STAVROS THOMOPOULOS, PH.D.

Columbia University
Department of Orthopedic Surgery
650 West 168th Street, Room 1408
New York, NY 10032
(212) 305-5124
sat2@columbia.edu
thomopoulos.org

BIRTH DATE: July 6, 1973
CITIZENSHIP: United States of America

CURRENT POSITIONS

Robert E. Carroll and Jane Chace Carroll Professor
Professor of Biomechanics (in Orthopedic Surgery and Biomedical Engineering)
Vice Chair of Basic Research, Dept. of Orthopedic Surgery, Columbia University, New York, NY
Director, Robert Carroll & Jane Chace Carroll Laboratories, Department of Orthopaedic Surgery, Columbia University, New York, NY

EDUCATION

Columbia University
Fu Foundation School of Engineering and Applied Science
1995: B.S. in Mechanical Engineering

University of Michigan
Rackham Graduate School
1997: M.S.Eng. in Mechanical Engineering
1998: M.S. in Biomedical Engineering

University of Michigan (research at the University of Pennsylvania)
Rackham Graduate School
2001: Ph.D. in Biomedical Engineering

ACADEMIC POSITIONS / EMPLOYMENT

9/93 - 6/95	**Research Assistant**, Orthopaedic Research Laboratory Columbia University (New York, NY), Van C. Mow, Ph.D., Director
9/95 - 12/97	**Research Assistant**, Orthopaedic Research Laboratories University of Michigan (Ann Arbor, MI), Steven A. Goldstein, Ph.D., Director; Louis J. Soslowsky, Ph.D., Advisor
8/99 - 11/99	**Research Fellow**, Musculoskeletal Sciences Laboratory Genetics Institute (Cambridge, MA), Vicki Rosen, Ph.D., Director; Gary Hattersley, Ph.D., Advisor
1/98 - 8/01	**Research Fellow**, McKay Orthopaedic Research Laboratory University of Pennsylvania (Philadelphia, PA), Louis Soslowsky, Ph.D., Director
9/01 - 9/03	**Postdoctoral Fellow**, Cardiac Tissue Mechanics Laboratory Columbia University (New York, NY), Jeffrey W. Holmes, Ph.D., Director
10/03 - 11/09	**Assistant Professor of Orthopaedic Surgery** Washington University (St. Louis, MO)
6/06 - 12/09	**Assistant Professor of Biomedical Engineering** Washington University (St. Louis, MO)

12/09 - 5/14 **Associate Professor of Orthopaedic Surgery (with tenure)**
Washington University (St. Louis, MO)
12/10 - 5/14 **Associate Professor of Biomedical Engineering**
Washington University (St. Louis, MO)
9/11 - 5/14 **Associate Professor of Mechanical Engineering & Materials Science**
Washington University (St. Louis, MO)
6/07 - 7/15 **Member – Institute of Materials Science and Engineering**
Washington University (St. Louis, MO)
4/09 - 7/15 **Associate Director, Musculoskeletal Center: Structure and Strength Core**
Washington University (St. Louis, MO)
11/09 - 7/15 **Member – Division of Biology and Biomedical Sciences**
Washington University (St. Louis, MO)
6/14 - 7/15 **Member – Center of Regenerative Medicine**
Washington University (St. Louis, MO)
6/14 - 7/15 **Professor of Orthopaedic Surgery, Biomedical Engineering, and Mechanical Engineering & Materials Science**
Washington University (St. Louis, MO)
8/15 – 2/16 **Professor of Biomechanics (in Orthopaedic Surgery and Biomedical Engineering)**
Columbia University (New York, NY)
8/15 - **Vice Chair for Basic Research, Orthopaedic Surgery**
Columbia University (New York, NY)
8/15 - **Director of Robert Carroll & Jane Chace Carroll Laboratories, Orthopaedic Surgery**
Columbia University (New York, NY)
3/16 - **Professor of Biomechanics (in Orthopaedic Surgery and Biomedical Engineering) (with tenure)**
Columbia University (New York, NY)
2/17 - **Robert E. Carroll and Jane Chace Carroll Professor**
Columbia University (New York, NY)

RESEARCH SUPPORT

Completed - Governmental

2002 - 2003 NIH F32 AR049640 (**Principal Investigator**): Functional tissue engineering of tendon ($27,566 total award)
2006 - 2011 NIH K01 EB004347 (**Principal Investigator**): Enhanced tendon-to-bone healing (Score-120, $634,778 total award)
2006 - 2011 NIH R01 AR033097 (Co-Investigator, PI: Richard Gelberman): Flexor tendon healing (Score- 145, 2.0 percentile, $2,410,282 total award)
2009 - 2011 NIH R21 AR055184 (**Principal Investigator**): Structure-function relationships at the tendon-to-bone insertion site (Score- 146, 1.5 percentile, $374,490 total award)
2011 - 2013 NIH R24 HD050837 (PI: Richard Lieber): Pilot grant: Recovery potential of degenerated muscle function following rotator cuff repair ($25,000 total award)
2011 - 2014 NIH T32 AR060719 (PI: Roberto Civitelli. **Mentor** to student appointee: Andrea Schwartz): Metabolic skeletal disorders training program grant ($67,800 total award)
2009 - 2014 NASA NNX09AP05G (**Principal Investigator**): The effect of weightlessness on the tendon-to-bone insertion ($165,000 total award)
2009 - 2014 NSF CAREER 844607 (**Principal Investigator**): Functionally graded biologic materials-tissue engineering of the tendon-to-bone insertion ($400,000 total award)
2013 - 2015 Children's Discovery Institute MD-F-2013-271 (**Mentor**, fellowship award to Dr. Megan Killian): The role of scleraxis on the development of tendon and its attachment to bone ($60,000 total award)
2013 - 2016 NIH F32 AR064652 (**Mentor**, fellowship award to Dr. Megan Killian): The role of scleraxis and mechanical loading on enthesis maturation ($161,802 total award)

2014 - 2016 NIH T32 AR060719 (PI: Roberto Civitelli. **Mentor** to student appointee: Stephen Linderman): Metabolic skeletal disorders training program grant ($70,428 total award)

2013 - 2016 NSBRI PD13-0019 (**Mentor**, fellowship award to Dr. Alix Deymier-Black): Effect of unloading on the structure and mechanics of the rotator cuff tendon-to-bone insertion ($156,432 total award)

2014 - 2016 NIH F31 AR066452 (**Mentor**, fellowship award to Shivam Shah): Evaluating the role of inflammation in tendinopathy with transgenic mice ($78,696 total award)

2011 - 2016 NIH R01 AR060820 (**Multiple Principal Investigator** with Younan Xia and Leesa Galatz): Nanofiber scaffolds with gradations in mineral content for rotator cuff repair ($2,324,139 total award; no cost extension)

2013 - 2018 NIH U01 EB016422 (**Multiple Principal Investigator** with Guy Genin): Cross-scale interactions between mineral and organic phases in the attachment of tendon to bone ($2,890,654 total award)

2016 - 2019 NIH F30 AR069491 (**Mentor**, fellowship award to Stephen Linderman): Improved orthopaedic repairs through mechanically optimized, adhesive biomaterials ($145,728 total award)

2016 - 2020 NSF 1608545 (**Multiple Principal Investigator** with Young-Shin Jun): Nucleation of calcium phosphate biomaterials ($90,000 total award to Thomopoulos)

2009 - 2021 NIH R01 AR055580 (**Principal Investigator**): Tendon enthesis development and regeneration ($4,033,438 total award)

Research supplement to promote diversity in health-related research ($76,307 total award; 2016 - 2017)

Supplements to Advance Research (STAR) from Projects to Programs ($477,449 total award; 2016 - 2018)

2010 - 2022 NIH R01 AR057836 (**Multiple Principal Investigator** with Leesa Galatz): Rotator cuff degeneration and repair ($3,514,844 total award)

Research supplement to promote diversity in health-related research ($53,586 total award; 2020 - 2021)

2019 - 2022 NIH R21 AR076008 (**Multiple Principal Investigator** with Guy Genin and Kollbe Ahn): Adhesive materials for tendon-to-bone repair ($416,900 total award)

2023 NSF 2306964 (**Principal Investigator):** Summer Biomechanics, Bioengineering, and Biotransport Conference ($49,433)

Completed - Non-Governmental

2005 - 2007 inSCOPE Orthopaedic Fellowship Award (**Principal Investigator**): The role of TGF-β at the healing tendon-to-bone insertion site ($50,000 total award)

2006 - 2009 Washington University Center for Materials Innovation (**Principal Investigator**): Nanostructure of attachment of dissimilar composite biomaterials ($85,000 total award)

2007 - 2008 Bone Solutions Incorporated (Co-Investigator, PI: Richard Gelberman): The effect of Osteocrete on tendon-to-bone healing in a canine flexor tendon model ($68,772 total award)

2007 - 2008 American Shoulder and Elbow Surgeons (Co-Investigator, PI: Leesa Galatz): The role of the stress environment on tendon-to-bone healing ($20,000 total award)

2007 - 2009 OREF Research Grant (**Principal Investigator**): Improving tendon-to-bone healing using novel biofactors ($100,000 total award)

2007 - 2010 OREF Career Development Award (Co-Investigator, PI: Leesa Galatz): The role of the stress environment on formation of the tendon-bone insertion site: development and healing models ($225,000 total award)

2013 - 2014 BioTime, Inc. OTM6075 (**Principal Investigator**): The effect of thiol-modified hyaluronan on flexor tendon healing ($54,655 total award)

2020 - 2022 BiomedX (**Princial Investigator**): PythonFix device for improved rotator cuff repair ($50,000)

Current - Governmental

2012 - 2023 NIH R01 AR062947 (**Multiple Principal Investigator** with Richard Gelberman and Shelly Sakiyama Elbert): Enhanced tendon healing though growth factor and cell therapies ($5,546,170 total award)
Research supplement to promote diversity in health-related research ($82,720 total award; 2020 - 2021)
2020 - 2025 NIH R01 AR077793 (**Multiple Principal Investigator** with Guy Genin): Multiscale models of fibrous interface mechanics ($2,440,076 total award)
2022 - 2027 NIH R01 AR080924 (**Multiple Principal Investigator** with Younan Xia): Biomimetic approaches for enthesis tissue engineering ($2,513,675 total award)
2023 - 2028 NIH R01 AR080717 (**Principal Investigator**): Formation of a functional tendon enthesis during development and healing ($2,518,043 total award)
2023 - 2025 NIH R13 EB035037 (**Principal Investigator**): Summer Biomechanics, Bioengineering, and Biotransport Conference ($32,000 total award)

Current - Non-Governmental
2023 - 2024 OREF 23-007 (**Mentor**, award to Beth Ashinsky): Moving towards primary ACL repair: The role of the ACL sheath ($5,000 total award)
2022 - 2023 OREF22-065 (**Mentor**, award to Lynn Ann Forrester): The role of tendinopathy and tissue crosstalk in osteoarthritis progression ($20,000 total award)
2023 - 2024 OREF 23-066 (**Mentor**, award to Andrew Luzzi): Enhanced enthesis regeneration via gli1+ enthesis stem cell treatment ($20,000 total award)

PATENTS AND INVENTION DISCLOSURES

Patent issued

1. **Thomopoulos S**, Sakiyama-Elbert S, Silva MJ, Gelberman RH, Xia Y, Schwartz A, Xie J., Polymer nanofiber scaffold for a heparin / fibrin-based growth factor delivery system. *U.S. Patent 8,673,323*, March 18, 2014.
2. Smith L, **Thomopoulos S**. Collagen matrix with locally controlled intrafibrillar and extrafibrillar mineral content and methods of producing. *U.S. Patent 9,908,929*, January 31, 2014.
3. Boyle J, Pless R, Genin GM, **Thomopoulos S**. System and method for quantifying deformation, disruption, and development in a sample. *U.S. Patent 10,072,924*, September 11, 2018.
4. Linderman S, **Thomopoulos S**, Genin GM. Adhesive coated sutures. *US Patent 10,314,574*, filed June 11, 2019.
5. Linderman S, Genin GM, **Thomopoulos S**, Ahn K, Birman VM. Compositions and methods for tissue repair. *U.S. Patent 10,631,973*, April 28, 2020.
6. Xia Y, Li J, **Thomopoulos S**, Linderman S, Zhu C. Surgical suture materials with porous sheaths for drug delivery. *U.S. Patent 11,110,197*, filed August 21, 2018.

Patent application published

7. **Thomopoulos S**, Ominsky MS. Method of improving connective tissue attachment using antisclerostin antibodies, *U.S. Patent Application Publication US2017/045705*, August 7, 2017.
8. Genin G, Hoppe E, Yoon DH, **Thomopoulos S,** Kurtaliaj I, Tedesco L, Kovacevic D, Birman V, Smith L, Galatz L. Soft tissue-hard tissue interface fixation device. *International Publication number WO 2021067972 A1*, April 8, 2021 | *US20230113477A1*, April 13, 2023.

HONORS AND AWARDS

1991 - 1995 AFL-CIO Hotel Association of New York City Scholarship
1999 Neer Award for Basic Science Research in the Shoulder (American Shoulder and Elbow Surgeons Society) – Refereed Journal Paper #4 below

1999 Hughston Award for Basic Science Research (American Orthopaedic Society for Sports Medicine)
2001 Best Student Paper in Orthopaedics: Ph.D. Level (Bioengineering Division of the American Society of Mechanical Engineers – 2001 Summer Meeting)
2007 Y.C. Fung Young Investigator Medal (American Society of Mechanical Engineers)
2009 Neer Award for Basic Science Research in the Shoulder (American Shoulder and Elbow Surgeons Society)
2009 Kappa Delta Young Investigator Award (American Academy of Orthopaedic Surgeons)
2009 Lee T. Ford Award (Award for Academic Achievement – Department of Orthopaedic Surgery, Washington University)
2012 Greek America's Forty Under 40 (Greek America Foundation)
2017 Fellow of The American Institute for Medical and Biological Engineering (AIMBE)
2018 Fellow of the American Society of Mechanical Engineers (ASME)
2018 Fellow of International Orthopaedic Research (International Combined Orthopaedic Research Societies - ICORS)
2020 Van C. Mow Medal (American Society of Mechanical Engineers)

PH.D. DISSERTATION

Title: "Supraspinatus tendon-to-bone healing: Differences in biomechanical, structural, and compositional properties due to a range of activity levels"
Date: 5/2001
Committee: Louis J. Soslowsky, Ph.D., University of Pennsylvania, Philadelphia, PA
Steven A. Goldstein, Ph.D., University of Michigan, Ann Arbor, MI
Gerald R. Williams, M.D., University of Pennsylvania, Philadelphia, PA
Gary Hattersley, Ph.D., Millennium Pharmaceuticals, Cambridge, MA
Alan Wineman, Ph.D., University of Michigan, Ann Arbor, MI

REFEREED JOURNAL ORIGINAL MANUSCRIPTS

Web of Science: 9,995 total citations, 59 H-index (as of 7/6/23)
Google Scholar: 15,805 total citations, 73 H-index (as of 7/6/23)

1998

1. Carpenter JE, Flanagan CL, **Thomopoulos S**, Yian EH, Soslowsky LJ. The effects of overuse combined with intrinsic or extrinsic alterations in an animal model of rotator cuff tendinosis. American Journal of Sports Medicine, 26:801-807, 1998.
2. Carpenter JE, **Thomopoulos S**, Flanagan CL, DeBano CM, Soslowsky LJ. Rotator cuff defect healing: A biomechanical and histological analysis in an animal model. Journal of Shoulder and Elbow Surgery, 7:599-605, 1998.

2000

3. Soslowsky LJ, **Thomopoulos S**, Tun S, Flanagan CL, Keefer CC, Mastaw J, Carpenter JE. Overuse activity injures the supraspinatus tendon in an animal model: A histologic and biomechanical study. Journal of Shoulder and Elbow Surgery, 9:79-84, 2000.

2002

4. **Thomopoulos S**, Hattersley G, Rosen V, Mertens M, Galatz L, Williams GR, Soslowsky LJ. The localized expression of extracellular matrix components in healing tendon insertion sites: An in situ hybridization study. Journal of Orthopaedic Research, 20:454-463, 2002.
5. **Thomopoulos S**, Soslowsky LJ, Flanagan CL, Tun S, Keefer CC, Mastaw J, Carpenter JE. The influence of exogenous fibrin clot on healing in a rat supraspinatus tendon defect. Journal of Shoulder and Elbow Surgery, 11:239-47, 2002.

6. Soslowsky LJ, **Thomopoulos S**, Esmail A, Williamson II JD, Flanagan CL, Iannotti JP, Carpenter JE. Rotator cuff tendinosis in an animal model: The role of extrinsic and overuse factors. Annals of Biomedical Engineering, 30:1057-1063, 2002.

2003

7. **Thomopoulos S**, Williams G, Soslowsky LJ. Supraspinatus tendon-to-bone healing: Differences in biomechanical, structural, and compositional properties due to a range of activity level. Journal of Biomechanical Engineering, 125:106-113, 2003.
8. **Thomopoulos S**, Williams GR, Gimbel JA, Favata M, Soslowsky LJ. Variation of structural, compositional, and biomechanical properties along the tendon-to-bone insertion site. Journal of Orthopaedic Research, 21:413-419, 2003.

2005

9. **Thomopoulos S**, Harwood FL, Silva MJ, Amiel D, Gelberman RH. Effect of several growth factors on canine tendon fibroblast proliferation and collagen synthesis *in vitro*. Journal of Hand Surgery - American, 30:441-447, 2005.
10. **Thomopoulos S**, Fomovsky G, Holmes JW. The development of structural and mechanical anisotropy in fibroblast populated collagen gels. Journal of Biomechanical Engineering, 127:742-750, 2005.
11. Galatz LM, Rothermich SY, Zaegel M, Silva MJ, Havlioglu N, **Thomopoulos S**. Delayed repair of tendon-to-bone injuries leads to decreased biomechanical properties and bone loss. Journal of Orthopaedic Research, 23:1441-7, 2005.

2006

12. Silva MJ, Brodt MD, Wopenka B, **Thomopoulos S**, Williams D, Ko M, Kusano N, Mecham RP, Bank R. Decreased collagen content and organization are associated with reduced material strength of demineralized and intact bone in the SAMP6 murine model of senile osteoporosis. Journal of Bone and Mineral Research, 21:78-88, 2006.
13. Galatz LM, Sandell LJ, Rothermich SY, Das R, Mastny A, Havlioglu N, Silva M, **Thomopoulos S**. Characteristics of the rat supraspinatus tendon during tendon-to-bone healing after acute injury. Journal of Orthopaedic Research, 24(3):541-550, 2006.
14. Silva MJ, **Thomopoulos S**, Kusano N, Zaegel MA, Harwood FL, Matsuzaki H, Havlioglu N, Dovan TT, Amiel D, Gelberman RH. Early healing of flexor tendon insertion site injuries: tunnel repair is mechanically and histologically inferior to surface repair in a canine model. Journal of Orthopaedic Research, 24(5):990-1000, 2006.
    Featured on issue cover.
15. **Thomopoulos S**, Marquez JP, Weinberger B, Birman V, Genin GM. Collagen fiber orientation at the tendon-to-bone insertion and its influence on stress concentrations. Journal of Biomechanics, 39(10):1842-1851, 2006.
16. Galatz LM, Silva MJ, Rothermich SY, Zaegel MA, Havioglu N, **Thomopoulos S**. Nicotine delays tendon-to-bone healing in a rat shoulder model. Journal of Bone and Joint Surgery [American], 88(9):2027-34, 2006.

2007

17. **Thomopoulos S**, Matsuzaki H, Zaegel M, Gelberman RH, Silva MJ. Alendronate prevents bone loss and improves tendon-to-bone repair strength in a canine model. Journal of Orthopaedic Research, 25(4):473-479, 2007.
18. Gelberman RH, **Thomopoulos S**, Sakiyama-Elbert S, Das R, Silva M. The early effects of sustained platelet derived growth factor administration on the functional and structural properties of repaired intrasynovial flexor tendons: An *in vivo* biomechanical study at the three week interval in canines. Journal of Hand Surgery – American, 32(3):373-9, 2007.
19. Gimbel JA, Van Kleunen JP, Williams GR, **Thomopoulos S**, Soslowsky LJ. Long durations of immobilization may be necessary to enhance the mechanical properties of the healing supraspinatus tendon. Journal of Biomechanical Engineering, 129(3):400-404, 2007.

20. **Thomopoulos S**, Kim HM, Rothermich SY, Biederstadt C, Das R, Galatz LM. Decreased muscle loading delays maturation of the tendon enthesis during post-natal development. Journal of Orthopaedic Research, 25(9), 1154-1163, 2007.
21. **Thomopoulos S,** Zaegel M, Das R, Harwood FL, Silva MJ, Amiel D, Sakiyama-Elbert S, Gelberman RH. PDGF-BB released in tendon repair using a novel delivery system promotes cell proliferation and collagen remodeling. Journal of Orthopaedic Research, 25(10):1358-1368, 2007.
22. **Thomopoulos S**, Fomovsky G, Chandran PL, Holmes JW. Collagen fiber alignment does not explain mechanical anisotropy in fibroblast populated collagen gels. Journal of Biomechanical Engineering, 129(5):642-650, 2007.
23. Galatz LM, Rothermich SY, VanderPloeg KA, Petersen BC, Sandell LJ, **Thomopoulos S**. Development of the supraspinatus tendon-to-bone insertion: localized expression of extracellular matrix and growth factor genes. Journal of Orthopaedic Research, 25(12):1621-1628, 2007.

2008

24. Sakiyama-Elbert S, Das R, Gelberman RH, Harwood F, Amiel D, **Thomopoulos S**. Controlled release kinetics and biologic activity of PDGF-BB for use in flexor tendon repair. Journal of Hand Surgery [American], 33(9):1548-57, 2008.
25. **Thomopoulos S**, Zampiakis E, Das R, Silva MJ, Gelberman RH. The effect of muscle loading on flexor tendon-to-bone healing in a canine model. Journal of Orthopaedic Research, 26(12):1611-1617, 2008.
26. Wopenka B, Kent A, Pasteris JD, Yoon Y, **Thomopoulos S**. The tendon-to-bone transition of the rotator cuff: A preliminary Raman spectroscopic study documenting the gradual mineralization across the insertion in tissue samples of rats. Applied Spectroscopy, 62(12):1285-1294, 2008.

2009

27. Kim HM, Galatz L, Patel N, Das R, **Thomopoulos S**. Recovery potential after postnatal shoulder paralysis: An animal model of neonatal brachial plexus palsy. Journal of Bone and Joint Surgery [American], 91:879-891, 2009.
28. **Thomopoulos S**, Das R, Silva MJ, Sakiyama-Elbert S, Harwood FL, Zampiakis E, Kim HM, Amiel D, Gelberman RH. Enhanced flexor tendon healing through controlled delivery of PDGF-BB. Journal of Orthopaedic Research, 27(9):1209-15, 2009.
29. Galatz LM, Charlton N, Das R, Kim HM, Havlioglu N, **Thomopoulos S**. Complete removal of load is detrimental to rotator cuff healing. Journal of Shoulder and Elbow Surgery, 18(5):669-675, 2009.
30. **Thomopoulos S**, Zampiakis E, Das R, Kim HM, Silva MJ, Havlioglu N, Gelberman RH. The use of a magnesium-based bone adhesive for flexor tendon-to-bone healing. Journal of Hand Surgery [American], 34(6):1066-73, 2009.
31. Genin GM, Kent A, Birman V, Wopenka B, Pasteris JD, Marquez JP, **Thomopoulos S**. Functional grading of mineral and collagen in the attachment of tendon to bone. Biophysical Journal, 97(4):976-985, 2009.
32. Li X, Xie J, Lipner J, Yuan X, **Thomopoulos S***, Xia Y*. Nanofiber scaffolds with gradations in mineral content for mimicking the tendon-to-bone insertion site. Nano Letters, 9(7):2763-8, 2009. [*Note: shared senior/corresponding authorship for Thomopoulos and Xia*].
33. **Thomopoulos S**, Das R, Sakiyama-Elbert S, Silva MJ, Charlton N, Gelberman RH. bFGF and PDGF-BB for tendon repair: Controlled release and biologic activity by tendon fibroblasts in vitro. Annals of Biomedical Engineering, 38(2):225-234, 2009.

2010

34. Fomovsky GM, **Thomopoulos S**, Jeffrey W. Holmes. Contribution of extracellular matrix to the mechanical properties of the heart. Journal of Molecular and Cellular Cardiology, 48(3):490 – 496, 2010.
35. Xie J, Li X, Lipner J, Manning CN, Schwartz AG, **Thomopoulos S***, Xia Y*. "Aligned-to-random" nanofiber scaffolds for mimicking the structure of the tendon-to-bone insertion site. Nanoscale, 2:923-926, 2010. [*Note: shared senior/corresponding authorship for Thomopoulos and Xia*].

36. Choi S-W, Zhang Y, Ye J, **Thomopoulos S**, Xia Y. In vitro mineralization by preosteoblasts in poly(dl-lactide-co-glycolide) inverse opal scaffolds reinforced with hydroxyapatite nanoparticles. Langmuir, 26(14):12126-31, 2010.
37. Kim HM, Galatz LM, Das R, Patel N, **Thomopoulos S**. Musculoskeletal deformities secondary to neurotomy of the superior trunk of the brachial plexus in neonatal mice. Journal of Orthopaedic Research, 28(10):1391-1398, 2010.
38. **Thomopoulos S**, Kim HM, Das R, Silva MJ, Sakiyama-Elbert S, Amiel D, Gelberman RH. The effects of exogenous bFGF on intrasynovial flexor tendon healing: A biomechanical, biochemical, and histological study in canines. Journal of Bone and Joint Surgery [American], 92:2285-2293, 2010.
    Featured Commentary and Perspective: Commentary on an article by Stavros Thomopoulos, PhD, et al.: ''The Effects of Exogenous Basic Fibroblast Growth Factor on Intrasynovial Flexor Tendon Healing in a Canine Model'', by Leon S. Benson, MD.

2011

39. Das R, Rich J, Kim HM, McAlinden A, **Thomopoulos S**. Effects of botulinum-toxin-induced paralysis on postnatal development of the supraspinatus muscle. Journal of Orthopaedic Surgery, 29(2):281-8, 2011.
40. Liu Y, Birman V, Chen C, **Thomopoulos S*,** Genin GM*. Mechanisms of bimaterial attachment at the interface of tendon to bone. Journal of Engineering Materials and Technology, 133:011006:1-8, 2011. [*Note: shared senior/corresponding authorship for Thomopoulos and Genin*].
41. Xie J, Liu W, MacEwan MR, Yeh Y-C, **Thomopoulos S**, Xia Y. Nanofiber membranes with controllable microwells and structural cues and their use in forming cell microarrays and neuronal networks. Small, 7(3):293-70, 2011.
    Featured on issue cover.
42. Kim HM, Galatz LM, Das R, Havlioglu N, Rothermich SY, **Thomopoulos S**. The role of transforming growth factor beta isoforms on tendon-to-bone healing. Connective Tissue Research, 52(2):87-98, 2011.
43. **Thomopoulos S**, Das R, Birman V, Smith L, Ku K, Elson EL, Pryse KM, Marquez JP, Genin GM. Fibrocartilage tissue engineering: The role of the stress environment on cell morphology and matrix expression. Tissue Engineering: Part A, 17(7-8):1039-53, 2011.
44. Manning CN, Kim HM, Sakiyama-Elbert S, Galatz LM, Havlioglu N, **Thomopoulos S.** Sustained delivery of transforming growth factor beta three enhances tendon-to-bone healing in a rat model. Journal of Orthopaedic Research, 29(7):1099-105, 2011.
45. Liu W, Yeh Y-C, Lipner J, Xie J, Sung H-W, **Thomopoulos S***, Xia Y*. Enhancing the stiffness of electrospun nanofiber scaffolds with controlled surface coating and mineralization. Langmuir, 27(15):9088-93, 2011. [*Note: shared senior/corresponding authorship for Thomopoulos and Xia*]

2012

46. Liu YX, **Thomopoulos S**, Birman V, Li JS, Genin GM**.** Bi-material attachment through a compliant interfacial system at the tendon-to-bone insertion site. Mechanics of Materials, 44:83–92, 2012.
47. Kim HM, Galatz LM, Lim C, Havlioglu N, **Thomopoulos S**. The effect of tear size and nerve injury on rotator cuff muscle fatty degeneration in a rodent animal model. Journal of Shoulder and Elbow Surgery, 21(7):847-58, 2012.
48. Alexander B, Daulton TL, Genin GM, Lipner J, Pasteris JD, Wopenka B, **Thomopoulos S**. The nanometer-scale physiology of bone: Steric modeling and scanning transmission electron microscopy of collagen-mineral structure. Journal of the Royal Society - Interface, 9(73):1774-86, 2012.
49. Nelson, GN, Potter, R, Ntouvali E, Silva, MJ, Boyer, MI, Gelberman, RH*, **Thomopoulos, S***. Intrasynovial flexor tendon repair: A biomechanical study of variations in suture application in human cadaver. Journal of Orthopaedic Research, 30(10):1652-9, 2012. [*Note: shared senior/corresponding authorship for Thomopoulos and Gelberman*].
50. **Thomopoulos S**, Kim HM, Silva MJ, Ntouvali E, Manning CN, Potter R, Seeherman H, Gelberman RH. The effect of bone morphogenetic protein 2 on tendon-to-bone healing in a canine flexor tendon model. Journal of Orthopaedic Research, 30(11):1702-1709, 2012.

51. Schwartz AG, Pasteris JD, Genin GM, Daulton TL, **Thomopoulos S**. Mineral distributions at the developing tendon-to-bone insertion. PLoS ONE 7(11): e48630, 2012.
52. Fufa DT, Osei DA, Calfee RP, Silva MJS, **Thomopoulos S**, Gelberman RH. The effect of core and epitendinous suture modifications on repair of intrasynovial flexor tendons in an *in vivo* canine model. Journal of Hand Surgery, 37A:2526–2531, 2012.

2013

53. Liu W, Zhang Y, **Thomopoulos S**, Xia Y. Generation of controllable gradients in cell density. Angewandte Chemie, 52(1):429-32, 2013.
54. Schwartz AG, Lipner JH, Pasteris JD, Genin GM, **Thomopoulos S**. Muscle loading is necessary for the formation of a functional tendon enthesis. Bone, 55(1):44-51, 2013.
55. Manning CN, Schwartz AG, Liu W, Xie J, Havlioglu N, Sakiyama-Elbert S, Silva MJ, Xia Y, Gelberman RH, **Thomopoulos S**. Controlled delivery of mesenchymal stem cells and growth factors using a nanofiber scaffold for tendon repair. Acta Biomaterialia, 9(6):6905-6914, 2013.
56. Killian M, Lim CT, **Thomopoulos S**, Charlton N, Kim HM, Galatz LM. The effect of unloading on gene expression of healthy and injured rotator cuffs. Journal of Orthopaedic Research, 31(8):1240-1248, 2013.
57. Shen H, Gelberman RH, Silva MJ, Sakiyama-Elbert S, **Thomopoulos S**. BMP12 induces tenogenic differentiation of adipose-derived stromal cells. PlosOne, 8(10):e77613, 2013.
58. Kolluru PV, Lipner J, Liu W, Xia Y, **Thomopoulos S**, Genin GM, Chasiotis I. Strong and tough mineralized PLGA nanofibers for tendon-to-bone scaffolds. Acta Biomaterialia, 9(12):9442-50, 2013.

2014

59. Liu Y, **Thomopoulos S**, Chen C, Birman V, Buehler MJ, Genin GM. Modelling the mechanics of partially mineralized collagen fibrils, fibres and tissue. Journal of the Royal Society – Interface, 11(92):20130835, 2014.
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4. **Thomopoulos S** and Galatz L. Biology and biomechanics of the tendon-to-bone junction. In: Tendon Surgery of the Hand. Eds: Tang, Amadio, Guibertau, and Chang, Elsevier, pg 49-58, 2011.
5. **Thomopoulos S**, Amadio P, Zhao C, Gelberman RH. Tendinopathy and tendon repair. In: Orthopaedic Basic Science. American Academy of Orthopaedic Surgeons, Rosemont IL, pg 329-340, 2011.
6. **Thomopoulos S**, Genin GM. Tendon and ligament biomechanics. In: Orthopaedic Biomechanics. CRC/Taylor and Francis, pg 49-74, 2012.
7. Birman V, Liu Y, **Thomopoulos S**, Genin GM. Multiscale optimization of joints of dissimilar materials in nature and lessons for engineering applications. In: Advanced Structural Materials. Springer, New York, pg 65-75, 2012.
8. **Thomopoulos S**. Tendons and ligaments. In: AAOS Comprehensive Orthopaedic Review (2nd edition). Ed: Boyer M, American Academy of Orthopaedic Surgeons, Rosemont IL, 2012.
9. **Thomopoulos S,** Genin GM, Birman V. The challenge of attaching dissimilar materials. In: Structural interfaces and attachments in biology. Eds: **Thomopoulos S,** Genin GM, Birman V, Springer, New York, ISBN 978-1-4614-3317-0, pg 3-18, 2013.
10. Schwartz A, **Thomopoulos S**. The role of mechanobiology in the attachment of tendon to bone. In: Structural interfaces and attachments in biology. Eds: **Thomopoulos S,** Genin GM, Birman V, Springer, New York, ISBN 978-1-4614-3317-0, pg 229-258, 2013.
11. Dennis ER, Caldwell JM, Levine SB, **Thomopoulos S**, Lu HH, Levine WN. Basic science of implants in sports medicine. In: DeLee & Drez's Orthopaedic Sports Medicine: Principles and Practice. Elsevier, 2018.

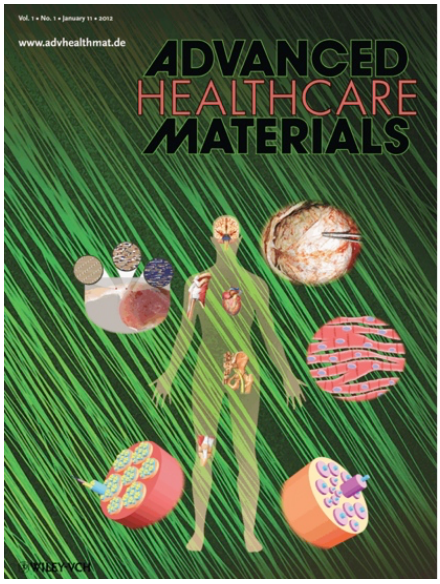
OTHER PUBLICATIONS

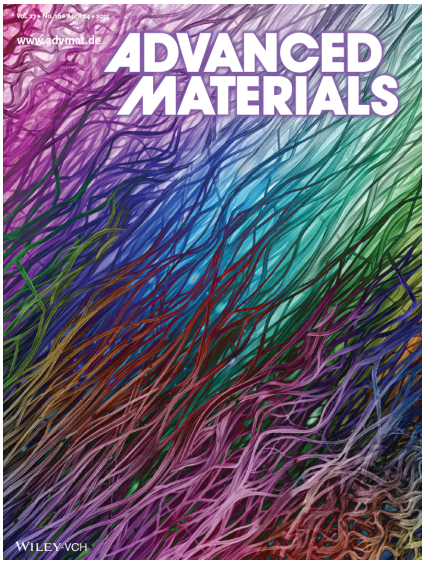
1. **Thomopoulos S**. 2012 Annual meeting of the Orthopaedic Research Society: tendon and ligament biology and development. IBMS BoneKEy 9:66, 2012.

JOURNAL/PROCEEDINGS COVERS

1. Silva MJ, **Thomopoulos S**, Kusano N, Zaegel MA, Harwood FL, Matsuzaki H, Havlioglu N, Dovan TT, Amiel D, Gelberman RH. Early healing of flexor tendon insertion site injuries: tunnel repair is mechanically and histologically inferior to surface repair in a canine model. Journal of Orthopaedic Research, 24(5):990-1000, 2006.

2. Xie J, Liu W, MacEwan MR, Yeh Y-C, **Thomopoulos S**, Xia Y. Nanofiber membranes with controllable microwells and structural cues and their use in forming cell microarrays and neuronal networks. Small, 7(3):293-70, 2011.
3. Liu W, **Thomopoulos S**, Xia Y. Electrospun nanofibers for regenerative medicine. Advanced Healthcare Materials, 1(1):10-25, 2012.
4. Liu W, Lipner J, Moran CH, Feng L, Li X, **Thomopoulos S***, Xia Y*. Generation of electrospun nanofibers with controllable degrees of crimping through a simple, plasticizer-based treatment. Advanced Materials, 27(16):2583-2588, 2015. [*Note: shared senior/corresponding authorship for Thomopoulos and Xia*]
5. Breidenbach AP, Schwartz AG, Russel RP, Aschbacher-Smith L, Liu H, Hagiwara Y, Jiang R, **Thomopoulos S**, Butler DL, Rowe. GDF5 progenitors give rise to fibrocartilage cells that mineralize via hedgehog signaling to form the zonal enthesis. Developmental Biology, 405(1):96-107, 2015.
6. Zhu C, Pongkitwitoon S, Qiu J, **Thomopoulos S**, Xia Y. Design and fabrication of a hierarchically structured scaffold for tendon-to-bone repair. Advanced Materials, 30(16):e1707306, 2018.
7. Golman M, Abraham AC, Kurtilaliaj I, Marshall BP, Genin GM, Birman V, **Thomopoulos S**. Failure mechanisms in the tendon enthesis under quasistatic, cyclical, and pathological loading. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C2019), 194, 2019.
8. Vinestock RC, Felsenthal N, Assaraf E, Katz E, Rubin S, Heinemann-Yerushalmi L, Krief S, Dezorella N, Levin-Zaidman S, Tsoory M, **Thomopoulos S**, Zelzer E. Neonatal enthesis healing involves noninflammatory acellular scar formation through extracellular matrix secretion by resident cells. The American Journal of Pathology, 192(8):1122-1135, 2022.





TEACHING EXPERIENCE

2001 – 2003 Undergraduate Biomedical Engineering Laboratory, Department of Biomedical Engineering, Columbia University (New York, NY)
This series of laboratory courses allows undergraduate Biomedical Engineering students to perform experiments relevant to their coursework.

- Introduction to Biomechanics (taught one lecture and three experiments), BME 3810 - Fall 2002
- Finite Strain Analysis (taught one lecture and three experiments), BME 3820 - Spring 2002, BME 3820 - Spring 2003
- Viscoelasticity in Biologic Tissues (taught one lecture and three experiments), BME 3840 - Spring 2003, BME 3840 - Spring 2003

2005 – 2007 Experimental Methods in Biomechanics, Department of Biomedical Engineering, Washington University (St. Louis, MO), BME 556 - Spring 2005, BME 556 - Spring 2007
This course surveys current experimental methods used in biomechanics at the tissue and cellular level. Weekly lectures cover measurement principles, data acquisition and analysis techniques. Lectures are complemented by laboratory measurements.

- Measurement of Bone Strength (taught one lecture and three experiments)

2003 – 2015 Orthopaedic Surgery CORE Lectures, Department of Orthopaedic Surgery, Washington University (St. Louis, MO)
These lectures are given to Orthopaedic Surgery residents to teach them the basics of biomechanics.
- Soft Tissue Biomechanics (taught one lecture)
- Spine Biomechanics (taught one lecture)

2005 – 2014 Orthopaedic Biomechanics: Soft Tissues, Department of Biomedical Engineering, Washington University (St. Louis, MO), BME 464/564 - Fall 2005, BME 464/564 - Fall 2007, BME 464/564 - Fall 2009, BME 464/564 - Fall 2011, BME 464/564 - Spring 2014
This course covers advanced viscoelasticity and finite strain analysis applied to the musculoskeletal system, with a focus on soft orthopaedic tissues (e.g., cartilage, tendon, and ligament).
- Graduate level (developed and taught full semester course)

2006 – 2014 Introduction to Biomedical Engineering, Department of Biomedical Engineering, Washington University (St. Louis, MO), BME 140 (every Fall semester)
This course introduces incoming engineering undergraduate students to the field of Biomedical Engineering.
- Orthopaedic Biomechanics (taught one lecture)

2007 – 2013 Moving and Shaking: An Introduction to Engineering, Washington University (St. Louis, MO)
The Moving and Shaking curriculum is a learning lab which introduces middle school students (especially girls) to engineering. Each week, during a 1.5 hour session, engineering professors perform demos and do hands-on engineering activities with the students.
- Bones & Joints (developed and taught one session)

2013 Interfaces and Attachments in Natural and Engineered Structures, Department of Mechanical Engineering / Department of Biomedical Engineering, Washington University (St. Louis, MO), MEMS 5560 / BME 4904 - Fall 2013
This course bridges the physiologic, surgical, and engineering approaches to connecting dissimilar materials and aims to advance the field by providing the first ever cross-disciplinary treatment of the subject.
- Graduate level (developed and taught full semester course)

2014 – 2017 ORS/OREF/AAOS New Investigator Workshop, This two day workshop teaches new investigators the skills and strategies for successfully securing funding for clinical, translational, and basic science research.

2016 – Biomechanics of Musculoskeletal Soft Tissues, Department of Biomedical Engineering, Columbia University (New York, NY), BMEN 4302 – Fall 2016, Fall 2018, Fall 2020, Fall 2022
This course covers advanced viscoelasticity and finite strain analysis applied to the musculoskeletal system, with a focus on soft orthopaedic tissues (e.g., cartilage, tendon, and ligament).
- Graduate level (developed and taught full semester course)

2019 – Career Development Seminar Series, Department of Biomedical Engineering, Department of Orthopedic Surgery, Columbia University (New York, NY)
This monthly seminar series consists of 10 lectures and discussions covering the following topics: Failure, Wellness, Academic Career Track, Non-Academic Career Tracks, How to Give Effective Presentations, Technical Writing, Mentorship, Developing Effective Collaborations, Authorship, Productivity
- Graduate level (developed and taught full year series)

MENTORSHIP/STUDENTS

Ph.D. Student Graduates (primary mentor)

1. Cionne N. Manning, Ph.D. in Biomedical Engineering, Washington University, 5/2013
   Thesis: "Anti-inflammatory effects of adipose-derived mesenchymal stem cells for flexor tendon healing"
2. Andrea G. Schwartz, Ph.D. in Biophysics, Washington University, 2/2014
   Thesis: "Ihh signaling and muscle forces are required for enthesis development"
3. Justin Lipner, Ph.D. in Biomedical Engineering, Washington University, 4/2015
   Thesis: "Development of nanofiber scaffolds with controllable structure and mineral content for tendon-to-bone repair"
4. Shivam A. Shah, Ph.D. in Biomedical Engineering, Washington University, 12/2016
   Thesis: "The role of NF-κB signaling in rotator cuff tendinopathy"
5. Stephen W. Linderman, Ph.D. in Biomedical Engineering, Washington University, 1/2017
   Thesis: "Improved orthopaedic repairs through mechanically optimized, adhesive biomaterials"
6. John Boyle, Ph.D. in Biomedical Engineering, Washington University, 11/2017
   Thesis: "Accurate determination and application of local strain for studying tissues with gradients in mechanical properties"
7. Mikhail Golman, Ph.D. in Biomedical Engineering, Columbia University, 6/2021
   Thesis: "Toughening mechanisms for the attachment of architectured materials: The mechanics of the tendon enthesis"
8. Brittany Marshall, Ph.D. in Biomedical Engineering, Columbia University, 5/2022
   Thesis: "The role of the subacromial bursa in rotator cuff tendon response to injury and healing"
9. Iden Kurtliaj, Ph.D. in Biomedical Engineering, Columbia University, 10/2023
   Thesis: "Bio-inspired solutions to understand rotator cuff pathology and improve repair"

<u>Undergraduates</u>

1. Bryan Petersen	Biology senior honors thesis mentor (2004-2005)
2. Carrie Biederstadt	Biomed. Eng. independent study mentor (2006)
3. Katherine Ku	Biomed. Eng. independent study mentor (2007)
4. Nikunj Patel	Research mentor (2007)
5. Nicolas Katsantonis	Summer research mentor (2007)
6. Zachary Radwine	Mech. Eng. independent study co-mentor (2007-2008)
7. Daniel Cohen	Mech. Eng. independent study co-mentor (2007-2008)
8. Alexander Tatara	Biomed. Eng. independent study mentor (2009-2010)
9. Elizabeth Phillips	Biomed. Eng. independent study mentor (2010)
10. Rebecca Strubberg	Biomed. Eng. independent study mentor (2010-2011)
11. Doreen Sheen	Biomed. Eng. independent study mentor (2011)
12. Ashley Williams	Biomed. Eng. independent study mentor (2011)
13. Caleb Ford	Biomed. Eng. independent study mentor (2013-2014)
14. Samuel Mo	Summer research mentor (2014)
15. Dana Sprague	Biomed. Eng. independent study mentor (2014)
16. Jenny Hu	Biomed. Eng. independent study mentor (2013-2015)
17. Panagiotis Oikonomou	Biomed. Eng. independent study mentor (2018-2019)
18. Astia Innis	Postbac mentor (2020-2021)
19. Ji Eon Kim	Postbac mentor (2022-2023)

<u>Medical Students</u>

20. Derek Williams	Summer project mentor (2004)
21. Bradley Weinberger	Summer project mentor (2004)
22. Kristin VanderPloeg	Summer project mentor (2005)
23. Kaveh Kousari	Summer project mentor (2006)
24. David Zeltser	Summer project mentor (2006)
25. David Ding	Research mentor (2007)
26. Alistair Kent	Summer project mentor (2005), Independent study (2007)
27. Carol Chen	Summer project mentor (2008)
28. Mark Mangano	Summer project mentor (2009)

29. Janelle Lambert — Research mentor (2016-2017)
30. Eric Schweppe — Research mentor (2018)
31. Xavier Ferrer — Research mentor (2020-2022)
32. Jennifer Kunes — Research mentor (2020-)
33. Valia Leifer — Research mentor (2021-)
34. Kurt Holuba — Research mentor (2022-)

Orthopaedic Surgery Residents

35. Sumeet Garg — Research project advisor (2005)
36. Gregory Nelson — Research project advisor (2010-2011)
37. Nicholas Danford — Research project advisor (2019-2022)
38. Liana Tedesco — Research project advisor (2020-2022)
39. Lynn Ann Forrester — Resident research year mentor (2018-)
40. Andrew Luzzi — Resident research year mentor (2019-)
41. Beth Ashinsky — Resident research year mentor (2022-)

M.S. Students

42. Corey Gill — M.S. thesis committee member (2004-2005)
43. Srikanth Kowtha — M.S. independent project (2017)
44. Michael Latour — M.S. independent project (2020)

Ph.D. Students

45. Juan Pablo Martinez — Ph.D. thesis committee member (2005)
46. Blaine Christiansen — Ph.D. thesis committee member (2007)
47. Casey Donahoe — Research rotation (2007)
48. Jenny Lynch — Ph.D. thesis committee member (2009)
49. Gian Colombo — Ph.D. thesis committee member (2010)
50. Sheng Lin Lee — Ph.D. thesis committee member (2011)
51. Yanxin Liu — Co-advisor (2008-2012)
52. Cionne Manning — Primary advisor (2007-2013)
53. Ryan Tomlinson — Ph.D. thesis committee member (2013)
54. Zhen Lee — Ph.D. thesis committee member (2013)
55. Andrea Schwartz — Primary advisor (2008-2014)
56. Justin Lipner — Primary advisor (2008-2015)
57. Shivam Shah — Primary advisor (2012-2016)
58. Salimeh Saadat — Co-advisor (2012-2016)
59. Stephen Linderman — Primary advisor (2013-2017)
60. John Boyle — Primary advisor (2011-2018)
61. Doyoon Kim — Ph.D. thesis committee member (2014-2018)
62. Heather Zannit — Ph.D. thesis committee member (2014)
63. Yeu Yu — Ph.D. thesis committee member (2016)
64. Emily Moore — Ph.D. thesis committee member (2016-2017)
65. Milos Spasic — Ph.D. thesis committee member (2016-2018)
66. Krista Durney — Ph.D. thesis committee member (2018)
67. Mikhail Golman — Primary advisor (2015-2021)
68. Yizhong Hu — Ph.D. thesis committee member (2019-2021)
69. Michael Duffy — Ph.D. thesis committee member (2020-2021)
70. Eric Schweppe — Ph.D. thesis committee member (2018-2021)
71. Brittany Marshall — Primary advisor (2017-2022)
72. Teodora Dinescu — Ph.D. thesis committee member (2021-2023)
73. Hagar Kenawy — Ph.D. thesis committee member (2023)
74. Iden Kurtaliaj — Primary advisor (2017-2023)
75. McKenzie Sup — Primary advisor (2018-)
76. Troy Anderson — Ph.D. thesis committee member (2020-)
77. Ismael Bousso — Primary advisor (2022-)

Post-doctoral Fellows

78. Emmanouil Zampiakis	Co-mentor (2006-2007)
79. Young Yoon	Mentor (2008)
80. H. Mike Kim	Co-mentor (2004-2009)
81. Chanteak Lim	Mentor (2008-2010)
82. Eleni Ntouvali	Mentor (2009-2010)
83. Leonardo Cavinatto	Mentor (2011-2012)
84. Lester Smith	Mentor (2009-2013)
85. Megan Killian	Mentor (2010-2015)
86. Ioannis Kormpakis	Mentor (2013-2015)
87. Alix Deymier	Mentor (2012-2017)
88. Xiaoning Li	Mentor (2016-2018)
89. Suphannee Pongkitwitoon	Mentor (2016-2018)
90. Dimitris Skouteris	Mentor (2018-2020)
91. Adam Abraham	Mentor (2016-2020)
92. Fei Fang	Mentor (2017-2022)

PROFESSIONAL SOCIETIES

1993 – present	American Society of Mechanical Engineers
2002 – present	Orthopaedic Research Society
2002 – present	Biomedical Engineering Society
2005 – present	American Society of Biomechanics
2007 – present	American Shoulder and Elbow Surgeons
2007 – present	Hellenic Bioscientific Association in the USA
2008 – 2018	Society for Biomaterials
2014 – 2018	American Physiological Society
2017 – present	American Institute for Medical and Biomedical Engineering

PROFESSIONAL ACTIVITIES

Journal Editorial Boards

- 2012 – 2015 Associate Editor, Connective Tissue Research
- 2013 – 2017 Editorial Board, Tissue Engineering
- 2013 – Board of Consulting Editors for Research, J Bone & Joint Surgery
- 2014 – Associate Editor, Journal of Orthopaedic Research

Grant proposal reviews

National Institutes of Health

- NIH (NIAMS) long range planning panel on research on cartilage and connective tissue biology and diseases, Oct. 8, 2004, Washington, DC.
- NIH study section (ZRG1 MOSS-C 58 R) – Mail reviewer, May 5, 2009.
- NIH study section (ZRG1 MOSS G 55R) – Mail reviewer, May 21, 2010.
- NIH study section (ZRG1 BST-N 02 M) – Study section reviewer, September 22, 2010.
- NIH study section (MTE) – Study section reviewer, February 16-17, 2012.
- NIH study section (MTE) – Study section reviewer, June 24-25, 2012.
- NIH study section (MTE) – Study section reviewer, October 22, 2012.
- NIH study section (ZRG1 MOSS-T 03 S – Study section reviewer, March 20, 2013.
- NIH study section (MTE) – Study section reviewer, June 13, 2013.
- NIH study section (MTE) – Study section reviewer, November 18, 2013.
- NIH study section (ZRG1 MOSS-C03) – Study section reviewer, December 2-3, 2013.
- NIH study section (ZAG1 ZIJ-9 GEMSSTAR) – Study section reviewer, January 27, 2014.
- NIH study section (MTE) – Study section reviewer, February 12, 2014.

- NIH study section (MTE) – Study section reviewer, June 4, 2014.
- NIH study section (MTE) – Study section reviewer, October 1, 2014.
- NIH study section (MTE) – Study section reviewer, February 2-3, 2014.
- NIH study section (MTE) – Study section reviewer, June 1, 2014.
- NIH study section (MTE) – Study section reviewer, October 1-2, 2014.
- NIH study section (MTE) – Study section reviewer, February 2-3, 2015.
- NIH study section (MTE) – Study section reviewer, June 1, 2015.
- NIH study section (MTE) – Study section reviewer, February 4, 2016.
- NIH study section (ZRG1 DTCS-A 81 S) – Mail reviewer, January 17, 2017.
- NIH study section (MTE) – Study section reviewer, October 10, 2018.
- NIH study section (ZRG1 MOSS-D 82 A) – Study section reviewer, November 13, 2019.
- NIH study section (ZRG1 MOSS-K) – Study section reviewer, February 28, 2019.
- NIH study section (ZRG1 MOSS-S (02) M) – Study section reviewer, November 12, 2020.
- NIH study section (DP2 panel) – Mail reviewer, December 19, 2020.
- NIH study section (DP2 panel) – Mail reviewer, December 10, 2021.

American Shoulder and Elbow Surgeons

- Research grant award committee, 2009.
- Research grant award committee, 2011.
- Research grant award committee, 2012.

Veterans Administration

- RRD0 R - Spinal Cord Injury & Regenerative Medicine – Mail reviewer, August 16, 2010.
- RRD0 1 - Regenerative Medicine – Mail reviewer, February 24, 2011.
- RRD0 1 - Regenerative Medicine – Mail reviewer, August 9, 2011.

National Science Foundation

- Grant review panelist, Nano/Bio Mechanics (NBM) program, 2009.
- Grant review panelist, Biomaterials (BMAT) program, 2017.
- Grant review panelist, Biomaterials (BMAT) program, 2018.

US Army Medical Research and Materiel Command

- External reviewer, 2011.

Science Foundation Ireland

- External reviewer 2013.

Orthopaedic Research & Education Foundation

- External reviewer 2009, 2010, 2017, 2018, 2021.

<u>Washington University committees</u>

- Department of Mechanical, Aerospace, and Structural Engineering (MASE) – Faculty search committee, 2008 – 2010.
- School of Medicine – Distinguished Investigator Award nomination committee, 2011.
- Department of Orthopaedic Surgery – Faculty search committee, 2011 – 2013.
- Department of Developmental Biology – Faculty search committee, 2012 – 2013.
- School of Medicine – Distinguished Investigator Award nomination committee, 2014.
- Department of Orthopaedic Surgery – Residency interviews, 2003 – 2015.
- Department of Orthopaedic Surgery – Shoulder service fellowship interviews, 2006 – 2015.

<u>Columbia University committees</u>

- Department of Biomedical Engineering – Faculty search committee, 2015 – 2016.
- Department of Orthopedic Surgery – Faculty search committee, Chair, 2016 – 2019.
- Dean's Student Research Day – MD/PhD Review Committee, 2016 –.
- Department of Orthopedic Surgery – Research committee, Chair, 2016 – .
- Department of Orthopaedic Surgery – Committee on Appointments and Promotion (COAP), Chair, 2016 – .

Professional society committees

- American Orthopaedic Society for Sports Medicine, Ligament and Tendon Repair and Regeneration Think Tank, January 24-25, 2009.
- American Shoulder and Elbow Society, Research Committee, 2009 – 2012.
- Cell and Tissue Engineering Committee, Biomedical Engineering Division, American Society of Mechanical Engineers, 2007 – present.
- Solid Mechanics Committee, Biomedical Engineering Division, American Society of Mechanical Engineers, 2007 – present.
- Y.C. Fung Young Investigator Award honors committee, American Society of Mechanical Engineers, 2011 – 2017.
- Program Committee, American Shoulder and Elbow Society 2015 Open Meeting/Specialty Day.
- Program Committee, Orthopaedic Research Society Annual Meeting, 2015 – 2017.
- Executive Committee, Treasurer, American Society of Mechanical Engineering – Bioengineering Division, 2017-2020.
- Chair Elect, Orthopaedic Research Society – Tendon Section, 2016-2018.
- Steering Committee, NIH Interagency Modeling and Analysis Group, 2018-2021.
- Chair, Orthopaedic Research Society – Tendon Section, 2019-2021.
- Chair, Van C. Mow Medal Honors Committee, American Society of Mechanical Engineers, 2021 – 2024.
- Awards & Recognition Committee, Orthopaedic Research Society, 2023-2025.

Conference chairs

- Publications Chair, American Society of Mechanical Engineering (ASME) Summer Bioengineering Conference, 2009.
- Co-Chair of the Upper Extremity Topic Committee, Orthopaedic Research Society Annual Meeting, 2009 – 2012.
- Program Committee Co-Chair, International Symposium on Ligaments & Tendons, 2011.
- Local Arrangements Chair, American Society of Mechanical Engineering (ASME) Summer Bioengineering Conference, 2012.
- Conference Co-Chair, International Symposium on Ligaments & Tendons, 2015.
- Chair, Orthopaedic Research Society Grant Writing Course, 2019.
- Chair, Summer Biomechanics, Bioengineering, and Biotransport Conference (SB^3C), 2023.

Manuscript reviewer

Cell Stem Cell, Nature Cell Biology, Science Translational Medicine, Journal of Clinical Investigation, Nature Materials, Science Advances, Nature Rheumatology, Proceedings of the National Academy of Sciences, eLife, Scientific Reports, Journal of Orthopaedic Research, Journal of Bone and Joint Surgery, Stem Cell Reports, PlosOne, Journal of Biomechanical Engineering, American Journal of Sports Medicine, ACS Nano, Nano Letters, Nature Protocols, Tissue Engineering: Part A, Matrix Biology, Journal of Shoulder and Elbow Surgery, Journal of Hand Surgery, Journal of Biomechanics, Annals of Biomedical Engineering, Biomechanics and Modeling in Mechanobiology, eCells and Materials Journal (eCM), Developmental Dynamics, Cell Biology International, Biophysical Journal, Acta Biomaterialia, Stem Cells and Development, Biopolymers, Clinical Orthopaedics and Related Research, Connective Tissue Research, Journal of Medical Devices, Cellular and Molecular Bioengineering, Osteoarthritis and Cartilage, Journal of Applied Physiology, Journal of Materials Research, Journal of Musculoskeletal & Neuronal Interactions

NATIONAL/INTERNATIONAL PODIUM PRESENTATIONS

1. **Thomopoulos S**, Tun S, Flanagan CL, Keefer CC, Mastaw J, Carpenter JE, Soslowsky LJ. Overuse activity injures rotator cuff tendons in an animal model: A histologic and biomechanical study. 44th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 16, 1998.

2. **Thomopoulos S**, Esmail A, Williamson II JD, Flanagan CL, Iannotti JP, Carpenter JE, Soslowsky LJ. Rotator cuff tendinosis in an animal model: The role of extrinsic and overuse factors. International Mechanical Engineering Congress & Exhibition, Orlando, FL, November 9, 2000.
3. **Thomopoulos S**, Esmail A, Williamson II JD, Flanagan CL, Iannotti JP, Carpenter JE, Soslowsky LJ. Rotator cuff injury: The role of combined etiologic factors. 47th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 27, 2001.
4. **Thomopoulos S**, Williams G, Soslowsky LJ. Tendon-to-bone healing: The role of postoperative activity level. 47th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 26, 2001.
5. **Thomopoulos S**, Williams G, Soslowsky LJ. Tendon-to-bone healing: Changes in biomechanical, structural, and compositional properties due to post-operative activity level. 48th Annual Meeting of the Orthopaedic Research Society, Dallas, TX, February 11, 2002.
6. **Thomopoulos S**, Williams G, Soslowsky LJ. Variation of structural, compositional, and biomechanical properties along the tendon-to-bone insertion site. 48th Annual Meeting of the Orthopaedic Research Society, Dallas, TX, February 12, 2002.
7. **Thomopoulos S**, Knezevic V, Costa KD, Holmes JW. Development of anisotropy in fibroblast populated collagen gels. International Mechanical Engineering Congress & Exhibition, New Orleans, LA, November 21, 2002.
8. **Thomopoulos S**, Costa KD, Holmes JW. Structural and mechanical anisotropy in tendon fibroblast populated collagen gels. 49th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, February 3, 2003.
9. **Thomopoulos S**, Genin G, Das R, Birman V. The role of the stress environment on fibrocartilage development. 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, March 19, 2006.
10. **Thomopoulos S**, Genin G, Das R, Birman V. The role of the stress environment on fibrocartilage development. Society of Experimental Mechanics Annual Conference, Saint Louis, MO, June 7, 2006.
11. **Thomopoulos S**, Matsuzaki H, Zaegel M, Gelberman RH, Silva MJ. Preventing bone loss improves tendon-to-bone healing in a canine model. Society of Experimental Mechanics Annual Conference, Saint Louis, MO, June 7, 2006.
12. **Thomopoulos S**, Kim HM, Das R, Rothermich S, Galatz L. Decreased loading delays the development of a fibrocartilaginous tendon-to-bone insertion in a mouse model. American Society of Mechanical Engineering – Summer Bioengineering Conference, Amelia Island, FL, June 24, 2006.
13. **Thomopoulos S**, Zeltser D, Kousari K, Das R, Kim HM, Galatz L. The role of the physical environment on the structure, composition, and biomechanics of the developing supraspinatus enthesis. International Symposium on Ligament and Tendon VII, San Diego, CA, February 10, 2007.
14. **Thomopoulos S**, Silva MJ, Das R, Zaegel M, Matsuzaki H, Zampiakis M, Sakiyama-Elbert S, Gelberman RH. Sustained delivery of PDGF-BB enhances range of motion after flexor tendon repair. 53nd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, February 11, 2007.
15. **Thomopoulos S**, Zampiakis E, Das R, Silva MJ, Gelberman RH. Increased muscle loading post-operatively improves flexor tendon-to-bone healing in a canine model. 54nd Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 4, 2008.
16. **Thomopoulos S**, Das R, Silva MJ, Sakiyama-Elbert S, Harwood F, Zampiakis E, Kim HM, Amiel D, Gelberman RH. Sustained delivery of PDGF-BB enhances flexor tendon healing. 8th World Biomaterials Congress, Amsterdam, Netherlands, May 30, 2008.
17. **Thomopoulos S**, Kent A, Wopenka B, Pasteris J, Birman V, Genin G. Modeling the tendon-bone insertion: a functionally graded material. 8th World Biomaterials Congress, Amsterdam, Netherlands, June 1, 2008.
18. **Thomopoulos S**, Das R, Silva MJ, Sakiyama-Elbert S, Harwood F, Zampiakis E, Kim HM, Amiel D, Gelberman RH. Enhanced flexor tendon healing through sustained delivery of PDGF-BB. 55th Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 25, 2009.
19. **Thomopoulos S**. Kappa Delta Award: Structure, biomechanics, and mechanobiology in the attachment of tendon to bone. 55th Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 24, 2009.

20. **Thomopoulos S**, Das R, Kim HM, Zeltser D, Kousari K, Galatz L. The role of the loading environment on the developing tendon-to bone insertion. ASME 2009 Summer Bioengineering Conference, Lake Tahoe, CA, June 17, 2009.
21. **Thomopoulos S**, Soslowsky LJ, Lu H, Rodeo S. Workshop: Functional attachment of soft tissues to bone: Development, healing, and tissue engineering. 56th Meeting of the Orthopaedic Research Society, 2010.
22. Alexander B, Daulton TL, Genin G, Lipner J, Pasteris JD, Wopenka B, **Thomopoulos S**. Nanophysiology of bone. 56th Meeting of the Orthopaedic Research Society, 175, March 8, 2010.
23. Lim C, Shen H, **Thomopoulos S**. Microgravity Leads to Degeneration of Murine Rotator Cuff Muscles. 57th Meeting of the Orthopaedic Research Society, Long Beach CA, January 16, 2011.
24. Lim C,Shen H, Kotiya A, Silva MJ, **Thomopoulos S**. STS-131: The Effects of Microgravity on the Rotator Cuff of the Shoulder. 18th Humans in Space Symposium, April 13, 2011.
25. **Thomopoulos S**, Coger R, Taber L. Workshop: Manipulating gradients to improve performance of tissue engineered products. ASME 2011 Summer Bioengineering Conference, Nemacolin Woodlands Resort, PA, June 24, 2011.
26. **Thomopoulos S**, Fitzgerald J. Workshop: New insights into the effects of spaceflight in musculoskeletal tissues. 58th Meeting of the Orthopaedic Research Society, February 5, 2012.
27. **Thomopoulos S**. Structure, biomechanics, and mechanobiology in the attachment of tendon to bone. Materials Research Society Spring Meeting, April 11, 2012.
28. **Thomopoulos S**, Birman V, Genin G. Multi-scale mechanics of the tendon-to-bone attachment. World Congress of Biomechanics 2014, July 7, 2014.
29. **Thomopoulos S**, Schwartz A, Long F. The role of muscle loading on the development of the tendon enthesis. World Congress of Biomechanics 2014, July 10, 2014.
30. **Thomopoulos S**. The mechanical challenge of attaching tendon to bone. 20th International Conference on Composite Materials, Copenhagen, Denmark, July 21, 2015.
31. **Thomopoulos S**, Schwartz A. Tissue engineering the tendon enthesis: lessons from development. 2015 TERMIS World Congress, Boston, MA, September 10, 2015.
32. **Thomopoulos S**. Targeting the NF-κB signaling pathway in chronic tendon disease. International Combined Meeting of Orthopaedic Research Societies, Montreal, Canada, June 21, 2019.

NATIONAL/INTERNATIONAL INVITED TALKS

1. **Thomopoulos S**, Tun S, Flanagan CL, Keefer CC, Mastaw J, Carpenter JE, Soslowsky LJ. Overuse activity injures rotator cuff tendons in an animal model: a histologic and biomechanical study. 20th Annual Samuel Higby Camp Lectureship in Biomechanics, University of Michigan, Ann Arbor, MI, October 30, 1997.
2. **Thomopoulos S**, Williams G, Soslowsky LJ. Tendon-to-bone healing: Changes in biomechanical, structural, and compositional properties due to post-operative activity level. Orthopaedic Research Laboratory Seminar, Mt. Sinai School of Medicine, New York, NY, October 26, 2001.
3. Gelberman RH, **Thomopoulos S**. Flexor tendon insertion site: injury and repair. Gordon Conference: Musculoskeletal Biology and Bioengineering, Proctor Academy, Andover, NH, July 26, 2004.
4. **Thomopoulos S**. The tendon-to-bone insertion site: injury and repair. Biological Engineering Seminar Series, University of Missouri, Columbia, MO, October 26, 2004.
5. **Thomopoulos S**, Genin G, Das R, Birman V. The role of the stress environment on the development of the tendon-to-bone insertion site. 5th World Congress of Biomechanics, Munich, Germany, July 31, 2006.
6. **Thomopoulos S**. Physical effects on the growth and remodeling of tendons and their bony insertions. Orthopaedic Research Laboratory Seminar, Mt. Sinai School of Medicine, New York, NY, September 8, 2006.
7. **Thomopoulos S**. Potential use of BMP-2 and BMP-12 for enhanced tendon-to-bone healing. Wyeth, Cambridge, MA, April 14, 2007.

8. **Thomopoulos S**. Soft tissue-to-bone attachment sites. American Orthopaedic Society for Sports Medicine (AOSSM) Ligament and Tendon Repair and Regeneration Think Tank. Miami, FL, January 24-25, 2009.
9. **Thomopoulos S**. The role of mechanical load attachment site healing. American Orthopaedic Society for Sports Medicine (AOSSM) Ligament and Tendon Repair and Regeneration Think Tank. Miami, FL, January 24-25, 2009.
10. **Thomopoulos S**. Current research directions in tendon healing. ASSH Masters Skills Course: Tendon Repair and Reconstruction, American Society for Surgery of the Hand, Burr Ridge, IL, October 16-17, 2009.
11. **Thomopoulos S**. Functional attachment of tendon to bone: Development, healing, and tissue engineering. Mechanical Engineering Seminar Series, Columbia University, New York, NY, February 17, 2010.
12. **Thomopoulos S**. Functional attachment of tendon to bone: Development, healing, and tissue engineering. Mechanical Engineering Seminar Series, University of Illinois – Urbana Champagne, March 12, 2010.
13. **Thomopoulos S**. Research trends in flexor tendon repair and rehabilitation. 52nd Annual Scientific Meeting of the Japan Society for Surgery of the Hand, Niigita, Japan, April 16, 2009.
14. **Thomopoulos S**. The role of mechanobiology in the attachment of tendon to bone. Gordon Conference: Musculoskeletal Biology and Bioengineering, Proctor Academy, Andover, NH, August 3, 2010.
15. **Thomopoulos S**. Nanofiber scaffolds with gradations in mineral content for rotator cuff repair. Center for Musculoskeletal Research: 1st Annual Winter Symposium, Washington University, St. Louis, MO, January 27, 2011.
16. **Thomopoulos S**. Fatty accumulation in the rotator cuff: rodent animal models. Intramuscular Fat Conference, University of California – San Diego, September 17, 2011.
17. **Thomopoulos S**. Structure, biomechanics, and mechanobiology in the attachment of tendon to bone. Orthopaedic Research Seminar Series, University of Pennsylvania, Philadelphia, PA, October 21, 2011.
18. **Thomopoulos S**. The role of mechanobiology in the development of the tendon-to-bone attachment. 2nd Batsheva Seminar on Integrative Perspectives on the Development of the Musculoskeletal System, Ein Gedi, Israel, March 1, 2011.
19. **Thomopoulos S**, Gelberman RH. Flexor tendon repair. Gordon Conference: Musculoskeletal Biology and Bioengineering, Proctor Academy, Andover, NH, August 5, 2012.
20. **Thomopoulos S**. Development of the fibrocartilaginous interface at the tendon-to-bone attachment. Gordon Conference: Cartilage Biology & Pathology, Les Diablerets, Switzerland, April 9, 2013.
21. **Thomopoulos S**. The challenge of attaching dissimilar materials. Biomedical Engineering Seminar Series, Mayo Clinic, Rochester, MN, September 20, 2013.
22. Gelberman RH, **Thomopoulos S**. Spotlight Session: Flexor tendon healing: restoration of a biological gliding surface. Orthopaedic Research Society Annual Meeting, March 17, 2014.
23. **Thomopoulos S**. How to write one-page specific aim and a 30-line abstract. 2014 ORS/OREF/AAOS New Investigator Workshop, Chicago, IL, May 16, 2014.
24. **Thomopoulos S**. Tissue engineering approaches for enhanced tendon-to-bone repair. 5th International Conference on Tissue Engineering, Kos, Greece, June 23, 2014.
25. **Thomopoulos S**. The effects of microgravity on the rotator cuff of the shoulder. 2014 Annual Meeting of the American Society for Gravitational and Space Research, Pasadena, CA, October 24, 2014.
26. **Thomopoulos S**. The role of muscle loading in tendon enthesis development and mineralization. The EMBO Workshop on Integrative Perspectives on Musculoskeletal Development, Ein Gedi, Israel, January 8, 2015.
27. **Thomopoulos S**. The mechanical challenge of attaching tendon to bone. Grand Rounds, Columbia University, New York, NY, January 29, 2015.
28. **Thomopoulos S.** New investigator networking session: Grant submissions strategies. Orthopaedic Research Society Annual Meeting, March 20, 2015.

29. **Thomopoulos S**. Guiding regenerative strategies for tendon-to-bone repair: lessons from developmental biology. 4th Musculoskeletal Repair and Regeneration Symposium, Albert Einstein School of Medicine, New York, NY, October 22, 2015.
30. **Thomopoulos S**. Biologically inspired solutions for attaching dissimilar materials. Tissue Engineering at Michigan (TEAM) Seminar Series, University of Michigan, Ann Arbor, MI, April 28, 2016.
31. **Thomopoulos S**. The mechanical challenge of attaching tendon to bone. Interdisciplinary training in mechanobiology from nm to cm - Annual retreat, Washington University, St. Louis, MO, June 3, 2016.
32. **Thomopoulos S**. Biologically inspired solutions for attaching dissimilar materials. Penn Institute for Regenerative Medicine, Advances in Musculoskeletal Regeneration Seminar Series, University of Pennsylvania, Philadelphia, PA, December 2, 2016.
33. **Thomopoulos S**. Biologically inspired solutions for attaching dissimilar materials. Penn Institute for Regenerative Medicine, BME 7900 Seminar Series, Cornell University, Ithaca, NY, January 27, 2017.
34. **Thomopoulos S**. Targeting inflammation for treating tendinopathy. Orthopaedic Research Laboratories Seminar Series, Icahn School of Medicine at Mount Sinai, New York, NY, February 22, 2017.
35. **Thomopoulos S**. Biologically inspired solutions for attaching tendon to bone. Grand Rounds – Orthopaedic Surgery, Icahn School of Medicine at Mount Sinai, New York, NY, February 22, 2017.
36. **Thomopoulos S**. Targeting inflammation for treating tendinopathy. Scientific Lecture, Hospital for Special Surgery, New York, NY, May 12, 2017.
37. **Thomopoulos S**. Biologically inspired solutions for attaching tendon to bone. Distinguished Lecture, Hospital for Special Surgery, New York, NY, May 12, 2017.
38. **Thomopoulos S**. Tendon enthesis development and regeneration. IUTAM Symposium on mechanical environments of living cells, Xi'An, China, June 28, 2018.
39. Pongkitwitoon S, Schwartz A, Fang F, **Thomopoulos S**. Tendon enthesis development and regeneration. World Congress of Biomechanics, Dublin, Ireland, July 8, 2018.
40. **Thomopoulos S**. Tendon enthesis development and regeneration. ORS Tendon Section Satellite Meeting, Portland, OR, November 17, 2018.
41. **Thomopoulos S**. Tendon enthesis development and regeneration. Distinguished Lecture, Hospital for Special Surgery, New York, NY, May 23, 2019.
42. **Thomopoulos S**. Targeting the NF-κB signaling pathway in chronic tendon disease. McKay Orthopaedic Research Laboratory 40th Anniversary, Philadelphia, PA, May 3, 2019.
43. **Thomopoulos S**. Tendon enthesis development and regeneration. First Achilles Conference, Porto, Portugal, July 10, 2019.
44. **Thomopoulos S**. Mow Medal Lecture: The attachment of dissimilar materials: lessons from the tendon enthesis, Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C2020), June 17, 2020.
45. **Thomopoulos S**. Tendon enthesis pathology and repair. Columbia University Rheumatology Research Seminar, October 28, 2020.
46. **Thomopoulos S**. Rodent rotator cuff models. ORS Tendon Section Satellite Meeting, Philadelphia, PA, May 7, 2022.
47. **Thomopoulos S**. Development and Regeneration of the Tendon Enthesis. Engineering in Medicine Symposium, February 17, 2022.
48. **Thomopoulos S**. Development and Regeneration of the Tendon Enthesis. Engineering in Medicine Symposium, February 23, 2023.
49. **Thomopoulos S**. Translational strategies for repairing the tendon enthesis. 3M Innovation Forum, May 10, 2023.