JILLIAN E. BEVERIDGE, Ph.D.

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BIOGRAPHICAL DATA

Current Position: Assistant Professor
Citizenship: Canadian

EDUCATION

Institution	Field	Degree	Period
Acadia University	Sport Rehabilitation	B.Kin	1998-2002
University of Calgary	Biomedical Engineering	(transferred to Ph.D.) 2006	2004-2006
University of Calgary	Biomedical Engineering	Ph.D.	2006-2012

ACADEMIC APPOINTMENTS

Title	Organization	Period
Assistant Professor	RIH/Warren Alpert Medical School of Brown University Department of Orthopaedic Surgery, Bioengineering Lab	2022-Present
Assistant Staff	Cleveland Clinic Lerner Research Institute Department of Biomedical Engineering	2019-2022
Assistant Professor	Case Western Reserve University Department of Biomedical Engineering	2020-2022
Postdoctoral Fellow	RIH/Warren Alpert Medical School of Brown University Department of Orthopaedic Surgery, Bioengineering Lab	2015-2019
Postdoctoral Fellow	University of Calgary Department of Mechanical and Manufacturing Engineering	2012-2015
Research Assistant	University of Calgary Department of Surgery (Orthopaedics)	2004-2012

ADDITIONAL WORK EXPERIENCE

Title	Organization	Period
Clinical Kinesiologist	The Physioclinic, Halifax, NS Rehabilitation, functional assessment, ergonomics	2002-2004

OTHER APPOINTMENTS

Title	Organization	Period
Standing Member	NIH; MRS Review Panel	07/2025-06/2029
Ad hoc Reviewer	NIH; AMS Special Grants Study Section Review Panel	04/2025

Editorial Board	Journal of Biomechanics	2024-Present
Editorial Board	American Journal of Sports Medicine	2023-Present
Ad hoc Reviewer	NIH; Member Conflict Special Emphasis Panel	11/2024
Ad hoc Reviewer	NIH; MRS Review Panel	06/2024
Ad hoc Reviewer	NIH; MRS Review Panel	02/2024
Ad hoc Reviewer	NIH; MRS Review Panel	06/2023
Ad hoc Reviewer	NIH; AMS Special Grants Study Section Review Panel	10/2022
Ad hoc Reviewer	NIH; Small Business and Innovation Review Panel	06/2022

PERSONAL STATEMENT

My research interests focus on knee joint injuries and the structural and functional changes that may contribute to early onset osteoarthritis. I have expertise in translational and clinical research using advanced imaging modalities that include video- and biplane videoradiography motion analyses, electromyography, quantitative magnetic resonance (MR) imaging, and soft tissue mechanical testing. These approaches have been applied interchangeably between preclinical large animal models and clinical patients and across different musculoskeletal scales (tissue, to joint, to joint series). I have co-authored 29 peer-reviewed manuscripts and presented 57 abstracts – the majority as first or senior author. I have held extramural funding through local, provincial, and national funding agencies throughout my training, and received national and international awards in recognition of my scientific contributions. ***My vision is to lead a team of translational biomedical research trainees, scientists, and clinicians to reveal mechanistic relationships between form and function that inform novel solutions to reduce the risk and severity of post-traumatic osteoarthritis.***

HONOURS AND AWARDS *(“*” indicates national or international recognition)*

2020	*Journal of Orthopaedic Research Early Career Award
2010-2014	University of Calgary, AIHS Team Grant in OA Travel Award (3 Awards)
2010-2014	University of Calgary, CREATE Travel Award (3 Awards)
2013	*Arthritis Alliance of Canada, Best Research Proposal Poster
2013	AIHS Alberta OA Team Meeting, Best Poster
2007-2011	University of Calgary, Biomedical Engineering Bursary
2009	*Canadian Institutes of Health Research (CIHR), Travel Award (1 of 40)
2008	*International Symposium on Ligaments & Tendons (ISL&T) Meeting, Best Poster
2007	University of Calgary, Medical Science Travel Award
2007	*Canadian Arthritis Network (CAN) Annual Scientific Meeting Travel Award (1 of 7)
2006	CIHR Bone & Joint Training Program Meeting, Best Poster
2005	Government of Alberta, Continuing Education Scholarship
2004	University of Calgary, Faculty of Graduate Studies Scholarship
2004	University of Calgary, Dean’s Entrance Scholarship

SCHOLARLY ACTIVITIES

Active Research Support

2024-2028 NIH R01 Clinical Trial Ancillary Grant (PI; $1,154,230 Direct costs). **Beveridge, JE**, Fleming, BC, Molino, J, Owens, B, Zandiyeh, P. *“Neuromuscular response to competing ACL surgeries.*” **Role: Principal Investigator** (35% Effort).

2022-2025 NIH R01 Bioengineering Research Grant (Co-Investigator, $154,470 Sub-award direct costs). Crisco, JJ, **Beveridge, JE**, Zhao, K, Rainbow, MJ, Paniagua, B, Fillion-Robin, JC, Venkata, A. *“Multi-modal Tracking of In Vivo Skeletal Structures and Implants.”* **Role: Co-Investigator** (10% Effort)

Submitted/Pending Research Support

TBD NIH R21 ($275,000 Direct costs). MPIs: Fleming, BC & Proffen, BL. "ACL Mechanoreceptor Structure and Function Following ACL surgery". **Role: Co-Investigator** (5% effort).

2025-2028 NIH R01 Administrative Supplement (PI; $71,100 Direct costs). **Beveridge, JE**, Ellingson, A. *"Neuromuscular response to competing ACL surgeries.*" **Role: Principal Investigator** (5% Effort).

Past Research Support

2023-2026 NIH P20 Injury COBRE Research Project Leader (PI; $300,000 Direct costs). **Beveridge, JE**, Fleming, BCF. *"New Potential to Restore Neuromuscular and Joint Function after ACL Injury."* **Role: Principal Investigator** (50% Effort). *Graduated from program when awarded R01.*

2019-2023 NIH R00 Pathway to Independence (PI; $453,555 Direct costs). **Beveridge, JE**. "The *Effects of Reduced ACL Stiffness on Dynamic In Vivo Joint Function."* **Role: Principal Investigator** (75% Effort)

2019-2022 Department of Defense (Collaborator; $445,340 Direct costs). PI: Wei, Lei. *"Intra-articular Injection of a2-Macroglobulin Prevents Post-Traumatic Osteoarthritis."* **Role: Co-Investigator** (5% Effort)

2022-2024 NIH T32 Training Program in MSK Research (Mentor; $136,000 Direct trainee support). PI: Zaylor, W. *"Computational Assessment of ACL Function and Quantitative MR Imaging."* **Role: Mentor** (No Effort)

2020-2021 MSRC Pilot Program Grant (Principal Investigator, $25,000 Direct costs). **Beveridge, JE**, Erdemir, A. *"Computational Modeling of In Vivo ACL Function*". **Role: Principal Investigator** (No Effort)

2016-2018 NIH K99 Pathway to Independence (PI; $181,980 Direct costs). **Beveridge, JE**; Fleming, BC (Mentor). *"The Effects of Reduced ACL Stiffness on Dynamic In Vivo Joint Function."* **Role: Principal Investigator** (100% Effort)

2016-2021 CIHR Foundations Grant (Collaborator; $596,311 Direct costs). PI: Ronsky, Janet. University of Calgary. *"A novel in-vivo mechanical marker of early changes in post-traumatic osteoarthritis."* **Role: Collaborator** (No Effort)

2015-2016 Alberta Spine Foundation (Co-Investigator; $20,000 Direct costs). Swamy, G, Salo, P, **Beveridge, JE,** Kuntze, G, Ronsky, J. *"Dual fluoroscopy for in-vivo analysis of the 3D kinematics of cervical and lumbar degeneration."* **Role: Co-Investigator** (No Effort)

Research Support as a Trainee

2015-2018 AIHS Postgraduate Fellowship ($50,000 with $5,000 research allowance p.a.; completed 2015)
2013-2016 The Arthritis Society Post-Doctoral Fellowship ($20,000 p.a.; completed 2015)
2013-2015 NSERC CREATE Post-Doctoral Fellowship ($20,000 p.a.)
2012-2013 McCaig Professorship Scholarship ($36,000 p.a.)
2006-2009 Bone & Joint Training Program ($3,000 with $2,000 travel allowance p.a.)
2006-2011 AHFMR – Full-time Studentship ($20,000 with $1,500 research allowance p.a.)

Refereed Journals (published, in press) (29)

1. Morton, AM, Holtgrewe, JD, **Beveridge, JE**, Yoon, D, Rainbow, MJ, Lopez, C, Zhao, KD, Paniagua, B, Fillion-Robin, J-C, Lombardi, AJ, Moore, DC, Crisco, JJ. (2025). An accuracy assessment of SlicerAutoscoper^{M} – software for tracking skeletal structures in multi-plane videoradiography datasets. J Biomec, 189(2025) *In Press.*
2. Barnes, DA, Murray, CJ, Molino, J, **Beveridge, JE**, Kiapour, AM, Murray, MM, Fleming, BC. Advancement of an automatic segmentation pipeline for metallic artifact removal in post-surgical ACL MRI. Magn Reson Imaging 121: 110417. PMID: 40348296
3. **Beveridge, JE**, Zandiyeh, P, Owens, BD, Kiapour, AM, Fleming, BC. (2024). Structure and function are not the same: the case for restoring mechanoreceptor continuity following anterior cruciate ligament injury. *RIMJ. 2013(107): 12-17.* PMID: 39058984
4. Sun, C, Chang, K, Fleming, BC, Owens, BD, **Beveridge, JE**, J, Xiao, Y, Wei, L. (2024). Alpha-2 Macroglobulin attenuates posttraumatic osteoarthritis cartilage damage by inhibiting inflammatory pathways in a preclinical Yucatan minipig model. *Am J Sports Med, 52(11): 2882-2892.* PMID: 39214071
5. Sun, C, Chang, K, Fleming, BC, Owens, BD, **Beveridge, JE**, Gage, A, Talley-Bruns, RC, McAllister, S, Costa, MQ, Pinnette, MP, Hague, M, Molino, J, Xiao, Y, Lu, S, Wei, L. (2023). A novel large animal model of posttraumatic osteoarthritis induced by inflammation with mechanical stability. *Am J Transl Res, 15(7): 4573-4586.* PMID: 37560216
6. Wu, Z, Zaylor, W, Sommer, S, Xie, D, Zhong, X, Liu, K, Kim, J, **Beveridge, JE**, Zhang, X, Li, X. (2023). Assessment of ultrashort echo time (UTE) T2* mapping at 3T for the whole knee: repeatability, the effects of fat suppression, and knee position. *Quant Imaging Med Surg, 13(12): 7893-7909.* PMID: 38106304
7. Sun, C, Chang, K, Fleming, BC, Owens, BD, **Beveridge, JE**, Gage, A, Talley-Bruns, RC, McAllister, S, Costa, MQ, Pinnette, MP, Hague, M, Molino, J, Xiao, Y, Lu, S, Wei, L. (2023). A novel large animal model of posttraumatic osteoarthritis induced by inflammation with mechanical stability. *Am J Transl Res, 15(7): 4573-4586.* PMID: 37560216
8. Zandiyeh, P, Parola, LR, Costa, MQ, Hague, MJ, Molino, J, Fleming, BC, **Beveridge, JE**. (2023). Neuromuscular function and knee osteoarthritis after anterior cruciate ligament reconstruction. *Bioeng J, 10(7):812. doi.org/10.3390/bioengineering10070812.* PMID: 37508839 **Featured on journal issue cover page*
9. Sun, C, Cao, C, Zhao, T, Guo, H, Fleming, BC, Owens, B, **Beveridge, J**, McAllister, S, Wei, L. (2023). A2M inihibits inflammatory mediators of chondrocytes by blocking IL-1ß/NF-kß pathway. JOR, 41(1): 241-248. doi.org/10.1002/jor.25348. PMID: 35451533
10. Flannery, SW, **Beveridge, JE**, Proffen, BL, Walsh, EG, BEAR Trial Team, Kramer, DE, Murray, MM, Kiapour, AM, Fleming, BC. (2023). Predicting anterior cruciate ligament failure load with T_2* relaxometry and machine learning as a prospective imaging biomarker for revision surgery. *Sci Reports, 13(1): 3524*. PMID: 36864112
11. Zandiyeh, P, Parola, LR, Fleming, BC, **Beveridge, JE**. (2022). Wavelet analysis reveals differential lower limb muscle activity patterns long after anterior cruciate ligament reconstruction. *J Biomech, 133:* 110957. PMID: 35114581
12. Flannery, SW, Kiapour, AM, Edgar, DJ, Murray, MM, **Beveridge, JE**, Fleming, BC. (2021). A Transfer learning approach for automatic segmentation of the surgically treated anterior cruciate ligament. *JOR, 40: 277-284.* PMID: 33458865

13. Behnke, AL, Parola, LR, Karmachedu, NP, Badger, GJ, Fleming, BC, **Beveridge, JE**. (2020). Neuromuscular function in anterior cruciate ligament reconstructed patients at long-term follow-up. *Clin Biomech, (17): 105231*. PMID: 33246796

14. **Beveridge, JE**, Proffen, BL, Karamchedu, NP, Chin, KE, Sieker, JT, Badger, GJ, Kiapour, AM, Murray, MM, Fleming, BC. (2019). Cartilage damage is related to ACL stiffness in a porcine model of ACL repair. *JOR, 37(10),* p. 2249-2257. PMID: 31125133 **JOR Early Career Award*

15. Shekarfoursh, M, Barton, KI, **Beveridge, JE**, Scott, M, Martin, CR, Muench, G, Heard, BJ, Sevick, JL, Hart, DA, Frank, CB, Shrive, NG. (2019). Alterations in joint angular velocity following traumatic knee injury in ovine models. *Ann Biomed Eng*, *47(3),* p. 790-801. PMID: 30656532

16. Shekarfoursh, M, **Beveridge, JE**, Hart, DA, Frank, CB, Shrive NG. (2018). Correlation between translational and rotational kinematic abnormalities and osteoarthritis-like damage in two in vivo sheep injury models. *J Biomech*, *75,* p.67-76. PMID: 29778418

17. **Beveridge, JE,** Machan, JT, Walsh, EG, Kiapour, AM, Karamchedu, NP, Chin, KE, Proffen, BL, Sieker, JT, Murray, MM, Fleming, BC. (2018). Magnetic resonance measurements of tissue quantity and quality using T_2* relaxometry predict temporal changes in the biomechanical properties of the healing ACL. *JOR, 36(6),* p.1701-1709. PMID: 29227559

18. Heard, BJ*, **Beveridge, JE*,** Atarod, M, O'Brien, EJ, Rolian, C, Frank, CB, Hart, DA, Shrive, NG. (2017). Analysis of change in gait in the ovine stifle: normal, injured, and anterior cruciate ligament reconstructed. *BMC Musculoskeletal Disorders, 18(1),* p. 212-222. PMID: 28535749 **Co-first authors*

19. **Beveridge, JE**, Walsh, EG, Murray, MM, Fleming, BC. (2017). Sensitivity of ACL volume and T_2* relaxation time to magnetic resonance imaging scan conditions. *J Biomech*, *56:* p.117-121. PMID: 28359570

20. **Beveridge, JE**, Atarod, M, Heard, BJ, O'Brien, EJ, Frank, CB, Shrive NG. (2016). Relationship between increased in vivo meniscal loads and abnormal tibiofemoral surface alignment in ACL deficient sheep is varied. *J Biomech, 49(16)*, p.3824-3832. PMID: 28573971

21. Lichti, DD, Sharma, GB, Kuntze, G, Mund, B, **Beveridge, JE**, Ronsky, JL. (2015). Rigorous geometrical self-calibrating bundle adjustment for a dual fluoroscopic imaging system. *IEEE Transactions on Medical Imaging, 32(2),* p. 589-98. PMID: 25330483

22. **Beveridge, JE,** Heard, BJ, Brown, JJY, Shrive, NG, Frank, CB. (2014). A new measure of tibiofemoral subchondral bone surface interactions that correlates with early cartilage damage in injured sheep. *JOR, 32(10),* p.1371-1380. PMID: 25042631

23. **Beveridge, JE,** Shrive, NG, Frank, CB. Repeatability and precision of a weighted centroid method for estimating dynamic in vivo tibiofemoral surface interactions in sheep. (2013). *Computer Methods in Biomechanics and Biomedical Engineering (CMBBE), 17(16),* p.1853-1863. PMID: 23742689

24. **Beveridge, JE,** Heard, BJ, Brown, JJY, Shrive, NG, Frank, CB. (2013). Tibiofemoral centroid velocity correlates more consistently with cartilage damage than does contact path length in two ovine models of stifle injury. *JOR, 31(11):* p.1745-1756. PMID: 23832294

25. O'Brien, EJO, **Beveridge, JE**, Huebner, KD, Heard, BJ, Tapper, JE, Shrive, NG, CB Frank. (2013). Osteoarthritis develops in the operated joint of an ovine model following ACL reconstruction with immediate anatomic reattachment of the native ACL. *JOR, 31(1):* p. 35-43. PMID: 22807114

26. Frank, CB, **Beveridge, JE**, Huebner, KD, Heard, BJ, Tapper, JE, O'Brien, EJO, Shrive, NG. (2012). Complete ACL/MCL deficiency induces variable degrees of instability in sheep with kinematic

abnormalities correlating with degrees of early osteoarthritis. *JOR, 30(3),* p.384-92. PMID: 21919045

27. **Beveridge, JE**, Shrive, NG, Frank, CB. (2011). Meniscectomy causes significant in vivo kinematic changes and mechanically induced focal chondral lesions in a sheep model. *JOR*, *29(9):* p.1397-405. PMID: 21432896
28. Darcy, SP, Rosvold, JM, **Beveridge, JE,** Corr, DT, Sutherland, CA, Brown, JJY, Marchuk, LL, Frank, CB, and Shrive, NG. (2008). A Comparison of passive flexion-extension to normal gait in the ovine stifle joint. *J Biomech*, *41*, p.854-860. PMID: 18093599
29. Howard, RA, Rosvold, JM, Tapper, JE, Darcy, SP, **Beveridge, JE,** Corr, DT, Marchuk, LL, Ronsky, JL, Frank, CB, Shrive, NG. (2007). Reproduction of ovine gait using a parallel robot. *Journal of Biomechanical Engineering, 129(5)*, p.743-749. PMID: 17887900

Refereed Abstracts / Papers in Conference Proceedings (published, accepted) (57)

1. Holtgrewe,JD, Murray, CJ, Barnes, DA, Molino, J, Fleming, BC, Beveridge, JE. Effect of hop distance on single-leg hop landing kinematics in healthy persons. ASB, 2025. *Accepted*
2. Holtgrewe, JD, Murray, CJ, Barnes, DA, Molino, J, Fleming, BC, Beveridge, JE. Robustness and bilateral symmetry of hop landing kinematics in healthy persons. Trans ORS 50, 2025.
3. Murray, CJ, Molino, J, Holtgrewe, JD, Barnes, DA, Zandiyeh, P, Fleming, BC, **Beveridge, JE**. Muscle activity patterns during a single-leg hop landing in healthy males and females. Trans ORS 50, 2025.
4. Crisco, JJ, Morton, AM, Zhao, KD, Lopez, C, Moore, DC, Holtgrewe, J, **Beveridge, JE**, Fillion-Robin, J-C, Lombardi, A, Paniagua, B, Yoon, D, Rainbow, M. SlicerAutoscoperM – A software environment for tracking skeletal structures in videoradiography datasets, Trans ORS 50, 2025.
5. Barnes, DA, Kiapour, AM, **Beveridge, JE**, Murray, CJ, Murray, MM, Fleming, BC. Precision imaging: automated metal artifact segmentation in ACL MRIs using k-means clustering. Trans ORS 50, 2025.
6. Barnes, DA, Kiapour, AM, **Beveridge, JE**, Murray, CJ, Murray, MM, Fleming, BC. Statistical parametric mapping analysis of meniscal cross-sectional areas between sexes. Trans ORS 50, 2025.
7. Thomson, HN, Thomas, NT, Del Valle, L, Al Jundi, S, Castro, A, **Beveridge, JE**, Proffen, BL, Fry, CS. Porcine ACL transection injury induces clinically-relevant deficits in quadriceps quality and fiber size. Trans ORS 50, 2025.
8. **Beveridge, JE**, Hague, M, Parola, LR, Costa, MQ, Molino, J, Fleming, BC. Static and dynamic constraint in ACL-reconstructed patients at 10-15 year follow-up. Trans ORS 49, 2024.
9. Murray, CJ, Molino, J, Costa, M, Fleming, BC, **Beveridge, JE**. Approach to evaluate femoral cartilage thickness based on patient geometry. Trans ORS 49, 2024.
10. Holtgrewe, J, Fleming, BC, **Beveridge, JE**. Accuracy and precision of model-based bone tracking for a dynamic hop landing. Trans ORS 49, 2024.
11. Barnes, DA, Kiapour, AM, **Beveridge, JE**, Fleming, BC. ACL specific signal intensity normalization across MRI sequences. Trans ORS 49, 2024. 2024.
12. Sun, Changqi, Chang, Kenny, Fleming, BC, Owens, BC, **Beveridge, JE**, Wei, L. A2M attenuates cartilage degeneration by binding to and blocking the IL-1r1 cascade in a large preclinical pig model. Trans ORS 49, 2024. 2024.

13. Zaylor, W, Tien, R, Chokhandre, SK, Klonowski, EM, Erdemir, A, **Beveridge, JE**. The effects of organized collagen distribution on ACL strain. Trans ORS 48, 2023.
14. Zaylor, W, Peters, JR, Chokhandre, SK, Klonowski, EM, Erdemir, A, **Beveridge, JE**, Li, X. An automated approach to define femoral and tibial coordinate systems with limited diaphysis length. Trans ORS 48, 2023.
15. Chang, K, Sun, C, Fleming, BC, Owens, BD, **Beveridge, JE**, McAllister, S, Costa, M, Pinette, M, Molino, J, Wei, L. A2-Macroglobulin reduces post-traumatic osteoarthritis cartilage degeneration by inhibiting catabolic pathways. Trans ORS 48, 2023.
16. Sun, C, Chang, K, Fleming, BC, Owens, BD, Bruns, R, **Beveridge, JE**, Mcallister, S, Costa, M, Pinette, M, Xiao, Y, Wei, L. A2M Reduces Synovial Inflammation in a Yucatan Mini-Pig PTOA Model. Trans ORS 48, 2023.
17. Zaylor, W, Malby, KM, Byram, NA, Li, X, **Beveridge, JE**. ACL T_2* relaxation time sensitivity to extra-articular bone surgery. Trans ORS 47, 2022.
18. Zaylor, W, Malby, KM, Byram, NA, Yalcin, S, Spindler, KP, Li, X, **Beveridge, JE**. Transient response in cartilage T2 relaxation time after “drill-model” of ACL reconstruction surgery. Trans ORS 47, 2022.
19. Rahman, RI, Brandt, A, Byram, NA, Malby, KM, Yalcin, S, Spindler, KP, **Beveridge, JE**. Intra-articular drilling elicits hind limb loading variability in a porcine model of ACL surgery. Trans ORS 47, 2022.
20. Sun, C, Chang, K, Fleming, BC, Owens, BD, Gage, A, **Beveridge, JE**, McAllister, S, Cost, M, Pinette, M, Xiao, Y, Wei, L. Cartilage damage is associated with synovium inflammation: a novel porcine model of post-traumatic osteoarthritis. Trans ORS 47, 2022.
21. Zaylor, W, Chokhandre, SK, Klonowski, EM, Malby, K, Erdemir, A, **Beveridge, JE**. Sensitivity of ACL force and stress to kinematic error. Midwest ASB, 2021.
22. **Beveridge, JE**, Chokhandre, SK, Klonowski, EM, Malby, K, Baron, EI, Erdemir, A. Spatial distribution of material properties influences gross and regional ACL load bearing function. ISB, 2021.
23. Wu, Z, Sommer, S, Zhong, X, Liu, K, Kim, J, **Beveridge, J**, Zhang, X, Li, X. Repeatability and orientation dependence on ultrashort echo time (UTE) T_2* mapping at 3T for the whole knee. ISMRM & SMRT Annual Meeting & Exhibition. May, 2021.
24. Zandiyeh, P, Parola, LR, Fleming, BC, **Beveridge, JE**. Muscle activation patterns are chronically altered after anterior cruciate ligament reconstruction. Trans ORS 46, 2021.
25. Sun, C, Cao, C, Fleming, BC, Owens, BD, **Beveridge, JE**, McAllister, S, Wei, L. A2M inhibits catabolism by blocking IL-1ß/NF-kß pathway. Trans ORS 46, 2021.
26. **Beveridge, JE**, Behnke, AL, Karamchedu, NP, Maldonado Rodas, C, Flannery, SW, Fleming, BC. Relationship between predicted ACL graft stiffness and kinematics at 12 year follow-up. Trans ORS 45, 2020.
27. Flannery, SW, **Beveridge, JE**, Kiapour, AM, Karamchedu, NP, Behnke, AL, Proffen, BL, Sieker, JT, Murray, MM, Fleming, BC. An improved T_2*-based prediction model for ACL failure load. Trans ORS 45, 2020.
28. **Beveridge, JE**, Behnke, AL, Karamchedu, NP, Maldonado Rodas, C, Fleming, BC. Predicted ACL graft stiffness explains variation in increased anterior tibial alignment in ACL-reconstructed subjects at 10-12 year follow-up. ISB, 2019.

29. Behnke, AL, Karamchedu, NP, Fleming, BC, **Beveridge, JE**. Muscle co-contraction indices of the lower limb are greater in ACL reconstructed patients compared to uninjured controls at 10-12 year follow-up. Trans ORS 44, 2019.
30. Flannery, SW, **Beveridge, JE**, Fleming, EN, Costa, MQ, Karamchedu, NP, Behnke, AL, Proffen, BL, Sieker, JT, Murray, MM, Fleming, BC. *Longitudinal assessment of meniscus post-ACL repair with MRI T_2* relaxometry.* Trans ORS 44, 2019.
31. Küpper, JC, Zandiyeh, P, **Beveridge, J**, Ritchie, B, Kuntze, G, Ronsky, JL. *Continuous and interval-based approaches to calculating the weighted centroid of in vivo knee articular cartilage contact.* OARSI 2019.
32. **Beveridge, JE**, Machan, T, Walsh, E, Kiapour, AM, Karamchedu, NP, Chin, KE, Proffen, BL, Sieker, JT, Costa, M, Murray, MM, Fleming, BC. *Structural properties of healing ACL predicted from MR T_2*, signal intensity and ligament volume.* Trans ORS 43, 2018.
33. **Beveridge, JE,** Proffen, BL, Karamchedu, NP, Chin, KE, Sieker, JT, Murray, MM, Fleming, BC. *Cartilage damage is related to ACL stiffness in a porcine model of ACL repair.* Trans ORS 43, 2018.
34. Flannery, SW, Fleming, EN, Karamchedu, NP, Behnke, AL, **Beveridge, JE**, Proffen, BL, Sieker, JT, Murray, MM, Fleming, BC. Assessing meniscus integrity post-ACL repair with MRI T_2* relaxometry. Trans ORS 43, 2018.
35. Shekarforoush, M, **Beveridge, JE,** Barton, KI, Heard, BJ, Sevick, JL, Martin, R, Hart, DA, Frank, CB, Shrive, NG. *The Magnitude of change in joint angular velocity after injury correlates with osteoarthritis development: a longitudinal in vivo study in two sheep models.* Trans ORS 43, 2018.
36. Küpper, JC, Sharma, GB, Ritchie, BL, Zandiyeh, P, Kuntze, G, **Beveridge, JE**, Ronsky, JL. Reliability of dual fluoroscopic manual 2D-3D registration for knee cartilage contact mechanics during walking. Trans ORS 43, 2018.
37. **Beveridge, JE,** Machan, JT, Walsh, EG, Kiapour, AM, Karamchedu, NP, Chin, KE, Proffen, BL, Sieker, JT, Murray, MM, Fleming, BC. *The combination of tissue collagen quantity and quality estimated from MR T_2* relaxometry predicts time-specific structural properties of healing ACL following ACL repair.* ASB, Boulder, CO, 2017.
38. **Beveridge, JE,** Walsh, EG, Murray, MM, Fleming, BC. *Sensitivity of ACL volume and MR T_2* characteristics to MR scan parameters.* Trans ORS 42, 2017.
39. Sharma, GB, Kuntze, G, **Beveridge, JE**, Ronsky, JL. *In vivo structure-function characterization of tibiofemoral cartilage during walking: a dual fluoroscopy and magnetic resonance imaging approach.* Trans ORS 42, 2017.
40. **Beveridge, JE**, Sharma, GB, Kuntze, G, Jaremko, JL, Koles, S, Wiley, JP, Ronsky, JL. (2015). *A preliminary study of contralateral knee structure and function associations in persons with unilateral knee osteoarthritis.* Osteoarthritis and Cartilage 23(S2), p. A1-A416.
41. Sharma, GB, Kuntze, G, **Beveridge, JE**, Bhatla, C, Shank, J, Ronsky, JL. (2015). *Characterization of tibiofemoral cartilage T_2 mapping in the contact and non-contact regions during walking using dual fluoroscopy and magnetic resonance imaging.* Osteoarthritis and Cartilage 23(S2), p. A1-A416.
42. **Beveridge, JE**, Bhatla, C, Sharma, GB, Kuntze, G, Shrive, NG, Frank, CB, Ronsky, JL. *Preliminary evidence supporting shared mechanical abnormalities in ACL-deficient human and ovine knees.* Trans ORS 40, 2015.

43. Sharma, GB, Kuntze, G, **Beveridge, JE**, Bhatla, C, Frayne, R, Ronsky, JL. *Subject-specific 3D T_2 relaxation mapping of the tibiofemoral cartilage contact regions during walking: a dual fluoroscopy and magnetic resonance imaging approach*. Trans ORS 40, 2015.
44. **Beveridge, JE,** Anderson, BL, Ronsky, JL, Shrive, NG, Frank, CB. (2014). *Tibiofemoral cartilage thickness becomes more homogeneous following stifle injury in sheep.* Osteoarthritis and Cartilage, 22(S2), p. A256-A257.
45. **Beveridge, JE,** Atarod, M, Heard, BJ, Frank, CB, Shrive NG. *Abnormal tibiofemoral surface alignment is associated with increased meniscal loads in vivo.* Trans ORS 39, 2014.
46. **Beveridge, JE,** Shrive, NG, Frank, CB. *Evidence that individual mechanical mechanisms work synergistically in the initiation and progression of early cartilage damage in injured sheep.* Trans ORS 38, 2013.
47. **Beveridge, JE,** Shrive, NG, Frank, CB. *A new measure of tibiofemoral surface interactions that correlates with early cartilage damage in injured sheep.* Trans ORS 38, 2013.
48. O'Brien, EJO, **Beveridge, JE**, Huebner, KD, Heard, BJ, Tapper, JE, Shrive, NG, Frank, CB. *ACL Reconstruction with immediate anatomic re-attachment of the native ACL in an ovine model results in minimal kinematic differences and greater evidence of early OA compared with sham controls.* Trans ORS 37, 2012.
49. **Beveridge, JE**, Anderson, BL, Habib, AF, Ronsky, JL, Shrive, NG, Frank, CB. *A new 3D method for mapping joint surface split-line orientation.* Trans ORS 35, 2010.
50. **Beveridge, JE**, Moody, HR, Shrive, NG, Frank, CB. (2009). *Early degenerative articular cartilage alterations are related to specific joint injuries in an ovine model of osteoarthritis.* Osteoarthritis and Cartilage 17, S48-S49.
51. **Beveridge, JE,** Heard, BJ, Darcy, SP, MacDonald, L, Sutherland, CA, Shrive, NG, Frank, CB. **A new model to explore the effects of ACL graft tension and twist on in vivo stifle biomechanics.* ISL&T, San Francisco, CA, 2008. **Received Best Poster Award.*
52. Chin, JWS, Huebner, KD, Chung, M, **Beveridge, JE,** Heard, BJ, Marchuk, LL, Shrive, NG, Frank, CB, Hart, DA. *ACL reimplantation in an ovine model leads to prolonged intra-articular inflammation dependent in part on graft tensioning.* ISL&T, San Francisco, CA, 2008.
53. **Beveridge, JE,** Moody, HR, Brown, JJY, Darcy, SP, Sutherland, CA, Ronsky, JL, Shrive, NG, Frank, CB. *Evidence of injury-specific mechanical mechanisms of articular cartilage degeneration in ovine models of secondary osteoarthritis.* Combined Meetings of the ORS, 2007.
54. **Beveridge, JE**, Brown, JJY, Darcy, SP, Hay, KD, Ronsky, JL, Shrive, NG, Frank, CB. *Early subchondral bone changes are not related to load location alone.* Trans ORS 32, 2007.
55. **Beveridge, JE**, Brown, JJY, Darcy, SP, Sutherland, CA, Rosvold, JM, Ronsky, JL, Shrive, NG, Frank, CB. *Lateral meniscectomy affects in vivo ovine stifle joint biomechanics.* ISL&T, San Diego, CA, 2007.
56. Darcy, SP, **Beveridge, JE**, Rosvold, JM, Corr, DT, Sutherland, CA, Brown, JJY, Marchuk, LL, Frank, CB, Shrive, NG. *A comparison of passive flexion-extension to gait in the ovine stifle.* ISL&T, San Diego, CA, 2007.
57. Darcy, SP, Rosvold, JM, **Beveridge, JE**, Corr, DT, Sutherland, CA, Brown, JJY, Marchuk, LL, Frank, CB, Shrive, NG. *Estimation of in-vivo forces during gait in an ovine stifle joint requires motion reproduction to an accuracy of less than 0.5 mm.* ISL&T, San Diego, CA, 2007.

Other Works

Beveridge, JE. Surface interactions and cartilage damage in two ovine models of stifle injury. Ph.D. Thesis supervised by Professor Cyril B. Frank, University of Calgary, Calgary, AB, Canada, 2012.

Conference Podium Presentations

Orthopaedic Research Society, 2020, 2023-2024.
Midwest American Society of Biomechanics, 2021, Cleveland, OH, 2021.
American Society of Biomechanics, 2017* **Thematic Poster with oral presentation*
McCaig Meeting on Osteoarthritis and Musculoskeletal Diseases, Calgary, AB, 2014, 2015.
Alberta Biomedical Engineering Conference, Banff, AB, 2010-2011.
Canadian Connective Tissue Conference, Calgary, AB, 2009.
Combined Meeting of the Orthopaedic Research Societies, Honolulu, HI, 2007.

Conference Poster Presentations

Orthopaedic Research Society Annual Meeting, 2007, 2010, 2013-2015, 2017-2025.
International Society of Biomechanics Meeting, 2019, 2021.
Gordon Research Conference on Musculoskeletal Biology and Bioengineering, 2016-2024.
Arthritis Alliance of Canada Annual Meeting, 2013.
AIHS Alberta OA Team Meeting, 2013.
Segal North American Osteoarthritis Workshop, 2009.
Osteoarthritis and Cartilage Research International (OARSI) Congress, 2009, 2014, 2015.
CIHR Student Health Research Forum, 2009.
International Symposium on Ligaments & Tendons, 2007, 2008.
Canadian Arthritis Network Annual Meeting, 2007.
Annual Meeting of the Alberta Provincial CIHR Training Program in Bone & Joint Health, 2006-2008.
Alberta Biomedical Engineering Conference, 2006.

Journal Reviewer

American Journal of Sports Medicine
Journal of Orthopaedic Research
Journal of Biomechanics
Osteoarthritis and Cartilage
Clinical Biomechanics
The Knee
Computer Methods in Biomechanics and Biomedical Engineering
Journal of Engineering in Medicine
Biorheology
Journal of Applied Biomechanics
Exercise and Sports Sciences Reviews
BMC Musculoskeletal Disorders

EDUCATIONAL ACTIVITIES

Keynote Speaker

American Society of Bio-Mechanics Midwest, 2021	"The Impact of ACL Function on Knee Biomechanics and PTOA Risk"

Invited Speaker (15)

University of Minnesota Visiting lecturer, 2025	"Risky business: Which responses to ACL surgery might promote PTOA risk?"
University of Calgary The Frank Talks, 2025	"Innovating the ACL: Continuing Cy's Vision for a "Better Way"
Brown Medical School Annual BioMed Retreat, 2024	"A Multi-Scale Approach to Determine PTOA Risk After Joint Injury"
Brown University/Rhode Island Hospital COBRE Seminar, 2022	"A Holistic, Multi-Scale, Approach to Determine PTOA Risk After Joint Injury"
University of Calgary McCaig Institute Seminar, 2022	The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
University of Calgary HPL Seminar, 2022	The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
Brown University/Rhode Island Hospital COBRE Seminar, 2021	"The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
Duke University L. DeFrate Lab Meeting, 2021	"The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
Washington University at St. Louis MSK Seminar Series, 2021	"The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
Orthopaedic Research Society Meniscus Section Meeting, 2020	"Models and Approaches Used in the Preclinical Testing of Meniscal Solutions: An Engineer's Perspective"
Program of Advanced Musculoskeletal Imaging, 2020	"Multimodal Imaging to Quantify ACL Function"
Washington University at St. Louis MSK Seminar Series, 2018	"The Impact of ACL Function on Knee Biomechanics and PTOA Risk"
Queen's University Biomechanics Research Seminar, 2018	"Moving Towards Multimodal Imaging for Studying ACL and Joint Biomechanics"
The Cleveland Clinic, BME Research Meeting, 2017	"Kinematic Insights into PTOA Pathogenesis and Progression"
Brown University Orthopaedic Research Meeting, 2013	"The 'Subject Factor' in Abnormal Contact Mechanics of ACL-Deficient Sheep"

Educational Lectures (8)

CWRU EMAE307 Lecture, 2022	"A Holistic, Multi-scale, Approach to Determine PTOA Risk after Joint Injury"
CWRU/CCF BME Alliance Fireside chat, 2020, 2021	"Mechanobiology of ACL Injury"
Providence College Engineering Guest Lecture, 2017, 2018	"Biomedical Engineering"
Joint Injury & OA Research KNES 503-02 Lecture, 2015	"Sheep Models of Joint Injury: Orthopaedic Biomechanics"
Bone and Joint Health Course MDSC 751.30 Lecture, 2014	"Joint Biomechanics"
Human Growth and Development KNES 355 Lecture, 2014	"Osteoarthritis"

Other Seminars Given (18)

Brown University Orthopaedic Research Meeting, 2024	"Risky Business: Identifying Neuromuscular and Mechanobiological Factors that Promote PTOA Risk"
Brown BME Graduate Program Seminar 2023	"A Holistic, Multi-scale, Approach to Determine PTOA Risk after Joint Injury"
CCF Mid-term Promotion Seminar, 2022	"A Model System to Probe the Mechanobiology of Post-Traumatic Osteoarthritis"
CCF BME Department Seminar, 2020	"Effects of Reduced ACL Stiffness"
Cleveland Clinic MSRC Research Day, 2020	"Joint and Soft Tissue Function in PTOA"
Cleveland Clinic MSRC Research Day, 2019	"ACL Graft Function at 12-year Follow-Up"
Brown University Osteoarthritis Research Workgroup, 2017	"ACL Graft Stiffness and PTOA"
Brown University Orthopaedic Research Meeting, 2017	"MR T_2* Relaxometery Predicts the Structural Properties of Healing ACLs Over Time"
Brown University MRI Research Facility Meeting, 2017	"MR T_2* Relaxometery Predicts the Structural Properties of Healing ACLs Over Time"
Brown University Orthopaedic Research Meeting, 2016	"A Proposal to Investigate the Relationship Between Inferior ACL Graft Biomechanical Properties and Abnormal Joint Motion"
Human Performance Lab Seminar Series, 2014	"Abnormal Surface Interactions in Post-Traumatic OA"

McCaig Institute Seminar Series, 2014	"Abnormal Surface Interactions in Post-Traumatic OA"
McCaig Institute Seminar Models of Series, 2012	"Surface Interactions and Cartilage Damage in Two Ovine Stifle Injury"
McCaig Institute Seminar Series, 2011	"A Qualitative Description of Stifle Split-Lines and their Relationship to Joint Function"
Human Performance Lab Seminar Series, 2009	"Exploring Injury-Specific Mechanical Mechanisms of Post-traumatic OA in Sheep"
McCaig Institute Seminar Series, 2009	"Knee Injury and Osteoarthritis: A Hodge-Podge Summary of Experiments"
Joint Injury & Arthritis Research Group Seminar, 2006	"Evidence of Injury-Specific Mechanical Mechanisms of Articular Cartilage Degeneration in Ovine Models of Secondary Osteoarthritis"
Joint Injury & Arthritis Research Group Seminar, 2005	"An Investigation of the Relationship Between Joint Surface Kinematics, Articular Cartilage Structure, and the Manifestation of Secondary Osteoarthritis Following ACL/MCL Injury in an Ovine Model"

Organized Workshops (7)

American Society of Bio-mechanics, Pittsburg, 2025	"Kinematic Tracking in Videoradiography using SlicerAutosoper^{M}"
American Society of Bio-mechanics, Knoxville, 2023	"Introduction to an Open-Source Approach to Bi-Plane Videoradiography and Multi-modal Kinematic Tracking"
Orthopaedic Research Society Dallas, 2023	"Cell, Tissue, and Systemic Crosstalk in Joint Disease"
North American Society of Biomechanics, Ottawa, 2022	"An Open-Source Approach to Multi-Modal Kinematic Imaging"
Orthopaedic Research Society Virtual, 2021	"Measuring Skeletal and Implant Arthrokinematics In Vivo"
Orthopaedic Research Society Virtual, 2021	"Mastering Finances as an Assistant Professor"
International Society of Biomechanics, Calgary, 2019	"Frontiers in X-Ray Reconstruction of Moving Morphology"

Supervised Theses (3)

Veronica Figueroa (MSc): "Computational Modelling of ACL Healing and Function." *Brown University, Expected May 2026.*

Sam Zalk (MSc): "Effect of Relaxin on Murine ACL Mechanical Properties." *Brown University, Completed April 2024.*

Visar Berki (PhD), *Cleveland State University Biomedical Engineering PhD student (transferred 2022).*

Graduate Thesis Advisory Committees (4)

Dominique Barnes (PhD): "Advancement and Validation of a Quantitative MRI Pipeline to Predict Risk of Subsequent Injury after ACL Surgery." *Brown University, Expected May 2026.*

Amulya Kabada (Sc.M): "Quantifying Mechanoreceptors in a Porcine ACL: A Comparative Analysis of Histological Staining Methods". *Brown University, May 2025.*

Dingyi Yang (Sc.M): "Mechanobiological Effects of Residual Stress on Epithelial Cell Morphology". *Brown University, May 2025.*

Sean Flannery (PhD): "An End-to-End Pipeline for Quantifying MRI Analysis of Ligament/Graft Healing". *Brown University, May 2022.*

Supervised Postdoctoral Research Projects (2)

Dr. William Zaylor: "Computational Assessment of ACL Function and Quantitative MR Imaging". *Cleveland Clinic postdoctoral fellow, 2021-2023. Current position: Data Analyst, Mount Sinai Hospital.*

Dr. Elise Baron: "Influence of Pain on Dynamic Gait". *Cleveland Clinic postdoctoral fellow, 2019-2021. Current position: Director of Research, Augment Therapy, Inc.*

Supervised Undergraduate Projects (15)

Siddharth Yende: "Integrating Biplane Videoradiography and Magnetic Resonance Imaging for In Vivo ACL Strain Analysis"
Brown University SPRINT & Undergraduate Thesis scholar, 2026

Ryan Tien: "Sensitivity of ACL Mechanics to T_2* Mapping"
Case Western Reserve University Summer Intern, 2022.

Diana Jones: "Precision of In Vivo Kinematics in Porcine Models of Joint Injury"
John Carroll University, Senior Physics Program Major, 2021.

Rakin Rhaman: "Intra-articular Drilling Elicits Hind Limb Loading Variability in a Porcine Model of ACL Surgery"
Ohio State University Summer Intern, 2021.

Cristian Maldonado Rodas: "Differences in Dynamic 3D Bone Position from Manual and Automated Post-Processing: Improving the Clinical Application of XROMM Framework"
Brown University Undergraduate Teaching and Research Award (UTRA) scholar, 2018; Class of 2020 Senior Prize in Biology.

Justin Lee: "Comparing Histological Predictors of ACL Healing to MRI Variables in Repaired Ligaments at Early Healing Stages"
Brown University UTRA & Senior Undergraduate Thesis scholar, 2017.

Franklin Tarke: "Sensitivity of Knee Joint Motion Calculated from CT- and MRI-derived Bone Models."
Brown University UTRA & Senior Undergraduate Thesis scholar, 2017.

Heather Charette: "Validation of Three-Dimensional Arthrokinematics Obtained Using Biplanar Videoradiography"
University of Calgary Markin Undergraduate Summer Research Program (USRP) scholar, 2015.

Emily Been: "Within- and Between-Subject Approaches for Quantifying Joint Surface Interactions"

**Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Awardee, 2015. (*National Award)*

Christopher Bhatla: "Altered Dynamic Tibiofemoral Contact Path Length in ACL Deficient Knees"
**Alberta Innovates Health Science (AIHS) undergraduate summer research scholar, 2014. (*Provincial Award)*

Andrea Agudelo: "Tibiofemoral Surface Modeling for Joint Mechanics Analysis"
NSERC CREATE International and Industrial Imaging Training Program undergraduate research scholar, 2013.

Nicole Marshall: "Ligament Injuries Alter In Vivo Tibiofemoral Shear Stress Direction in Sheep"
University of Calgary Best Undergraduate Biomedical Engineering Honours Thesis, 2011.

Blair Anderson: "A Novel Technique to Determine 3D Orientation of Articular Cartilage Split-Lines in Ovine Stifle Joints"
**Alberta Heritage Foundation for Medical Research (AHFMR) undergraduate summer research scholar, successful completion of Specialized Training in Research component of University of Alberta MD program, 2010. (*Provincial Award)*

Lynnette MacDonald: "Kinematic Consequences Observed Using a Novel Surgical Approach to Varying ACL Graft Tensions in An Ovine Model"
**AHFMR undergraduate summer research scholar, USRP scholar, USRP 1st place podium presentation, 2009. (*Provincial Award)*

Katie Hay: "3D Structure of Articular Cartilage: An MRI Investigation"
**NSERC USRP scholar, 2008. (*National Award)*

ACADEMIC SERVICE

Brown University Biomedical Engineering Department Graduate Program Committee, 2024-Present.

Orthopaedic Research Society Career Development Committee Chair, 2025-2026.

Orthopaedic Research Society Career Development Committee Vice-Chair, 2024-2025.

Brown University Orthopaedic Resident Research Committee Co-Chair, 2023-Present.

Brown University Biomedical Engineering Department DEI Committee Member, 2023-2024.

Orthopaedic Research Society Knee Topic Co-Chair, 2022-2025.

Orthopaedic Research Society Abstract Reviewer, 2019-Present.

Cleveland Clinic Molecular Device Solutions Scientific Advisory Board, 2021-2022.

Cleveland Clinic Department of Biomedical Engineering Seminar Committee Member, 2020-2022.

Cleveland Clinic Lerner Research Institute RETC Awards Committee Member, 2019.

Alberta Osteoarthritis Team Trainee Leaders' Committee Vice-Chair, 2014-2015.

NSERC CREATE Communications & KT Committee Chair, 2013-2015.

McCaig Institute Community Outreach Committee Member, 2012-2015.

AIHS Interdisciplinary Research Team in OA Trainee Leaders' Committee, 2011-2014.

Canadian Medical Education Directives for Specialists (CanMEDS) examiner, October 2012-2015.

University of Calgary Medical Science Graduate Student Council Member, 2004-2006.

PROFESSIONAL AFFILIATIONS

Orthopaedic Research Society, Member

International Society of Biomechanics, Member
American Orthopaedic Society for Sports Medicine, Member
Osteoarthritis Research Society International, Associate Member, Past Member
Canadian Society of Biomechanics, Past Member
Ontario Kinesiology Association, Past Member

LEADERSHIP IN THE COMMUNITY

Consultant, Canadian Ski Instructor's Alliance Technical Committee, March 2014-2019.
Consultant, Canadian Ski Instructor's Alliance Women in Skiing Committee, November 2014-2016.
Kronos Triathlon Club Board Member 2010-2012; Board Chair 2012-2014.
United Way Board Chair Training Course attendee, January-February 2013.
United Way Essentials of Governance Workshop attendee, December 2012.
McCaig Institute United Way Annual BBQ volunteer, 2011-2012.
McCaig Institute Jingle Bell Run for Arthritis Corporate Team Lead, November 2009.