

## Mark Stuart Thompson, MEng, PhD, CEng, MIMechE

### *Degrees and professional qualifications*

MEng (Engineering and Materials Science, University of Oxford, 1997)

PhD (Biomechanics, IRC in Biomedical Materials, University of London, 2001)

CEng, MIMechE (Chartered Engineer, Member of the Institution of Mechanical Engineers, 2003)

AMIM (Associate Member Institute of Materials)

### *Present position*

2006-date Principal Investigator, Oxford Mechanobiology Group

2006-date Associate Professor in Orthopaedic Biomechanics, Institute of Biomedical Engineering  
Department of Engineering Science, University of Oxford

2006-date Senior Tutorial Fellow in Engineering Science, Wadham College, University of Oxford

### *Current Funding*

2014-16 Rosetrees Medical Fund **Dr Mark Thompson** 2 years. £9,000

2014-19 Wellcome Trust Affordable Healthcare in India, **Dr Mark Thompson**, Prof Alison Noble, Prof Dibakar Sen, Prof B Gurumorthy Design of a prosthetic arm. total £1.1 M

2014-15 EPSRC Impact Acceleration Award Prof Alison Noble, Dr Mark Thompson, Dr Phill Brown  
£110 K

2012-13 Rosetrees Medical Fund, **Dr Mark Thompson**, Mr Tyler Grant, 18 months, £4.5K

2010 EPSRC PhD Plus, **Dr Mark Thompson**, Dr Ann Harvey. 9 months, £36K

2008-2012 Oxford Partnership Biomedical Research Centre (NIHR). Prof. Keith Willett (NHS), Dr. Philippa Hulley, **Dr. Mark Thompson**, Prof. Alison Noble (IBME) "Regenerative Tendon Repair" £89K p.a. up to 3 years

2010-2011 NIHR Feasibility and Sustainability Funding, Mr Joseph Alsousou, **Dr Mark Thompson**, Professor Keith Willett. "Platelet Rich Plasma in Accelerated Tendo-Achilles Healing", 1 Clinical Fellow, 1 year.

2009-2011 Joint Action (BOA). Prof. K. Willett (NHS), **Dr M Thompson**, Dr PA Hulley, Dr Simon Ostelere (NHS), Dr David Wilson (NHS), Mr Robert Handley (NHS) "Regenerative tendon repair", £97K over 2 years

### *Research Training*

2003-2006 Hansjörg Wyss AO Medical Foundation Post-doctoral Fellowship, Center for Musculoskeletal Surgery, Charité Hospital, Berlin, Germany

2001-2003 European Commission Marie Curie Fellowship, Department of Orthopaedics, University of Lund, Sweden

### *Awards*

2004 Novel Award – best paper: Seebeck, Thompson et al. "Gait evaluation: A tool to monitor bone healing?" €5,000

### *Publications*

1. Pedro Aparício, **Mark S Thompson**, Paul N Watton "A novel chemo-mechano-biological model of arterial tissue growth and remodelling" *J Biomech* accepted (2016)
2. Nazri Bajuri, Hanna Isaksson, Pernilla Eliasson, **Mark S Thompson** "A Hyperelastic Fibre-reinforced Continuum Model of Healing Tendons with Distributed Collagen Fibre Orientations" *Biomech Model Mechanobiol* accepted (2016)
3. Tyler Grant, Clarence Yapp, Qi Chen, Jan T Czernuszka, **Mark S Thompson** "The mechanical, structural, and compositional changes of tendon exposed to elastase" *Ann Biomed Eng* 43(10):2477-2486 (2015)
4. Alastair Shipman, Joseph Alsousou, David J Keene, Igor N Dyson, Sarah E Lamb, Keith M Willett, **Mark S Thompson**. "Quantitative biomechanical comparison of ankle fracture casting methods" *Biomed Tech* 60(3):263-7 (2015)

5. Eun-Min Seo, Suman K Shrestha, Cong-Truyen Duong, Ashish Ranjan Sharma, Tae-Woo Kim, Ayyappan Vijayachandra, **Mark S Thompson**, Myung Guk Cho, Sungchan Park, Kwanghoon Kim, Seonghun Park, Sang-Soo Lee "Tribological changes in the articular cartilage of a human femoral head with avascular necrosis" *Biointerphases* 10(2) 021004 (2015)
6. JY Park, CT Duong, AR Sharma, KM Son, **MS Thompson**, S Park, JD Chang, JS Nam, S Park, SS Lee "Effects of Hyaluronic Acid and  $\gamma$ -Globulin Concentrations on the Frictional Response of Human Osteoarthritic Articular Cartilage". *PloS one* 9 (11), e112684 (2014)
7. Russell P Tucker, Per Henningsson, Sarah L Franklin, Duanduan Chen, Yiannis Ventikos, Richard J Bomphrey, **Mark S Thompson**. "See-saw rocking: an in vitro model for mechanotransduction research" *J R Soc Interface* 11 20140330 (2014)
8. JB Park, CT Duong, HG Chang, AR Sharma, **MS Thompson**, S Park, BC Kwak, TY Kim, SS Lee, S Park "Role of hyaluronic acid and phospholipid in the lubrication of a cobalt–chromium head for total hip arthroplasty" *Biointerphases* 9 (3), 031007 (2014)
9. **MS Thompson** "Tendon mechanobiology: experimental models require mathematical underpinning" *Bulletin of Mathematical Biology* 75 (8), 1238-1254 (2013)
10. P Brown, J Alsousou, A Cooper, **MS Thompson**, JA Noble. "The AutoQual ultrasound elastography method for quantitative assessment of post rupture Achilles tendons" *J Biomech* 46, 2695-2700 (2013)
11. TM Grant, **MS Thompson**, J Urban, J Yu. "Elastic fibres are broadly distributed in tendon and highly localized around tenocytes" *J Anatomy* 222, 573-579 (2013)
12. Jae-Hoon Lee, Sang-Soo Lee, **Mark S. Thompson**, Dong-Joong Kang, Sungchan Park, Seonghun Park "A Novel Method for the Accurate Evaluation of Poisson's Ratio of Soft Polymer Materials" *The Scientific World Journal* 930798 (2013)
13. I Adekanmbi, N Zargar Baboldashti, C Yapp, S Franklin, **M S Thompson**. "A novel in-vitro loading system for high frequency loading of cultured tendon fascicles" *Med Eng Phys* 25 205-120 (2013)
14. Min Liang, Hannah Cornell, Nasim Zargar Baboldashti, **Mark Thompson**, Andrew Carr, Philippa Hulley "Regulation of hypoxia induced cell death in human tenocytes" *Advances in Orthopedics* 2012 984950 (2012)
15. Knowles, H, **Thompson, MS**, Grunhagen, J , Kashima, TG, Cheng, XG, Athanasou, NA "Chondroclasts Are Mature Osteoclasts Which Are Capable Of Cartilage Matrix Resorption" *Virchows Arch* 461, 205-210 (2012)
16. S Chaudhury, C Holland, **M S Thompson**, F Vollrath, A J Carr. "Tensile and Shear Mechanical Properties of Rotator Cuff Repair Patches" *Journal of Shoulder and Elbow Surgery* 21(9):1168-1176 (2011)
17. NZ Baboldashti, RC Poulsen, SL Franklin, **MS Thompson**, PA Hulley. "Platelet Rich Plasma Protects Tenocytes from Adverse Side Effects of Dexamethasone and Ciprofloxacin" *Am J Sports Med* 39 1929-1935 (2011)
18. **Thompson, M.S.** Abercrombie, S.R., Bieler, F.H., Ott, C.-E., Duda, G.N., Ventikos, Y., "Quantification and significance of fluid shear stress field in biaxial cell stretching device" *Biomech Model Mechanobiol* 10 559-564 (2011)
19. Aline Groothuis, Georg N. Duda, Cameron J. Wilson, **Mark S. Thompson**, Morgan R. Hunter, Hermann J. Bail, Karine M. van Scherpenzeel, Grit Kasper "Mechanical stimulation of the pro-angiogenic capacity of human fracture haematoma: involvement of VEGF mechano-regulation" *Bone* 47 438-444 (2010)
20. **Thompson MS**, Epari D, Bieler FH, Duda GN. "In vitro models for bone mechanobiology: application in bone regeneration and tissue engineering". *J Eng Med* 224 1533-1541 (2010)
21. Ann K Harvey, Tünde Szilágyi, Michael Brady, **Mark S Thompson**, Niranjana Joshi. "Curvatures with uncertainties derived in conformal space to characterize tendon microstructure". *Engineering in Medicine and Biology Society (EMBC)* 5589-5592 (2010)
22. Epari DR, Duda GN, **Thompson MS**. "Mechanobiology of bone healing and regeneration: in vivo models" *J Eng Med* 224 1543 – 1553 (2010)
23. Alsousou J., **Thompson M.S.**, Hulley P.A., Noble, A., Willett K. The biology of platelet-rich plasma and its application in trauma and orthopaedic surgery. *J Bone Joint Surg* 91-B 987-996 (2009)

24. Harvey AK, **Thompson MS**, Cochlin L, Raju PA, Cui Z, Cornell H, Hulley PA, Brady JM. Functional imaging of tendon. *Annals of the British Machine Vision Association* 2009: 1-11 (2009).
25. Bieler FH, Ott CE, **Thompson MS**, Seidel R, Ahrens S, Epari DR, Wilkening U, Schaser KD, Mundlos S, Duda GN. Biaxial cell stimulation: a mechanical validation. *J Biomech* 42 1692-1696 (2009).
26. Schell, H., **Thompson, M. S.**, Bail, H. J., Hoffman, J. E., Schill, A., Duda, G. N., and Lienau, J. Mechanical induction of critically delayed bone healing in sheep: radiological and biomechanical results. *J. Biomech.* 41 3066-3072 (2008)
27. Kasper, G., Dankert, N., Tuischer, J., Hoeft, M., Gaber, T., Glaeser, J.D., Zander, D., Tschirschmann, M., **Thompson, M.**, Matziolis, G., Duda, G.N. "Mesenchymal stem cells regulate angiogenesis according to their mechanical environment". *Stem Cells* 25 903-910 (2007).
28. Trepczik, B., Lienau, J., Schell, H., Epari, D.R., **Thompson, M.S.**, Hoffmann, J.E., Kadow-Romacker, A., Mundlos, S., Duda, G.N. "Endochondral ossification in vitro is influenced by mechanical bending". *Bone* 40 597-603 (2007).
29. **Thompson, M.S.**, Schell, H., Lienau, J., Duda, G.N. "Digital image correlation: a technique for determining local mechanical conditions within early bone callus". *Med Eng Phys* 29 820-823 (2007).
30. Kleemann, R.U., Schell, H., **Thompson, M.S.**, Epari, D.R., Duda, G.N., Weiler, A. "Mechanical behavior of articular cartilage after osteochondral autograft transfer in an ovine model". *Am J Sports Med* 35 555-563 (2007).
31. **Thompson M.S.**, Bleckwehl F.H., Ott C.E., Epari D.R., Duda G.N. "Mechanical characterisation of the BioFlex system". *Tissue Engineering* 13:1378 (2007).
32. Matziolis, G., Tuischer, J., Kasper, G., **Thompson, M.**, Bartmeyer, B., Krockner, D., Perka, C., Duda, G. "Idea and innovation: simulation of cell differentiation in fracture healing - mechanically loaded composite scaffolds in a novel bioreactor system". *Tissue Engineering* 12 201-208 (2006).
33. Seebeck, P., **Thompson, M.S.**, Parwani, A., Taylor, W.R., Schell, H., Duda, G.N. "Gait evaluation: A tool to monitor bone healing?" *Clinical Biomechanics* 20 883-891 (2005).
34. Kaspar, K., Schell, H., Seebeck, P., **Thompson, M.**, Schütz, M., Haas, N.P., Duda, G.N. "Angle stable locking of unreamed nailing reduces interfragmentary movements in a displaced osteotomy of the sheep tibia and promotes healing". *JBJs Am* 87 2028-2037 (2005).
35. **Thompson, M.S.**, Flivik, G., Juliusson, R., Odgaard, A., Ryd, L. "A comparison of structural and mechanical properties in cancellous bone from the femoral head and acetabulum" *Proc IMechE Part H: Journal of Engineering in Medicine* 218: 425-429 (2004).
36. **Thompson, M.S.**, McCarthy, I.D., Ryd, L., Lidgren, L. "Compressive and shear properties of commercially available polyurethane foams" *Journal of Biomechanical Engineering* 125: 732-734 (2003).
37. **Thompson, M.S.**, Northmore-Ball, M.D., Tanner, K.E. "Effects of acetabular resurfacing component materials on the strain distribution in the pelvis" *Proc IMechE Part H: Journal of Engineering in Medicine* 216: 237-245 (2002).
38. **Thompson, M.S.**, Northmore-Ball, M.D., Tanner, K.E. "Tensile mechanical properties of polyacetal after one and six months' immersion in Ringer's solution" *Journal of Materials Science: Materials in Medicine* 12: 883-887 (2001).
39. **Thompson, M.S.**, Dawson, T., Kuiper, J.H., Northmore-Ball, M.D., Tanner, K.E. "Acetabular morphology and resurfacing design" *Journal of Biomechanics* 33 (12) 1645-1653 (2000).
40. Haddow, D., **Thompson, M.S.**, Berry, S.R., Czernuszka, J.T. "Compositional and structural control in bone regenerative coatings" *Journal of Materials Science: Materials in Medicine* 10(4): 219-222 (1999).