BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
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NAME	POSITION TITLE
Chang, James MD.	Professor of Surgery [Plastic Surgery] & Orthopedic Surgery; Stanford University Medical Center
eRA COMMONS USER NAME JIMCHANG	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Stanford University	B.A.S.	1987	Biology & Economics
Yale University	M.D.	1993	Medicine

A. Personal Statement

The goal of my basic and translational laboratory is to develop tissue engineered tendon-bone constructs that can be used for extremity reconstruction. Specifically, we have optimized methods for decellularization and reseeding of Achilles tendon-calcaneal bone constructs in animal in vitro and in vivo models, and now will translate to patients in a multi-center clinical trial. I have directed a funded research laboratory at the VA Palo Alto Health Care System for the past 15 years. This work is a new concept, yet builds on previous work on growth factor technology, scarless flexor tendon healing, and tissue engineered flexor tendon grafts for hand reconstruction. I was Research Director for the American Society for Surgery of the Hand and managed the grant portfolio and programs of this national organization. I received the ASSH Weiland Medal for outstanding research in 2011. Therefore, my track record of successful funding and publication and my clinical expertise in reconstruction of mutilating extremity injuries will allow me to lead this project. Our team of collaborators will offer specific expertise in GMP/GTP tissue preparation, in vivo models, biomechanical analysis, and FDA regulatory pathways.

B. Positions and Honors

Positions and Employment

1993-1996: Stanford University Medical Center, Resident in Surgery
1996-1998: Stanford University Medical Center, Resident in Plastic & Reconstructive Surgery
1998-2000: Assistant Professor of Surgery [Plastic Surgery], Stanford University
1999-2000: Clinical Instructor in Orthopedic Surgery - Hand & Microsurgery Fellow, UCLA
1998-2006: Chief, Plastic & Reconstructive Surgery, V.A. Palo Alto Health Care System
2002-2006: Associate Professor of Surgery [Plastic Surgery] and Orthopedic Surgery, Stanford
2006-present: Professor of Surgery [Plastic Surgery] and Orthopedic Surgery, Stanford University
Chief, Division of Plastic & Reconstructive Surgery, Stanford University Medical Center
Attending Surgeon, VA Palo Alto Health Care System

Professional Memberships

Research Director – American Society for Surgery of the Hand - 2007 to 2010
Director – American Association for Hand Surgery - 2006-2008
Associate Editor - Journal of Hand Surgery; Annals of Plastic Surgery; Hand
Member – American Surgical Association
Member – Association of Academic Chairmen in Plastic Surgery
Member - American Society of Plastic Surgeons
Member – Plastic Surgery Research Council
Fellow - American College of Surgeons

Honors

2011 ASSH Weiland Medal for Outstanding Research
2006 ASSH Sterling Bunnell Traveling Fellowship
2004 CSPS Meeting Best Resident Paper Award [Dr. Steven Bates]

2003 Royal College of Surgeons Foundation Traveling Lectureship
2001 PSRC Meeting Snyder Plastic Surgery Resident Paper Award [Dr. Matthew Klein]
2000 CSPS Meeting Best Overall Paper Award
1999 PSEF Scholarship Essay Award – First Place

C. Selected peer-reviewed publications (Selected from 125 peer-reviewed publications)

Most relevant to the current application

Fong KD, Trindade MC, Wang Z, Nacamuli RP, Pham H, Fang TD, Song HJ, Smith RL, Longaker MT, Chang J. Microarray Analysis of Mechanical Shear Effects on Flexor Tendon Cells. Plastic & Reconstructive Surgery, 116: 1393-1404, 2005.

Chong AK and Chang J. Tissue Engineering for the Hand Surgeon: A Clinical Perspective. Journal of Hand Surgery, 31: 349-358, 2006.

Costa MA, Wu C, Pham BV, Chong A, Pham HM, Chang J. Tissue Engineering of Flexor Tendons: Optimization of Tenocyte Proliferation Using Growth Factor Supplementation. Tissue Engineering, 12: 1937-1943, 2006.

Kryger G, Chong AK, Costa M, Pham H, Bates SJ, Chang J. A Comparison of Tenocytes and Mesenchymal Stem Cells for Use in Flexor Tendon Tissue Engineering. Journal of Hand Surgery, 32A, 597-605, 2007.

Riboh J, Chong A, Pham H, Longaker M, Jacobs C, Chang J. Cyclic Strain Increases Cell Proliferation and Collagen Production in Candidate Cell Lines for Rabbit Flexor Tendon Engineering. Journal of Hand Surgery, 33A: 1388-1396, 2008.

Thorfinn J, Saber S, Angelidis IK, Ki SH, Zhang A, Chong AK, Lee GK, Chang J. Flexor Tendon Tissue Engineering: The Temporal Distribution of Donor Tenocytes vs. Recipient Cells. Plastic & Reconstructive Surgery, 124:2019-1026, 2009.

Zhang AY, Bates SJ, Morrow E, Pham BV, Pham HM, Chang J. Tissue Engineering of Flexor Tendons: Optimization of Acellularization and Seeding. Journal of Rehabilitation Research & Development, 46: 489-498, 2009.

Chong AK, Riboh J, Smith RL, Lindsey DP, Pham HM, Chang J. Flexor Tendon Tissue Engineering: Biomechanical Properties of Acellularized and Reseeded Tendon Constructs. Plastic & Reconstructive Surgery, 123: 1759-1766, 2009.

Angelidis IK, Thorfinn J, Connolly ID, Lindsey D, Pham HM, Chang J. Tissue Engineering of Flexor Tendons: The Effect of a Tissue Bioreactor on Adipoderived Stem Cell-seeded and Fibroblast-seeded Tendon Constructs. Journal of Hand Surgery, 35: 1466-72, 2010.

Zhang A, Thorfinn J, Saber S, Angelidis I, Ki S, Pham H, Chang J. Tissue Engineered Intrasynovial Tendons: In Vivo Graft Survival and Tensile Strength. European Journal of Plastic Surgery, 33: 283-289, 2010.

Saber S, Zhang AY, Ki SH, Lindsey D, Smith RL, Riboh J, Pham H, Chang J. Flexor Tendon Tissue Engineering: Bioreactor Cyclic Strain Increases Construct Strength. Tissue Engineering, 16:2085-90, 2010.

Woon C, Pridgen B, Kraus A, Bari S, Pham H, Chang J. Optimization of Human Tendon Tissue Engineering: Peracetic Acid Oxidation for Enhanced Reseeding of Acellularized Intrasynovial Tendon. Plastic & Reconstructive Surgery, 127:1107-17, 2011.

Pridgen B, Woon, C, Kim M, Thorfinn J, Lindsey D, Pham H, Chang J. Flexor Tendon Tissue Engineering: Acellularization of Human Flexor Tendons With Preservation of Biomechanical Properties and Biocompatibility. Tissue Engineering, 17(8):819-28, 2011.

Thorfinn J, Angelidis I, Gigliello L, Pham H, Lindsey D, Chang J. Bioreactor Optimization of Tissue Engineered Rabbit Flexor Tendons In Vivo. Journal of Hand Surgery (Eur.), 37: 109-14, 2012.

Woon C, Kraus A, Raghavan S, Pridgen B, Pham H, Chang J. 3D Construct Bioreactor Conditioning in Human Tendon Tissue, Tissue Engineering, 17 (19-20): 2561-72, 2011.

Raghavan S, Woon C, Kraus A, Megerle K, Pham H, Chang J. Optimization of Human Tendon Tissue Engineering: Synergistic Effects of Growth Factors For Use in Tendon Scaffold Repopulation, Plastic & Reconstructive Surgery, 129: 479-89, 2012.

Chang J. 2011 Weiland Medal Paper: Studies in Flexor Tendon Reconstruction: Modulaton of Tendon Repair and Tissue Engineering, Journal of Hand Surgery, 37:552-61, 2012.

Additional publications

Ngo MT, Pham H, Longaker M, Chang J. Differential Expression of Transforming Growth Factor-Beta Receptors in a Rabbit Zone II Flexor Tendon Wound Healing Model. Plastic & Reconstructive Surgery, 108: 1260-1267, 2001.

Klein MB, Yalamanchi N, Pham H, Chang J. Flexor Tendon Wound Healing *In Vitro*: The Effect of Lactate on Tendon Cell Proliferation and Collagen Production. Journal of Hand Surgery, 26A: 847-854, 2001.

Zhang A, Pham H, Ho F, Teng K, Longaker MT, Chang J. Inhibition of TGF-Beta-induced Collagen Production in Rabbit Flexor Tendons. Journal of Hand Surgery, 29A: 230-235, 2004.

Yalamanchi N, Klein MB, Pham H, Longaker MT, Chang J. Flexor Tendon Wound Healing *In Vitro*: Lactate Upregulation of TGF-Beta Expression and Functional Activity. Plastic & Reconstructive Surgery, 113: 625-632, 2004.

Chang J, Most D, Stelnicki E, et al. Gene Expression of Transforming Growth Factor Beta-1 in Rabbit Zone II Flexor Tendon Wound Healing: Evidence For Dual Mechanisms of Repair. Plastic & Reconstructive Surgery, 100; 937, 1997.

Chang J, Most D, Mehrera B, et al. Molecular Studies in Flexor Tendon Wound Healing: The Role of Basic Fibroblast Growth Factor. Journal of Hand Surgery, 23A: 1052, 1998.
Mehrara B, Most D, Chang J, et al. Basic Fibroblast Growth Factor and Transforming Growth Factor Beta-1 Expression in the Developing Dura Mater Correlates with Calvarial Bone Formation. Plastic & Reconstructive Surgery, 104: 435, 1999.

Chang J, Thunder R, Most, D, et al. Studies in Flexor Tendon Wound Healing: Neutralizing Antibody to TGF-Beta 1 Increases Post-operative Range of Motion. Plastic & Reconstructive Surgery, 105: 148, 2000.

Lee L, Zhang AY, Chong AK, Pham H, Longaker MT, Chang J. Expression of a Novel Gene, MafB in Dupuytren's Disease. Journal of Hand Surgery, 31: 211-218, 2006.

Bates SJ, Morrow E, Zhang AY, Pham H, Longaker MT, Chang J. Mannose-6-Phosphate, An Inhibitor of TGF-Beta, Improves Flexor Tendon Repair. Journal of Bone and Joint Surgery (Am), 88: 2465-72, 2006.

Satterwhite T, Chong A, Luo J, Pham H, Costa M, Longaker MT, Wyss-Coray T, Chang J. In Vitro Analysis of TGF-β1 Inhibition in Transgenic SBE-luciferase Mice. Annals of Plastic Surgery, 59: 762-6, 2007.

Chong A, Satterwhite T, Luo J, Pham H, Costa M, Longaker MT, Wyss-Coray T, Chang J. Live Imaging of Smad2/3 Signaling in Mouse Skin Wound Healing. Wound Repair and Regeneration, 15: 762-766, 2007.

D. Research Support

Ongoing Research Support

I01RX000275 Merit Review Grant (Chang) 10/1/2009 – 09/30/2013
VA RR&D $480,000. Principal Investigator (effort 10%)
Title: "Optimization of Human Tendon Engineering Using Bioreactors"
Purpose: This VA grant focuses on developing tissue engineered human tendon grafts and translating to a clinical trial of patients with mutilating hand injuries.

Completed Research Support

2010 Merit Review Pilot Grant (Clark) - $180,000. "Cast Immobilization as a Model of Complex Regional Pain Syndrome" Co-investigator (2%)

2010 PSEF Investigator Grant – $50,000. "Flexor Tendon Tissue Engineering: The Role of Ultrasonication" (5% effort)

2006 VA Medical Merit Review Grant - $440,000. – [4/07 – 3/11]
"Tissue Engineered Flexor Tendon Grafts for Extremity Reconstruction" (10% effort)

2006 VA RR&D Merit Review Grant – $330,000. – [10/06-9/09]
"Optimization of Bioengineered Tendons Using Bioreactors and Stem Cells" (10% effort)

2006 American Association of Hand Surgery Research Award - $5,000. -
"Bioreactors in Flexor Tendon Tissue Engineering" (5% effort)

2005 American Society for Surgery of the Hand Research Award - $20,000. – (5% effort)
"Scarless Flexor Tendon Wound Healing: Tissue Engineering of Intrasynovial Tendon Grafts"

2003 Plastic Surgery Educational Foundation Research Award - $5,000. –
"In Vivo Modulation of Flexor Tendon Wound Healing with Decorin and M6P" (5% effort)

2001 VA Merit Review Grant – $360,000. - "Modulation of TGF-Beta in Tendon Wound Healing" (10% effort)

2001 Stanford University OTL Research Award - $25,000. – "Tissue Engineered Cartilage Grafts" (10% effort)

12/1/96 – 11/30/02 NIH/NIGMS 7RO1 GM41343-09-12 Krummel (PI) (5% effort)
"Fetal Wound Repair: Cellular and Biochemical Mechanisms" (Co-Investigator)

1999 VA VISN Young Investigator Award - $25,000. – "Modulation of TGF-Beta in Flexor Tendon Wound Healing" (10% effort)

1999 VA Merit Review MREP Research Grant - $165,000. [4/99-4/02] – "Modulation of TGF-Beta in Flexor Tendon Wound Healing" (10% effort)

E. Time and Effort Statement

Research: 20%; Teaching/mentoring: 15%; Administration: 5%; Clinical: 60%