

CURRICULUM VITAE FOR ACADEMIC PROMOTION

The Johns Hopkins University School of Medicine

(Signature) 
(typed name) Janet L. Crane

September 29, 2014
(Date of this version)

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

2014- Assistant Professor, Department of Pediatrics, Johns Hopkins University

Personal Data

Division of Pediatric Endocrinology
Department of Pediatrics
Building and room Rubenstein 3120
200 N Wolfe St
Baltimore, MD 21287
phone 410-955-6463
fax 410-955-9773
e-mail jcrane2@jhmi.edu

Education and Training:

<u>Year</u>	<u>Degrees</u>	<u>Discipline</u>	<u>Institution</u>
1997-2001	B.S.	Nutritional Science	University of Missouri, Columbia, MO
2003-2007	M.D.	Medicine	University of Maryland, Baltimore, MD
2007-2010	Residency	Pediatrics	Children's Mercy Hospital & Clinics, Kansas City, MO
2010-2013	Fellowship	Pediatric Endocrine	Johns Hopkins University, Baltimore, MD

Professional Experience

6/2001-6/2003 (full time); 07/2003-06/2006 (part time). Senior Laboratory Technician, Division of Pediatric Endocrinology, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD.
2013 - 2014 Instructor, Department of Pediatrics, Johns Hopkins University
2014 - Assistant Professor, Department of Pediatrics, Johns Hopkins University

RESEARCH ACTIVITIES

80% effort in Department of Orthopaedics

Publications: Peer-reviewed Original Science Research

1. Germain-Lee EL, Ding CL, Deng Z, **Crane JL**, Saji M, Ringel MD, Levine MA. Paternal imprinting of *Gas* in the human thyroid as the basis of TSH resistance in pseudohypoparathyroidism type 1a. *Biochem Biophys Res Commun.* 2002; 9;296(1):67-72. PMID 12147228.
2. Germain-Lee EL, Groman J, **Crane JL**, Jan de Beur SM, Levine MA. Growth hormone deficiency in pseudohypoparathyroidism type 1a: another manifestation of multi-hormone resistance. *J Clin Endocrinol Metab.* 2003; 88(9):4059-69. PMID 12970262.
3. Germain-Lee EL, Schwindinger W, **Crane JL**, Zewdu R, Zweifel LS, Wand G, Huso DL, Saji M, Ringel MD, Levine MA. A mouse model of albright hereditary osteodystrophy generated by targeted disruption of exon 1 of the *Gnas* gene. *Endocrinology.* 2005; 146(11):4697-709. PMID 16099856.

4. **Crane JL**, Axelman J, Shablott MJ, Hsu S, Levine MA, Germain-Lee EL. Imprinting status of $G\alpha_s$, NESP55, and $XL\alpha_s$ in cell cultures derived from human embryonic germ cells: GNAS imprinting in human embryonic germ cells. *Clin Transl Sci.* 2009; 2(5):355-60. PMID 20443919.
5. Xian L, Wu X, Pang L, Lou M, Rosen C, Qiu T, **Crane J**, Frassica F, Zhang L, Rodriguez JP, Jia X, Yakar S, Xuan S, Efstratiadis A, Wan M and Cao X. Matrix IGF-1 regulates bone mass by activation of mTOR in mesenchymal stem cells. *Nat Med.* 2012; 18(7):1095-101. PMID 22729283.
6. Yu B, Zhao X, Yang C, **Crane J**, Xian L, Lu W, Wan M, and Cao X. PTH Induces Differentiation of Mesenchymal Stem Cells by Enhancing BMP Signaling. *J Bone Miner Res.* 2012; 27(9):2001-14. PMID 22589223.
7. Zhen G, Wen C, Jia X, Li Y, **Crane JL**, Mears SC, Askin FB, Frassica FJ, Chang W, Yao J, Nayfeh T, Johnson C, Artemov D, Chen Q, Zhou X, Cosgarea A, Carrino J, Wan M, Lu WW, Cao X. Inhibition of TGF β signaling in subchondral bone mesenchymal stem cells prevents onset of osteoarthritis. *Nat Med.* 2013; 19(6):704-12. PMID 23685840.
8. **Crane JL**, Zhao L, Frye JS, Xian L, Qiu T Cao X. IGF-1 signaling is essential for differentiation of mesenchymal stem cells for peak bone mass. *Bone Res.* 2013; 2:186-194. doi: 10.4248/BR201302007.
9. Li C, Xing Q, Yu B, Xie H, Wang W, Shi C, **Crane JL**, Cao X, Wan M. Disruption of LRP6 in osteoblasts blunts the bone anabolic activity of PTH. *J Bone Miner Res.* 2013; 28(10):2094-108. PMID 23609180.
10. **Crane JL**, Cao X. Function of matrix IGF-1 in coupling bone resorption and formation. *J Mol Med.* 2014; 92(2):107-15. PMID 24068256.
11. **Crane JL**, Cao X. Bone marrow mesenchymal stem cells and TGF β signaling in bone remodeling. *J Clin Invest.* 2014; 124(2):466-72. PMID 24487640.
12. Qiu T, Xian L, **Crane J**, Wen C, Hilton M, Newman P, Lu W, Cao X. PTH receptor signaling in osteoblasts regulates endochondral vascularization in maintenance of postnatal growth plate. *J Bone Miner Res.* 2014 Sep 8. doi: 10.1002/jbmr.2327. PMID: 25196529.
13. Xie H, Cui Z, Wang L, Xia Z, Hu Y, Xian L, Li C, Xie L, **Crane J**, Wan M, Zhen G, Bian Q, Yu B, Chang W, Qiu T, Pickarski M, Duong LT, Windle JJ, Luo X, Liao E, Cao X. PDGF-BB secreted by preosteoclasts induces angiogenesis during coupling with osteogenesis. *Nat Med.* 2014 Oct 5. doi: 10.1038/nm.3668. PMID:25282358.

Inventions, Patents, Copyrights

NA

Extramural Funding (current, pending, previous)

Current

NIH/NIAMS 1K08AR064833-01A1

Role: Principal Investigator

Period: 5/16/2014-4/30/2019

Title: Temporal-Spatial Regulation of MSCs by IGF-1

Goal: Determine the temporal-spatial regulation, including regulation of key signaling pathways of mesenchymal stem cell differentiation into mature osteoblasts that change over the lifespan

Pediatric Endocrine Society Clinical Scholar Award

Role: Principal Investigator

Period: 7/1/2013-6/30/15

Title: Temporal-Spatial Regulation of MSCs by IGF-1

Goal: Determine the key signaling pathways in the temporal-spatial regulation of MSCs that contribute to the acquisition of bone mass during childhood

NIH Loan Repayment Program

Role: Principal Investigator

Period: 7/1/2013-6/30/15

Title: Temporal-Spatial Regulation of MSCs by IGF-1

Goal: Determine the key signaling pathways in the temporal-spatial regulation of MSCs that contribute to the acquisition of bone mass during childhood

Previous

NIH/NIAMS 1R01AR063943-01A1

Xu Cao (PI)

Role: Co-Investigator

Period: 7/12/2013-5/5/2014

Title: TGF-beta activity in the subchondral bone and onset of OA

Goal: Delineate the role of TGF β in subchondral bone and articular cartilage in mouse models and human sample in relation to the pathogenesis of osteoarthritis

NIH/NIDDK 5T32DK007751-15

Sally Radovick (PI)

Role: Post-doctoral clinical fellow

Period: 07/01/2011-06/30/2013

Title: Interdepartmental Training Program in Cellular and Molecular Endocrinology

Goal: Training in research skills relevant to pediatric endocrinology

Research Program Building / Leadership

NA

EDUCATIONAL ACTIVITIES

Educational Publications

Book Chapters:

Crane JL, Xian L, Cao X. Role of TGF β signaling in coupling bone remodeling. In Fen XH (ed) *Methods in Molecular Biology: TGF-beta signaling*. 2013. Springer. *In Press*.

Teaching

Classroom instruction (dates, course title, role, location)

- 12/10/2010 - Genes to Society – Endocrine Section. Adrenal cases small group discussion to 2nd year medical students. Small group facilitator. Johns Hopkins University School of Medicine, Baltimore, MD

Clinical instruction (dates, course title, role, location)

- 12/07/2010 - Evaluation of a breast mass in an adolescent female. Combined Adolescent-Pediatric Endocrine Clinical Case Conference. Presenter. Johns Hopkins University, Baltimore, MD.
- 04/21/2011 - Neonatal Hypoglycemia for the Neonatologist. Neonatology Fellow Lecture Series. Presenter. Johns Hopkins University School of Medicine, Baltimore, MD
- 05/19/2011 - Neonatal Hypoglycemia for the Pediatric Endocrinologist. Pediatric Endocrinology Clinical Conference. Presenter. Johns Hopkins University School of Medicine, Baltimore, MD
- 06/23/2011 – Fibrous dysplasia in McCune Albright Syndrome. Endocrinology Clinical Case Conference. Presenter. National Institute of Health, Bethesda, MD.
- 06/07/2012 – Assessment and treatment of low bone mass in adolescents. Combined Adolescent-Pediatric Endocrine Clinical Case Conference. Presenter. Johns Hopkins University, Baltimore, MD.
- 04/25/2013 – Bone mass patterns and current therapies for low bone mass during childhood. Pediatric Endocrinology Clinical Conference. Presenter. Johns Hopkins University School of Medicine, Baltimore, MD
- 01/09/2014 – Pediatrics and Osteoporosis. Pediatric Resident Research Conference. Presenter. Johns Hopkins University, Baltimore, MD.
- 01/28/2014 – Introduction to Basic Bone Biology and Pediatric Bone Disorders. Pediatric Endocrinology Fellows Core Lecture Series. Presenter. Johns Hopkins University, Baltimore, MD.

- 3/17/2014 – Vitamin D deficient rickets. Resident teaching attending conference. Presenter. Johns Hopkins University, Baltimore, MD.
- 8/22/2014 – 15 yo previously healthy male with hypertensive urgency and diaphoresis. Pediatric Case Conference. Expert discussant. Johns Hopkins University, Baltimore, MD.
- 9/12/2014 – 23 month old with multiple rib fractures. Barton Child's Case Conference. Expert discussant. Johns Hopkins University, Baltimore, MD.

CME instruction (dates, course title, role, location)

- 10/1/2010-9/30/2013 – Pediatric Endocrine Clinical Conference. Clinical On-service Fellow/Presenter (36 times over the three year fellowship program). Johns Hopkins University, Baltimore, MD.
- 05/02/2012 - Role of Igf-1 receptor in mesenchymal stem cell proliferation and differentiation and impact on endochondral ossification. Endocrine Seminars. Presenter. Johns Hopkins University, Baltimore, MD.
- 03/20/2013 – Introduction to Basic Bone Biology. Endocrine Seminars/Endocrine Grand Rounds. Presenter. Johns Hopkins University, Baltimore, MD.
- 04/08-2014 – Bone Health: When is there a problem? Pediatric Trends. Presenter. Johns Hopkins University, Baltimore, MD.

Workshops /seminars (dates, course title, role, location)

- 12/07/2009 – Clinical case presentation on fatty acid oxidation disorders. Professor Rounds – Presenter. Children's Mercy Hospital and Clinics, Kansas City, MO.
- 10/21/2011 - Effect of Iron on FGF23 levels in Autosomal Dominant Hypophosphatemic Rickets. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 03/02/2012 – Directing mesenchymal stem cells to bone to augment bone formation and increase bone mass. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 06/01/2012 - Inhibition of IGF-1 Expression by Prolonged TGF- β 1 Administration Suppresses Osteoblast Differentiation. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 09/21/2012 – Intermittent PTH injection improves short stature in mouse model of achondroplasia. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 02/01/2013 – Impaired GH secretion in patients with SHOX mutations and efficacy of treatment. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 06/07/2013 – Multiple phases of chondrocyte enlargement underlie differences in skeletal proportions. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 09/24/2013 – Isolated congenital growth hormone deficiency. European Society for Pediatric Endocrinology Summer School. Presenter. Castello Dal Pozzo, Lake Maggiore, Italy.
- 10/18/2013 – The search for treatment options in Osteogenesis Imperfecta. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 03/21/2014 – *In vivo* role of sclerostin. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.
- 09/05/2014 – Mechanisms of osteocyte communication. Center for Musculoskeletal Research Journal Club. Presenter. Johns Hopkins University, Baltimore, MD.

Mentoring (pre- and post-doctoral)

05/2012-08/2012, Joseph S. Frye, Johns Hopkins University, Diabetes and Research Training Center Summer Research Program. University of Missouri, Columbia, MO; current medical student. Anticipated graduation date 05/2015.

02/2013-6/2013. Luo Zhao. Johns Hopkins University Research elective. Peking Union Medical College, Beijing, China. Current medical student. Anticipated graduation date 06/2013.

03/2014-05/2014. Zixing Ye. Johns Hopkins University Research elective. Peking Union Medical College, Beijing, China. Current medical student. Anticipated graduation date 06/2014.

Educational Program Building / Leadership

3/6/2013. Internal review committee meeting for Ophthalmology Residency Program, fellow committee member

Education Extramural Funding

NA

CLINICAL ACTIVITIES

20% effort in Department of Pediatrics, Division of Endocrinology

Certification

- Medical, other state/government licensure (date, identification #)
Missouri, license number 2009006144
Maryland, temporary license number P25992
Maryland, license number D0075881
- Boards, other specialty certification (date, identification #)
Pediatrics, certificate number 97072
Pediatric Endocrinology, certificate number 1497

Clinical (Service) Responsibilities (dates, specialty, role, time commitment)

Clinic Attending, half-day clinic per week in Pediatric Endocrinology
In-patient/Consulting Attending, 6 weeks per year for Pediatric Endocrine Service

Clinical Program Building / Leadership (dates, name of clinical program, role)

05/2014, Center for Bone Health, Division of Pediatric Endocrinology, JHU at GBMC clinic, Co-Director

Clinical Extramural Funding

NA

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation and Quality Improvement Publications

NA

System Innovation and Quality Improvement efforts within JHM:

9/2012 – 7/2014, Rate of Influenza Immunization of type 1 diabetes mellitus in Johns Hopkins Pediatric Diabetes Clinic, Co-investigator, data collection prior to and after intervention.

System Innovation and Quality Improvement efforts outside of JHM:

2008-2010, Family as Faculty: Advancing Patient Centered Care, Children's Mercy Hospitals and Clinics Kansas City, MO. Resident consultant for educational intervention strategies.

Production of guidelines and/or protocols:

NA

System Innovation and Quality Improvement Program Building/Leadership:

NA

Systems Innovation and Quality Improvement Extramural Funding:

NA

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments (date, committees)

NA

Editorial Activities (dates, role)

2013 Ad hoc reviewer for *PLOS ONE*
2014 Ad hoc reviewer for *Journal of Cystic Fibrosis*

Advisory Committees, Review Groups/Study Sections (date, sponsor, role)

NA

Professional Societies (date, membership, committees, role)

2006 - 2010 American Academy of Pediatrics member
2010 - Pediatric Endocrine Society member
2010 - 2013 Endocrine Fellows Foundation member
2011 - American Society for Bone and Mineral Research member
2012 - International Chinese Musculoskeletal Research Society member
2013- European Society for Pediatric Endocrinology member

Conference Organizer, Session Chair (date, sponsor, role)

NA

Consultantships (date, organization/agency, role)

NA

RECOGNITION

Awards, Honors (date, title, description, sponsor)

1997-2001 Curators Scholars Award
1997-2001 Missouri Higher Education Academic Scholarship (Bright Flight)
1997-2001 Dean's List-University of Missouri-Columbia
1999 Department of Nutritional Sciences Undergraduate Research Scholar
2000 University of Missouri Life Sciences Undergraduate Summer Research Fellowship
2004 Society for Pediatric Research and American Pediatric Society Summer Research Fellow
2004 Third Place in the Poster Presentation at 27th Annual Medical Student Research Day, University of Maryland School of Medicine
2005 Student Research Program Travel Award, Pediatric Academic Societies' Annual Meeting, Washington D.C
2005 The Secretary's Award for Innovations in Health Promotion and Disease Prevention, Second place in the Interdisciplinary National Competition. United States Department of Health and Human Services. Project entitled "University of Maryland's Interdisciplinary Framework for Prevention and Intervention in Maternal and Child Health"
2012 Travel Grant for Pediatric Endocrine Society Annual Meeting. Boston, MA.
2013 European Society for Pediatric Endocrinology Summer School Award Recipient.
2013 Travel Grant for 9th Joint Meeting of Pediatric Endocrinology. Milan, Italy.
2014 Passano Physician Scientist Award

Invited Talks, Panels (date, title, venue, sponsor)

June 30, 2013. Pediatric Endocrinology and Bone Disorders. Frontiers in Bone Metabolism, Stem Cells, Viruses, and Cancers. The 1st International Biomedical Forum of West China. Shihezi University School of Medicine. Shihezi, Xinjiang, China.

OTHER PROFESSIONAL ACCOMPLISHMENTS

NA