BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Tochigi, Yuki	Assistant Research Scientist
eRA COMMONS USER NAME TOCHIGI	

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
Yamanashi Medical Collage, School of Medicine Tamaho, Yamanashi, Japan	M.D.	1990	Medicine
Chiba University Hospital Chiba City, Chiba, Japan	Residency (Year 1)	1990–1991	Orthopaedic Surgery
Numadu City Hospital Numadu, Shizuoka, Japan	Residency (Year 2)	1991–1992	Orthopaedic Surgery
Chiba University Hospital, Chiba City, Chiba, Japan	Clinical Fellowship	1996–1999	Foot & Ankle Surgery and Orthopaedic Sports Medicine
Chiba University, Graduate School of Medicine Chiba City, Chiba, Japan	Research Fellowship	1996–1999	Orthopaedic Biomechanics
Chiba University, Graduate School of Medicine Chiba City, Chiba, Japan	Ph.D.	2000	Orthopaedic Biomechanics

A. Positions and Honors

Positions and Employment

1992–1993	Orthopaedic Surgeon in Training	Narashino National Hospital Narashino, Chiba, Japan
1993–1995	Orthopaedic Surgeon in Training	Kanazawa Hospital Yokohama, Kanagawa, Japan
1995–1996	Orthopaedic Surgeon in Training	Kawatatsu Chiba Hospital Chiba City, Chiba, Japan
1999–2001	Staff Orthopaedic Surgeon	Watanabe Hospital, Fuji City, Shizuoka, Japan
2001–2005	Visiting Assistant Professor	Department of Orthopaedics & Rehabilitation University of Iowa, Iowa City, IA
2005–Present	Assistant Research Scientist	Department of Orthopaedics & Rehabilitation University of Iowa, Iowa City, IA

Other Experience and Professional Memberships

American Orthopaedic Foot & Ankle Society, American Society of Biomechanics, Japanese Arthroscopy Association, Japanese Knee Society, Japanese Orthopaedic Association, Japanese Orthopaedic Society of Sports Medicine, Japanese Society for Surgery of the Foot, Orthopaedic Research Society

Honors

2002 American Orthopaedic Foot & Ankle Society “Leonard Goldner” Award

Licensure Certification

1990 Japanese National Board of Medical Practitioner
1997 Japanese Board of Orthopaedics
2000 Japanese Board of Orthopaedic Sports Medicine

B. Selected peer-reviewed publications (in chronological order).

1. Tochigi Y, Yoshinaga K, Wada Y, Moriya H. Acute inversion injury of the ankle: Magnetic resonance image and clinical outcomes. Foot Ankle Int. 1998;19(11):730–734.
2. Tochigi Y, Takahashi K, Yamagata M, Tamaki T. Influence of the interosseous talocalcaneal ligament injury on stability of the ankle-subtalar joint complex— A cadaveric experimental study. Foot Ankle Int. 2000;21(6):486–491.
3. Tochigi Y. MRI pathology of inversion sprain of ankle-subtalar joint complex. Am. J. Med. Sports. 2001;3:379–383.
4. Tochigi Y. Biomechanical pathology of ankle-subtalar joint complex instability. Clinical Orthopaedic Surgery. 2002;37:23–28. (Japanese)
5. Tochigi Y, Amendola A, Muir D, Saltzman CL. Surgical approach for central talar osteochondral lesions with an anterolateral osteotomy. Foot Ankle Int. 2002;23(11):1038–1039.
6. Tochigi Y. Effect of arch supports on ankle-subtalar complex instability: A biomechanical experimental study. Foot Ankle Int. 2003;24(8):634–639.
7. Saltzman CL, Tochigi Y, Rudert MJ, McIff TE, Brown TD. The effect of agility ankle prosthesis misalignment on the peri-ankle ligaments. Clin. Orthop. Relat. Res. 2004;424:137–142.
8. Tochigi Y, Amendola A, Ruder MJ, Baer TE, Brown TD, Hillis SL, Saltzman CL. The role of the interosseous talocalcaneal ligament in subtalar joint stability. Foot Ankle Int. 2004;25(8):588–596.
9. McKinley TO, Rudert MJ, Koos DC, Tochigi Y, Baer TE, Brown TD, Smith RL. Pathomechanic determinants of posttraumatic arthritis. Clin. Orthop. Relat. Res. 2004; 427(Suppl): S78–88.
10. Tochigi Y, Rudert MJ, Brown TD, McIff TE, Saltzman CL. The effect of accuracy of implantation on range of movement of the Scandinavian Total Ankle Replacement. J. Bone Joint Surg Br. 2005 May;87(5):736–740.
11. Tochigi Y, Rudert MJ, Amendola A, Brown TD, Saltzman CL. Tensile engagement of the peri-ankle ligaments in stance phase. Foot Ankle Int. 2005 Dec;26(12):1067–1073. PMCID2268960.
12. McKinley TO, Rudert MJ, Koos DC, Pedersen DR, Baer TE, Tochigi Y, Brown TD. Contact stress transients during functional loading of ankle stepoff incongruities. J. Biomech. 2006;39(4):617–626.
13. McKinley TO, McKinley T, Rudert MJ, Koos DC, Pedersen DR, Baer TE, Tochigi Y, Brown TD. Stance-phase aggregate contact stress and contact stress gradient changes resulting from articular surface stepoffs in human cadaveric ankles. Osteoarthritis Cartilage. 2006 Feb;14(2):131–138.
14. Tochigi Y, Suh JS, Amendola A, Pedersen DR, Saltzman CL. Ankle alignment on lateral radiographs. Part 1: Sensitivity of measures to perturbations of ankle positioning. Foot Ankle Int. 2006 Feb;27(2):82–87. PMCID2274959
15. Tochigi Y, Suh JS, Amendola A, Saltzman CL. Ankle alignment on lateral radiographs. Part 2: Reliability and validity of measures. Foot Ankle Int. 2006 Feb;27(2):88–92. PMCID2267757
16. Phisitkul P, Tochigi Y, Saltzman CL, Amendola A. Arthroscopic visualization of the posterior subtalar joint in the prone position: a cadaver study. Arthroscopy. 2006 May;22(5):511–5.
17. Anderson DD, Goldsworthy JK, Shivanna K, Grosland NM, Pedersen DR, Thomas TP, Tochigi Y, Marsh JL, Brown TD. Intra-articular contact stress distributions at the ankle throughout stance phase-patient-specific finite element analysis as a metric of degeneration propensity. Biomech. Model. Mechanobiol. 2006 Jun;5(2–3):82–89. PMCID2194754.
18. Muir D, Saltzman CL, Tochigi Y, Amendola N. Talar dome access for osteochondral lesions. Am. J. Sports Med. 2006 Sep;34(9):1457–1463.
19. Hayes A, Tochigi Y, Saltzman CL. Ankle morphometry on 3D-CT images. Iowa Orthop. J. 2006;26:1–4. PMCID1888582.
20. McKinley TO, Rudert MJ, Tochigi Y, Pedersen DR, Koos DC, Baer TE, Brown TD. Incongruity-dependent changes of contact stress rates in human cadaveric ankles. J. Orthop. Trauma. 2006 November/December;20(10):732–738.
21. McKinley TO, Rudert MJ, Tochigi Y, Pedersen DR, Koos DC, Baer TE, Brown TD. Cambios dependientes de incongruencia de grados de estres de contacto en tobillos cadavericos humanos. J. Orthop. Trauma. 2006 November/December;20(10):747.

22. Tochigi Y, Rudert MJ, Saltzman CL, Amendola A, Brown TD. The contribution of articular surface geometry to ankle stabilization. J. Bone Joint Surg. Am. 2006;88(12):2704–2713.
23. Heiner AD, Rudert MJ, McKinley TO, Fredericks DC, Bobst JA, Tochigi Y. In vivo measurement of translational stiffness of rabbit knees. J. Biomech. 2007;40(10):2313–2317. PMCID2080615.
24. Anderson DD, Goldsworthy JK, Li W, James Rudert M, Tochigi Y, Brown TD. Physical validation of a patient-specific contact finite element model of the ankle. 2006 ASB Microstrain Award Paper J. Biomech. 2007;40(8):1662-9. PMCID1945165.
25. McKinley TO, Tochigi Y, Rudert MJ, Brown TD. Instability-associated changes in contact stress and contact stress rates in human cadaveric ankles. J. Bone Joint Surg. Am. 2008 Feb;90(2):375–383. PMC2587164.
26. Tochigi Y, Rudert MJ, McKinley TO, Pedersen DR, Brown TD. Correlation of dynamic cartilage contact stress aberrations with severity of instability in ankle incongruity. J. Orthop. Res. 2008;26(9):1186–1193. PMC Journal – In Process.
27. McKinley TO, Tochigi Y, Rudert MJ, Brown TD. The effect of incongruity and instability on contact stress directional gradients in human cadaveric ankles. Osteoarthritis Cartilage. 2008 Nov;16(11):1363–9. PMC Journal – In Process.

C. Research Support

Ongoing Research Support

Yuki Tochigi (PI) 01/01/09–12/31/09
Orthopaedic Trauma Association
Acute Cartilage Damage Associated with Intraarticular Fractures
The major goal of this project is to build toward a large animal model of intraarticular fracture by establishing strong scientific rationale for the fracture impact technique. A one-year research project that consists of two in-laboratory experimental studies is proposed to characterize acute-phase pathology of cartilage injury in human ankle intraarticular fractures (Aim 1), and to clarify the mechanisms of fracture-associated cartilage injury (Aim 2).
Role: Principal Investigator

Neil A. Segal (PI) 10/01/08–09/30/10
Foundation for Physical Medicine & Rehabilitation
Quantification of Functional Limitation in Older Adults with Symptomatic Knee Osteoarthritis Through Evaluation of Gait Variability
In this project, a new technique to quantify variability in leg motion during walking by means of tri-axial acceleration of the lower limb segment will be studied. The long-term goal is to develop a valid method for the quantitative assessment of locomotive function in people with symptomatic knee osteoarthritis.
Role: Co-Investigator

5 P50 AR055533 Joseph A. Buckwalter (PI) 09/10/07–08/31/12
US DHHS, National Institutes of Health/NIAMS
New Approaches to Assess and Forestall Osteoarthritis in Injured Joints
The goal of the University of Iowa CORT is to develop new methods of forestalling post-traumatic osteoarthritis (PTOA) through a multi-disciplinary translational approach including biological science, bioengineering, imaging, and clinical research. The central theme is that joint injuries initiate a sequence of biologic events that lead to PTOA and that new treatments of joint injuries will minimize these deleterious events and promote joint healing.
Role: Principal Investigator: Tissue & Experimental Modeling Core.

5 R01 AR053899 Thomas D. Brown (PI) 09/07/07–08/31/11
US DHHS, National Institutes of Health
Local Biomechanics of Median Nerve Insult in Carpal Tunnel
The long-term goal of the study is to establish an objective mechanistic framework for linking CTS with quantifiable biomechanical influence factors. An interdisciplinary approach will be adopted, integrating research team member expertise in the areas of biomechanical stress analysis, hand surgery, and musculoskeletal magnetic resonance imaging (MRI).
Role: Co-Investigator

5 R01 AR53553 Thomas D. Brown (PI) 09/25/06–08/31/10
US DHHS, National Institutes of Health/NIAMS
Implant/Construct Interactions in the Biomechanics of Total Hip Dislocation
The major goal of this project is to study the interaction between implant design parameters, surgical placement, and capsule integrity/repair on the dislocation propensity of total hip constructs. The work involves three-dimensional nonlinear FEA, validated cadaverically in a multi-axial servohydraulic hip simulator.
Role: Investigator

Completed Research Support

Yuki Tochigi (PI) 02/01/07–12/31/08
University of Iowa OVPR Biological Sciences Funding Program
Development of an Animal Model of Human Intra-Articular Fracture
The purpose of this project was to develop a novel animal model of intraarticular fracture that allows *in-vivo* pilot studies of new treatment strategies for human post-traumatic osteoarthritis. The goal was to establish definitive methodology to realistically replicate the pathophysiology of human intraarticular fractures in animal joints.
Role: Principal Investigator

Annunziato Amendola (PI) 01/01/07–12/31/08
Arthrosurface, Inc.
The Effects of Osteochondral Defects and Focal Resurfacing on Joint Contact Mechanics
The proposed research aimed to clarify the pathomechanics of focal osteochondral defect in the ankle and to assess the ability of resurfacing to restore functional joint contact mechanics.
Role: Co-Principal Investigator

M. James Rudert (PI) 06/15/06–08/15/06
Smith & Nephew, Inc.
Investigation of Dislocation Kinematics of Smith and Nephew Oxinium THA Components
The UI Orthopaedic Biomechanics Lab assisted Smith and Nephew in an investigation of possible dislocation damage of Oxinium THA components. The components were implanted in Sawbones® hip joint models that had been augmented with a hip capsule analog. The THA/sawbones/capsule construct was mounted in our hip motion simulator in order to explore clinically plausible joint movements under which the dislocation and damage might occur.
Role: Investigator

Yuki Tochigi (PI) 04/01/05–03/31/06
Chiba University Orthopaedic Alumni
The Role of the Articular Surfaces in Ankle Stability
This project studied the mechanism via which ankle stabilization by articular surface resistance is developed, using a newly developed computer model of ankle surface geometry. The goal was to determine the contribution of articular surface geometry to passive ankle stability, and to determine the effect of individual geometric differences on the level of that contribution.
Role: Principal Investigator

Yuki Tochigi (PI) 04/01/03–09/30/04
American Orthopaedic Foot & Ankle Society Research Grant
The Role of the Ankle Articular Surfaces in Controlling Joint Motion
This study consisted of two types of experiments, one with a dynamic loading sequence and the other quasi-static. 1) To assess the contribution of the peri-ankle ligaments versus the articular surfaces to stabilizing the ankle during walking, tensile behavior of the peri-ankle ligaments during a dynamic loading sequence simulating normal stance phase was explored in a cadaver experiment. 2) To assess the capability of articular surface geometry to control ankle motion during walking, the function of articular surface geometry in stabilizing the ankle under weight-bearing conditions was investigated.
Role: Principal Investigator