

## Ken Muldrew Publications

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Lo IKY, Sciore P, Chung M, Liang S, Boorman R, Thornton G, Rattner JB, and Muldrew K. Local Anesthetics Induce Chondrocyte Death in Bovine Articular Cartilage Disks in a Dose- and Duration-Dependent Manner. *Arthroscopy*: 25: 707-715. 2009.

Muldrew K, Schachar J, Cheng P, Poole B, Rempel C, and Wan R. The Influence of Osmotic Poration on Cell Membrane Water Permeability. *Cryobiology* 58:62-68. 2009.

Muldrew K. The salting-in hypothesis of post-hypertonic lysis. *Cryobiology* 57:251-256. 2008.

Yang B, Wan RG, Muldrew K, and Donnelly B. A Finite element model for cryosurgery with coupled phase change and thermal stress aspects. *Finite Elements in Analysis and Design* 44: 288-297. 2008.

Hunter CJ, Bianchi S, Chen P, and Muldrew K. Osmoregulatory Function of Large Vacuoles Found in Notochordal Cells of the Intervertebral Disc. *Molecular and Cellular Biomechanics* 4: 227-238. 2007.

Hunter S, Timmerman S, Schachar N, and Muldrew K. The effects of hypothermic storage on chondrocyte survival and apoptosis in human articular cartilage. *Cell Preservation Technology* 4: 82-90. 2006.

R. Wan, B. Yan, Y. Belhamadia, B. Donnelly, and K. Muldrew. Finite Element Modeling of Prostate Cryosurgery. In Electronic Proceedings of the 7-th International Symposium on Computer Methods in Biomechanics and Bioengineering (CMBBE), 2006.

Liu Z, Muldrew K, Wan R, and Elliott J. Retardation of ice growth in glass capillaries: Measurement of the critical capillary radius. *Physical Review E* 69, 021611-1. 2004.

Liu ZH, Wan RG, Muldrew K, Sawchuk S, and Rewcastle J. A level set variational formulation for coupled phase change/mass transfer problems: Application to freezing of biological systems. *Finite Elements in Analysis and Design* 40: 1641-1663. 2004.

Wan R, Liu Z, Muldrew K, and Rewcastle J. A Finite Element Model for Ice Ball Evolution in a Multi-Probe Cryosurgery. *Computer Methods in Biomechanics and Biomedical Engineering* 6: 197-208. 2003.

Liu Z, Muldrew K, Wan R, and Elliott J. Measurement of freezing point depression of water in glass capillaries and the associated ice front shape. *Physical Review E* 67: 1-9. 2003.

Muldrew K, Acker JP, Elliott JAW, and McGann LE. The water to ice transition: implications for living cells. *Life in the Frozen State*, edited by Benson, Fuller, and Lane. Taylor & Francis Books, Ltd. 2004.

Jomha NM, Lavoie G, Muldrew K, Schachar NS, and McGann LE. Cryopreservation of intact human articular cartilage. *J Orthop Res* **20**: 1253-1255. 2002.

Muldrew K. Osteoarthritis as an Inevitable Consequence of the Structure of Articular Cartilage. *Medical Hypotheses* **59**: 389-397. 2002.

Muldrew K, Novak K, Studholme C, Wohl G, Zernicke R, Schachar NS, and McGann LE. Transplantation of Articular Cartilage Following a Step-Cooling Cryopreservation Protocol. *Cryobiology* **43**: 260-267. 2001.

Muldrew K, Liang S, Liu Z, and Wan R. Kinetics of Osmotic Water Movement from Rabbit Patellar Tendon and Medial Collateral Ligament Fibroblasts. *Cryoletters* **22**: 329-336. 2001.

Rewcastle JC, Sandison GA, Muldrew K, Saliken JC, Donnelly BJ. A model for the time dependent three-dimensional thermal distribution within iceballs surrounding multiple cryoprobes. *Med Phys* **28**: 1125-1137. 2001.

Muldrew K, Rewcastle J, Donnelly BJ, Saliken JC, Liang S, Goldie S, Olson M, Baissalov R, and Sandison G. Flounder Antifreeze Peptides Increase the Efficacy of Cryosurgery. *Cryobiology* **42**: 182-189. 2001.

Muldrew K, Chung M, Novak K, Schachar NS, Rattner JB, and Matyas J. Chondrocyte Regeneration in Adult Ovine Articular Cartilage Following Cryoinjury and Long-Term Transplantation. *Osteoarthritis and Cartilage* **9**: 432-439. 2001.

Baissalov R, Sandison SA, Reynolds D, and Muldrew K. Simultaneous optimization of cryoprobe placement and thermal protocol for cryosurgery. *Phys. Med. Biol.* **46**: 1799-1814. 2001.

Baissalov R, Sandison G, Donnelly B, Saliken J, McKinnon G, Muldrew K, and Rewcastle J. A Semi-Empirical Treatment Planning Model for Optimization of Multiprobe Cryosurgery. *Phys. Med. Biol.* **45**: 1085-1098. 2000.

Baissalov R, Sandison GA, Donnelly BJ, Saliken JC, McKinnon JG, Muldrew K, and Rewcastle JC. Suppression of high-density artefacts in x-ray CT images using temporal digital subtraction with application to cryotherapy. *Phys. Med. Biol.* **45**: N53-N59. 2000.

Binod KC, Forrester K, Irvine-Halliday D, Muldrew K, Frank C, Shrive N, and Thompson RI. In-vitro measurements of light transmission parallel and perpendicular to the collagen orientation in tendons. In *In-Vitro Diagnostic Instrumentation*, Gerald E. Cohn, Ed. Proceedings of SPIE Vo. 3913. 2000.

Muldrew K, Novak K, Yang H, Zernicke R, Schachar NS, and McGann LE. Cryobiology of Articular Cartilage: Ice Morphology and Recovery of Chondrocytes. *Cryobiology*. **40**: 102-109. 2000.

Schachar N.S., Novak K., Muldrew K., Zernicke R.F., and McGann L.E. Articular Cartilage Joint Surface Reconstruction Techniques. *Journal of Orthopaedic Science* 4:457-461. 1999.

Schachar N.S., Novak K., Hurtig M., Muldrew K., McPherson R., Wohl G., Zernicke R.F., and McGann L.E. Transplantation of Cryopreserved Osteochondral Dowel Allografts for Repair of Focal Articular Defects in an Ovine Model. *J Orthop Res.* 17: 909-920. 1999.

Hurtig, M., Novak, K., McPherson, R., McFadden, S., McGann, L.E., Muldrew, K., and Schachar, N.S. Osteochondral Dowel Transplantation for the Repair of Focal Defects in the Knee: An Outcome Study using an Ovine Model. *Vet. Surg.* 27:5-16. 1998.

Muldrew, K. Schachar, N.S. and McGann, L.E. Permeation Kinetics of Dimethyl Sulfoxide in Articular Cartilage. *Cryoletters* 17: 331-340. 1996.

Larese, A., Muldrew, K., Acker, J. and McGann, L.E. Antifreeze Proteins Induce Intracellular Nucleation. *Cryoletters* 17:175-182. 1996.

Schachar, N.S. and Muldrew, K. Clinical relevance in Orthopaedic Research. *Current Opinion in Orthopaedics* 6(6): 39-40. 1995.

Muldrew, K. and McGann, L.E. The Osmotic Rupture Hypothesis of Intracellular Freezing Injury. *Biophysical Journal.* 66:532-541. 1994.

Muldrew, K., Hurtig, M., Novak, K., Schachar, N. and McGann, L.E. Localization of Freezing Injury in Articular Cartilage. *Cryobiology* 31:31-38 1994.

Muldrew, K. The Osmotic Rupture Hypothesis and its Application to the Cryopreservation of Articular Cartilage. Ph.D. Thesis, University of Alberta. 1993.

Muldrew, K. and McGann, L.E. Mechanisms of Intracellular Ice Formation. *Biophysical Journal* 57:525-532. 1990.

Muldrew, K. Mechanisms of Intracellular Ice Formation During Rapid Cooling. M.Sc. Thesis, University of Alberta. 1988.

McGann, L.E., Stevenson, M., Muldrew, K. and Schachar, N. Kinetics of osmotic water movement in chondrocytes isolated from articular cartilage and applications to cryopreservation. *J. Orthopaedic Research* 6: 109-115. 1988.

McGann, L.E., Janowska-Wieczorek, A., Turner, A.R., Hogg, L., Muldrew, K.B. and Turc, J.M. Water Permeability of Human Hematopoietic Stem Cells. *Cryobiology* 24:112-119. 1987.

Miller, G., Siemann, D., Scott, P., Dawson, D., Muldrew, K., Trepanier, P. and McGann, L. A Semiquantitative Probe for Radiation-Induced Normal Tissue Damage at the Molecular Level. *Radiation Research* 105:76-83. 1986.

