KLF10 impairs Treg differentiation and enhances Th17 cell differentiation, effects that are not observed in male mice. Interestingly, this T-cell phenotype also impacts the skeleton leading to increased osteoclast differentiation and decreased bone mass in female mice. Ongoing studies are aimed at understanding the communication between T-cells and bone cells within the bone marrow microenvironment and elucidating how estrogen signaling impacts these processes.
5. KLF10 regulation of skeletal muscle metabolism: We have recently identified a striking skeletal muscle phenotype that is present only female KLF10 global knockout mice. This phenotype is characterized by myocyte disarray, improper sarcomere organization, loss of I-bands, decreased mitochondrial fusion/fission, dysregulated metabolism and muscle fatigue. This is one of the first reports of a nuclear encoded transcription factor that is essential for normal mitochondrial function in a sex specific manner. We are pursuing studies aimed at uncovering the molecular and cellular basis for this phenotype and understanding why this phenotype is specific to female mice.
6. ER $\alpha$  and ER $\beta$  functions in airway smooth muscle cells: In collaboration with Dr. Satish Venkatachalem, we have demonstrated that ER $\alpha$  promotes airway smooth muscle proliferation and hypertrophy while ER $\beta$  suppresses these effects. This is important from the standpoint of asthma which is more prevalent in women than men. Interestingly, asthma is also more likely to be diagnosed in young boys relative to

young girls, but dramatically increases in females following puberty. Furthermore, asthma symptoms classically diminish or resolve following the menopause indicating a role for the sex hormones in this condition. Our studies are aimed at understanding the molecular functions of ER $\alpha$  and ER $\beta$  in normal and asthmatic states and determining if manipulation of these receptors can alter disease development or alleviate symptoms.

## Research Grants Awarded

### Active Grants

#### Federal

Co-Investigator	Targeting Aurora-A Kinase to Overcome Endocrine Resistance in ER+ Breast Cancer. Funded by National Cancer Institute. (R01 CA 214893).	08/2017 - 05/2022
Co-Principal Investigator	Project 2: Therapeutic Targeting of Estrogen Receptor beta in Triple Negative Breast Cancer: Mayo Clinic Breast Cancer SPORE. Funded by National Cancer Institute. (P50 CA 116201).	09/2016 - 08/2021
Principal Investigator	Interrogating Epigenetic Regulators as Therapeutic Targets in Ovarian Cancer. Mayo Clinic Ovarian Cancer SPORE Pilot Project. Funded by National Cancer Institute. (P50 CA 136393).	09/2018 – 08/2020

#### Federal sub award

Co-Investigator	Estrogen Receptor Signaling in Airway Inflammation: Estrogen Receptor Signaling in Airway Inflammation. Funded by National Heart, Lung, and Blood Institute. (HL 123494).	07/2017 - 06/2020
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#### Mayo Clinic

Program Director / Principal Investigator	Biological functions of ER $\beta$ in pre-malignant and malignant cancers. Funded by Development - Benefactor Funded Career Development Award.	01/2015 - 12/2019
Program Director / Principal Investigator	Identification of KLF10 as a novel osteoimmunological gene that influences bone metabolism through alterations in T-cell biology. Funded by Center for Biomedical Discovery.	01/2017 - 12/2018
Principal Investigator	MCR Atwater Funding: A Randomized Phase II Trial to Evaluate Alisertib Alone or Combined with Fulvestrant for Women with Advanced, Endocrine-resistant Breast Cancer: Spending Plan - 91544010 - MCR Atwater Funding: A Randomized Phase II Trial to Evaluate Alisertib Alone or Combined with Fulvestrant for Women with Advanced, Endocrine-resistant Breast Cancer. Funded by Development - Gifts from benefactors.	04/2016 - 03/2019
Principal Investigator	Mayo Clinic Metabolomics Resource Core 2018 Pilot and Feasibility Award: Role of KLF10 in regulating skeletal muscle metabolism.	06/2018 - 05/2019

### Completed Grants

#### Federal

Principal Investigator	Role of sex steroids in female TIEG-null mouse bone loss. Funded by National Institute of Arthritis and Musculoskeletal and Skin Diseases. (F32 AR 53983).	07/2006 - 07/2007
Program Director / Principal Investigator	Role of a TGF- $\beta$ Regulated Gene in Human and Mouse Osteoblasts and Skeleton. Funded by National Institute of Dental and Craniofacial Research. (R01 DE 14036).	07/2012 - 06/2018

Co-Investigator	Project 1 (Year 5): Mayo Clinic Breast Cancer SPORE. Funded by National Cancer Institute. (P50 CA 116201).	09/2005 - 08/2011
Co-Investigator	Role of a TGF-beta Regulated Gene in human and mouse osteoblasts and skeleton. Funded by National Institute of Dental and Craniofacial Research. (R56 DE14036).	07/2007 - 06/2008
Co-Investigator	Role of a TGF-beta Regulated Gene in human and mouse osteoblasts and skeleton. Funded by National Institute of Dental and Craniofacial Research. (R01 DE 14036).	07/2008 - 06/2012
Co-Investigator	Project 2: Endoxifen as hormonal therapy: Mayo Clinic Breast Cancer SPORE. Funded by National Cancer Institute. (P50 CA 116201).	09/2010 - 08/2011
Co-Program Director / Principal Investigator	Project 2: Endoxifen as hormonal therapy: Mayo Clinic Breast Cancer SPORE. Funded by National Cancer Institute. (P50 CA 116201).	09/2011 - 08/2016
Co-Investigator	Estrogen Receptor Signaling in Airway Inflammation. Funded by National Heart, Lung, and Blood Institute. (R01 HL 123494).	08/2015 - 09/2016

**Federal sub award**

Co-Investigator	Role of Lrp5/Beta-Catenin in Aortic Valve Calcification. Funded by National Heart, Lung, and Blood Institute. (HL 85591).	10/2007 - 09/2011
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**Foundation**

Program Director / Principal Investigator	The Role of ER-beta and Endoxifen in the Treatment and Progression of Breast Cancer. Funded by Susan G. Komen Breast Cancer Foundation. (KG100142).	04/2010 - 04/2014
Co-Investigator	Core A: BCRF - Spelsberg Lab: Breast Cancer Research Foundation. Funded by Breast Cancer Research Foundation. (BCRF).	10/2003 - 09/2008
Co-Investigator	Spelsberg - Analysis of the functions of estrogen receptor beta in human breast cancers.: Comparison of the actions of endoxifen and 4-hydroxytamoxifen on steroid responsive ER $\alpha$ and ER $\beta$ expressing breast cancer cell lines and steroid responsive and resistant ER $\alpha$ cell lines (continuation). Funded by Breast Cancer Research Foundation. (BCRF 2010).	10/2010 - 09/2011
Co-Investigator	Spelsberg - Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer: Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer. Funded by Breast Cancer Research Foundation. (BCRF).	10/2011 - 09/2012
Co-Investigator	Spelsberg - Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer: Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer. Funded by Breast Cancer Research Foundation. (BCRF).	10/2012 - 09/2013
Co-Investigator	Spelsberg - Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer: Analysis of the functions of estrogen receptor beta (ER $\beta$ ) in human breast cancer. Funded by Breast Cancer Research Foundation. (BCRF).	10/2013 - 09/2014

**Industry**

Co-Investigator	Cardiac Research Studies - Collaboration with Northwestern University. Funded by Northwestern University.	01/2007 - 12/2007
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**Mayo Clinic**

Program Director / Principal Investigator	The Role of ER $\beta$ in Conferring Tamoxifen Effectiveness as an Endocrine Therapy for Breast Cancer - supplement to SPORE. Funded by Early Career Supplement Award.	07/2010 - 12/2012
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Program Director / Principal Investigator	Estrogen Receptor Beta: A Novel Therapeutic Target for Breast Cancer. Funded by Development - Gifts from benefactors.	01/2014 - 12/2016
Program Director / Principal Investigator	Development of an inducible and conditional ER $\beta$ transgenic mouse model. Funded by Center for Biomedical Discovery.	04/2016 - 12/2016
Program Director / Principal Investigator	Implementation of a CRISPR based screen for the identification of novel therapeutic targets for the treatment of endocrine resistant breast cancer. Funded by Eagle Funds for Cancer Research.	06/2017 - 05/2018
Co-Investigator	A Randomized Phase II Trial of Two Doses of Z-Endoxifen in Postmenopausal Women or Men with Metastatic Estrogen Receptor Positive, HER2 Negative Breast Cancer - A011203 - Development-Atwater Fdn. Funded by Conquer Cancer Foundation of the American Society of Clinical Oncology.	01/2014 - 12/2016
Co-Program Director / Principal Investigator	ER beta. Funded by CCaTS-CBD Pilot Awards for Team Science.	01/2016 - 12/2016

## Bibliography

### Peer-reviewed Articles

1. Zhang W, **Hawse J**, Huang Q, Sheets N, Miller KM, Horwitz J, Kantorow M. Decreased expression of ribosomal proteins in human age-related cataract. *Invest Ophthalmol Vis Sci*. 2002 Jan; 43(1):198-204. PMID: 11773032 PMCID: 2831404
2. **Hawse JR**, Cumming JR, Oppermann B, Sheets NL, Reddy VN, Kantorow M. Activation of metallothioneins and alpha-crystallin/sHSPs in human lens epithelial cells by specific metals and the metal content of aging clear human lenses. *Invest Ophthalmol Vis Sci*. 2003 Feb; 44(2):672-9. PMID: 12556398 PMCID: 2825746
3. **Hawse JR**, Hejtmancik JF, Huang Q, Sheets NL, Hosack DA, Lempicki RA, Horwitz J, Kantorow M. Identification and functional clustering of global gene expression differences between human age-related cataract and clear lenses. *Mol Vis*. 2003 Oct 7; 9:515-37. PMID: 14551530 PMCID: 2831407
4. Kantorow M, **Hawse JR**, Cowell TL, Benhamed S, Pizarro GO, Reddy VN, Hejtmancik JF. Methionine sulfoxide reductase A is important for lens cell viability and resistance to oxidative stress. *Proc Natl Acad Sci U S A*. 2004 Jun 29; 101(26):9654-9 Epub 2004 Jun 15. PMID: 15199188 PMCID: 470730 DOI: 10.1073/pnas.0403532101
5. **Hawse JR**, Hejtmancik JF, Horwitz J, Kantorow M. Identification and functional clustering of global gene expression differences between age-related cataract and clear human lenses and aged human lenses. *Exp Eye Res*. 2004 Dec; 79(6):935-40. PMID: 15642332 PMCID: 1351355 DOI: 10.1016/j.exer.2004.04.007
6. **Hawse JR**, DeAmicis-Tress C, Cowell TL, Kantorow M. Identification of global gene expression differences between human lens epithelial and cortical fiber cells reveals specific genes and their associated pathways important for specialized lens cell functions. *Mol Vis*. 2005; 11:274-83 Epub 2005 Apr 18. PMID: 15851978 PMCID: 1351354
7. **Hawse JR**, Padgaonkar VA, Leverenz VR, Pelliccia SE, Kantorow M, Giblin FJ. The role of metallothionein IIa in defending lens epithelial cells against cadmium and TBHP induced oxidative stress. *Mol Vis*. 2006; 12:342-9. Epub 2006 Apr 17. PMID: 16636651 PMCID: 1810351
8. Monroe DG, Secreto FJ, **Hawse JR**, Subramaniam M, Khosla S, Spelsberg TC. Estrogen receptor isoform-specific regulation of the retinoblastoma-binding protein 1 (RBBP1) gene: roles of AF1 and enhancer elements. *J Biol Chem*. 2006 Sep 29; 281(39):28596-604. Epub 2006 Jul 26. PMID: 16873370 DOI: 10.1074/jbc.M605226200
9. Bensamoun SF, Tsubone T, Subramaniam M, **Hawse JR**, Boumediene E, Spelsberg TC, An KN, Amadio PC. Age-dependent changes in the mechanical properties of tail tendons in TGF-beta inducible early gene-1 knockout mice. *J Appl Physiol* (1985). 2006 Nov; 101(5):1419-24. Epub 2006 Jun 22. PMID: 16794021 DOI: 10.1152/jappphysiol.00800.2005
10. Bensamoun SF, **Hawse JR**, Subramaniam M, Ilharreborde B, Bassillais A, Benhamou CL, Fraser DG, Oursler MJ, Amadio PC, An KN, Spelsberg TC. TGF beta inducible early gene-1 knockout mice display defects in bone strength and microarchitecture. *Bone*. 2006 Dec; 39(6):1244-51. PMID: 0
11. Subramaniam M, **Hawse JR**, Johnsen SA, Spelsberg TC. Role of TIEG1 in biological processes and disease states. *J Cell Biochem*. 2007 Oct 15; 102(3):539-48. PMID: 17729309 DOI: 10.1002/jcb.21492
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### Book Chapters

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