

## Kristen Lee Williams Walton, PhD

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### EDUCATION AND TRAINING

- 2001 – 2006 SPIRE Postdoctoral Fellow, University of North Carolina at Chapel Hill, Chapel Hill, NC
- The Seeding Postdoctoral Innovators in Research and Education (SPIRE) program is a competitive, innovative postdoctoral training program at the University of North Carolina at Chapel Hill (UNC-CH). Fellows combine research training at UNC-CH, teaching undergraduate-level classes at one of eight partner historically minority colleges and universities, and attending professional development workshops and seminars. Further information about the SPIRE program is available at <http://spire.unc.edu>.
- 2001 PhD in physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC
- Dissertation title: "Endocrine and paracrine actions of growth hormone and insulin-like growth factor-I in normal and diseased bowel"
  - Dissertation advisor: Dr. P. Kay Lund
- 1996 BS in biology with minors in chemistry and French, *summa cum laude* in the Honors College, Missouri State University (formerly Southwest Missouri State University), Springfield, MO

### TEACHING EXPERIENCE

- 2006-present Assistant Professor, Department of Biology, Missouri Western State University. Courses taught include: Medical and Public Health Microbiology (nursing/allied health majors); Principles of Organismal Biology lab (introductory course for biology majors); Immunology (upper-division biology majors); Principles of Biology (nonmajors); Anatomy & Physiology (mixed nursing/allied health and other majors); Pathophysiology (nursing/allied health majors); Molecular Basis of Disease (upper-division biology majors).
- 2006 Visiting Assistant Professor / SPIRE Postdoctoral Fellow. Taught Molecular Basis of Disease (undergraduate-level special topics course on molecular pathophysiology), videoteleconference class team-taught simultaneously at North Carolina Central University and the University of North Carolina at Chapel Hill (spring)
- Visiting Lecturer, taught cardiovascular physiology section (9 class sessions) of Introduction to Physiology (undergraduate allied health majors), University of North Carolina at Chapel Hill (spring)
- 2005 Visiting Lecturer, cardiovascular physiology section (8 class sessions) of Introduction to Physiology (first-year pharmacy students and upper-level undergraduates), University of North Carolina at Chapel Hill (fall)
- Visiting Assistant Professor / SPIRE Postdoctoral Fellow. Taught Immunology (undergraduate biology majors), via videoteleconference to University of North Carolina at Pembroke (spring)
- 2003 – 2004 Visiting Assistant Professor / SPIRE Postdoctoral Fellow at the University of North Carolina at Pembroke. Courses taught include Principles of Biology, lecture and laboratory (mixed non-majors and majors); Molecular Mechanisms of Disease and Drug Therapy (upper-division biology majors), team-taught at North Carolina Central University via simultaneous videoteleconference
- 1998 - 1999 Co-director, weekly journal club for Summer Undergraduate Research in Physiology (SURPh) Program, University of North Carolina at Chapel Hill

- 1998 Instructor, weekly discussion section, Medical Physiology course for first-year medical students, University of North Carolina at Chapel Hill
- 1997 Teaching assistant, weekly discussion section for Medical Physiology course for first-year medical students, University of North Carolina at Chapel Hill

### GUEST LECTURES

- 2007 "Host-parasite interactions: host immune defenses", Medical Parasitology course, Missouri Western State University
- 2005 "Endocrine anatomy and physiology", Anatomy & Physiology I course, University of North Carolina at Pembroke
- "At war within: bacteria and inflammatory bowel disease", Molecular Basis of Disease course for upper-division undergraduates, University of North Carolina at Chapel Hill
- 2004 "Hollywood Science: Understanding biology in the media", Principles of Biology class, University of North Carolina at Pembroke
- 2003 "Immune system genetics", in "Genetics" upper-level undergraduate course at North Carolina A&T State University (by videoteleconference)
- 1999 - 2000 2 class sessions each fall semester, reproductive physiology section, Introduction to Physiology course for first-year pharmacy students and upper-level undergraduates, University of North Carolina at Chapel Hill
- 1995 "Molecular biology methods", Cell Biology sophomore/junior-level course, Missouri State University (formerly Southwest Missouri State University)

### UNDERGRADUATE STUDENT RESEARCH MENTORSHIP

- 2008-2009 Summer Gemmell, senior, Missouri Western State University  
Erica Pasch, junior, Missouri Western State University  
Leah Voltmer, entering freshman, Missouri Western State University.  
**Project:** "Effects of triclosan on the normal intestinal microbiota and on susceptibility to experimental colitis in mice" (Poster presentation)
- Andrew Gordon, senior, Missouri Western State University. **Project:** "Effects of lipopolysaccharide on collagen expression and secretion by cultured intestinal myofibroblasts" (poster presentation)
- 2007 Angela Mohamed, senior, Missouri Western State University. **Project:** "Effects of lipopolysaccharide on collagen expression and secretion by cultured intestinal myofibroblasts" (Oral presentation)
- 2005 (Co-mentor) Sadondria Richardson, rising sophomore, North Carolina A&T State University. **Project:** "Do soluble mediators produced by primary intestinal myofibroblasts influence the maturation of dendritic cells?" (Oral presentation)
- 2004 Leisha Collins, rising sophomore, Fayetteville Technical Community College. **Project:** "Are primary murine intestinal myofibroblasts responsive to lipopolysaccharide?" (Poster presentation)

## RESEARCH TRAINING

- 2001 – 2006 Division of Gastroenterology and Hepatology, Department of Medicine, University of North Carolina at Chapel Hill
- Postdoctoral advisor: Dr. R. Balfour Sartor
  - Postdoctoral co-advisor (2001-2002): Dr. Nancy (Van Houten) Fisher
  - Research areas: 1) T cell responses to oral antigen in germ-free mice; 2) characterization of dendritic cell subsets and function in germ-free mice; 3) Responses of murine primary intestinal myofibroblasts to bacterial stimulation
- 1997 - 2001 Department of Cell and Molecular Physiology, University of North Carolina at Chapel Hill
- Dissertation advisor: Dr. P. Kay Lund
  - Research areas: Actions of growth hormone and insulin-like growth factor-I in intestinal growth, inflammation, and fibrosis
- 1996 Department of Cell and Molecular Physiology, University of North Carolina at Chapel Hill
- Rotation advisor: Dr. Sharon Milgram
  - Project: Characterization of an antibody-binding epitope by phage display
- 1995 Summer Medical and Research Training (SMART) Program, Baylor College of Medicine
- Advisor: Dr. JoAnne Richards
  - Project: Ovarian granulosa cell responses during pregnancy in the rat

## FUNDING – INTERNAL

- 2009 Undergraduate Summer Research Institute grant, Missouri Western State University (\$1000). Project: “Effects of triclosan on the normal intestinal microbiota and on susceptibility to experimental colitis in mice”
- 2008 Summer Research Institute grant, Missouri Western State University (\$7835). Project: “Effects of triclosan on the normal intestinal microbiota and on susceptibility to experimental colitis in mice”
- 2007 Undergraduate Summer Research Institute grant, Missouri Western State University (\$1000). Project: “Effects of lipopolysaccharide on collagen expression and secretion by cultured intestinal myofibroblasts”

## FUNDING – EXTERNAL GRANT APPLICATIONS

- 2008 Missouri Life Sciences Trust Fund grant: “Missouri Western Regional Laboratory for Imaging and Spectroscopy”. PI: Dr. Michael Ducey, Department of Chemistry, Missouri Western State University; co-PIs: Dr. Ben Caldwell, Chemistry, MWSU; Dr. Melissa Daggett, Biology, MWSU; **Dr. Kristen Walton, Biology, MWSU**. (not funded)
- 2008 National Science Foundation Course, Curriculum, and Laboratory Improvement program grant: “Getting Back to the Basics: Development and Assessment of Performance Based Skills in Biology and Biochemistry Curricula”. PI: Dr. Melissa Daggett, Department of Biology, Missouri Western State University; co-PIs: Dr. Ben Caldwell, Chemistry, MWSU; **Dr. Kristen Walton, Biology, MWSU**. (not funded)

## HONORS AND AWARDS

- 2009 Board of Governors Distinguished Professor award with Distinction in Scholarship, Missouri Western State University

- 2008 Outstanding Faculty Implementation of Critical Thinking award, Missouri Western State University
- 2007 American Physiological Society Teaching of Physiology Section Research Recognition Award for poster presented at Experimental Biology 2007
- 2007 Outstanding Instructor Award, Disability Services, Missouri Western State University (student-nominated award)
- 2001-2006 SPIRE Postdoctoral Fellowship, Department of Biology, University of North Carolina at Chapel Hill
- 2006 Poster of Distinction, Digestive Disease Week 2006 (meeting of the American Association of Gastroenterologists). This award is given to the top 10% of abstracts submitted for poster presentation.
- 2005 Poster of Distinction, Center for Gastrointestinal Biology and Disease Annual Research Retreat, University of North Carolina at Chapel Hill
- 2004 Poster of Distinction, Digestive Disease Week 2004 (meeting of the American Association of Gastroenterologists). This award is given to the top 10% of abstracts submitted for poster presentation.
- 1997-2001 Howard Hughes Medical Institute Predoctoral Fellowship
- 2000 Travel Award, REGPEP 2000 (13<sup>th</sup> International Symposium on Regulatory Peptides)
- 2000 Travel Award, American Gastroenterological Association Student Abstract Prize competition (runner-up)
- 1998 Travel Award, Women in Endocrinology
- 1997 Awarded National Science Foundation Predoctoral Fellowship (declined to accept Howard Hughes Medical Institute Predoctoral Fellowship)
- 1996-1997 William Reynolds Fellowship, Graduate School, University of North Carolina at Chapel Hill
- 1996 Burroughs-Wellcome Scholar Award, Department of Physiology, University of North Carolina at Chapel Hill
- 1996 Outstanding Graduating Senior Award, College of Natural and Applied Sciences, Missouri State University (formerly Southwest Missouri State University)
- 1992-1996 Presidential Scholar, Missouri State University (formerly Southwest Missouri State University)

#### **PROFESSIONAL SERVICE**

- 2009-present Faculty sponsor, MWSU Pre-Professional Club
- 2008-present Chair, MWSU Academic Honesty Committee
- 2008-present Member, MWSU Institutional Animal Care and Use Committee (IACUC)
- 2008-present Member, Mid-America Regional Science and Engineering Fair (MARSEF) committee, Missouri Western State University

2008-present	Member, Editorial Board, <i>Bioscene</i>
2007-present	Member, Critical Thinking Steering Committee, Missouri Western State University
2002-present	Ad hoc reviewer, <i>American Journal of Physiology</i>
2007-2008	Demonstrated biology-related topics each February at Super Science Saturday, St. Joseph Museum Society (half-day open house for community families)
2008	Ad hoc reviewer, National Center for Case Study Teaching in Science
2008	Panelist, faculty panel for Western Welcome New Faculty Orientation, Missouri Western State University
2007	Ad hoc reviewer, <i>Bioscene</i>
2007	Ad hoc reviewer for pre-revision review of textbook <i>Essential Biology with Physiology</i> , 2 <sup>nd</sup> Ed., by Campbell, Reece, & Simon. Pearson Benjamin Cummings, publishers.
2006-2008	Ad hoc reviewer, <i>Clinical and Experimental Immunology, Immunology</i>
2006, 2008	Presented seminar, "Finding Summer Research Internships" for Tri Beta Biological Honor Society meeting, Missouri Western State University
2006	Workshop co-facilitator, "Tools of Engagement: Case Studies in Science" for participants at the MORE Division/NIGMS Institutional Research and Career Development Award (IRACDA) Annual Retreat, Kansas City, MO
2001-2006	Ad hoc reviewer, <i>Gastroenterology</i>
2005, 2006	Led workshop on "Evaluating Science Information on the Internet" for summer undergraduate research program participants, University of North Carolina at Chapel Hill
	Panelist, "Teaching across the wire: preparing for videoteleconference instruction in the University of North Carolina at Chapel Hill / Elizabeth City State University Doctor of Pharmacy Partnership Program"
2002-2005	Planning committee member, SPIRE Annual Distinguished Scholar Seminar
2004	Presenter, demonstration video on agarose and acrylamide gel loading for DESTINY Traveling Science Learning Program, a traveling science lab bus for outreach to middle and high school students ( <a href="http://destiny.unc.edu">http://destiny.unc.edu</a> )
	Demonstrator, "Better Safe Than Sorry" middle school science lab module aboard DESTINY during conference "Fetal Alcohol Spectrum Disorder – Research to Practice"
2003-2004	Panelist, "Undergraduate Research Opportunities" informational workshop, presented by simultaneous videoteleconference to students at the University of North Carolina at Pembroke and Johnson C. Smith University
1998-1999	Student representative to the Graduate Committee, Department of Cell and Molecular Physiology, University of North Carolina at Chapel Hill

#### **PROFESSIONAL DEVELOPMENT AND MEMBERSHIPS**

2008-present	Member, Association of College and University Biology Educators
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2007-present	Member, National Science Teachers' Association
2004-present	Member, American Physiological Society
2006-present	Graduate member, Tri Beta Biological Honor Society
2007	Member, Missouri Academy of Science
2007	Attended 2-day "Critical Thinking Workshop" on helping students develop critical thinking skills, Missouri Western State University
2006	Attended "UNC Leadership Symposium" on development of leadership and conflict resolution skills, University of North Carolina at Chapel Hill
2001-2006	Attended ongoing workshops and seminars on instructional technology, including use of a SMARTBoard, Blackboard courseware, videoteleconferencing technology, and web authoring
2006	Attended "Strategies for Success" workshop on strategies to increase active learning and student engagement in the classroom, Virginia Commonwealth University, sponsored by Benjamin Cummings publishers
2005	Selected to attend "Teaching Creative Problem Solving" workshop, University of Washington, sponsored by Chautauqua Short Courses for Faculty Development
2002, 2004-2006	Attended professional development workshops on various topics, including using active learning techniques in the classroom, grantsmanship, leadership skills, using technology in the classroom, and diversity in the classroom and in the sciences. Institutional Research and Career Development Award (IRACDA) Annual Retreat (Summers of 2002, 2004, and 2005)
2004	Attended "Research on Teaching and Learning in the Sciences" workshop on approaches to and publication of education research by Drs. Richard Felder and Rebecca Brent, North Carolina State University
2004	Attended "Student-Centered Activities for Large Enrollment Undergraduate Programs (SCALE UP) workshop: Teaching college biology, chemistry, and physics through team-based experiments instead of lectures" by Dr. Robert Beichner, North Carolina State University
2003	Completed SPIRE teaching workshop series by Dr. Ed Neal, Director of the Center for Teaching and Learning, University of North Carolina at Chapel Hill (8-session series of workshops covering pedagogical topics such as student learning styles, classroom management, teaching critical thinking skills, and evaluating student learning)
2003	Attended 1-day workshop by Dr. Malcolm Campbell, Davidson College, on several topics such as getting students involved in lecture, using versus not using IT in the science classroom, and faculty experiences at a primarily undergraduate institution
2002-2003	Trainee member, Society of Mucosal Immunology
2002	Completed "Effective College Teaching" 2-day workshop led by Drs. Richard Felder and Rebecca Brent, North Carolina State University
2002	Attended "Introductory Course in Immunology" at Tufts University, a 9-day, intensive short course in immunology, sponsored by the American Association of Immunologists

- 2000 Completed "College Teaching", graduate-level course on pedagogy and effective teaching skills, University of North Carolina at Chapel Hill
- 1998 Completed Carolina Workshop, "Transgenic and Knockout Mouse Technology" (2-week, hands-on training course on theory and techniques of genetic manipulation in mice), University of North Carolina at Chapel Hill

#### INVITED RESEARCH SEMINARS

- November 2008 Department of Biological Sciences, Missouri University of Science & Technology, Rolla, MO
- October 2007 Tri Beta Biological Honor Society, Missouri Western State University, St. Joseph, MO
- November 2005 Department of Biology, Assumption College, Worcester, MA
- February 2004 Department of Biology, University of North Carolina at Pembroke, Pembroke, NC

#### PUBLICATIONS: PAPERS

1. **Walton KLW**. Teaching the role of secretin in regulation of gastric acid secretion using a classic paper by Dr. Leonard Johnson and Dr. Morton Grossman. In press, *Advances in Physiology Education*, 2009.
2. **Walton KLW** and JC Baker. Group projects as a method of promoting student scientific communication and collaboration in a public health microbiology course. In press, *Bioscene*, 2009.
3. **Walton KLW**, Holt L, and RB Sartor. Lipopolysaccharide activates innate immune responses in murine intestinal myofibroblasts through multiple signaling pathways. *American Journal of Physiology: Gastrointestinal & Liver Physiology* 2009;296:G601-611.
4. **Walton, KLW** and Rybarczyk, BJ. Hypothesis Modification Activity. In: College Science Teachers Guide to Assessment, TR Lord, DP French, and LW Crow, Eds. NSTA Press, Arlington, VA. 2009.
5. Rybarczyk, BJ and **Walton, KLW**. Feedback as a Learning Opportunity. *Teaching Tips - Best Practices for College Science Teaching*. Society for College Science Teachers, 2008.
6. **Walton KLW**, Galanko JA, Sartor RB, and NC Fisher. T cell-mediated oral tolerance is intact in germ-free mice. *Clinical and Experimental Immunology* 2006;143:503-512.
7. **Walton KLW**, He JP, Kelsall BL, Sartor RB, and NC Fisher. Dendritic cells in germ-free and specific pathogen-free mice are similar in phenotype and antigen-presentation function. *Immunology Letters* 2006;102(1):16-24.
8. **Walton KLW**. The case of Baby Joe: chronic infections in an infant. The National Center for Case Study Teaching in Science Case Collection [Online database of peer-reviewed case studies]. State University of New York at Buffalo, <http://ublib.buffalo.edu/libraries/projects/cases/ubcase.htm>. Date posted: December 13, 2005.
9. **Williams KL**, Fuller CR, Mohapatra NK, Wang J, Fagin J, and PK Lund. Mesenchymal IGF-I: paracrine actions in the intestine, distinct from endocrine effects. *American Journal of Physiology: Gastrointestinal and Liver Physiology* 2002;283(4):G875-85.
10. Wilkins H, Ohneda K, Keku T, Fuller CR, D'Ercole AJ, **Williams KL**, and PK Lund. Reduction of spontaneous and irradiation-induced apoptosis in the small intestinal mucosa of IGF-I transgenic mice. *American Journal of Physiology: Gastrointestinal and Liver Physiology* 2002;283(2):G457-G464.

11. **Williams KL**, Fuller CR, Dieleman LA, DaCosta CM, Haldemann KM, Sartor RB, and PK Lund. Enhanced survival and mucosal repair following dextran sodium sulfate-induced colitis in transgenic mice that overexpress growth hormone. *Gastroenterology* 2001;120:923-937.
12. Pucilowska JB, **Williams KL**, and PK Lund. Fibrogenesis IV. Fibrosis and inflammatory bowel disease: Cellular mediators and animal models. *American Journal of Physiology: Gastrointestinal and Liver Physiology* 2000;279:G653-G659.

#### **ABSTRACTS (\*denotes undergraduate author)**

1. **Gordon, AJ\*** and KLW Walton. Effects of lipopolysaccharide on collagen expression in myofibroblasts. Missouri Academy of Science, April 2009. (Poster)
2. Pasch E\*, Voltmer L\*, Gemmell S\*, Walter J, and **KLW Walton**. Effects of triclosan on the normal intestinal microbiota and on susceptibility to experimental murine colitis. Experimental Biology meeting, April 2009. (Poster)
3. **Walton KLW** and BJ Rybarczyk. Assessing biology students' critical thinking abilities using a skills-based classification model. Experimental Biology meeting, April 2009. (Poster)
4. **Walton KLW**. Case studies and data analysis assignments as tools for improving critical thinking skills in an anatomy & physiology course. ACUBE annual meeting, October 2008.
5. Pasch E\*, Voltmer L\*, and **KLW Walton**. Effects of triclosan on the normal intestinal microbiota and on susceptibility to experimental colitis in mice. Summer Research Institute Symposium, July 2008. (Poster)
6. **Walton KLW**. Use of case studies and data analysis to improve critical thinking skills in a one-semester anatomy & physiology course. Experimental Biology meeting, April 2008. (Oral presentation)
7. Rushin J, Baker J, Boutwell D, Chevalier C, Daggett M, Eckdahl T, Seeger S, and **Walton K**. Using two-week learning cycle blocks (LCB's) as a way for non-major general biology students to do science in the lab. National Association of Biology Teachers meeting, November 2007. (Symposium presentation by J. Rushin)
8. **Walton KLW** and Rybarczyk BJ. Use of case studies and data analysis to increase student engagement and learning in a molecular basis of disease course. Experimental Biology meeting, April 2007. (Poster)
9. **Walton KLW**. Group poster presentations as a method of improving student communication and learning. Experimental Biology meeting, April 2007. (Poster)
10. **Walton KLW**, Collins L\*, and Sartor RB. Lipopolysaccharide activates innate immune responses in murine intestinal myofibroblasts through multiple signaling pathways. *Gastroenterology* 2006;130(4):A698. Digestive Disease Week, May 2006. (Poster)
11. **Walton KLW**, Collins L\*, and Sartor RB. Lipopolysaccharide activates innate immune responses in murine intestinal myofibroblasts. Experimental Biology meeting, April 2006. (Poster)
12. Richardson S\*, **Walton KLW**, and Moran J. Look who's talking: communication between myofibroblasts and dendritic cells. Partnership for Minority Advancement in Biomedical Sciences (PMABS) Summer Research Program annual symposium, August 2005. (Oral presentation)
13. **Walton KLW**, Karrasch T, and Sartor RB. Endogenous interleukin-10 regulates lipopolysaccharide-induced secretion of proinflammatory molecules in primary murine intestinal myofibroblasts. *Gastroenterology* 2005;128(4):A659. Digestive Disease Week, May 2005. (Poster)

14. Collins L\* and **Walton KLW**. Do primary intestinal myofibroblasts respond to lipopolysaccharide? Partnership for Minority Advancement in Biomedical Sciences (PMABS) Summer Research Program annual symposium, August 2004. (Poster)
15. **Walton KLW**, Sartor RB, and NC Fisher. Oral tolerance in intact in germ-free mice despite the lack of enteric bacterial colonization. *Gastroenterology* 2004;126(4):A289. Digestive Disease Week, May 2004. (Poster, selected as a "Poster of Distinction")
16. Hutchins GG and **Walton KLW**. Pharmacology and pathophysiology for undergraduate students: technology enhances the learning experience. Experimental Biology, April 2004. (Poster)
17. **Williams KL**, He JP, Kelsall BL, Sartor RB, and N Van Houten. Dendritic cells in germ-free and SPF mice are similar in phenotype and in vitro antigen-presentation function. Keystone Symposium on Regulation of Mucosal Inflammation, April 2003. (Poster)
18. Lerea LS, Baines A, Hutchins GG, McVey M, Key SCS, White CD, **Williams KL**, and W Bollenbacher. SPIRE – An Innovative Model of Postdoctoral Training Enhances Science Education at Historically Minority Universities. American Association for the Advancement of Science annual meeting, February 2003. (Poster)
19. **Williams KL**, He JP, Kelsall BL, Sartor RB, and N Van Houten. Impaired in vivo antigen-specific T cell responses to oral antigen in germ-free mice despite normal presence of dendritic cells in mucosal sites. 11<sup>th</sup> International Congress of Mucosal Immunology, June 2002. (Oral presentation).
20. **Williams KL**, Miller ME, DaCosta CD, Dieleman LA, Sartor RB, and PK Lund. Evidence for inhibition of cytokine action by growth hormone during recovery from experimental enterocolitis. *Regulatory Peptides* 2000;94:20. 13<sup>th</sup> International Symposium on Regulatory Peptides, June 2000. (Poster)
21. Miller ME, Goebel HN, **Williams KL**, Keku TO, Pucilowska JB, Sartor, RB, and PK Lund. Suppressor of cytokine signaling-3 (SOCS-3) mRNA is preferentially induced during experimental enterocolitis, ulcerative colitis and Crohn's disease. *Regulatory Peptides* 2000;94:67. 13<sup>th</sup> International Symposium on Regulatory Peptides, June 2000. (Poster)
22. **Williams KL**, Fuller CR, Dieleman LA, DaCosta CM, Clark KS, Sartor RB, and PK Lund. Enhanced survival and mucosal repair following DSS colitis in transgenic mice that overexpress bovine growth hormone. *Gastroenterology* 2000;118(4):A556. Digestive Disease Week, May 2000. (Poster)
23. **Williams KL**, Fuller CR, Mohapatra NK, Wang J, Fagin J, and PK Lund. Enhanced growth of intestinal mucosa in SMP8-IGF-I transgenic mice that overexpress insulin-like growth factor-I in intestinal mesenchymal cells via the alpha smooth muscle actin promoter. *Gastroenterology* 1999;116(4):A585. Digestive Disease Week, May 1999. (Poster)
24. **Williams KL**, Ohneda K, Fuller CR, and PK Lund. Differential effects of chronic IGF-I and GH excess on apoptosis in the small intestine. Endocrine Society Annual Meeting, New Orleans, June 1998. (Oral presentation)