

## PERSONAL INFORMATION

Name: Robert Joel Tower  
Citizenship: Canada  
Language(s): English (native), German (basic)

## RANK/TITLE

Rank: Assistant Professor  
Department: Surgery  
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## EDUCATION

2015 PhD Diagnostic Radiology  
Christian Albrechts University, Kiel, Germany  
2012 MSc Cell Biology  
University of Alberta, Edmonton, AB, Canada  
2008 BSc Specialization in Molecular Genetics  
University of Alberta, Edmonton, AB, Canada

## POSTDOCTORAL TRAINING

2019-2021 Johns Hopkins University, Department of Orthopaedic Surgery, Baltimore, MD  
Role of sensory nerves in bone development  
2016-2019 University of Pennsylvania, McKay Orthopaedic Research Lab, Perelman School of Medicine, Philadelphia, PA  
Bioinformatic dissection of bone lineage cells  
2015-2016 KU Leuven, Skeletal Biology and Engineering Research Center, Department of Development and Regeneration, Leuven Belgium  
Postdoctoral Fellowship, The Research Foundation-Flanders (FWO)  
Role of osteogenic PDGFR $\beta$  in fracture repair

## ACADEMIC APPOINTMENTS

2023-present McDermott Center for Human Growth and Development, University of Texas Southwestern Medical Center, Dallas TX (secondary appointment)  
2022-present Charles and Jane Pak Center for Mineral Metabolism, University of Texas Southwestern Medical Center, Dallas TX (secondary appointment)  
2021-present Assistant Professor. Center for Organogenesis, Regeneration and Trauma, Department of Surgery, University of Texas Southwestern Medical Center, Dallas TX

## AWARDS/HONORS

2022 ASBMR Harold M Frost Young Investigator Award  
2022 UTSW Faculty of Surgery Pilot Award  
2021 ASBMR Young Investigator Award  
2021 Journal of Clinical Investigation editorial board scholar  
2018 UPenn Art in Science Award  
2018 ICMRS Webster Jee Young investigator award  
2018 ASBMR Young Investigator Travel Award  
2018 ORS New Investigator Research Award (NIRA) Finalist

2018	UPenn Biomedical Postdoc Program travel grant
2018	Regeneron Prize University Finalist
2017	Penn Center for Musculoskeletal Disorders Seed Grant
2016	Research Foundation-Flanders (FWO) 3-year Postdoctoral Fellowship
2016	ECTS/ASBMR travel grant
2014	German Society of Senology Science Award
2013	ECTS 50th Anniversary Travel Grant
2011	Faculty of Medicine and Dentistry 75th Anniversary Award
2011	Faculty of Graduate Studies Professional Development Grant
2010	Alberta Advanced Education and Technology Advanced Student Scholarship
2008	Rise-pro Industrial Internship Award (DAAD)

### **PROFESSIONAL SOCIETIES**

2022	Shock Society
2018-present	Orthopedic Research Society (ORS)
2018-present	The American Society for Bone and Mineral Research (ASBMR)
2012-2015	European Calcified Tissue Society
2012-2015	World Molecular Imaging Society
2012-2015	European Society for Molecular Imaging

### **PROFESSIONAL ACTIVITIES**

#### Invited Talks

2023	“Spatial transcriptomic profiling reveals local and domain-establishing regulatory signaling networks within the bone marrow”. 10x Genomics Spatial/In Situ Day, Dallas, TX
2023	“Spatial transcriptomic analysis of the bone marrow microenvironment”. McDermott Center Seminar Series, UTSW, Dallas, TX
2023	“Spatial transcriptomic profiling reveals local and domain-establishing regulatory signaling networks within the bone marrow”. COBRE Aging Seminar Series, Tulane University Center for Aging, New Orleans, LA
2022	“Itaconate-producing neutrophils regulate local and systemic inflammation following trauma”. Children’s Research Institute Annual Retreat, Dallas, TX
2022	“Technology update: established methods and new frontiers in molecular histology and spatial omics – where do we stand in musculoskeletal research?” IFMRS Herbert Fleisch Workshop, Bruges, Belgium
2022	“Spatial Transcriptomics in Musculoskeletal Research”. Chinese Agricultural University. Beijing, China
2021	“Spatial Transcriptomics in Bone Development, Homeostasis and Regeneration”. Tulane University Center for Aging. New Orleans, LA
2021	“Spatial Transcriptomics in Bone Development, Homeostasis and Regeneration”. Touchstone Diabetes Center UTSW. Dallas, TX
2021	“Spatial Transcriptomics in Musculoskeletal Research”. Breaking Spatial Barriers with Visium Spatial Solutions 10X Genomics (virtual)
2021	“Spatial Transcriptomics in Bone Development, Homeostasis and Regeneration”. Charles and Jane Pak Center for Mineral Metabolism UTSW. Dallas, TX

2021 “Mapping the healing response following musculoskeletal trauma” UTSW, Department of Dermatology. Dallas, TX

Oral Presentations

2023 “Itaconate-producing neutrophils regulate local and systemic inflammation following trauma”. Advances in Mineral Metabolism. Snowmass, CO, USA

2022 “Spatial transcriptomics reveals increased energetic requirements underpinning age-dependent declines in digit regeneration rescued through administration of OAA”. Bones and Teeth Gordon Research Conference. Ventura, CA, USA

2022 “Single cell mapping of regenerative and fibrotic healing responses following musculoskeletal injury”. American Society for Bone and Mineral Research Annual Meeting. Austin, TX, USA

2022 “Spatial transcriptomic profiling reveals local and global regulatory signaling networks within the bone marrow”. American Society for Bone and Mineral Research Annual Meeting. Austin, TX, USA

2021 “Spatial transcriptomics reveals a role for sensory nerves in preserving cranial suture patency through modulation of BMP/TGF $\beta$  signaling”. American Society for Bone and Mineral Research Annual Meeting. San Diego, CA, USA

2018 “Mineralizing bone surfaces drive blood vessel redistribution through asymmetric angiogenesis”. American Society for Bone and Mineral Research Annual Meeting, Montreal, QC, Canada

2018 “Multi-modal image registration and spatial analyses to unravel angiogenic-osteogenic coupling”. Orthopaedic Research Society Annual Meeting, New Orleans, Louisiana

2016 “Conditional deletion of PDGFR $\beta$  in osteoblast lineage cells results in impaired fracture callus formation”. Herbert Fleisch Workshop. International Bone and Mineral Society, Brugge, Belgium

Training

2023 Leadership Training Workshop. “PQ Grow Session on Relationship Mastery” Shirzad Chamine, CEO, Positive Intelligence Inc

2021-present Leadership Training – ongoing. “Positive Intelligence”. Coach: Barbara McMahon, President, Center for Translational Management.

2014 SPIRIT Summer School: “Multimodal molecular imaging-from high resolution in vitro towards in vivo”. Max-Planck-Institute for Experimental Medicine, Göttingen, Germany

2012 ECTS Training Workshop: “Cancer and bone-a guide for in vivo experiments”. University of L’Aquila, department of biotechnical and applied clinical sciences, L’Aquila, Italy

Ad hoc Journal Review

2023-present Frontiers in Endocrinology

2022-present Communications Biology

2022-present BioCell

2021-present JCI Insight

2021 Journal of Clinical Investigation editorial board scholar

2019-present Journal of Clinical Investigation  
2018-present Development  
2018-present Stem Cells  
2017-present BMC Cancer  
2017-present Arthritis and Rheumatology  
2017-present Bone Research  
2015-present Journal of Bone and Mineral Research  
2014-present Bone

## **UNIVERSITY SERVICE**

### University of Texas Southwestern Medical Center

2022-present Search Committee, member - Center for Organogenesis Research and Trauma faculty hires.

2021-present Director, Bioinformatics and Spatial Omics Core, Center for Organogenesis Research and Trauma, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

### Department of Surgery

2022-present Annual Research Forum abstract reviewer, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

### Center for Organogenesis Research and Trauma

2022-present Micro-CT core director, Center for Organogenesis Research and Trauma, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

2021-present Bone working group (organizer), Center for Organogenesis Research and Trauma, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

### Charles and Jane Pak Center for Mineral Metabolism

2022 New faculty hiring committee, Charles and Jane Pak Center for Mineral Metabolism, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

2021-present Faculty specific aims mentoring, Charles and Jane Pak Center for Mineral Metabolism, Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX

## **TEACHING EXPERIENCE**

### **Teaching**

#### University of Pennsylvania

2017-2018 Vertebrate Physiology (BIOL 215)

#### Workshops

2023 Faculty, NIH – sponsored Frontiers in Stem Cells and Regeneration. Marine Biological Lab, Woods Hole, MA. Course design and teaching for 10x spatial transcriptomics analysis workshop using both Seurat and Loupe analysis. Design and teaching of 10x spatial transcriptomics tissue optimization platform.

2023 NIH-sponsored Frontiers in Aging, Alzheimers and Regeneration Research. Xavier University of Louisiana, New Orleans, LA. Course design and teaching of 10x spatial transcriptomics tissue optimization platform.

2023 COBRE Aging Center Spatial Transcriptomics Core. Tulane University, New Orleans, LA. Help establish and optimize library generation, sequencing and bioinformatic analysis associated with the establishment of a fee for service spatial core.

2022 Workshop, "Technology update: established methods and new frontiers in molecular histology and spatial omics – where do we stand in musculoskeletal research?" IFMRS Herbert Fleisch Workshop, Bruges, Belgium

**Mentoring** (underline denotes mentees as primary supervisor)

Staff/Postdoctoral

2023-present Dimitri Sokolowskei, Data Scientist I, Department of Surgery, University of Texas Southwestern Medical Center

2022-present Neda Vishlaghi, Postdoctoral Fellow, Department of Surgery, University of Texas Southwestern Medical Center (co-mentor)  
-Recipient, Hamon Center for Regenerative Science and Medicine Fellowship Award, 2022

Doctoral

2022 Eunice Song, PhD Rotation Student, Department of Surgery, University of Texas Southwestern Medical Center (co-mentor)

2022 Katherine Borner, PhD Rotation Student, Department of Surgery, University of Texas Southwestern Medical Center (co-mentor)

2014-2015 Hendrik Fritsche, PhD Candidate, Division of Molecular Oncology, Institute for Experimental Cancer Research, CCC-North, University of Kiel, Kiel, Germany (lab mentor)

Masters

2015 Eleanora Persoons, MSc Rotation Student, KU Leuven, Skeletal Biology and Engineering Research Center, Department of Development and Regeneration, Leuven Belgium (lab mentor)

2015 Jana Damm, MSc Candidate, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2014 Marc Mueller, MSc Candidate, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2014 Lia Appold, MSc Candidate, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2014 Mary Klute, MSc Candidate, Department of Cell Biology, University of Alberta, Edmonton, AB, Canada (lab mentor)

Undergraduate

2018-2019 Ari Clements, Penn Center for Undergraduate Research and Fellowship, University of Pennsylvania, Philadelphia, PA (lab mentor)

2016 Gerard Belman, KU Leuven, Skeletal Biology and Engineering Research Center, Department of Development and Regeneration, Leuven Belgium (lab mentor)

2011 Stacey Fisher, Department of Cell Biology, University of Alberta, Edmonton, AB, Canada (lab mentor)

2010 Megan Lyndall Yu, Department of Cell Biology, University of Alberta, Edmonton, AB, Canada (lab mentor)

Technical

2022-2023 Sonya Ostashevskaya-Gohstand, Research Associate I, Department of Surgery, University of Texas Southwestern Medical Center  
-Accepted to the UTSW PhD graduate program 2023

2021-present Janna Crossley, Research Assistant II, Department of Surgery, University of Texas Southwestern Medical Center

Medical Researchers

2023 Lauren Truitt, MD Student Researcher (2<sup>nd</sup> year), University of Texas Southwestern Medical Center (co-mentor)

2022-2023 Conan Juan, MD Student Researcher (2<sup>nd</sup> year), University of Texas Southwestern Medical Center (co-mentor)

2021-2022 Ashish Chowdary, MD Student Researcher (2<sup>nd</sup> year), University of Texas Southwestern Medical Center (co-mentor)

2016 Anna-Christine Rambow, MD Student Researcher, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2015 Julia Muenst, MD Student Researcher, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2015 Fiona Liest-Kiessling, MD Student Researcher, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

2015 Patrick Kniesl, MD Student Researcher, Department of Diagnostic Radiology, Christian Albrechts University, Kiel, Germany (lab mentor)

**Graduate Student Committees**

Doctoral

2022 Josue Jaramillo, Department of Surgery, Tulane University. External Advisory Committee for Preliminary Exam.

**GRANT SUPPORT**

Current

Title: Spatiotemporal regulation of digit regeneration by sensory nerves

Role: Co-Investigator (PI: Sammarco)

Time Commitments (Calendar/Academic/Summer): 2.4 Calendar Months

Supporting Agency: Tulane University/ NIH NIHCD

Performance Period (MM/YYYY): 04/2022- 03/2024

Level of Funding: \$73,266

Project Goal: This project seeks to elucidate the role of TrkA/NGF nerve signaling during limb regeneration.

Title: Cellular metabolism at the crossroads of skeletal regeneration

Role: Co-Investigator (PI: Sammarco)

Time Commitments (Calendar/Academic/Summer): 2.4 Calendar Months

Supporting Agency: Tulane University/ NIH NICHD

Performance Period (MM/YYYY): 09/2022 – 06/2027

Level of Funding: \$259,319

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Project Goal: Advance the understanding the spatial regulation of digit regeneration and underlying role of cell metabolics in aging-induced regeneration decline.

Title: Pivotal and diverse roles for matricellular proteins in musculoskeletal disorders

Role: Project Leader (PI:Hankenson)

Time Commitments (Calendar/Academic/Summer): 2.1 Calendar Months each year

Supporting Agency: University of Michigan/Department of Defense

Performance Period (MM/YYYY): 05/01/2023 – 04/30/2027

Level of Funding: \$3,678,402

Project Goal: The central goal of this project is to demonstrate the efficacy of novel therapeutic strategies that target thrombospondin signaling to prophylax against HO in combat casualties, veterans and civilians.

Title: Metabolic interventions to mitigate acute and chronic bone disease

Role: PI

Time Commitments (Calendar/Academic/Summer): 2.4 Calendar Months each year

Supporting Agency: Department of Defense

Performance Period (MM/YYYY): 07/01/2023 – 06/31/2027

Level of Funding: \$1,632,725

Project Goal: Through this proposal we will improve our understanding of the role of diet and specific metabolites which stimulates heterotopic ossification. This proposal will lead to a novel, targeted therapy, and a nutrition Standard Practice Guideline to prevent HO.

Title: Glutamine targeted therapies to prevent traumatic heterotopic ossification

Role: Co-Investigator (PI: Karner)

Time Commitments (Calendar/Academic/Summer): 0.6 Calendar Months each year

Supporting Agency: Department of Defense

Performance Period (MM/YYYY): 06/2023 – 05/2026

Level of Funding: \$725,000

Project Goal: Improve our understanding of the role of glutamine on heterotopic ossification (HO) formation. This proposal will lead to a novel, targeted therapy and a dietary Standard Practice Guideline to prevent HO.

#### Pending

Title: Role of Bnip3 and Bnip3l in regulating digit regeneration

Role: MPI

Time Commitments (Calendar/Academic/Summer): 1.2 Calendar Months each year

Supporting Agency: NIH/NIAMS

Performance Period (MM/YYYY): 07/2023 – 06/2028

Level of Funding: \$1,057,195

Project Goal: Provide the first evidence of a BNIP3/NIX signaling axis in injury, implicating mitochondrial function and mitophagy as spatial regulators of the regeneration process.

Status: Scored 23<sup>rd</sup> percentile in A0 phase

Title: Temporospatial modification of peripheral nerves to enhance tendon healing

Role: Co-Investigator (PI:James/Levi)

Time Commitments (Calendar/Academic/Summer): 0.6 calendar months

Supporting Agency: Johns Hopkins University/NIH NIAMS

Performance Period (MM/YYYY): 09/2023 – 8/2028

Level of Funding: \$1,849,920

Project Goal: Establish a full range of sensory nerve function in musculoskeletal tissue repair and how defects in sensory nerves contribute to disease.

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Title: Translational lymphatic regulation to enhance post-traumatic musculoskeletal regeneration

Role: Co-Investigator (PI:Levi)

Time Commitments (Calendar/Academic/Summer): 0.6 calendar months

Supporting Agency: Department of Defense

Performance Period (MM/YYYY): 09/2024 – 09/2028

Level of Funding: \$2,363,984

Project Goal: Determine the phenotypic and functional consequences of lymphatic inhibition or augmentation on digit tip regeneration. To enhance digit regeneration through timed therapeutic and surgical inhibition of lymphatic ingrowth.

#### Completed

Title: Dissecting the heterogeneity of bone marrow mesenchymal lineage progenitors

Role: Key Personnel (PI:Qin)

Time Commitments (Calendar/Academic/Summer): 0.1 Calendar Month

Supporting Agency: NIH NIAMS/R21AR074570

Performance Period (MM/YYYY): 03/2019- 01/2022

Level of Funding: \$389,600

Project Goal: Delineate mesenchymal cell heterogeneity using scRNAseq.

#### **PUBLICATIONS**

Citations 1009

h-index 17

i10-index 29

stats retrieved from Google Scholar 07/11/2023

<https://www.ncbi.nlm.nih.gov/myncbi/robert.tower.1/bibliography/public/>

#### **International, Peer-Reviewed Publications** (\*Co-first author, Trainees, #Senior authorship)

##### Published

1. Yea JH\*, Gomez-Salazar M\*, Onggo S, Cherief M, Li Z, Negri S, **Tower RJ**, Fan CM, Levi B, James AW. 2023. Tppp3<sup>+</sup> synovial/tendon sheath progenitor cells contribute to heterotopic bone after trauma. *Bone Res* (*accepted*)
2. Nunez JH, Juan C, Sun Y, Hong J, Bancroft AC, Hwang C, Medrano JM, Huber A, **Tower RJ**<sup>#</sup>, Levi B<sup>#</sup>. 2023. Neutrophil and NETosis modulation in traumatic heterotopic ossification. *Ann Surg* (*online ahead of print*).
3. Chowdary AR, Maertz T, Henn D, Hankenson KD, Pagani CA, Marini S, Gallagher K, Aguilar CA, **Tower RJ**, Levi B. 2023. Macrophage-mediated PDGF activation correlates with regenerative outcomes following musculoskeletal trauma. *Ann Surg* 278(2):e349-e359
4. Pagani CA\*, Bancroft AC\*, **Tower RJ**, Livingston N, Sun Y, Hong JY, Kent III RN, Strong AL, Nunez JH, Medrano JMR, Patel N, Nanes BA, Dean KM, Li Z, Ge C, Baker BM, James AW, Weiss SJ, Franceschi RT, Levi B. 2022. Discoidin Domain Receptor 2 regulates aberrant mesenchymal lineage cell fate and matrix organization. *Sci Adv* 8(51):eabq6152
5. Dirckx N, Zhang Q, Chu EY, **Tower RJ**, Li Z, Guo S, Yuan S, Khare PA, Verado A, Alejandro LO, Park A, Faugere MC, Helfand SL, Somerman MJ, Riddle RC, de Cabo R, Le A, Schmidt-Rohr K, Clemens TL. 2022. A Specialized Metabolic Pathway Partitions Citrate in Hydroxyapatite to Impact Mineralization of Bones and Teeth. *Proc Natl Acad Sci* 119(45):e2212178119
6. **Tower RJ**<sup>#</sup>, Bancroft AC, Chowdary AR, Barnes S, Edwards NJ, Pagani CA, Dawson LA, Levi B<sup>#</sup>. 2022. Single cell mapping of regenerative and fibrotic healing responses following musculoskeletal injury. *Stem cell reports* 17(10):2334-2348



7. Negri S, Wang Y, Lee S, Qin Q, Xu J, Hsu G, **Tower RJ**, Presson B, Levin A, McCarthy E, Levi B, James AW. 2022. Acetabular reaming is a reliable model to produce and characterize periarticular heterotopic ossification of the hip. *Stem Cells Transl Med* doi: 10.1093/stcltm/szac042
8. Qin Q, Gomez-Salazar M, **Tower RJ**, Chang L, Morris C, McCarthy E, Ting K, Zhang X, James AW. 2022. NELL-1 regulates the matrisome to alter osteosarcoma disease progression. *Cancer Res* 82(15):2734-2747
9. Qin Q, Gomez-Salazar M, Cherief M, Pagani CA, Lee S, Hwang C, **Tower RJ**, Onggo S, Sun Y, Piplani A, Li Z, Ramesh S, Clemens TL, Levi B, James AW. 2022. Neuron-to-vessel signaling is a required feature of aberrant stem cell commitment after soft tissue trauma. *Bone Res* 10(1):43
10. **Tower RJ**<sup>#</sup>, Busse E, Simkin J, Guntur A, Jaramillo J, Lacey M, Hoffseth K, Sammarco MC<sup>#</sup>. 2022. Spatial transcriptomics reveals metabolic changes underlying age-dependent declines in digit regeneration. *Elife*. 11:e71542. doi: 10.7554/eLife.71542
11. **Tower RJ**<sup>\*</sup>, Xu J<sup>\*</sup>, Li Z<sup>\*</sup>, Negri S, Wang Y, Meyers C, Sono T, Qin Q, Lu A, McCarthy E, Clemens TL, James AW. 2022. NGF-p75 signaling coordinates skeletal cell migration during bone repair. *Sci Adv* 8(11):eabl5716
12. Xu J, Wang Y, Li Z, Tian Y, Li Z, Lu A, Hsu C, Negri S, Tang C, **Tower RJ**, Morris C, James AW. 2022. PDGFR $\alpha$  reporter activity identifies periosteal progenitor cells critical for bone formation and fracture repair. *Bone Res* 10(1):7
13. Medina OP, **Tower RJ**, Medina TP, Ashkenani F, Appold L, Boetcher M, Huber L, Will O, Ling Q, Hauser C, Rohwedder A, Heneweer C, Peschke E, Hoeverner JB, Luedtke-Burzug K, Boretius S, Mentlein R, Kairemo K, Glueer CC, Sebens S, Kalthoff H. 2022. Multimodal targeted nanoparticle-based delivery system for pancreatic tumor imaging in cellular and animal models. *Curr Pharm Des* 28(4):313-323
14. **Tower RJ**, Li Z, Cheng Y, Wang X, Rajbhandari L, Zhang Q, Negri S, Uytingco CR, Venkatesan A, Zhou F, Cahan P, James AW, Clemens TL. 2021. Spatial transcriptomics reveals a role for sensory nerves in preserving cranial suture patency through modulation of BMP/TGF $\beta$  signaling. *Proc Natl Acad Sci USA* 118(42):e2103087118
15. Lee S<sup>\*</sup>, Hwang C<sup>\*</sup>, Marini S, **Tower RJ**, Pagani CA, Stepien DM, Qin Q, Negri S, Sorkin M, Kubiak CA, Visser ND, Meyers CA, Wang Y, Rasheed HA, Xu J, Miller S, Huber AK, Minichiello L, Cederna PS, Kemp SWP, Clemens TL, James AW, Levi B. 2021. NGF-TrkA signaling dictates neural ingrowth and aberrant osteochondral differentiation after soft tissue trauma. *Nat Commun* 12(1):4939
16. Heneweer C, Penate-Medina T, **Tower RJ**, Kalthoff H, Kolesnick R, Larson S, Penate-Medina O. 2021. Acid-sphingomyelin triggered fluorescently labeled sphingomyelin containing liposomes in tumor diagnosis after radiation-induced stress. *Int J Mol Sci* 22(8):3864
17. Zhang Q, Mesner L, Calabrese G, Dirckx N, Li Z, Verardo A, Yang Q, **Tower RJ**, Faugere MC, Farber C, Clemens TL. 2020. Genomic variants within a GWAS locus on chromosome 14q32.32 regulate bone mass through MARK3 signaling in osteoblasts. *J Clin Inv* 131(7):e142580
18. Kc R, Haseeb A, de Charleory C, Angelozzi M, Rux D, **Tower RJ**, da Silva RP, Pacifici M, Qin L, Lefebvre V. 2021. Growth plate and articular chondrocytes exhibit osteogenic plasticity countered by SOX9 throughout life. *Proc Natl Acad Sci U S A* 118(8):e2019152118
19. Negri S, Wang Y, Sono T, Qin Q, Hsu GC, Cherief M, Xu J, Lee S, **Tower RJ**, Yu V, Piplani A, Meyers CA, Broderick K, Lee M, James AW. 2020. Systemic DKK1 neutralization enhances human adipose-derived stem cell mediated bone repair. *Stem Cells Transl Med* 10(4):610-622

20. Xu J, Wany Y, Hsu CY, Negri S, **Tower RJ**, Gao Y, Tian Y, Sono T, Meyers CA, Hardy WR, Chang L, HU S, Kahn N, Gimble J, Broderick K, Peault B, James AW. 2020. Lysosomal protein surface expression discriminates fat- from bone-forming human mesenchymal precursor cells. *Elife* Oct 12;9:e58990
21. Wei Y, Tian Z, **Tower RJ**, Gullbrand S, Yao L, Sheyte SS, Mauck RL, Qin L, Zhang Y. 2020. The inner annulus fibrosis encroaches on the nucleus pulposus in the injured mouse tail intervertebral disc. *Am J Phys Med Rehabil* 100(5):450-457
22. Xu J, Li D, Hsu CY, Tian Y, Zhang L, Wang Y, **Tower RJ**, Chang L, Meyers CA, Gao Y, Broderick K, Morris C, Hooper J, Nimmagadda S, Peault B, James AW. 2020. Comparison of skeletal and soft tissue pericytes identifies CXCR4<sup>+</sup> bone forming mural cells in human tissues. *Bone Res* 8(1):22
23. Zhong L, Yao L, **Tower RJ**, Wei Y, Park J, Miao Z, Shrestha R, Wang L, Yu W, Holdreith N, Zhang Y, Tong W, Gong Y, Long F, Ahn J, Seale P, Susztak K, Li M, Chen C, Qin L. 2020. Single cell transcriptomics identifies a unique adipocyte population that regulates bone marrow environment. *Elife* April 14;9:e54695
24. **Tower RJ**<sup>\*</sup>, Wei Y<sup>\*</sup>, Zouzhen T, Mohanraj B, Mauck RL, Qin L, Zhang Y. 2019. Spatial distribution of type II collagen gene expression in the mouse intervertebral disc. *JOR Spine* 2(4) (published as Wei *et al*)
25. **Tower RJ**<sup>\*</sup>, Bohm AM<sup>\*</sup>, Dirckx N<sup>\*</sup>, Peredo N, Vanuytven S, Theunis K, Nefyodova E, Cardoen R, Lindner V, Voet T, Van Hul M, Maes C. 2019. Activation of skeletal stem and progenitor cells for bone regeneration is driven by PDGFR $\beta$  signaling. *Dev Cell* 51(2):236-254 (published as Bohm *et al*.)
26. **Tower RJ**<sup>\*</sup>, Penate-Medina O<sup>\*</sup>, Penate-Medina T, Will O, Saris PEJ, Suojanen J, Sorsa T, Huuskonen L, Hiippala K, Satokari R, Gluer CC, de Vos WM, Reunanen J. 2019. Universal membrane-labeling combined with expression of Katushka far-red fluorescent protein enables non-invasive dynamic and longitudinal quantitative 3D dual-color fluorescent imaging of multiple bacterial strains in mouse intestine. *BMC Microbiology* 19(1):167 (published as Penate-Medina *et al*.)
27. **Tower RJ**<sup>\*</sup>, Tong W<sup>\*</sup>, Chen C, Wang L, Wei Y, Cao G, Jia H, Pacifici M, Enomoto-Iwamoto M, Qin L. 2019. Periarticular mesenchymal progenitors initiate and produce the secondary ossification center during mouse long bone development. *Stem Cells* 37(5):677-689 (published as Tong *et al*.)
28. Wang L, **Tower RJ**, Chandra A, Yao L, Tong W, Xiong Z, Tang K, Zhang Y, Liu XS, Boerckel JD, Guo X, Ahn J, Qin L. 2019. Periosteal mesenchymal progenitor dysfunction and extraskelentially-derived fibrosis contribute to atrophic fracture nonunion. *J Bone Miner Res* 34(3):520-532
29. Zhang Y, Tian Z, Ashley JW, Wang L, **Tower RJ**, Wei Y, Qin L, Yang S, Enomoto-Iwamoto M. 2018. Extracellular matrix and adhesion molecule gene expression in the normal and injured murine intervertebral disc. *Am J Phys Med Rehabil* 98(1):35-42
30. Wang L, Jia H, **Tower RJ**, Levine MA, Qin L. 2018. Analysis of short-term treatment with the phosphodiesterase type 5 inhibitor Tadalafil on long bone development in young rats. *Am J Physiol Endocrinol Metab* 315(4):E446-53
31. Dirckx N, **Tower RJ**, Mercken EM, Vangoitsenhoven R, Moreau-Triby C, Breugelmans T, Nefyodova E, Cardoen R, Mathieu C, Van der Schueren B, Confavreux C, Clemens T, Maes C. 2018. Vhl deletion in osteoblasts boosts cellular glycolysis and improves global glucose metabolism. *J Clin Inv* 128(3):1087-1105
32. Campbell GM, **Tower RJ**, Damm T, Kneissl P, Rambow A, Schem C, Tiwari S, Gluer CC. 2018. Tracking the progression of osteolytic and osteosclerotic lesions in mice using serial in vivo micro-CT: Applications to the assessment of bisphosphonate treatment efficacy. *J Bone Miner Res* 33(3):410-418

33. Jia H\*, Ma X\*, Wei Y, Tong W, **Tower RJ**, Chandra A, Wang L, Sun Z, Yang Z, Badar F, Zhang K, Tseng W, Kramer I, Kneissel M, Xia Y, Liu XS, Wang JHC, Han L, Enomoto-Iwamoto M, Qin L. 2018. Loading-induced reduction in Sclerostin as a mechanism of subchondral bone plate sclerosis in mouse knee joints during late-stage osteoarthritis. *Arthritis Rheumatol* 70(2):230-241
34. Poss M, **Tower RJ**, Napp J, Appold LC, Lammers T, Alves F, Glueer CC, Boretius S, Feldmann C. 2017. Multimodal [GdO]<sub>3</sub>+ [ICG]-nanoparticles for optical, photoacoustic and magnetic resonance imaging. *Chem Mater* 29(8):3547-3554
35. Dotterweich J, Schlegelmilch K, Alexander K, Beate G, Doris S, Zeck S, **Tower RJ**, Ebert R, Jakob F, Scutze N. 2016. Contact of myeloma cells induces a characteristic transcriptome signature in skeletal precursor cells-implications for myeloma bone disease. *Bone* 93:155-166
36. Stelmach-Mardas M, Iqbal K, Mardas M, Schwingshackl L, Walkowiak J, **Tower RJ**, Boeing H. 2016. Synchronic inverse seasonal rhythmus of energy density of food intake and sleep quality: a contribution to chrono-nutrition from a Polish adult population. *Eur J Clin Nutr* 71(6):718-722
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#### Pending

1. Hu G, Yu Y, Zhang GF, Tower RJ, Karner CM. 2023. Glutamine metabolism underpins osteoclast metabolism and bone resorption. *Sci Adv* (submitted)
2. Wang Y\*, Gomez-Salazar M\*, Thottappillil N, **Tower RJ**, Qin Q, Cherief M, Cheng R, Broderick K, Peault B, James AW. 2023. Integrated transcriptomics of human blood vessels defines the spatially regulated niche for early mesenchymal progenitors. *Nat Cell Biol* (under revision)
3. **Tower RJ**<sup>#</sup>, Crossley JL, Ostashevskaya-Gohstand S, Comazetto S, Hook JS, Guo L, Vishlaghi N, Juan C, Xu L, Horswill AR, Hoxhaj G, Moreland JG, Levi B<sup>#</sup>. 2023. Itaconate-producing neutrophils regulate local and systemic inflammation following trauma. *J Clin Res* (under revision).
4. Rios JJ<sup>#</sup>, Shelton JM, Kidane Y, Cornelia R, Conway S, Wise CA, **Tower RJ**<sup>#</sup>. 2023. Spatial transcriptomic analysis of a pre-clinical NF1 pseudoarthrosis fracture model. *J Bone Miner Res* (under review).
5. Cherief M\*, Xu J\*, Li Z\*, **Tower RJ**, Qin Q, Gomez-Salazar M, Yea JH, Lee S, Negri S, Xu M, Kendal AR, Fan CM, Clemens TL, Levi B, James AW. 2023. TrkA<sup>+</sup> sensory nerves induce tendon repair via expansion of Tppp3<sup>+</sup> tendon sheath progenitor cells. *Sci Trans Med* (under revision)
6. Xiao X\*, Juan C\*, Uyttingco CR, Drennon T, Vishlaghi N, Xu L, Levi B, Sammarco MC, **Tower RJ**. 2023. Spatial transcriptomic profiling reveals local and domain establishing regulatory signaling networks within the bone marrow. *Bone Res* (under review)

#### Book Chapters

1. **Tower RJ** and Qin L. "Chondrocyte cell fate analysis" in *Encyclopedia of Bone Biology* 1<sup>st</sup> ed (Elsevier, 2020, p 621-631, Ed:Mone Zaidi)

#### Abstracts from International Conferences

1. Rios JJ, Shelton J, Juan C, Paria N, Oxendine I, Kidane Y, Cornelia R, Jeffery EC, Podeszwa DA, Conway S, Wise CA, **Tower RJ**. Spatial transcriptomic analysis of a pre-clinical model of Nf1-deficient fractures pseudarthrosis. American Society for Bone and Mineral Research Annual Meeting Oct 13-16, 2023. Vancouver, BC, Canada
2. **Tower RJ**, Crossley JL, Ostashevskaya-Gohstand S, Comazetto S, Hook JS, Guo L, Vishlaghi N, Juan C, Xu L, Horswill AR, Hoxhaj G, Moreland JG, Levi B. Itaconate-producing neutrophils regulate local and systemic inflammation following trauma. American Society for Bone and Mineral Research Annual Meeting Oct 13-16, 2023. Vancouver, BC, Canada
3. Vishlaghi N, Guo L, Griswold-Wheeler D, Sun Y, Booker C, Crossley JL, Bancroft AC, Ramesh S, Xu L, James AW, **Tower RJ**, Dellinger M, Levi B. Mesenchymal cell derived

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- VEGFC promotes lymphangiogenesis and aberrant repair following musculoskeletal injury. American Society for Bone and Mineral Research Annual Meeting Oct 13-16, 2023. Vancouver, BC, Canada
4. Vishlaghi N, Guo L, Griswold-Wheeler D, Sun Y, Crossley JL, Bancroft AC, Booker C, Ramesh S, Xu L, James AW, **Tower RJ**, Dellinger M, Levi B. Mesenchymal cell derived VEGFC promotes lymphangiogenesis and aberrant repair following musculoskeletal injury. Lymphatics Forum June 13-17, 2023. Banff, AB, Canada
  5. Vishlaghi N, Guo L, Griswold-Wheeler D, Sun Y, Booker C, Crossley JL, Bancroft AC, Ramesh S, Xu L, James AW, **Tower RJ**, Dellinger M, Levi B. Mesenchymal cell derived VEGFC promotes lymphangiogenesis following trauma. MHSRS
  6. Nunez JH, Hong J, Bancroft A, Medrano JMR, **Tower RJ**, Levi B. Neutrophil and netosis modulation in traumatic heterotopic ossification. AAP/ASCI/APSA Joint Meeting. April 21-23, 2023. Chicago, IL, USA.
  7. Pagani CA, Bancroft AC, **Tower RJ**, Livingston N, Sun Y, Hong JY, Nanes BA, Kent RN, Dean K, Franceschi R, Baker BM, Weiss SJ, Levi B. Mesenchymal lineage discoidin domain receptor 2 affects heterotopic ossification formation and extracellular matrix organization. Plastic Surgery Research Council Annual Meeting. April 13-16, 2023. Cleveland, OH, USA
  8. **Tower RJ**, Crossley JL, Ostashevskaya-Gohstand S, Comazzetto S, Hook JS, Guo L, Vishlaghi N, Juan C, Horswill AR, Hoxhaj G, Moreland JG, Levi B. Itaconate-producing neutrophils regulate local and systemic inflammation following trauma. Advances in Mineral Metabolism. April 3-7, 2023. Snowmass, CO, USA
  9. Pagani CA, Bancroft AC, **Tower RJ**, Livingston N, Sun Y, Hong JY, Nanes BA, Kent RN, Dean K, Baker BM, Franceschi RT, Weiss SJ, Levi B. Mesenchymal Lineage Discoidin Domain Receptor 2 effects Heterotopic Ossification Formation and Extracellular Matrix Organization. Feb 10-14, 2023. Dallas, TX, USA.
  10. Rios JJ, Paria N, Wise CA, **Tower RJ**. Spatial transcriptomic and single-cell analyses of NF1-deficient fractures in pre-clinical and patient-derived experimental models. Orthopaedic Research Society Annual Meeting. Feb 10-14, 2023. Dallas, TX, USA.
  11. Nunez JH, Juan C, Sun Y, Hong J, Bancroft AC, Medrano JMR, Huber A, **Tower RJ**, Levi B. Neutrophil and NETosis modulation in traumatic heterotopic ossification. AAP/ASCI/APSA Joint Meeting. April 21-23, 2023. Chicago, IL, USA.
  12. Sammarco MC, Guntur A, **Tower RJ**. Mitochondrial function regulates ROS-mediated patterning following injury. Orthopaedic Research Society Annual Meeting. Feb 10-14, 2023. Dallas, TX, USA.
  13. Cherief M, Xu J, Li Z, Negri S, Gomez-Salazar M, Tang C, Ramesh S, Zhong L, **Tower RJ**, Levi B, James AW. Skeletal nerves modulate tendon sheath progenitor cell proliferation during tendon repair via TGF $\beta$  signaling. Orthopaedic Research Society Annual Meeting. Feb 10-14, 2023. Dallas, TX, USA.
  14. Yea JH, Gomez-Salazar G, Onggo S, Negri S, Li Z, **Tower RJ**, Fan CM, Levi B, James A. Tppp3+ tendon sheath progenitor cells contribute to heterotopic ossification after traumatic injury. Orthopaedic Research Society Annual Meeting. Feb 10-14, 2023. Dallas, TX, USA.
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17. Pagani CA, Bancroft AC, **Tower RJ**, Lvingston N, Sun Y, Hong JY, Nanes BA, Kent RN, Dean K, Baker BM, Franceschi RT, Weiss SJ, Levi B. Mesenchymal Lineage Discoidin Domain Receptor 2 effects Heterotopic Ossification Formation and Extracellular Matrix Organization. Feb 10-14, 2023. Dallas, TX, USA.
18. Xiao X, Juan C, Uytingco CR, Drennon T, Xu L, Levi B, **Tower RJ**. Spatial transcriptomic profiling reveals local and global regulatory signaling networks within the bone marrow. Herbert Fleisch Workshop. Nov 20-22, 2022. Brugge, Belgium.
19. **Tower RJ**, Busse E, Simkin J, Guntur A, Jaramillo J, Lacey M, Hoffseth K, Sammarco MC. Spatial transcriptomics reveals increased energetic requirements underpinning age-dependent declines in digit regeneration rescued through administration of OAA. Bones and Teeth Gordon Research Conference. Sept 18-23, 2022. Ventura, CA, USA
20. **Tower RJ**, Barnes S, Edwards N, Pagani CA, Levi B. Parallels and deviations in mesenchymal progenitor cell activation in regenerative and fibrotic injuries. Plastic Surgery Research Council Annual Meeting. June 8-12, 2022. Toronto, Canada.
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22. Wang Y, Gomez-Salazar M, **Tower RJ**, Chang L, Broderick K, Peault B, James AW. Human blood vessel walls contain a spatially defined niche for mesenchymal precursor cells. Orthopaedic Research Society Annual Meeting. Feb 4-8, 2022. Tampa, FL, USA.
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24. Qin Q, Gomez-Salazar M, Cherief M, Pagani CA, Lee S, Hwang C, **Tower RJ**, Onggo S, Sun Y, Piplani A, Li Z, Ramesh S, Clemens TL, Levi B, James AW. Neurovascular coupling during the genesis of trauma-induced heterotopic ossification. Orthopaedic Research Society Annual Meeting. Feb 12-16, 2021. Virtual
25. Zhong L, Yao L, **Tower RJ**, Wei Y, Wang L, Yu W, Zhang Y, Gong Y, Long F, Seale P, Chen C, Ahn J, Qin L. Identification of a novel adipose lineage cell population that regulates bone marrow environment. Orthopaedic Research Society Annual Meeting. Feb 8-11, 2020. Phoenix, AZ, USA
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28. **Tower RJ**, Barnes S, Bancroft AC, Chowdary AR, Edwards NJ, Pagani CA, Dawson LA, Levi B. Single cell mapping of regenerative and fibrotic healing responses following musculoskeletal injury. American Society for Bone and Mineral Research Annual Meeting. Sept 9-12, 2022. Austin, TX, USA
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30. Gomez-Salazar M, Wang Y, Thottappillil, **Tower RJ**, Chang L, Broderick K, Peault B, James AW. Human blood vessel walls contain a spatially defined niche for mesenchymal precursor cells with distinct differentiation potential defined by CD201

- expression. American Society for Bone and Mineral Research Annual Meeting. Sept 9-12, 2022. Austin, TX, USA
31. Drennon T, Uyttingco CR, **Tower RJ**. Spatial transcriptomic profiling reveals local and global regulatory signaling networks within the bone marrow. Jul 23-27, 2022. Snowbird, UT, USA
  32. **Tower RJ**, Barnes S, Edwards N, Pagani C, Levi B. Parallels and deviations in mesenchymal progenitor cell activation in regenerative and fibrotic injuries. Plastic Surgery Research Council Annual Meeting. Jun 8-12, 2022. Toronto, Canada
  33. **Tower RJ**, Busse E, Simkin J, Guntur A, Jaramillo J, Lacey M, Hoffseth K, Sammarco MC. Spatial transcriptomics reveals increased energetic requirements underpinning age-dependent declines in digit regeneration rescued through administration of OAA. Orthopaedic Research Society Annual Meeting. Feb 4-8, 2022. Tampa, FL, USA
  34. Chowdary AR, Patel N, Pagani C, Henn D, Marini S, Huber A, Larouche J, Aguilar C, **Tower RJ**, Levi B. Macrophage PDGF Signaling to Mesenchymal Progenitors Drives Normal Musculoskeletal Healing. Annual Academic Surgical Congress. Feb 1-3, 2022. Orlando, FL, USA
  35. **Tower RJ**, Xu J, Li Z, Wang Y, Negri S, Sono T, Clemens TL, James AW. Myeloid-to-mesenchymal NGF-p75 signaling is required for bone repair via regulation of mesenchymal cell migration and differentiation. American Society for Bone and Mineral Research Annual Meeting. Oct 1-4, 2021. San Diego, CA, USA
  36. **Tower RJ**, Li Z, Cheng YH, Wang XW, Rajbhandari L, Zhang Q, Negri S, Uyttingco CR, Venkatesan A, Zhou FQ, Cahan P, James AW, Clemens TL. Spatial transcriptomics reveals a role for sensory nerves in preserving cranial suture patency through modulation of BMP/TGF $\beta$  signaling. American Society for Bone and Mineral Research Annual Meeting. Oct 1-4, 2021. San Diego, CA, USA
  37. Dirckx N, Zhang Q, **Tower RJ**, Li Z, Yuan S, Khare P, Chu E, Verado A, Helfand S, Somerman M, Riddle R, de Cabo R, Le A, Schmidt-Rohr K, Clemens TL. American Society for Bone and Mineral Research Annual Meeting. Oct 1-4, 2021. San Diego, CA, USA
  38. Xu J, Li Z, Negri S, Lee S, Wang Y, Hsu CY, Tian Y, Qin Q, Cherief M, **Tower RJ**, Clemens TL, James AW. Requirement of Macrophage to Stromal Cell NGF-p75 Signaling in Bone Repair. American Society for Bone and Mineral Research Annual Meeting. Sept 11-15, 2020. Virtual
  39. Henrich M, **Tower RJ**, Wang Y, Xang Y, Adams JS, Chun R. Using single cell transcriptomics to characterize the potential role of RNA binding proteins to regulate the early stages of adult human bone marrow-derived mesenchymal stem cell differentiation. American Society for Bone and Mineral Research Annual Meeting. Sept 11-15, 2020. Virtual
  40. Boehm AM, Dirckx N, **Tower RJ**, Peredo N, Vanuytven S, Theunis K, Nefyodova E, Cardoen R, Lindner V, Voet T, Van Hul M, Maes C. PDGFR $\beta$  Signaling Drives the Expansion, Recruitment and Blood Vessel Affinity of Skeletal Stem and Progenitor Cells for Bone Repair. American Society for Bone and Mineral Research Annual Meeting. Sept 19-23, 2019. Orlando, FL, USA
  41. Zhong L, **Tower RJ**, Yao L, Wei Y, Park J, Miao Z, Shrestha R, Wang L, Yu W, Holdreith N, Zhang Y, Tong W, Gong Y, Long F, Ahn J, Seale P, Susztak K, Li M, Chen C, Qin L. American Society for Bone and Mineral Research Annual Meeting. Sept 19-23, 2019. Orlando, FL, USA
  42. **Tower RJ**, Rajapakse CS, Jiang X, Tong W, Dymont NA, Qin L. Mineralizing bone surfaces drive blood vessel redistribution through asymmetric angiogenesis. American

- Society for Bone and Mineral Research Annual Meeting Sept 28-Oct1, 2018. Montreal, QC, Canada
43. **Tower RJ**, Zhong L, Park J, Wang L, Shrestha R, Susztak K, Qin L. Building a single-cell transcriptome atlas of mouse bone marrow mesenchymal lineage cells for analyzing MSC heterogeneity. American Society for Bone and Mineral Research Annual Meeting Sept 28-Oct1, 2018. Montreal, QC, Canada
  44. Wang L, **Tower RJ**, Chandra A, Zhang Y, Liu X, Guo X, Ahn J, Qin L. Atrophic Non-union Fracture is Caused by Severe Damage on Periosteal Mesenchymal Progenitors and Fibrosis Derived from Non-osseous Tissue. American Society for Bone and Mineral Research Annual Meeting Sept 28-Oct1, 2018. Montreal, QC, Canada
  45. **Tower RJ** and Qin L. Multi-modal image registration and spatial analyses to unravel angiogenic-osteogenic coupling. Orthopaedic Research Society Annual Meeting, Mar 9-13, 2018. New Orleans, Louisiana
  46. **Tower RJ**, Tian Z, Cosgrove B, Mauck RR, Qin L, Enomoto-Iwamoto M, Zhang Y. Nucleus Pulposus cells have epithelial cell-like cytoskeleton and highly expressed N-cadherin. Orthopaedic Research Society Annual Meeting, Mar 9-13, 2018. New Orleans, Louisiana.
  47. **Tower RJ**, Tong W, Chen C, Jia H, Enomoto-Iwamoto M, Shi S, Qin L. The Perichondrium is Enriched for Mesenchymal Progenitors that Initiate Canal Formation during the Development of the Secondary Ossification Center. American Society for Bone and Mineral Research Annual Meeting Sept 8-11, 2017. Denver, Colorado
  48. **Tower RJ\***, Dirckx N\*, Van Hul M, Maes C. PDGFR $\beta$ -expressing osteoprogenitors and PDGFR $\beta$  signaling contribute to fracture healing by promoting callus formation and vascularization. American Society for Bone and Mineral Research Annual Meeting Sept 8-11, 2017. Denver, Colorado
  49. Ma X, Jia H, Tong W, Yang Z, **Tower RJ**, Zhang K, Tseng WJ, Liu XS, Wang JHC, Han L, Enomoto-Iwamoto M, Qin L. A novel 3D measurement of mouse joint subchondral bone plate reveals a positive correlation between its thickness and loading status due to altered Sclerostin amount at late osteoarthritis stage. American Society for Bone and Mineral Research Annual Meeting Sept 8-11, 2017. Denver, Colorado
  50. Wang L, Chandra A, **Tower RJ**, Ahn J, Zhang Y, Qin L. Prior Focal Radiation Causes Atrophic Nonunion Healing in Mouse Long Bone Fracture. American Society for Bone and Mineral Research Annual Meeting Sept 8-11, 2017. Denver, Colorado
  51. **Tower RJ**, Van Hul M, Dirckx N, Maes C. Conditional deletion of PDGFR $\beta$  in osteoblast lineage cells results in impaired fracture callus formation. Herbert Fleisch Workshop. International Bone and Mineral Society, Feb 28-Mar 1, 2016. Brugge, Belgium
  52. Dirckx N, **Tower RJ**, Mercken EM, Breugelmans T, Nefyodova E, Vanoitsenhoven R, Van der Schueren B, Mathieu C, Clemens TL, Maes C. Hypoxia-induced glycolytic metabolism in osteoblast lineage cells can directly impact on systemic glucose homeostasis by advantaging local glucose uptake in the skeleton Herbert Fleisch Workshop. International Bone and Mineral Society, Feb 28-Mar 1, 2016. Brugge, Belgium
  53. Schem C, **Tower RJ**, Kneissl P, Rambow AC, Campbell GM, Heilmann T, Trauzold A, Jonat W, Glueer CC, Schott S, Tiwari S. Inhibition of osteolytic tumor growth by 5-FdU-alendronate, a bisphosphonate conjugate that maintains bone formation: Implications for treatment of osteolytic bone lesions. Annual CTRC-AACR San Antonio Breast Cancer Symposium. Dec 9-13, 2014. San Antonio, TX, USA.
  54. Kalthoff H, Haselmann V, Kurz A, Bertsch U, Huebner S, Fritsche H, Hauser C, Schem C, **Tower RJ**, Heilmann T, Tiwari S, Glueer CC, Trauzold A. Trail-R2: A death receptor



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55. **Tower RJ**, Mueller M, Will O, Tiwari S, Glueer CC, Campbell GM. Utilizing bisphosphonate binding kinetics and soft tissue-derived input functions to differentiate changes in long bone and vertebra bone metabolism using in vivo fluorescent molecular tomography. European Calcified Tissue Society Annual Congress, May 17-20, 2014. Prague, Czech Republic
56. **Tower RJ**, Campbell GM, Mueller M, Will O, Grundmann F, Schem C, Glueer CC, Tiwari S. Binding kinetics of fluorescent bisphosphonates as a tool for monitoring bone dynamics in vivo. European Calcified Tissue Society Annual Congress, March 21-24, 2013. Lisbon, Portugal