



Constance Chu, MD

Professor of Orthopaedic Surgery (Sports Medicine)

CLINICAL OFFICE (PRIMARY)

- **Stanford Sports Medicine Clinic**

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ACADEMIC CONTACT INFORMATION

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Bio

BIO

Dr. Constance R. Chu is Professor and Vice Chair Research, in the Department of Orthopedic Surgery at Stanford University. She is also Director of the Joint Preservation Center and Chief of Sports Medicine at the VA Palo Alto. Previously, she was the Albert Ferguson Endowed Chair and Professor of Orthopaedic Surgery at the University of Pittsburgh. She is a clinician-scientist who is both principal investigator of several projects funded by the National Institutes of Health and who has been recognized as a Castle-Connelly/US News and World Report "Top Doctor" in Orthopedic Surgery as well as on Becker's list of Top Knee Surgeons in the United States. Her clinical practice focuses on the knee: primarily restoration and reconstruction of the ACL, menisci and cartilage. She graduated from the U.S. Military Academy at West Point and earned her medical degree from Harvard Medical School.

As Director of the multi-disciplinary Joint Preservation Center structured to seamlessly integrate the latest advances in biologics, mechanics, and imaging with comprehensive patient centered musculoskeletal and orthopedic care, Dr. Chu aims to develop a new model for health care delivery, research and education with an emphasis on health promotion and prevention. Cornerstones of this program include teamwork and a focus on personalized medicine. A central goal is to transform the clinical approach to osteoarthritis from palliation to prevention. In addition to optimizing clinical operations, outstanding research is critical to developing more effective new treatments. Towards this end, Dr. Chu is leading innovative translational research from bench to bedside in three main areas: quantitative imaging and biomarker development for early diagnosis and staging of joint and cartilage injury and degeneration; cartilage tissue engineering and stem cell based cartilage repair; and molecular and biological therapies for joint restoration and joint rejuvenation. Her research efforts have led to more than 30 professional awards and honors to include a Kappa Delta Award, considered to be the highest research honor in Orthopedic Surgery.

Dr. Chu also regularly holds leadership and committee positions in major professional organizations such as the American Association of Orthopedic Surgeons (AAOS) and the American Orthopedic Association (AOA). In her subspecialty of Orthopedic Sports Medicine, she is a past President of the Forum Sports Focus Group, a member of the Herodicus Society of leaders in Sports Medicine, and immediate past Chair of the American Orthopedic Society for Sports Medicine (AOSSM) Research Council. She is alumnus of the AOA American, British, Canadian (ABC) and the AOSSM Traveling Fellowships.

CLINICAL FOCUS

- Sports Medicine and Arthroscopy
- ACL, Cartilage and Meniscus Repair
- Orthopaedic Sports Medicine

ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Orthopaedic Surgery
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance

ADMINISTRATIVE APPOINTMENTS

- Director, Joint Preservation Center, VA Palo Alto, (2013- present)
- Chief, Sports Medicine, VA Palo Alto, (2013- present)
- Vice Chair Research, Stanford Orthopedic Surgery, (2013- present)

PROFESSIONAL EDUCATION

- Fellowship: Brigham and Women's Hospital Orthopaedic Surgery Programs (1999) MA
- Residency: UCSD Orthopaedic Surgery (1998) CA
- Internship: UCSD Surgery Residency (1993) CA
- Board Certification: Orthopaedic Surgery, American Board of Orthopaedic Surgery (2002)
- Medical Education: Harvard Medical School (1992) MA
- Fellowship, Drexel University , Executive Leadership in Academic Medicine (2012)
- Certificate, University of Pittsburgh Katz Business School , Physician Leadership and Management (2011)
- Undergraduate, US Military Academy at West Point (1983)

LINKS

- Get a Second Opinion: <https://stanfordhealthcare.org/second-opinion/overview.html>

Research & Scholarship

CLINICAL TRIALS

- The Effects of Tranexamic Acid on Joint Inflammation and Cartilage Health in Anterior Cruciate Ligament Injured Patients, Recruiting
- Gait Retraining to Reduce Joint Loading, Inflammation, and PTOA Risk, Not Recruiting
- Precision Assessment of Platelet Rich Plasma for Joint Preservation, Not Recruiting

Teaching

COURSES

2024-25

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

2023-24

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

2022-23

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

2021-22

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- PM& R Sports Medicine (Fellowship Program)
- Sports Medicine (Fellowship Program)

Publications

PUBLICATIONS

- **Dance between biology, mechanics, and structure: A systems-based approach to developing osteoarthritis prevention strategies** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Chu, C. R., Andriacchi, T. P.
2015; 33 (7): 939-947
- **The Challenge and the Promise of Bone Marrow Cells for Human Cartilage Repair** *CARTILAGE*
Chu, C. R.
2015; 6 (2): 36S-45S
- **Effects of high heel wear and increased weight on the knee during walking.** *Journal of orthopaedic research*
Titchenal, M. R., Asay, J. L., Favre, J., Andriacchi, T. P., Chu, C. R.
2015; 33 (3): 405-411
- **Osteoarthritis: From Palliation to Prevention: AOA Critical Issues.** *The Journal of bone and joint surgery. American volume*
Chu, C. R., Millis, M. B., Olson, S. A.
2014; 96 (15): e130
- **Quantitative Magnetic Resonance Imaging UTE-T2* Mapping of Cartilage and Meniscus Healing After Anatomic Anterior Cruciate Ligament Reconstruction.** *American journal of sports medicine*
Chu, C. R., Williams, A. A., West, R. V., Qian, Y., Fu, F. H., Do, B. H., Bruno, S.
2014; 42 (8): 1847-1856
- **Quantitative Magnetic Resonance Imaging UTE-T2* Mapping of Cartilage and Meniscus Healing After Anatomic Anterior Cruciate Ligament Reconstruction** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Chu, C. R., Williams, A. A., West, R. V., Qian, Y., Fu, F. H., Do, B. H., Bruno, S.
2014; 42 (8): 1847-1856
- **Persistence, Localization, and External Control of Transgene Expression After Single Injection of Adeno-Associated Virus into Injured Joints** *HUMAN GENE THERAPY*
Lee, H. H., O'Malley, M. J., Friel, N. A., Payne, K. A., Qiao, C., Xiao, X., Chu, C. R.
2013; 24 (4): 457-466
- **Early diagnosis to enable early treatment of pre-osteoarthritis** *ARTHRITIS RESEARCH & THERAPY*
Chu, C. R., Williams, A. A., Coyle, C. H., Bowers, M. E.
2012; 14 (3)
- **Donor sex and age influence the chondrogenic potential of human femoral bone marrow stem cells** *OSTEOARTHRITIS AND CARTILAGE*
Payne, K. A., Didiano, D. M., Chu, C. R.
2010; 18 (5): 705-713
- **Vertical Ground Reaction Force 2 Years After Anterior Cruciate Ligament Reconstruction Predicts 10-Year Patient-Reported Outcomes.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Mahtani, G. B., Andriacchi, T. P.
2021

- **Longitudinal changes in tibial and femoral cartilage thickness are associated with baseline ambulatory kinetics and cartilage oligomeric matrix protein (COMP) measures in an asymptomatic aging population.** *Osteoarthritis and cartilage*
Erhart-Hledik, J. C., Chehab, E. F., Asay, J. L., Favre, J., Chu, C. R., Andriacchi, T. P.
2021
- **Platelet-Rich Plasma Augmentation for Isolated Arthroscopic Meniscal Repairs Leads to Significantly Lower Failure Rates: A Systematic Review of Comparative Studies.** *Orthopaedic journal of sports medicine*
Sochacki, K. R., Safran, M. R., Abrams, G. D., Donahue, J., Chu, C., Sherman, S. L.
2020; 8 (11): 2325967120964534
- **Comparison of Autologous Chondrocyte Implantation and Osteochondral Allograft Transplantation of the Knee in a Large Insurance Database: Reoperation Rate, Complications, and Cost Analysis.** *Cartilage*
Sochacki, K. R., Varshneya, K., Calcei, J. G., Safran, M. R., Abrams, G. D., Donahue, J., Chu, C., Sherman, S. L.
2020: 1947603520967065
- **VARIABLE RESPONSES IN PAIN AND FUNCTION 1 MONTH AFTER PLATELET-RICH PLASMA INJECTION ARE RELATED TO CHANGES IN JOINT LOADING DURING GAIT**
Erhart-Hledik, J., Mahtani, G., Asay, J., Burt, H., Nguyen, M., Do, B., Andriacchi, T., Chu, C.
ELSEVIER SCI LTD.2020: S246–S247
- **TRUNK MOVEMENT PATTERNS ARE ASSOCIATED WITH KNEE FLEXION MOMENT CHANGES WHILE UTILIZING THE SOMATOSENSORY SYSTEM DURING STAIR CLIMBING: CLINICAL TRIAL CROSSOVER STUDY**
Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.
ELSEVIER SCI LTD.2020: S234–S235
- **SIDE-TO-SIDE DIFFERENCES IN VERTICAL GROUND REACTION FORCE TWO YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION PREDICT LONGITUDINAL CHANGES IN PATIENT-REPORTED OUTCOMES**
Erhart-Hledik, J., Chu, C., Asay, J., Mahtani, G., Andriacchi, T.
ELSEVIER SCI LTD.2020: S225–S226
- **Single-cell mass cytometry reveals cross-talk between inflammation-dampening and inflammation-amplifying cells in osteoarthritic cartilage** *Science Advances*
Grandi, F., Baskar, R., Smeriglio, P., Murkherjee, S., Indelli, P., F. Amanatullah, D., Goodman, S., Chu, C., Bendall, S., Bhutani, N.
2020; 6 (11)
- **Changes in Knee Adduction Moment Wearing a Variable-Stiffness Shoe Correlate with Changes in Pain and Mechanically-Stimulated Cartilage Oligomeric Matrix Levels.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
Erhart-Hledik, J. C., Mahtani, G. B., Asay, J. L., Migliore, E. n., Nguyen, M. M., Andriacchi, T. P., Chu, C. R.
2020
- **Classification systems for platelet-rich plasma.** *The bone & joint journal*
Rossi, L. A., Murray, I. R., Chu, C. R., Muschler, G. F., Rodeo, S. A., Piuze, N. S.
2019; 101-B (8): 891–96
- **Platelet-Rich Plasma (PRP) From Older Males With Knee Osteoarthritis Depresses Chondrocyte Metabolism and Upregulates Inflammation** *JOURNAL OF ORTHOPAEDIC RESEARCH*
O'Donnell, C., Migliore, E., Grandi, F., Koltsov, J., Lingampalli, N., Cisar, C., Indelli, P. F., Sebastiano, V., Robinson, W. H., Bhutani, N., Chu, C. R.
2019; 37 (8): 1760–70
- **Longitudinal Changes in the Total Knee Joint Moment After Anterior Cruciate Ligament Reconstruction Correlate With Cartilage Thickness Changes** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Erhart-Hledik, J., Chu, C., Asay, J., Favre, J., Andriacchi, T.
2019; 37 (7): 1546–54
- **Platelet-Rich Plasma (PRP) from Older Males with Knee Osteoarthritis Depresses Chondrocyte Metabolism and Upregulates Inflammation.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
O'Donnell, C., Migliore, E., Grandi, F. C., Koltsov, J., Lingampalli, N., Cisar, C., Indelli, P. F., Sebastiano, V., Robinson, W. H., Bhutani, N., Chu, C. R.
2019
- **ACTIVATING THE SOMATOSENSORY SYSTEM ENHANCES KNEE FLEXION AND QUADRICEPS ACTIVITY DURING GAIT AND STAIR CLIMBING**

- Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.
ELSEVIER SCI LTD.2019: S63–S64
- **CHANGES IN KNEE ADDUCTION MOMENT WITH A VARIABLE-STIFFNESS SHOE ARE RELATED TO CHANGES IN PAIN AND FUNCTION**
Erhart-Hledik, J., Mahtani, G., Asay, J., Andriacchi, T., Chu, C.
ELSEVIER SCI LTD.2019: S111–S112
 - **Changes in stair ascent biomechanics two to eight years after ACL reconstruction are associated with patient-reported outcomes** *GAIT & POSTURE*
Fischer, A. G., Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2019; 69: 91–95
 - **MRI UTE-T2* shows high incidence of cartilage subsurface matrix changes 2 years after ACL reconstruction** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Williams, A. A., Titchenal, M. R., Do, B. H., Guha, A., Chu, C. R.
2019; 37 (2): 370–77
 - **Changes in stair ascent biomechanics two to eight years after ACL reconstruction are associated with patient-reported outcomes.** *Gait & posture*
Fischer, A. G., Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2019; 69: 91–95
 - **Optimizing Clinical Use of Biologics in Orthopaedic Surgery: Consensus Recommendations From the 2018 AAOS/NIH U-13 Conference** *JOURNAL OF THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS*
Chu, C. R., Rodeo, S., Bhutani, N., Goodrich, L. R., Huard, J., Irrgang, J., LaPrade, R. F., Lattermann, C., Lu, Y., Mandelbaum, B., Mao, J., McIntyre, L., Mishra, et al
2019; 27 (2): E50–E63
 - **Activating the somatosensory system enhances net quadriceps moment during gait** *JOURNAL OF BIOMECHANICS*
Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.
2019; 82: 149–55
 - **The distillation curve and sooting propensity of a typical jet fuel** *Fuel*
Saggese, C., Singh, A. V., Xue, X., Chu, C., Kholghy, M. R., Zhang, T., Camacho, J., Giaccai, J., Miller, H., Thomson, M. J., Sung, C., Wang, H.
2019; 235
 - **Adaptive Sports and the Warrior Athlete.** *Sports medicine and arthroscopy review*
Chu, C. R., Diaz, R. n., Syrop, I. P.
2019; 27 (2): 41
 - **Proceedings of the signature series symposium "cellular therapies for orthopaedics and musculoskeletal disease proven and unproven therapies-promise, facts and fantasy," international society for cellular therapies, montreal, canada, may 2, 2018.** *Cytotherapy*
Piuze, N. S., Dominici, M., Long, M., Pascual-Garrido, C., Rodeo, S., Huard, J., Guicheux, J., McFarland, R., Goodrich, L. R., Maddens, S., Robey, P. G., Bauer, T. W., Barrett, et al
2018
 - **MRI UTE-T2* Shows High Incidence of Cartilage Subsurface Matrix Changes 2 Years After ACL Reconstruction.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
Williams, A. A., Titchenal, M. R., Do, B. H., Guha, A., Chu, C. R.
2018
 - **Longitudinal changes in knee gait mechanics between 2 and 8 years after anterior cruciate ligament reconstruction.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2018; 36 (5): 1478–86
 - **Longitudinal changes in knee gait mechanics between 2 and 8 years after anterior cruciate ligament reconstruction** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2018; 36 (5): 1478–86

- **MRI UTE-T2*profile characteristics correlate to walking mechanics and patient reported outcomes 2 years after ACL reconstruction** *OSTEOARTHRITIS AND CARTILAGE*
Williams, A. A., Titchenal, M. R., Andriacchi, T. P., Chu, C. R.
2018; 26 (4): 569–79
- **ACTIVE FEEDBACK GAIT RETRAINING ALTERS FOOT PRESSURE PATTERNS AND REDUCES KNEE ADDUCTION MOMENT IN AN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTED POPULATION**
Erhart-Hledik, J. C., Mahtani, G. B., Asay, J. L., Chu, C. R., Andriacchi, T. P.
ELSEVIER SCI LTD.2018: S364
- **MECHANICALLY STIMULATED CS846 CORRELATES WITH ULTRASHORT ECHO TIME ENHANCED T2*QUANTITATIVE MRI AND GAIT MECHANICS 2 YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**
Titchenal, M. R., Williams, A. A., Asay, J. L., Migliore, E., Erhart-Hledik, J. C., Andriacchi, T. P., Chu, C. R.
ELSEVIER SCI LTD.2018: S176–S177
- **Cartilage Subsurface Changes to Magnetic Resonance Imaging UTE-T2*2 Years After Anterior Cruciate Ligament Reconstruction Correlate With Walking Mechanics Associated With Knee Osteoarthritis** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Titchenal, M. R., Williams, A. A., Chehab, E. F., Asay, J. L., Dragoo, J. L., Gold, G. E., McAdams, T. R., Andriacchi, T. P., Chu, C. R.
2018; 46 (3): 565–72
- **Men and Women Differ in the Biochemical Composition of Platelet-Rich Plasma** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Xiong, G., Lingampalli, N., Koltsov, J. B., Leung, L. L., Bhutani, N., Robinson, W. H., Chu, C. R.
2018; 46 (2): 409–19
- **Minimally Manipulated Bone Marrow Concentrate Compared with Microfracture Treatment of Full-Thickness Chondral Defects A One-Year Study in an Equine Model** *JOURNAL OF BONE AND JOINT SURGERY-AMERICAN VOLUME*
Chu, C. R., Fortier, L. A., Williams, A., Payne, K. A., McCarrel, T. M., Bowers, M. E., Jaramillo, D.
2018; 100 (2): 138–46
- **Human iPSC-derived chondrocytes mimic juvenile chondrocyte function for the dual advantage of increased proliferation and resistance to IL-1 beta** *STEM CELL RESEARCH & THERAPY*
Lee, J., Smeriglio, P., Chu, C. R., Bhutani, N.
2017; 8: 244
- **CCL2/CCR2, but not CCL5/CCR5, mediates monocyte recruitment, inflammation and cartilage destruction in osteoarthritis** *ANNALS OF THE RHEUMATIC DISEASES*
Raghu, H., Lopus, C. M., Wang, Q., Wong, H. H., Lingampalli, N., Oliviero, F., Punzi, L., Giori, N. J., Goodman, S. B., Chu, C. R., Sokolove, J. B., Robinson, W. H.
2017; 76 (5)
- **BILATERAL ASSESSMENT OF CARTILAGE WITH UTE-T2*QUANTITATIVE MRI AND ASSOCIATIONS WITH KNEE CENTER OF ROTATION FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**
Titchenal, M. R., Williams, A. A., Asay, J. L., Andriacchi, T. P., Chu, C. R.
ELSEVIER SCI LTD.2017: S120–S121
- **Early Changes in Knee Center of Rotation During Walking After Anterior Cruciate Ligament Reconstruction Correlate With Later Changes in Patient-Reported Outcomes** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Titchenal, M. R., Chu, C. R., Erhart-Hledik, J. C., Andriacchi, T. P.
2017; 45 (4): 915-921
- **Early articular cartilage MRI T2 changes after anterior cruciate ligament reconstruction correlate with later changes in T2 and cartilage thickness** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Williams, A., Winalski, C. S., Chu, C. R.
2017; 35 (3): 699-706
- **Gait mechanics 2 years after anterior cruciate ligament reconstruction are associated with longer-term changes in patient-reported outcomes** *JOURNAL OF ORTHOPAEDIC RESEARCH*
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2017; 35 (3): 634-640
- **Environmental durability of protected silver mirrors prepared by plasma beam sputtering** *APPLIED OPTICS*

- Folgnier, K. A., Chu, C., Lingley, Z. R., Kim, H. I., Yang, J., Barrie, J. D.
2017; 56 (4): C75-C86
- **Effects of active feedback gait retraining to produce a medial weight transfer at the foot in subjects with symptomatic medial knee osteoarthritis.** *Journal of orthopaedic research*
Erhart-Hledik, J. C., Asay, J. L., Clancy, C., Chu, C. R., Andriacchi, T. P.
2017
 - **Mechanically stimulated biomarkers signal cartilage changes over 5 years consistent with disease progression in medial knee osteoarthritis patients.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*
Chu, C. R., Sheth, S. n., Erhart-Hledik, J. C., Do, B. n., Titchenal, M. R., Andriacchi, T. P.
2017
 - **CCL2/CCR2, but not CCL5/CCR5, mediates monocyte recruitment, inflammation and cartilage destruction in osteoarthritis.** *Annals of the rheumatic diseases*
Raghu, H., Lepus, C. M., Wang, Q., Wong, H. H., Lingampalli, N., Oliviero, F., Punzi, L., Giori, N. J., Goodman, S. B., Chu, C. R., Sokolove, J. B., Robinson, W. H.
2016
 - **Early Changes in Knee Center of Rotation During Walking After Anterior Cruciate Ligament Reconstruction Correlate With Later Changes in Patient-Reported Outcomes.** *American journal of sports medicine*
Titchenal, M. R., Chu, C. R., Erhart-Hledik, J. C., Andriacchi, T. P.
2016
 - **Early articular cartilage MRI T2 changes after anterior cruciate ligament reconstruction correlate with later changes in T2 and cartilage thickness.** *Journal of orthopaedic research*
Williams, A., Winalski, C. S., Chu, C. R.
2016
 - **AAOS Research Symposium Updates and Consensus: Biologic Treatment of Orthopaedic Injuries** *JOURNAL OF THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS*
LaPrade, R. F., Dragoo, J. L., Koh, J. L., Murray, I. R., Geeslin, A. G., Chu, C. R.
2016; 24 (7): E62-E78
 - **Gait mechanics 2 years after anterior cruciate ligament reconstruction are associated with longer-term changes in patient-reported outcomes.** *Journal of orthopaedic research*
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.
2016
 - **PROSPECTIVE CHANGES IN CARTILAGE THICKNESS CORRELATE WITH KNEE KINEMATICS AT PEAK LOADING DURING WALKING FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**
Titchenal, M. R., Chu, C. R., Andriacchi, T. P.
ELSEVIER SCI LTD.2016: S98-S99
 - **SIDE-TO-SIDE DIFFERENCES IN KINEMATICS AND KINETICS TWO YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION ARE ASSOCIATED WITH LONGER-TERM CHANGES IN PATIENT-REPORTED OUTCOMES**
Erhart-Hledik, J., Chu, C., Asay, J., Andriacchi, T.
ELSEVIER SCI LTD.2016: S90-S91
 - **Defining Pre-Osteoarthritis Is Key to Prevention** *CARTILAGE*
Chu, C. R.
2016; 7 (2): 204
 - **Addition of Mesenchymal Stem Cells to Autologous Platelet-Enhanced Fibrin Scaffolds in Chondral Defects: Does It Enhance Repair?** *journal of bone and joint surgery. American volume*
Goodrich, L. R., Chen, A. C., Wery, N. M., Williams, A. A., Kisiday, J. D., Su, A. W., Cory, E., Morley, P. S., McIlwraith, C. W., Sah, R. L., Chu, C. R.
2016; 98 (1): 23-34
 - **Addition of Mesenchymal Stem Cells to Autologous Platelet-Enhanced Fibrin Scaffolds in Chondral Defects Does It Enhance Repair?** *JOURNAL OF BONE AND JOINT SURGERY-AMERICAN VOLUME*
Goodrich, L. R., Chen, A. C., Wery, N. M., Williams, A. A., Kisiday, J. D., Su, A. W., Cory, E., Morley, P. S., McIlwraith, C. W., Sah, R. L., Chu, C. R.

2016; 98A (1): 23-34

- **Short-term Analysis vs Long-term Data on Total Hip Replacement Survivorship** *JAMA SURGERY*
Chu, C. R.
2015; 150 (10): 989
- **PROSPECTIVE CHANGES IN THE KNEE JOINT CENTER OF ROTATION RELATIVE TO THE CONTRALATERAL KNEE AND OVER TIME PROVIDE A COMPREHENSIVE VIEW OF KINEMATIC CHANGES FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**
Titchenal, M., Chu, C. R., Andriacchi, T. P.
ELSEVIER SCI LTD.2015: A96–A97
- **The Challenge and the Promise of Bone Marrow Cells for Human Cartilage Repair.** *Cartilage*
Chu, C. R.
2015; 6 (2 Suppl): 36S-45S
- **A Systems View of Risk Factors for Knee Osteoarthritis Reveals Insights into the Pathogenesis of the Disease** *ANNALS OF BIOMEDICAL ENGINEERING*
Andriacchi, T. P., Favre, J., Erhart-Hledik, J. C., Chu, C. R.
2015; 43 (2): 376-387
- **Osteoarthritis: From Palliation to Prevention AOA Critical Issues** *JOURNAL OF BONE AND JOINT SURGERY-AMERICAN VOLUME*
Chu, C. R., Millis, M. B., Olson, S. A.
2014; 96A (15)
- **Synovial Fluid Lubricant Properties are Transiently Deficient after Arthroscopic Articular Cartilage Defect Repair with Platelet-Enriched Fibrin Alone and with Mesenchymal Stem Cells.** *Orthopaedic journal of sports medicine*
Grissom, M. J., Temple-Wong, M. M., Adams, M. S., Tom, M., Schumacher, B. L., McIlwraith, C. W., Goodrich, L. R., Chu, C. R., Sah, R. L.
2014; 2 (7)
- **Synovial Fluid Lubricant Properties Are Transiently Deficient After Arthroscopic Articular Cartilage Defect Repair With Platelet-Enriched Fibrin Alone and With Mesenchymal Stem Cells** *ORTHOPAEDIC JOURNAL OF SPORTS MEDICINE*
Grissom, M. J., Temple-Wong, M. M., Adams, M. S., Tom, M., Schumacher, B. L., McIlwraith, W., Goodrich, L. R., Chu, C. R., Sah, R. L.
2014; 2 (7)
- **The Effect of Platelet-Rich Plasma Formulations and Blood Products on Human Synoviocytes Implications for Intra-articular Injury and Therapy** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Braun, H. J., Kim, H. J., Chu, C. R., Dragoo, J. L.
2014; 42 (5): 1204-1210
- **Articular cartilage changes in maturing athletes: new targets for joint rejuvenation.** *Sports health*
Luria, A., Chu, C. R.
2014; 6 (1): 18-30
- **Brief report: carboxypeptidase B serves as a protective mediator in osteoarthritis.** *Arthritis & rheumatology (Hoboken, N.J.)*
Lepus, C. M., Song, J. J., Wang, Q., Wagner, C. A., Lindstrom, T. M., Chu, C. R., Sokolove, J., Leung, L. L., Robinson, W. H.
2014; 66 (1): 101-106
- **Carboxypeptidase B Serves as a Protective Mediator in Osteoarthritis** *ARTHRITIS & RHEUMATOLOGY*
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