

Curriculum vitae

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Name: Courtney M. Karner, PhD

Office Address: 5323 Harry Hines Blvd. F5.102A
Dallas TX 75390

Work Phone: (214) 648-8777

Work E-Mail: Courtney.Karner@UTSouthwestern.edu

Place of Birth: Lincoln, NE

Education

Year	Degree (Honors)	Field of Study (Thesis advisor for PhDs)	Institution
2004	B.S.	Biology	East Central University
2009	Ph.D.	Genetics and Developmental Biology (Thomas J Carroll)	University of Texas Southwestern Medical Center

Postdoctoral Training

Year(s)	Titles	Specialty/Discipline (Lab PI for postdoc research)	Institution
2010-2015	Postdoctoral Fellow	Orthopaedic Research and Cell Biology (Fanxin Long)	Washington University School of Medicine

Honors and Awards

Year	Name of Honor/Award	Awarding Organization
1999	Scholar/Athlete Award	National Football Foundation & College Hall of Fame – Oklahoma Chapter
2001	All-Academic Honorable Mention	Lone Star Conference
2002	All-Academic First Team	Lone Star Conference
2003	All-Academic First Team	Lone Star Conference
2003	Academic All- American	College Sports Information Directors of America (CoSIDA)

2003	Frank G. Brooks Award for Excellence in Student Research	Beta Beta Beta - Biological Honor Society
2004	Scholar Athlete of the Year	Lone Star Conference
2004	Top 10 Graduating Senior	East Central University
2010	Nominata Award	University of Texas Southwestern Medical Center
2011	Viktor Hamburger Award	Washington University School of Medicine
2016	Harold M. Frost Young Investigator Award	American Society for Bone and Mineral Research (ASBMR)
2017	Joe B. Milam Award	East Central University
2017	John Haddad Young Investigator Award	Advances in Mineral Metabolism (AIMM) and ASBMR

Faculty Academic Appointments

Year(s)	Academic Title	Department	Academic Institution
09/2015-04/2020	Assistant Professor	Orthopaedic Surgery Cell Biology	Duke University
05/2020-10/2020	Associate Professor	Orthopaedic Surgery Cell Biology	Duke University
11/2020-Present	Associate Professor	Internal Medicine	University of Texas Southwestern Medical Center
03/2023-Present	Associate Professor with Tenure	Internal Medicine	University of Texas Southwestern Medical Center

Committee Service (*Member, unless noted otherwise*)

Year(s)	Name of Committee	Institution/Organization
2016	Department of Orthopaedic Surgery Ortho/Engineering Faculty Search Committee	Duke University
2017	Department of Orthopaedic Surgery Trauma Surgeon Search Committee	Duke University
2017-2020	Cell and Molecular Biology (CMB) Graduate Admissions Committee	Duke University
2019	Regeneration Next Initiative (RNI) Postdoctoral Fellowship Committee	Duke University
2022-Present	VA-CDA2 Career Development Award, Mentoring Committee for Dr. Jessica Hathaway-Schrader	Medical University of South Carolina

2022-Present	Propel Mentorship Program, Mentoring Committee for Dr. Robert Tower	University of Texas Southwestern Medical Center
2022-Present	OK-INBRE External Advisory Committee	University of Oklahoma Health Sciences Center
2023-Present	Genetics, Development and Disease (GDD) Graduate Program Steering Committee	University of Texas Southwestern Medical Center
2023-Present	Faculty Mentoring Committee for Dr. Ruban Dhaliwal	University of Texas Southwestern Medical Center

Professional Societies

Dates	Society Name, member
2010-Present	Society for Developmental Biology (SDB), member
2012-Present	American Society for Bone and Mineral Research (ASBMR), member
2015-2017	American Society for Biochemistry and Molecular Biology (ASBMB), member
2015-Present	Orthopaedic Research Society (ORS), member
2017-Present	Advances in Mineral Metabolism (AIMM), member

Grant Review Activities

Year(s)	Name of Review Committee	Organization
2016	Medical Research Council	United Kingdom
2017	Translational Research Institute (TRI)	National Aeronautics and Space administration (NASA)
2017	Czech Science Foundation	Czech Republic
2018	Human Exploration and Operations (HERO) Mission review Panel	National Aeronautics and Space administration (NASA)
2018	MEDx Translating Duke Health Pilot Project	Duke University
2020	Medical Research Council	United Kingdom
2020	MEDx Biomechanics of Injury or Injury Repair Pilot Project	Duke University
2021 (June)	Skeletal Biology, Structure & Regeneration (ad hoc)	National Institutes of Health
2021-Present	Rare Bone Disease Program of Texas - Lawrence Award Research Applications	Baylor College of Medicine, MD Anderson Cancer Center and University of Texas Health Sciences Center (McGovern Medical and Dental Schools)
2022 (Feb)	Skeletal Biology, Structure & Regeneration (ad hoc)	National Institutes of Health
2022	CTSA Translational Pilot Grants Program	UT Southwestern Medical Center
2022 (June)	Skeletal Biology, Development and Disease (ad hoc)	National Institutes of Health

Editorial Activities

Year(s)	Journal Name
<u>Editor/Associate Editor</u>	
2021	JoVE Methods Collection on Metabolic Pathways (Guest Editor)
<u>Editorial Board</u>	
2018-Present	<i>Journal of Bone and Mineral Research (JBMR)</i>
2018-Present	<i>JBMR-Plus</i>
<u>Ad Hoc Reviewer</u>	
	<i>Aging Cell</i>
	<i>Aging and Disease</i>
	<i>American Journal of Pathology</i>
	<i>Antioxidants</i>
	<i>Apoptosis</i>
	<i>Biomaterials</i>
	<i>Bone</i>
	<i>Bone Reports</i>
	<i>Bone Research</i>
	<i>Cell Reports</i>
	<i>Cell Research</i>
	<i>Connective Tissue Research</i>
	<i>Developmental Dynamics</i>
	<i>Developmental Biology</i>
	<i>FASEB Journal</i>
	<i>Journal of Biomechanics</i>
	<i>Journal of Bone and Mineral Research (JBMR)</i>
	<i>JBMR-Plus</i>
	<i>Journal of Cellular Biochemistry</i>
	<i>Journal of Cellular Physiology</i>
	<i>Journal of Clinical Investigation Insight</i>
	<i>Journal of Orthopaedic Research</i>
	<i>Laboratory Investigation</i>
	<i>Life Science Alliance</i>
	<i>Molecular Metabolism</i>
	<i>Nature Communications</i>
	<i>Nature Metabolism</i>
	<i>Nutrients</i>
	<i>Organogenesis</i>
	<i>Pharmacological Research</i>

	<i>Physiological Genomics</i>
	<i>Public Library of Science (PLoS) – One</i>
	<i>Science Advances</i>
	<i>Scientific Reports</i>

Grant Support

<u>Present</u>	NIAMS R01-AR071967
	“Role of Glutamine Metabolism During Osteoblast Differentiation and Bone Formation”
	Principal Investigator (30% effort)
	\$220,000/yr
	\$1,100,000 (direct costs) - 04/01/2018-12/31/2023
	Renewal received impact score 27 – 9% 6/20/2023
	NIAMS R01-AR076325
	“The Role of Proline Metabolism During Osteoblast Differentiation and Bone Formation”
	Principal Investigator (20% effort)
	\$198,000/yr
	\$990,000 (direct costs) - 8/10/2020-07/31/2025
	NIAMS R21-AR078399
	“A Metabolic Strategy Utilizing a Zein Scaffold for Bone Repair”
	Co-Investigator (15% effort)
	\$27,097 – 2021. \$95,929 – 2022.
	05/01/2021 – 04/30/2024
	DoD OR220107
	“Glutamine targeted therapies to prevent traumatic heterotopic ossification.”
	Principal Investigator (5% effort)
	\$442,073 (Direct Costs)
	06/15/2023 – 06/14/2026
	NIAMS
	“Regulation of notochord vacuole biogenesis: investigating its role in IVD biology and chordoma.”
	Co-Investigator (10% effort)
	\$61,000/yr (Direct Costs) – Received impact score 19 – 5% - 6/20/2023
	Clinical and Translational Science Award (NCATS 1UL1TR003163)
	“Contribution of bone to lower diabetes risk after lactation ends”

	Co-Investigator
	\$50,000
	Endowed Professors' Collaborative Research Support from the Charles Y.C. Pak Foundation
	"Evaluation of the ability of a GOT1 inhibitor to stimulate bone formation and inhibit bone resorption."
	Principal Investigator
	\$125,000
	07/01/2023-12/31/2024
	Cancer & Bone Initiative from the Charles Y.C. Pak Foundation
	"The role of prostate specific membrane antigen in the bone metastatic niche."
	Co-Principal Investigator
	\$125,000
	07/01/2023-12/31/2024
<u>Pending</u>	
	"Metabolic regulation of osteoclast differentiation and bone resorption."
	Principal Investigator (30% effort)
	\$431,754/yr (direct costs)
	01/01/2024-12/31/2029

<u>Past</u>	NIAMS F32-AR060674
	"Elucidating the Relationship Between Notch and WNT Signaling in Bone Formation"
	Principle Investigator (100% effort)
	\$48,398 – 2011, \$51,326 – 2012, \$53,042 – 2013.
	4/01/2011 – 03/31/2014
	Endowed Professors' Collaborative Research Support from the Charles Y.C. Pak Foundation
	"Determining the effect of estrogens on amino acid metabolism and bone formation in osteoblasts."
	Principal Investigator
	\$75,000
	11/01/2021-04/30/2023

Teaching Activities

Year(s)	Activity
	<u>Medical and graduate school didactic and small group teaching</u>
2017	Duke University - CBI 702: Cell Biology Grant Review, 1 Lecture, reviewed 10 grants

2018-2020	Duke University - CMB 710: Mechanisms of skeletal biology and disease. Designed and delivered module consisting of 6 Lectures.
2021-Present	UTSW - Developmental Principles in Regenerative Science and Medicine, Topic: Bone Development. 1 Lecture.
2023	UTSW – GD 5155: GD&D Qual Exam and Hypothesis Driven Grantsmanship, Course Co-Director. 3 Lectures
2024-Present	UTSW – GD 5155: GD&D Qual Exam and Hypothesis Driven Grantsmanship, Course Director. 3 Lectures
<u>Dissertation committees</u>	
2017-2018	Michael Reinsvold – Duke University Biomedical Engineering (BME) M.S. Program, Mentor: Louis E. DeFrate.
2018-2019	Monique Goldsmith – Duke University Biomedical Engineering (BME) M.S. Program, Mentor: Louis E. DeFrate.
2016-2020	Jason Long - Duke University DSCB PhD Program, Mentor: Matthew J. Hilton.
2016-2021	Hongyuan “Hazel” Zhang – Duke University Development and Stem Cell Biology (DSCB) PhD Program, Mentor: Benjamin A Alman
2021	Guillaume Tournaire – Katholieke Universiteit (KU) Leuven, Advisor: Geert Carmeliet
2017-2022	Brianna Peskin - Duke University DSCB PhD Program, Mentor: Michel Bagnat.
2020-2022	Apurva Limaye – New Jersey Institute of Technology, Advisor: Treena Arinzeh
2020-Present	Dilara Anbarci – Duke University DSCB PhD Program, Advisor: Blanche Capel
2023-Present	Harrison Tom – UTSW Biomedical Sciences PhD Program
<u>Qualifying examination committees</u>	
2016	Jason Long - Duke University DSCB PhD Program
2016	Hongyuan “Hazel” Zhang - Duke University DSCB PhD Program,
2017	Brianna Peskin - Duke University DSCB PhD Program
2019	Wendi Guo - Duke University Pharmacology and Cancer Biology (PCB) PhD Program
2020	Dilara Anbarci – Duke University DSCB PhD Program
2022	Peter Luo – UTSW GD&D PhD Program
<u>Graduate student rotations</u>	
2016	Leyao Shen – Duke University DSCB PhD Program
2018	Dilara Anbarci – Duke University DSCB PhD Program
2018	Belinda Hernandez - Duke University DSCB PhD Program
2023	Nataliya Tod – UTSW MSTP Program
<u>Graduate student trainees</u>	
2016-2021	Leyao Shen, Duke University DSCB PhD Program
<u>Postdoctoral trainees</u>	
2017-2020	Deepika Sharma
2018-Present	Guoli Hu (2022 Harold M. Frost Award, 2022 ASBMR Young Investigator Award)
2021-2022	Leyao Shen (Currently DDS student at University of Michigan)
2023-Present	Logan Moore

Invited Lectures

Year(s)	Title	Location
<u>International</u>		
10/01/2018	“Glutamine metabolism is a critical regulator of osteoblast and adipocyte specification in skeletal stem cells.”	Canadian Shriners Hospital for Children and McGill University, Montreal, QC, Canada
09/10/2020	“Glutamine metabolism provides glutathione necessary for osteoblast differentiation in mice.”	International Bone Marrow Adiposity Society 2020 Annual Meeting, Seattle WA
02/06/2022	“Interrogating amino acid metabolism in osteoblasts: A new role for proline in bioenergetics”	Orthopaedic Research Society 2022 Annual Meeting, Workshop on Bioenergetics in Bone and Cartilage, Tampa FL
04/09/2022	“The role of glutamine uptake and metabolism in bone biology.”	Advances in Mineral Metabolism 2022 Annual Meeting, Session on Cell Bioenergetics and Metabolism, Aspen CO.
09/17/2022	“To build bone, Runx2 must mind it’s P’s and Q’s.”	Bones and Teeth Gordon Research Seminar Keynote Lecture, Ventura, CA.
11/10/2022	“The regulation of bone formation by glutamine metabolism.”	2022 FOP Drug Development Forum - Unifying FOP and Traumatic Heterotopic Ossification, Science + Families = A Cure, Dallas, TX
10/22/2023	“Amino acid metabolism and the control of osteoblast differentiation.”	Nephrology-Metabolism Symposium, Chang Gung Week 2023, Chang Gung Memorial Hospital, Taipei City, Taiwan.
09/26/2024	“Title TBD – Amino Acids and bone cells” – Skeletal Cell Metabolism Session.	Energy Metabolism in Skeletal Development and Disease, American Society for Bone and Mineral Research Symposium, Toronto, Ontario, Canada.
<u>National</u>		
04/19/2017	“Glutamine metabolism regulates the maintenance and specification of mesenchymal stem cells”	East Carolina Diabetes & Obesity Institute, East Carolina University, Greenville NC
06/03/2019	“Biphasic regulation of bone formation by glutamine metabolism.”	Department of Orthopaedic Surgery, Washington University School of Medicine, St. Louis MO
08/28/2019	“Biphasic regulation of bone formation by glutamine metabolism.”	Department of Oral Health Sciences, Medical University of South

		Carolina, College of Dental Medicine, Charleston SC
09/27/2021	“Proline metabolism fulfills synthetic and bioenergetic demands in osteoblasts.”	Center for Bone Biology, Vanderbilt University Medical Center, Nashville TN
03/29/2022	“Proline metabolism fulfills synthetic and bioenergetic demands in osteoblasts.”	Department of Cell and Molecular Biology, St. Jude Children’s Research Hospital, Memphis TN
01/12/2023	“The role of glutamine uptake and metabolism in bone biology.”	Tulane Center for Aging, Tulane School of Medicine, New Orleans LA
03/27/2023	“To build bone, Runx2 must mind it’s P’s and Q’s.”	Department of Biology, Lipscomb University, Nashville, TN
05/01/2023	“Glutamine metabolism and the control of osteoblast differentiation.”	National O’Brien Centers Kidney Seminars, Hosted by UT Southwestern Medical Center
07/12/2023	“Metabolic regulation of bone formation: Runx2 minds its P’s and Q’s.”	William F. Neuman Visiting Scientist Seminar Series. Center for Musculoskeletal Research, University of Rochester, Rochester NY
11/08/2023	“Glutamine metabolism and the control of osteoblast differentiation.”	NIH Matrix Biology Scientific Interest Group, Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD
<u>Regional/Local</u>		
02/26/2009	“Cell interactions and movements during development: the making and shaping of kidney tubules.”	NIH Bridges to the Baccalaureate, East Central University, Ada OK
04/09/2014	“Wnt induced glutamine metabolism is required for osteoblast differentiation.”	Interdisciplinary Seminar Series, University of Oklahoma Health Sciences Center, Oklahoma City OK
02/05/2019	“Glutamine metabolism is a critical regulator of osteoblast proliferation, specification and bone formation.”	Department of Molecular Biosciences, University of Texas, Austin TX
02/11/2019	“Interrogating glutamine metabolism during osteoblast differentiation and bone formation.”	Department of Nutritional Sciences, Oklahoma State University, Stillwater OK
06/12/2019	“Biphasic regulation of bone formation by glutamine metabolism.”	Center for Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas TX
04/22/2022	“Metabolic Regulation of Bone Formation.”	Charles Pak Symposium on Mineral Metabolism Research, UT

		Southwestern Medical Center, Dallas TX
09/16/2022	“Glutamine metabolism and the control of osteoblast differentiation”	Center for Organogenesis Research and Trauma, UT Southwestern Medical Center, Dallas TX

Service to the Community

Year(s)	Role	Organization or institution
2018	2018 Annual Meeting - Late-Breaking Basic/Translational Science Topics Session, Session Chair/Moderator	Advances in Mineral Metabolism
2019	2019 Annual Meeting - Crosstalk Between Bone and Other Joint Tissues Session, Moderator	Orthopaedic Research Society
2020	2020 Annual Meeting - Career Development Meet-the-Professor Session	Advances in Mineral Metabolism
2020	Abstract Reviewer for 2020 Annual Meeting	International Bone Marrow Adiposity Society
2020-Present	Abstract Reviewer for ASBMR Annual Meeting	American Society for Bone and Mineral Research (ASBMR)
2020-Present	Abstract Reviewer for ORS Annual Meeting	Orthopaedic Research Society (ORS)
2022	Abstract Reviewer for 2022 Southwest Regional Meeting	Society for Development Biology
2022	2022 Southwest Regional Meeting, Organizing Committee, Member	Society for Development Biology
2022-2025	Board member	Advances in Mineral Metabolism
2022	2022 Annual Meeting – Professional Development Meet-the-Professor Session (Building and Managing an Effective Research Team)	American Society for Bone and Mineral Research
2022-Present	UTSW liaison for the Rare Bone Disease Program of Texas.	Rare Bone Disease Program of Texas
2023	2023 Annual Meeting – Young Investigator Session, Session Chair	Advances in Mineral Metabolism
2023	ASBMR Publications Committee – <i>ex officio</i> member	American Society for Bone and Mineral Research

2023-2026	FASEB Publications Committee - ASBMR Representative	Federation of American Societies for Experimental Biology
2024-2026	ASBMR Publications Committee	American Society for Bone and Mineral Research
2023	2023 Annual Meeting – Basic/Translational Meet-the-Professor Session (Skeletal Cell Metabolism)	American Society for Bone and Mineral Research

Bibliography

Peer-Reviewed Publications

Students/trainees are underlined

1.	Ma, Z, Gong, Y, Patel, V, Karner, CM , Fischer, E, Hiesberger, T, Carroll, TJ, Pontoglio, M and Igarashi, P. Mutations of HNF1B inhibit epithelial morphogenesis through dysregulation of SOCS-3. <i>Proc Natl Acad Sci U S A</i> . 2007 Dec 18;104(51):20386-91. PMID: PMC2154440
2.	Karner CM , Chirumamilla R, Aoki S, Igarashi P, Wallingford JB, Carroll TJ. Wnt9b regulates convergent extension movements and oriented cell divisions during kidney morphogenesis. <i>Nature Genetics</i> , 2009 Jul;41(7):793-9. PMID: PMC2761080
3.	Li L, Zepeda-Orozco D, Patel V, Truong P, Karner CM , Carroll TJ, Lin F. Aberrant planar cell polarity induced by urinary tract obstruction. <i>Am J Physiol Renal Physiol</i> . 2009 Dec;297(6):F1526-33. PMID 19794107
4.	Karner CM* , Dietrich MF*, Johnson EB*, Kappesser N, Tennert C, Percin F, Wollnik B, Carroll TJ [§] , Herz J [§] . Lrp4 Regulates Initiation of Ureteric Budding and is crucial for kidney formation – a mouse model for Cenani-Lenz syndrome. <i>PLOS One</i> . 2010 Apr29;5(4):e10418. PMID 20454682.
5.	Karner CM , Merkel CE, Dodge M, Ma Z, Lu J, Chen C, Lum L, Carroll TJ. Tankyrase is necessary for canonical Wnt signaling during kidney development. <i>Developmental Dynamics</i> . 2010 Jul;239(7):2014-23. PMID 205449720
6.	Smeeton J, Zhang X, Bulus N, Mernaugh G, Lange A, Karner CM , Carroll TJ, Fassler R, Pozzi A, Rosenblum ND, Zent R. Integrin-linked kinase regulates p38 MAPK-dependent cell cycle arrest in ureteric bud development. <i>Development</i> . 2010 Oct;137(19):3233-43. PMID:20823064
7.	Karner CM , Das, A, Ma Z, Self M, Chen C, Lum L, Oliver G, Carroll TJ. Canonical Wnt9b signaling regulates progenitor cell expansion during renal development. <i>Development</i> . 2011 Apr;138(7):1247-57. PMID 21350016
8.	Ferretti E, Li B, Zewdu R, Wells V, Herbert JM, Karner C , Anderson MJ, Williams T, Dixon J, Dixon MJ, Depew MJ, Selleri L. A conserved Pbx-Wnt-p63-Irf6 regulatory module controls face morphogenesis by promoting epithelial apoptosis. <i>Developmental Cell</i> . 2011 Oct 18;21(4):627-41. PMID:21982646
9.	Tu X, Chen J, Lim J, Karner CM , Lee SY, Heisig J, Wiese C, Surendran K, Kopan R, Gessler M, Long F. Physiological notch signaling maintains bone homeostasis via RBPjk and Hey upstream of NFATc1. <i>PLoS Genetics</i> . 2012;8(3):e1002577. PMID:22457635

10.	Dodge ME, Moon J, Tuladhar R, Lu J, Jacob LS, Zhang LS, Shi H, Wang X, Moro E, Mongera A, Argenton F, Karner CM , Carroll TJ, Chen C, Amatruda JF, Lum L. Diverse chemical scaffolds support direct inhibition of the membrane-bound O-acyltransferase porcupine. <i>J Biol Chem.</i> 2012 Jun 29;287(27):23246-54. PMID:22593577
11.	Lienkamp SS, Liu K, Karner CM , Carroll TJ, Ronnenberger O, Wallingford JB, Walz G. Vertebrate kidney tubules elongate using a planar cell polarity-dependent, rosette based mechanism of convergent extension. <i>Nature Genetics</i> 2012 Dec;44(12):1382-7. PMID:23143599
12.	Esen E, Chen J, Karner CM , Okunade A, Patterson B, Long F. Wnt-LRP5 signaling induces Warburg effect through mTORC2 activation during osteoblast differentiation. <i>Cell Metabolism</i> 2013 May 7;17(5):745-55. PMID:23623748
13.	Das, A, Tanigawa S, Karner CM , Xin M, Lum L, Chen C, Olson EN, Perantoni A, Carroll TJ. Stromal-epithelial cross talk regulates kidney progenitor cell differentiation. <i>Nature Cell Biology</i> 2013 Sep;15(9):1035-44. PMID:23974041
14.	Karner, CM , Esen E, Okunade A, Patterson BW, and Long F. Increased glutamine catabolism mediates bone anabolism in response to Wnt signaling. <i>J Clin Invest.</i> 2015 Feb;125(2):551-62. PMID:25562323
15.	Pan, X, Schnell U, Karner, CM , Small EV, Carroll TJ. A Cre-inducible fluorescent reporter for observing apical membrane dynamics. <i>Genesis.</i> 2015 Mar-Apr;53(3-4):285-93. PMID:25809849
16.	Shi Y, Chen J, Karner CM , Long F. Hedgehog signaling activates a positive feedback mechanism involving insulin-like growth factors to induce osteoblast differentiation. <i>Proc Natl Acad Sci U S A.</i> 2015 Apr 14;112(15):4678-83. PMID:25825734
17.	Karner CM , Long F, Solnica-Krezel L, Monk KR, and Gray RS. GPR126/Adgrg6 deletion in cartilage models human adolescent idiopathic scoliosis and pectus excavatum in mice. <i>Hum Mol Genet.</i> 2015 Aug 1;24(15):4365-73. PMID:25954032
18.	Caprioli A, Villasenor A, Wylie LA, Braitsch C, Marty-Santos L, Barry D, Karner, CM , Fu S, Meadows SM, Carroll TJ, Cleaver O. Wnt4 is essential to normal mammalian lung development. <i>Dev Bio.</i> 2015 Oct 15;406(2):222-34. PMID:26321050
19.	Lim J, Shi Y, Karner CM , Lee SY, Lee WC, He G, Long F. Dual function of Bmpr1a signaling in restricting preosteoblast proliferation and stimulating osteoblast activity in mouse. <i>Development.</i> 2016 Jan 15;143(2):339-47. PMID: 26657771
20.	Karner, CM , Esen E, Chen J, Hsu F, Turk J, Long F. Wnt Protein Signaling Reduces Nuclear Acetyl-CoA Levels to Suppress Gene Expression during Osteoblast Differentiation. <i>J Biol Chem.</i> 2016 Jun 17;291(25):13028-39. PMID:27129247
21.	Karner, CM , Lee, SY, Long F. Bmp induces osteoblast differentiation through both Smad4 and mTORC1 signaling. <i>Mol and Cell Biol.</i> 2017 Feb 1;37(4). pii: e00253-16. PMID:27920253
22.	Pan X, Karner CM , Carroll TJ. Myc cooperates with beta-catenin to determine nephron progenitor cell fate. <i>Development.</i> 2017 Oct 9. Pii:dev.153700. doi: 10.1242/dev.153700. PMID:28993399
23.	Cao C, Ren Y, Miranda AJ, Barnett A, Rouse D, Mun SH, Park-Min KH, McNulty AL, Guilak F, Karner CM , Hilton MJ, Pitt GS. Increased Ca ²⁺ signaling through Cav1.2 L-type Ca ²⁺ channels promotes bone formation and prevents estrogen deficiency-induced bone loss. <i>J Clin Invest Insight.</i> 2017;2(22):e95512. PMID: 29202453
24.	<u>Yu Y</u> , <u>Newman H</u> , <u>Shen L</u> , <u>Sharma D</u> , <u>Hu G</u> , <u>Mirando AJ</u> , <u>Zhang H</u> , <u>Knudsen E</u> , <u>Zhang GF</u> , <u>Hilton MJ</u> , Karner CM . Glutamine metabolism regulates proliferation and lineage allocation

	in skeletal stem cells. <i>Cell Metabolism</i> . 2019 Apr;29(4):966-978.e4. doi: 10.1016/j.cmet.2019.01.016. PMID:30773468
25.	Dickinson KK, Hammond LC, Karner CM , Hastie ND, Carroll TJ, Goodyer PR. Molecular determinants of WNT9B responsiveness in nephron progenitor cells. <i>PLoS One</i> . 2019 Apr 12;14(4):e0215139. Doi: 10.1371/journal.pone.0215139. eCollection 2019. PMID:30978219
26.	Heden TD, Johnson JM, Ferrara PJ, Eshima H, Verkerke ARP, Wentzler EJ, Siripoksup P, Narowski TM, Coleman CB, Lin CT, Ryan TE, Reidy PT, de Castro Bras LE, Karner CM , Burant CF, Maschek JA, Cox JE, Mashek DG, Kardon G, Boudina S, Brault JJ, Zeczycki TN, Shaikh SR, Vance JE, Drummond MJ, Neuffer PD, Funai K. Mitochondrial PE potentiates respiratory enzymes to amplify skeletal muscle aerobic capacity. <i>Science Advances</i> . 2019 Sep 11;5(9):eaax8352. doi: 10.1126/sciadv.aax8352. eCollection 2019 Sep. PMID:31535029
27.	<u>Hu G</u> , <u>Yu Y</u> , Tang Y, Wu C, Long F, Karner CM . The amino acid sensor <i>Eif2ak4/GCN2</i> is required for proliferation of osteoblast progenitors in mice. <i>Journal of Bone and Mineral Research</i> . 2020 Oct;35(10):2004-2014. doi:10.1002/jbmr.4091. PMID: 32453500
28.	<u>Shen L*</u> , <u>Sharma D*</u> , <u>Yu Y</u> , Long F, Karner CM . Biphasic regulation of glutamine consumption by WNT during osteoblast differentiation. <i>Journal of Cell Science</i> . 2021 Jan 11;134(1):jcs251645. doi:10.1242/jcs.251645. PMID:33262314
29.	Collins AT*, <u>Hu G*</u> , <u>Newman H</u> , Reinsvold MH, Goldsmith MR, Twomey-Kozak JN, Leddy HA, <u>Sharma D</u> , <u>Shen L</u> , DeFrate LE, Karner CM . Obesity alters the collagen structure and mechanical properties of cartilage in mice. <i>Scientific Reports</i> . 2021 Jan 15;11(1):1626. doi:10.1038/s41598-020-80599-1. PMID:33452305
30.	Johnston RA, Vullioud P, Thorley J, Kirveslahti H, <u>Shen L</u> , Mukherjee S, Karner CM , Clutton-Brock T, Tung J. Morphological and genomic shifts in mole-rat queens increase fecundity but reduce skeletal integrity. <i>eLife</i> . 2021 Apr 12;10:e65760. Doi: 10.7554/eLife.65760. PMID: 33843584.
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