



#### **Prof Martin Knight**

BEng, MSc, PhD, FHEA

School of Engineering and Materials Science Queen Mary University of London Mile End Road London E1 4NS

tel: +44 (0)20 7882 8868 email: m.m.knight@qmul.ac.uk web: www.sems.qmul.ac.uk/m.m.knight

#### 2023

A Novel Primary CiliumMediated Mechanism Through which Osteocytes Regulate Metastatic Behavior of Both Breast and Prostate Cancer Cells.

Verbruggen SW, Nolan J, Duffy MP, Pearce OMT, Jacobs CR and Knight MM. Advanced Science vol. 11, (2). Wiley.

Human vascularised synovium-on-a-chip: a mechanically stimulated, microfluidic model to investigate synovial inflammation and monocyte recruitment.

Thompson CL, Hopkins T, Bevan C, Screen HRC, Wright KT and Knight MM. Biomedical Materials vol. 18, (6). Iop Publishing.

#### Organ-on-a-Chip and Microfluidic Platforms for Oncology in the UK.

Nolan J, Pearce OMT, Screen HRC, Knight MM and Verbruggen SW. Cancers vol. 15, (3). Mdpi.

#### 2022

#### Techniques for Visualization and Quantification of Primary Cilia in Chondrocytes.

Meng H, Thompson CL, Coveney CR, Wann AK and Knight MM. Cartilage Tissue Engineering 157-176. Springer Nature.

YAP activation inhibits inflammatory signalling and cartilage breakdown associated with reduced primary cilia expression.

Meng H, Fu S, Ferreira MB, Hou Y, Pearce OM, Gavara N and Knight MM. Osteoarthritis and Cartilage vol. 31, (5) 600-612. Elsevier.

Mechanostimulation of breast myoepithelial cells induces functional changes associated with DCIS progression to invasion.

Hayward M-K, Allen MD, Gomm JJ, Goulding I, Thompson CL, Knight MM, Marshall JF and Jones JL. *Npj Breast Cancer vol.* 8, (1). Springer Nature.

#### Collagen pre-strain discontinuity at the boneCartilage interface.

Badar W, Ali H, Brooker ON, Newham E, Snow T, Terrill NJ, Tozzi G, Fratzl P, Knight MM and Gupta HS. *Plos One vol. 17*, (9). *Public Library of Science (Plos)*.

Oscillations of the circadian clock protein, BMAL-1, align to daily cycles of mechanical stimuli: a novel means to integrate biological time within predictive in vitro model systems.

Heywood HK, Gardner L, Knight MM and Lee DA. In Vitro Models 1-8. Springer Nature.

#### 2021

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

Inamdar SR, Prévost S, Terrill NJ, Knight MM and Gupta HS. Acta Biomaterialia vol. 136, 314-326. Elsevier.

#### Mechanical Stimulation Modulates Osteocyte Regulation of Cancer Cell Phenotype.

Verbruggen SW, Thompson CL, Duffy MP, Lunetto S, Nolan J, Pearce OMT, Jacobs CR and Knight MM. *Cancers vol. 13*, (12). Mdpi.

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

Malacrida B, Nichols S, Maniati E, Jones R, Delanie-Smith R, Roozitalab R, Tyler EJ, Thomas M, Boot G, Mackerodt J, Lockley M, Knight MM, Balkwill FR and Pearce OMT. *Iscience vol. 24*. (6). *Elsevier*.

#### Modelling TGFR and Hh pathway regulation of prognostic matrisome molecules in ovarian cancer.

Delaine-Smith RM, Maniati E, Malacrida B, Nichols S, Roozitalab R, Jones RR, Lecker LSM, Pearce OMT, Knight MM and Balkwill FR. *Iscience vol.* 24, (6). *Elsevier*.

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

Thompson C, Mcfie M, Chapple J, BEALES P and Knight M. International Journal of Molecular Sciences. Mapi Ag.

# **Sub-toxic levels of cobalt ions impair mechanostranduction via HDAC6-depedent primary cilia shortening.** Wu H, Wang Z, Liu S, Meng H, Liu S, Shelton JC, Thompson CL, Fu S and Knight MM. *Biochem Biophys Res Commun.*

#### Corrigendum: Mechanical Stimulation: A Crucial Element of Organ-on-Chip Models.

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

#### Modelling TGFR and Hh pathway regulation of prognostic matrisome molecules in ovarian cancer.

Delaine-Smith R, Maniati E, Malacrida B, Nichols S, Roozitalab R, Jones R, Lecker L, Pearce O, Knight M and Balkwill F. *Biorxiv.Org.* Balkwill F.

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

Fu S, Meng H, Inamdar S, Das B, Gupta H, Wang W, Thompson C and Knight M. Osteoarthritis and Cartilage. Block JA. Elsevier.

#### 2020

#### Mechanical Stimulation: A Crucial Element of Organ-on-Chip Models.

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

### Solution-Processed Epitaxial Growth of Arbitrary Surface Nanopatterns on Hybrid Perovskite Monocrystalline Thin Films.

Zhang J, Guo Q, Li X, Li C, Wu K, Abrahams I, Yan H, Knight MM, Humphreys CJ and Su L. *Acs Nano.American Chemical Society*.

# Nanoscale mapping reveals functional differences in ion channels populating the membrane of primary cilia. Torres-Pérez JV, Naeem H, Thompson CL, Knight MM and Novak P. *Cellular Physiology and Biochemistry vol. 54*, (1) 15-26.

#### 2019

### Sub-toxic levels of Co2+ are anti-inflammatory and protect cartilage from degradation caused by IL-1. Fu S, Meng H, Freer F, Kwon J, Shelton JC and Knight MM. *Clinical Biomechanics vol.* 79, Elsevier.

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

Walker RV, Keynton JL, Grimes DT, Sreekumar V, Williams DJ, Esapa C, Wu D, Knight MM and Norris DP. *Nature Communications vol. 10, (1). Springer Nature.* 

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

Inamdar SR, Barbieri E, Terrill NJ, Knight MM and Gupta HS. Acta Biomaterialia vol. 97, 437-450. Elsevier.

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

Delaine-Smith R, Wright N, Hanley C, Hanwell R, Bhome R, Bullock M, Drifka C, Eliceiri K, Thomas G, Knight M, Mirnezami A and Peake N. *Cancers.Mdpi Ag.* 

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

Fu S, Thompson CL, Ali A, Wang W, Chapple JP, Mitchison HM, Beales PL, Wann AKT and Knight MM. *Osteoarthritis and Cartilage vol.* 27, (7) 1064-1074. *Elsevier*.

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

Harris C, THORPE SD, Rushwan S, Wang W, THOMPSON C, Peacock J, KNIGHT M, Gooptu B and Greenough A. *Journal of Biomechanics.Elsevier*.

#### 2018

#### Oncometabolite induced primary cilia loss in pheochromocytoma.

O Toole SM, Watson DS, Novoselova TV, Romano LEL, King PJ, Bradshaw TY, Thompson CL, Knight MM, Sharp TV, Barnes MR, Srirangalingam U, Drake WM and Chapple JP. *Endocrine Related Cancer vol. 26, (1) 165-180. Bioscientifica.* 

#### 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). Springer Nature.

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

Xu J, Nyga A, Li W, Zhang X, Gavara N, Knight MM and Shelton JC. European Cells and Materials vol. 36, 142-155.

# **Tissue stiffening promotes keratinocyte proliferation through activation of epidermal growth factor signaling.** Kenny FN, Drymoussi Z, Delaine-Smith R, Kao AP, Laly AC, Knight MM, Philpott MP and Connelly JT. *Journal of Cell Science vol. 131*, (10) 215780-215780.

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

Xu J, Yang J, Nyga A, Ehteramyan M, Moraga A, Wu Y, Zeng L, Knight MM and Shelton JC. *Acta Biomater vol.* 72, 434-446.

#### 2017

# **Deconstruction of a metastatic tumor microenvironment reveals a common matrix response in human cancers.** Pearce OMT, Delaine-Smith R, Maniati E, Nichols S, Wang J, Bhm S, Rajeeve V, Ullah D, Chakravarty P, Jones RR, Montfort A, Dowe T, Gribben J, Jones JL, Kocher HM, Serody JS, Vincent BG, Connelly J, Brenton JD, Chelala C, Cutillas PR, Lockley M, Bessant C, Knight M and Balkwill FR. *Cancer Discov*.

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

Thompson CL, Plant JC, Wann AK, Bishop CL, Novak P, Mitchison HM, Beales PL, Chapple JP and Knight MM. *Eur Cell Mater vol.* 34, 128-141.

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

Inamdar SR, Knight DP, Terrill NJ, Karunaratne A, Cacho-Nerin F, Knight MM and Gupta HS. Acs Nano.

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

Zhang J, Dalbay MT, Luo X, Vrij E, Barbieri D, Moroni L, de Bruijn JD, van Blitterswijk CA, Chapple JP, Knight MM and Yuan H. *Acta Biomater vol.* 57, 487-497.

### Smoothenedantagonists reverse homogentisic acidinduced alterations of Hedgehog signaling and primary cilium length in alkaptonuria.

Gambassi S, Geminiani M, Thorpe SD, Bernardini G, Millucci L, Braconi D, Orlandini M, Thompson CL, Petricci E, Manetti F, Taddei M, Knight MM and Santucci A. *Journal of Cellular Physiology vol.* 232, (11) 3103-3111. Wiley.

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

THORPE SD, Gambassi S, Thompson CL, Chandrakumar C, Santucci A and Knight MM. *Journal of Cellular Physiology. John Wiley & Sons Inc.* 

#### 2016

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

Delaine-Smith RM, Burney S, Balkwill FR and Knight MM. *Journal of The Mechanical Behavior of Biomedical Materials vol.* 60, 401-415. Elsevier.

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

Sliogeryte K, Botto L, Lee DA and Knight MM. Osteoarthritis and Cartilage vol. 24, (5) 912-920. Elsevier.

### 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.

KNIGHT MM, wang W, wang Z, wann A, thompson C and hassen A. Osteoarthritis and Cartilage.

#### Lithium chloride modulates chondrocyte primary cilia and inhibits Hedgehog signaling.

Thompson CL, Wiles A, Poole CA and Knight MM. Faseb Journal vol. 30, (2) 716-726.

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

Sliogeryte K, Thorpe SD, Wang Z, Thompson CL, Gavara N and Knight MM. *Journal of Biomechanics vol.* 49, (2) 310-317. Elsevier.

#### Physiology of urethral flow.

Knight M, Buchholz N and Bourdoumis A. *Handbook of Urinary Stents: Basic Science and Clinical Applications* 219-219. *Jaypee Brothers Medical Publishing*.

#### 2015

#### Hedgehog signalling does not stimulate cartilage catabolism and is inhibited by Interleukin-1.

Thompson CL, Patel R, Kelly T-AN, Wann AKT, Hung CT, Chapple JP and Knight MM. *Arthritis Research & Therapy vol.* 17, (1).

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

Tan AR, VandenBerg CD, Attur M, Abramson SB, Knight MM, Bulinski JC, Ateshian GA, Cook JL and Hung CT. *Arthritis Res Ther vol. 17, 361-361.* 

#### Lithium chloride modulates chondrocyte primary cilia and inhibits Hedgehog signaling.

Thompson CL, Poole CA and Knight MM. The Faseb Journal vol. 100, (4) A39-A40. Federation of American Society of Experimental Biology.

### FINITE ELEMENT ANALYSIS OF MECHANICAL DEFORMATION OF CHONDROCYTE TO 2D SUBSTRATE AND 3D SCAFFOLD.

CHEN J, BADER DL, LEE DA and KNIGHT MM. *Journal of Mechanics in Medicine and Biology vol. 15, (05). World Scientific Publishing.* 

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

KNIGHT MM, Thompson CL, Yasmin H, Varone A, Wiles A and Poole CA. *Journal of Orthopaedic Research. Wiley:* 12 Months.

### Adipogenic Differentiation of hMSCs is Mediated by Recruitment of IGF1r Onto the Primary Cilium Associated With Cilia Elongation.

Dalbay MT, Thorpe SD, Connelly JT, Chapple JP and Knight MM. *Stem Cells vol. 33*, (6) 1952-1961. Oxford University Press (Oup).

#### 2014

### 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, (1). Springer Nature.

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

Wang Z, Irianto J, Kazun S, Wang W and Knight MM. Osteoarthritis and Cartilage vol. 23, (2) 289-299. Elsevier.

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

Rowson D, Knight M and Screen H. British Journal of Sports Medicine vol. 48, (Suppl 2) a58-a59.Bmj.

#### The primary cilium influences interleukin-1-induced NFB signalling by regulating IKK activity.

Wann AKT, Chapple JP and Knight MM. Cell Signal vol. 26, (8) 1735-1742.

#### Quantification of chromatin condensation level by image processing.

Irianto J, Lee DA and Knight MM. Med Eng Phys vol. 36, (3) 412-417.

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

Thompson CL, Chapple JP and Knight MM. Osteoarthritis Cartilage vol. 22, (3) 490-498.

#### Depletion of chondrocyte primary cilia reduces the compressive modulus of articular cartilage.

Irianto J, Ramaswamy G, Serra R and Knight MM. J Biomech vol. 47, (2) 579-582.

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

Shaheen T, Edirisinghe T, Gabriel M, Bourdoumis A, Buchholz N and Knight M. Urolithiasis vol. 42, (3) 203-207.

#### 2013

#### Correction: 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, (12). Public Library of Science (Plos).

### Surface topography regulates wnt signaling through control of primary cilia structure in mesenchymal stem

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.

Wann AK, Thompson CL, Chapple JP and Knight MM. Cilia vol. 2, (1).

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

Shafat M, Rajakumar K, Syme H, Buchholz N and Knight MM. Urolithiasis vol. 41, (6) 481-486.

#### Osmotic challenge drives rapid and reversible chromatin condensation in chondrocytes.

Irianto J, Swift J, Martins RP, McPhail GD, Knight MM, Discher DE and Lee DA. Biophys J vol. 104, (4) 759-769.

#### 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).

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

Hernandez-Hernandez V, Pravincumar P, Diaz-Font A, May-Simera H, Jenkins D, Knight M and Beales PL. *Human Molecular Genetics vol.* 22, (19) 3858-3868.

#### 2012

#### Heat shock induces rapid resorption of primary cilia.

Prodromou NV, Thompson CL, Osborn DPS, Cogger KF, Ashworth R, Knight MM, Beales PL and Chapple JP. *Development vol.* 139, (24) e2408-e2408. The Company of Biologists.

#### Heat shock induces rapid resorption of primary cilia.

Prodromou NV, Thompson CL, Osborn DPS, Cogger KF, Ashworth R, Knight MM, Beales PL and Chapple JP. *Journal of Cell Science vol. 125*, (18) 4297-4305.

#### Heat-shock induces rapid resorption of primary cilia.

Thompson C, Prodromou N, Osborn D, Ashworth R, Knight M, Beales P and Chapple J. *Cilia vol. 1, (Suppl 1). Springer Nature.* 

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

Thompson C, Chapple J and Knight M. Cilia vol. 1, (Suppl 1). Springer Nature.

#### Topographical regulation of primary cilia orientation and length in mesenchymal stem cells.

McMurray R and Knight M. Cilia vol. 1, (Suppl 1). Springer Nature.

#### A role for IFT88/the primary cilium in the inflammatory response to interleukin-1.

Wann A and Knight M. Cilia vol. 1, (Suppl 1). Springer Nature.

#### The primary cilium conducts chondrocyte mechanotransduction.

Wann A, Zuo N, Haycraft C, Jensen C, Poole C, McGlashan S and Knight M. Cilia vol. 1, (Suppl 1). Springer Nature.

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

Hernandez V, Pravincumar P, Diaz-Font A, May-Simera H, Jenkins D, Knight M and Beales P. *Cilia vol. 1, (Suppl 1). Springer Nature.* 

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

Wheeler APS, Morad S, Buchholz N and Knight MM. Plos One vol. 7, (10).

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

Chen J, Irianto J, Inamdar S, Pravincumar P, Lee DA, Bader DL and Knight MM. Biophys J vol. 103, (6) 1188-1197.

#### 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.

Bonzani IC, Campbell JJ, Knight MM, Williams A, Lee DA, Bader DL and Stevens MM. *J Mech Behav Biomed Mater vol.* 11, 72-81.

### PRESSURE RATE SENSITIVE VISCOELASTIC CELL DEFORMATION INVOLVES ACTIN REMODELLING.

Pravincumar P, Bader D and Knight M. Journal of Biomechanics vol. 45, Elsevier.

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

Wann AKT, Zuo N, Haycraft CJ, Jensen CG, Poole CA, McGlashan SR and Knight MM. Faseb Journal vol. 26, (4) 1663-1671.

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

Maeda E, Ye S, Wang W, Bader DL, Knight MM and Lee DA. *Biomechanics and Modeling in Mechanobiology vol.* 11, (3-4) 439-447.

### Improved outcome after peripheral nerve injury in mice with increased levels of endogenous Omega-3 polyunsaturated fatty acids.

Gladman SJ, Huang W, Lim SN, Dyall SC, Boddy S, Kang JX, Knight MM, Priestley JV and Michael-Titus AT. *Journal of Neuroscience vol.* 32, (2) 563-571.

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

Hosny NA, Lee DA and Knight MM. J Biomed Opt vol. 17, (1).

#### 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 405-426. Springer Nature.

#### 2011

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

Gladman S, Lim SN, Dyall S, Knight MM, Priestley JV and Michael-Titus AT. Ocl - Oleagineux Corps Gras Lipides vol. 18, (6) 317-323.

#### E84 Can Shockwave lithotripsy remove encrustation from ureteric nitinol stents?.

Gabriel CEL, Nedilko T, Paulose PA, Bach C, Buchholz N and Knight MM. European Urology Open Science vol. 10, (7). Elsevier.

**E70** The influence of extracorporeal shock wave lithotripsy on tissue viability around metallic ureteral stents. Edirisinghe TY, Knight MM, Buchholz N and Bach C. *European Urology Open Science vol. 10, (7). Elsevier.* 

**E189** Does the composition of feline urine prevent calcium oxalate encrustation of urethral stents?. Shafat M, Nedilko T, Syme H, Buchholz N and Knight MM. *European Urology Open Science vol. 10, (7) 517-518. Elsevier.* 

#### E75 Comparison of encrustation rates between ureteric metal stents and Double J stents.

Nedilko T, Paulose PA, Buchholz N and Knight MM. European Urology Open Science vol. 10, (7). Elsevier.

**Gap junction permeability between tenocytes within tendon fascicles is suppressed by tensile loading.**Maeda E, Ye S, Wang W, Bader DL, Knight MM and Lee DA. *Biomechanics and Modeling in Mechanobiology 1-9*.

#### Stem cell mechanobiology.

Lee DA, Knight MM, Campbell JJ and Bader DL. J Cell Biochem vol. 112, (1) 1-9.

#### 2010

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

Gladman SJ, Ward RE, Michael-Titus AT, Knight MM and Priestley JV. Neuroscience vol. 171, (2) 577-587.

### 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. Garcia M and Knight MM. *Journal of Orthopaedic Research vol.* 28, (4) 510-515.

A compartment model to evaluate the permeability of gap junctions between tenocytes in tendon fascicles. Ye S, Maeda E, Knight M, Lee D, Bader D and Wang W. Faseb Journal vol. 24,.

#### 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 106-136. Elsevier.

#### Contributor contact details.

Archer C, Ralphs J, Säämänen A-M, Arokoski JPA, Jurvelin JS, Kiviranta I, Hinz B, Hunziker EB, Bader DL, Knight MM, Dell accio F, Vincent TL, Aigner T, Schmitz N, Sder S, McIlwraith CW, Hangody L, Kish G, Koreny T, Hangody LR, Mdis L, Brittberg M, Sato M, Andriamanalijaona R, Li H, Elisseeff JH, Trice ME, Benjamin M, Kjær M and Magnusson SP. Regenerative Medicine and Biomaterials For The Repair of Connective Tissues xiii-xvii. Elsevier.

1P338 1J1450 Mechano-regulation of gap junction communications between tenocytes within isolated fascicles(Bioengineering,Oral Presentations,The 48th Annual Meeting of the Biophysical Society of Japan).

Maeda E, Ye S, Knight M, Wang W, Bader D and Lee D. Seibutsu Butsuri vol. 50, (supplement2).Biophysical Society of Japan.

#### 2009

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

Knight MM, Mcglashan SR, Garcia M, Jensen CG and Poole CA. Journal of Anatomy vol. 214, (2) 275-283.

#### 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.

#### Mechanosensitive Purinergic Calcium Signalling in Articular Chondrocytes.

Pingguan-Murphy B and Knight MM. Mechanosensitive Ion Channels 235-251. Springer Nature.

#### 2007

#### 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.

### 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.

#### 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.

Pingguan-Murphy B, El-Azzeh M, Bader DL and Knight MM. Journal of Cellular Physiology vol. 209, (2) 389-397.

#### Ultrastructure of insect and spider cocoon 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. Bomzon Z, Knight MM, Bader DL and Kimmel E. *Journal of Biomechanical Engineering vol. 128*, (5) 674-679.

Chondrocyte deformation induces mitochondrial distortion and heterogeneous intracellular strain fields. Knight MM, Bomzon Z, Kimmel E, Sharma AM, Lee DA and Bader DL. *Biomech Model Mechan vol. 5, (2-3) 180-191.* 

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

Knight MM, Toyoda T, Lee DA and Bader DL. J Biomech vol. 39, (8) 1547-1551.

# Chondrocyte Deformation and Mechanotransduction in Cartilage Model Systems(International Workshop 2). Bader DL, Lee DA and Knight MM. The Proceedings of The Bioengineering Conference Annual Meeting of Bed/Jsme vol. 2005.18, 2-3. Japan Society of Mechanical Engineers.

#### Probing mechanical heterogeneity in chondrocytes using passive microtheology.

Bomzon Z, Knight MM, Bader DL and Kimmel E. Journal of Biomechanics vol. 39, Elsevier.

#### 2005

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

Pingguan-Murphy B, Lee DA, Bader DL and Knight MM. Arch Biochem Biophys vol. 444, (1) 45-51.

#### 2004

Confocal analysis of local and cellular strains in chondrocyte-agarose constructs subjected to mechanical shear. Sawae Y, Shelton JC, Bader DL and Knight MM. *Ann Biomed Eng vol. 32*, (6) 860-870.

Mechanical loading of chondrocytes embedded in 3D constructs: in vitro methods for assessment of morphological and metabolic response to compressive strain.

Lee DA and Knight MM. Methods Mol Med vol. 100, 307-324.

#### Mechanical Loading of Chondrocytes Embedded in 3D Constructs.

Lee DA and Knight MM. Cartilage and Osteoarthritis 307-324. Springer Nature.

Increased presence of cells with multiple elongated processes in osteoarthritic femoral head cartilage.

Holloway I, Kayser M, Lee DA, Bader DL, Bentley G and Knight MM. Osteoarthritis Cartilage vol. 12, (1) 17-24.

#### 2003

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

Knight MM, Roberts SR, Lee DA and Bader DL. Am J Physiol Cell Physiol vol. 284, (4) C1083-C1089.

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.

Knight MM, van de Breevaart Bravenboer J, Lee DA, van Osch GJVM, Weinans H and Bader DL. *Biochim Biophys Acta vol. 1570, (1) 1-8.* 

#### 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.

Knight MM, Idowu BD, Lee DA and Bader DL. Med Biol Eng Comput vol. 39, (3) 397-404.

Mechanical compression influences intracellular Ca2+ signaling in chondrocytes seeded in agarose constructs. Roberts SR, Knight MM, Lee DA and Bader DL. *J Appl Physiol* (1985) vol. 90, (4) 1385-1391.

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.

Knight DP, KNIGHT MM and Vollrath F. International Journal of Biological Macromolecules vol. 27, (3) 205-210.

#### 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

#### 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.

#### Measurement of the deformation of isolated chondrocytes in agarose subjected to cyclic compression.

Knight MM, Ghori SA, Lee DA and Bader DL. Med Eng Phys vol. 20, (9) 684-688.