2021

Reversible changes in the 3D collagen fibril architecture during cyclic loading of healthy and degraded cartilage.

A human multi-cellular model shows how platelets drive production of diseased extracellular matrix and tissue invasion.

Modelling TGF-β and Hh pathway regulation of prognostic matrisome molecules in ovarian cancer.

Mechanical stimulation modulates osteocyte regulation of cancer cell phenotype.

Polycystin-2 is required for chondrocyte mechanotransduction and traffics to the primary cilium in response to mechanical stimulation.

Sub-toxic levels of cobalt ions impair mechanotransduction via HDAC6-dependent primary cilia shortening.

Thompson CL, Fu S, Heywood HK, Knight MM and Thorpe SD. Frontiers in Bioengineering and Biotechnology vol. 9,.

Activation of TRPV4 by mechanical, osmotic or pharmaceutical stimulation is anti-inflammatory blocking IL-1β mediated articular cartilage matrix destruction.

2020

Thompson CL, Fu S, Knight MM and Thorpe SD. Frontiers in Bioengineering and Biotechnology vol. 8, Frontiers Media.

Sub-toxic levels of Co2+ are anti-inflammatory and protect cartilage from degradation caused by IL-1β.
Fu S, Meng H, Freer F, Kwon J, Shelton JC and Knight MM. Clinical Biomechanics vol. 79,.
Solution-Processed Epitaxial Growth of Arbitrary Surface Nanopatterns on Hybrid Perovskite Monocrystalline Thin Films.

Nanoscale mapping reveals functional differences in ion channels populating the membrane of primary cilia.

2019

Ciliary exclusion of Polycystin-2 promotes kidney cystogenesis in an autosomal dominant polycystic kidney disease model.

Proteoglycan degradation mimics static compression by altering the natural gradients in fibrillar organisation in cartilage.

Mechanical loading inhibits cartilage inflammatory signalling via an HDAC6 and IFT-dependent mechanism regulating primary cilia elongation.

Transglutaminase-2 Mediates the Biomechanical Properties of the Colorectal Cancer Tissue Microenvironment that Contribute to Disease Progression.

An in vitro investigation of the inflammatory response to the strain amplitudes which occur during high frequency oscillation ventilation and conventional mechanical ventilation.

Oncometabolite induced primary cilia loss in pheochromocytoma.

2018

Mechanical loading induces primary cilia disassembly in tendon cells via TGF? and HDAC6.
Rowson DT, Shelton JC, Screen HRC and Knight MM. *Scientific Reports* vol. 8, (1).

Cobalt ions stimulate a fibrotic response through matrix remodelling, fibroblast contraction and release of pro-fibrotic signals from macrophages.

Tissue stiffening promotes keratinocyte proliferation through activation of epidermal growth factor signaling.

Cobalt (II) ions and nanoparticles induce macrophage retention by ROS-mediated down-regulation of RhoA expression.

2017

Deconstruction of a metastatic tumor microenvironment reveals a common matrix response in human cancers.
Smoothened-antagonists reverse homogentisic acid-induced alterations of Hedgehog signaling and primary cilium length in alkaptonuria.

Chondrocyte expansion is associated with loss of primary cilium and disrupted hedgehog signalling.

The Secret Life of Collagen: Temporal Changes in Nanoscale Fibrillar Pre-Strain and Molecular Organization During Physiological Loading of Cartilage.

Topography of calcium phosphate ceramics regulates primary cilium length and TGF receptor recruitment associated with osteogenesis.

Reduced Primary Cilia Length and Altered Arl13b Expression Are Associated with Deregulated Chondrocyte Hedgehog Signalling in Alkaptonuria.

2016

Experimental validation of a flat punch indentation methodology calibrated against unconfined compression tests for determination of soft tissue biomechanics.

Chondrocyte dedifferentiation increases cell stiffness by strengthening membrane-actin adhesion.

Zonal variation in primary cilia elongation correlates with localized biomechanical degradation in stress deprived tendon.
Rowson D, Knight MM and Screen HRC. *J Orthop Res* vol. 34, (12) 2146-2153.

IFT88 influences chondrocyte actin organization and biomechanics.

Lithium chloride modulates chondrocyte primary cilium and inhibits Hedgehog signalling.

Differential effects of LifeAct-GFP and actin-GFP on cell mechanics assessed using micropipette aspiration.

2015

Hedgehog signalling does not stimulate cartilage catabolism and is inhibited by Interleukin-17.

Cytokine preconditioning of engineered cartilage provides protection against interleukin-1 insult.

Lithium chloride modulates chondrocyte primary cilium and inhibits Hedgehog signaling.
FINITE ELEMENT ANALYSIS of MECHANICAL DEFORMATION of CHONDROCYTE to 2D SUBSTRATE and 3D SCAFFOLD.

Lithium chloride prevents interleukin-1? induced cartilage degradation and loss of mechanical properties.

Adipogenic differentiation of hMSCs is mediated by recruitment of IGF-1r onto the primary cilium associated with cilia elongation.

The rate of hypo-osmotic challenge influences regulatory volume decrease (RVD) and mechanical properties of articular chondrocytes.

2014

89 Primary Cilia In Tenocytes From The Inter-fascicular Matrix And The Fascicular Matrix.

The primary cilium influences interleukin-1?-induced NF?B signalling by regulating IKK activity.

In vitro encrustation of a semi-permanent polymer-covered nitinol ureter stent: an artificial urine model.

Quantification of chromatin condensation level by image processing.

Primary cilia disassembly down-regulates mechanosensitive hedgehog signalling: a feedback mechanism controlling ADAMTS-5 expression in chondrocytes.

Depletion of chondrocyte primary cilium reduces the compressive modulus of articular cartilage.
Irianto J, Ramaswamy G, Serra R and Knight MM. *J Biomech* vol. 47, (2) 579-582.

Stem cell differentiation increases membrane-actin adhesion regulating cell blebability, migration and mechanics.
Sliogeryte K, Thorpe SD, Lee DA, Botto L and Knight MM. *Scientific Reports* vol. 4,.

2013

Surface topography regulates wnt signaling through control of primary cilia structure in mesenchymal stem cells.
McMurray RJ, Wann AKT, Thompson CL, Connelly JT and Knight MM. *Sci Rep* vol. 3,.

Interleukin-1? sequesters hypoxia inducible factor 2? to the primary cilium.

Stent encrustation in feline and human artificial urine: does the low molecular weight composition account for the difference?.

Bardet-Biedl syndrome proteins control the cilia length through regulation of actin polymerization.

Osmotic challenge drives rapid and reversible chromatin condensation in chondrocytes.
Correction: Super-Resolution Imaging Strategies for Cell Biologists Using a Spinning Disk Microscope.

Super-resolution imaging strategies for cell biologists using a spinning disk microscope.
Hosny NA, Song M, Connelly JT, Ameer-Beg S, Knight MM and Wheeler AP. *Plos One* vol. 8, (10).

Super-resolution imaging strategies for Cell Biologists using a spinning disk microscope.

**2012**

Heat shock induces rapid resorption of primary cilia.

Mechanical strain disrupts primary cilia structure and modulates hedgehog signalling in adult chondrocytes.

Topographical regulation of primary cilia orientation and length in mesenchymal stem cells.
McMurray R and Knight M. *Cilia* vol. 1, (Suppl 1) p34-p34.

A role for IFT88/the primary cilium in the inflammatory response to interleukin-1.
Wann A and Knight M. *Cilia* vol. 1, (Suppl 1) p60-p60.

Bardet-Biedl syndrome proteins control cilia length through regulation of actin polymerisation.

The primary cilium conducts chondrocyte mechanotransduction.

The Shape of the Urine Stream - From Biophysics to Diagnostics.

Cell mechanics, structure, and function are regulated by the stiffness of the three-dimensional microenvironment.

Heat shock induces rapid resorption of primary cilia.

Viscoelastic Cell Mechanics and Actin Remodelling are Dependent on the Rate of Applied Pressure.
Pravincumar P, Bader DL and Knight MM. *Plos One* vol. 7, (9).

Primary cilia elongation in response to interleukin-1 mediates the inflammatory response.
Wann AKT and Knight MM. *Cellular and Molecular Life Sciences* vol. 69, (17) 2967-2977.

Dynamic compressive strain influences chondrogenic gene expression in human periosteal cells: a case study.

Primary cilia mediate mechanotransduction through control of ATP-induced Ca2+ signaling in compressed chondrocytes.

Gap junction permeability between tenocytes within tendon fascicles is suppressed by tensile loading.
Improved outcome after peripheral nerve injury in mice with increased levels of endogenous Omega-3 polyunsaturated fatty acids.

**Single photon counting fluorescence lifetime detection of pericellular oxygen concentrations.**

The role of the primary cilium in chondrocyte response to mechanical loading.
Wann AKT, Thompson C and Knight MM. *Mechanically Gated Channels and Their Regulation*.

**2011**

**Omega-3 fatty acids and acute neurological trauma: A perspective on clinical translation.**

**Gap junction permeability between tenocytes within tendon fascicles is suppressed by tensile loading.**

**Stem cell mechanobiology.**

**2010**

The effect of mechanical strain or hypoxia on cell death in subpopulations of rat dorsal root ganglion neurons in vitro.

**The potential of pulsed low intensity ultrasound to stimulate chondrocytes matrix synthesis in agarose and monolayer cultures.**
Vaughan NM, Grainger J, Bader DL and Knight MM. *Medical and Biological Engineering and Computing* vol. 48, (12) 1215-1222.

**Eicosapentaenoic acid and docosahexaenoic acid reduce interleukin-1? mediated cartilage degradation.**
Wann AKT, Mistry J, Blain EJ, Michael-Titus AT and Knight MM. *Arthritis Research and Therapy* vol. 12, (6).

Both superficial and deep zone articular chondrocyte subpopulations exhibit the crabtree effect but have different basal oxygen consumption rates.
Heywood HK, Knight MM and Lee DA. *Journal of Cellular Physiology* vol. 223, (3) 630-639.

**Cyclic loading opens hemichannels to release ATP as part of a chondrocyte mechanotransduction pathway.**

**Measuring the biomechanical properties of cartilage cells.**
Bader DL and Knight MM.

**Mechanical loading modulates chondrocyte primary cilia incidence and length.**
McGlashan SR, Knight MM, Chowdhury TT, Joshi P, Jensen CG, Kennedy S and Poole CA. *Cell Biology International* vol. 34, (5) 441-446.

**4 Measuring the biomechanical properties of cartilage cells.**
Bader DL and Knight MM. *Regenerative Medicine and Biomaterials For The Repair of Connective Tissues*.

**Contributor contact details.**

**2009**

Articular chondrocytes express connexin 43 hemichannels and P2 receptors - A putative mechanoreceptor complex involving the primary cilium.?
2008

Biomechanical analysis of structural deformation in living cells.
Bader DL and Knight MM. *Medical and Biological Engineering and Computing* vol. 46, (10) 951-963.

2007

An improved confocal FRAP technique for the measurement of long-term actin dynamics in individual stress fibers.
Campbell JJ and Knight MM. *Microscopy Research and Technique* vol. 70, (12) 1034-1040.

Loading alters actin dynamics and up-regulates cofilin gene expression in chondrocytes.
Campbell JJ, Blain EJ, Chowdhury TT and Knight MM. *Biochemical and Biophysical Research Communications* vol. 361, (2) 329-334.

Loading alters actin dynamics and up-regulates cofilin gene expression in chondrocytes.
KNIGHT MM, Chowdhury TT, Campbell JJ and Blain EJ. *Biochemical and Biophysical Research Communications* vol. 361, (21) 329-334.

2006

Purinergic pathway suppresses the release of NO and stimulates proteoglycan synthesis in chondrocyte/agarose constructs subjected to dynamic compression.
Chowdhury TT and Knight MM. *Journal of Cellular Physiology* vol. 209, (3) 845-853.

Cyclic compression of chondrocytes modulates a purinergic calcium signalling pathway in a strain rate- and frequency-dependent manner.

Ultrastructure of insect and spider cocon silks.
Hakimi O, Knight DP, Knight MM, Grahn MF and Vadgama P. *Biomacromolecules* vol. 7, (10) 2901-2908.

Mitochondrial dynamics in chondrocytes and their connection to the mechanical properties of the cytoplasm.

Intracellular mechanics and mechanotransduction associated with chondrocyte deformation during pipette aspiration.
Ohashi T, Hagiwara M, Bader DL and Knight MM. *Biorheology* vol. 43, (3-4) 201-214.

Chondrocyte deformation induces mitochondrial distortion and heterogeneous intracellular strain fields.

Mechanical compression and hydrostatic pressure induce reversible changes in actin cytoskeletal organisation in chondrocytes in agarose.

2005

Activation of chondrocytes calcium signalling by dynamic compression is independent of number of cycles.

2004

Mechanical Loading of Chondrocytes Embedded in 3D Constructs.
Lee DA and Knight MM. *Cartilage and Osteoarthritis*.

Confocal analysis of local and cellular strains in chondrocyte-agarose constructs subjected to mechanical shear.

Mechanical loading of chondrocytes embedded in 3D constructs: in vitro methods for assessment of morphological and metabolic response to compressive strain.
Increased presence of cells with multiple elongated processes in osteoarthritic femoral head cartilage.
2003

Live cell imaging using confocal microscopy induces intracellular calcium transients and cell death.

Confocal Analysis of Local and Cellular Strains in Chondrocyte - Agarose Constructs Subjected to Shear.
Bader DL, SHELTON JC, Knight MM and Sawae Y. *J Biochemical Engineering Asme*.
2002

Cell and nucleus deformation in compressed chondrocyte-alginate constructs: temporal changes and calculation of cell modulus.
2001

Chondrocyte deformation within mechanically and enzymatically extracted chondrons compressed in agarose.
Knight MM, Ross JM, Sherwin AF, Lee DA, Bader DL and Poole CA. *Biochim Biophys Acta* vol. 1526, (2) 141-146.

Temporal changes in cytoskeletal organisation within isolated chondrocytes quantified using a novel image analysis technique.

Mechanical compression influences intracellular Ca2+ signaling in chondrocytes seeded in agarose constructs.

Compressive deformation and damage of muscle cell subpopulations in a model system.
Bouten CV, Knight MM, Lee DA and Bade DL. *Ann Biomed Eng* vol. 29, (2) 153-163.
2000

Confocal analysis of cytoskeletal organisation within isolated chondrocyte sub-populations cultured in agarose.
Idowu BD, Knight MM, Bader DL and Lee DA. *Histochem J* vol. 32, (3) 165-174.

Beta transition and stress-induced phase separation in the spinning of spider dragline silk.

Chondrocyte deformation within compressed agarose constructs at the cellular and sub-cellular levels.
Lee DA, Knight MM, Bolton JF, Idowu BD, Kayser MV and Bader DL. *J Biomech* vol. 33, (1) 81-95.
1998

Prize-winning peeks at the microscopic world.
Hing K and Knight M.

Measurement of the deformation of isolated chondrocytes in agarose subjected to cyclic compression.
Knight MM, Ghorri SA, Lee DA and Bader DL. *Med Eng Phys* vol. 20, (9) 684-688.

Response of chondrocyte subpopulations cultured within unloaded and loaded agarose.
Lee DA, Noguchi T, Knight MM, O'Donnell L, Bentley G and Bader DL. *J Orthop Res* vol. 16, (6) 726-733.

The influence of elaborated pericellular matrix on the deformation of isolated articular chondrocytes cultured in agarose.
Knight MM, Lee DA and Bader DL. *Biochim Biophys Acta* vol. 1405, (1-3) 67-77.