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Current Fields of Research

The Arthritis Research UK Epidemiology Unit is a unique research institution internationally, in terms of its major focus being the epidemiology of the major rheumatic and musculoskeletal disorders. It consists of three divisions and includes both laboratory and field-based research.

- **Clinical Epidemiology Division**

Case control studies, longitudinal observational studies and intervention studies investigating inflammatory and non-inflammatory musculoskeletal conditions such as rheumatoid arthritis, juvenile idiopathic arthritis, psoriatic arthritis, systemic lupus erythematosus, chronic musculoskeletal pain, bone health and musculoskeletal ageing. Studies investigating the co-morbidities associated with inflammatory musculoskeletal disorders and their impact on quality of life and mortality. Studies of bone health from

childhood to very old age. Intervention studies to investigate the effect of a statin on cardiovascular outcomes; and to improve frailty, reduce pain and enhance quality of life.

- **Genetics and Genomics Division**

Investigating the genes that confer increased susceptibility to musculoskeletal conditions, or that influence outcome or response to treatment.

- **Infrastructure Division**

Providing statistical, computing and database support to the other divisions. Complying with national regulations on research governance and data protection.

Research is diverse and multi-disciplinary addressing genetic and environmental risk factors for the development and outcome of musculoskeletal conditions. We also co-ordinate a number of national clinical trials and host several national registers that are investigating the long-term safety of the new biologic drugs in patients with rheumatic diseases.

The Unit conducts research in community, primary and secondary care settings and adds to the published evidence on the best treatment for musculoskeletal disorders.

The translation of identified risk factors for the development of disease or of a poor outcome of disease into evidence-based strategies for disease prevention or improvement is the major aim. Investigation of the existence and impact of co-morbidities is also a major theme.

Selected Publications

1. **Thomson W, Barton A, Ke X, Eyre S, Hinks A, Bowes J, Donn R, Symmons D, Hider S, Bruce IN, Wilson AG, Marinou I, Morgan A, Emery P, Carter A, Steer S, Hocking L, Reid DM, Wordsworth P, Harrison P, Strachan D, Worthington J.** Rheumatoid arthritis association at 6q23. *Nat Genet* 2007; **39**(12): 1431-1433.
2. **Farragher TM, Lunt M, Fu B, Bunn D, Symmons D.** Early treatment with, and time receiving, first disease-modifying antirheumatic drug predicts long-term function in patients with inflammatory polyarthritis. *Ann Rheum Dis* 2010; **69**(4): 689-695.
3. **Pye SR, Adams JE, Ward KA, Bunn DK, Symmons DP, O'Neill TW.** Disease activity and severity in early inflammatory arthritis predict hand cortical bone loss. *Rheumatology (Oxford)* 2010; **49**: 1943-8
4. **Hinks A, Eyre S, Ke X, Barton A, Martin P, Flynn E, Packham J, Worthington J,** Childhood Arthritis Prospective Study (CAPS), UKRAG Consortium, BSPAR Study Group, **Thomson W.** Association of the AFF3 gene and IL2/IL21 gene region with juvenile idiopathic arthritis. *Genes Immun* 2010; **11**(2): 194-198.
5. **Galloway JB, Hyrich KL, Mercer LK, Dixon WG, Fu B, Ustianowski AP, Watson KD, Lunt M,** BSR Control Centre Consortium, **Symmons DP,** BSR Biologics Register. Anti-TNF therapy is associated with an increased risk of serious infections in patients with rheumatoid arthritis especially in the first 6 months of treatment: updated results from the British Society for Rheumatology Biologics Register with special emphasis on risks in the elderly. *Rheumatology (Oxford)* 2011; **50**: 124-31
6. **Dixon WG, Hyrich KL, Watson KD, Lunt M, Galloway J,** Ustianowski A, BSR Control Centre Consortium, **Symmons DP.** Drug-specific risk of tuberculosis in patients with rheumatoid arthritis treated with anti-TNF therapy: Results from the British Society for Rheumatology Biologics Register (BSRBR). *Ann Rheum Dis* 2010; **69**(3): 522-528.

7. **Orozco G, Eyre S, Hinks A, Ke X**, Wellcome Trust Case Control Consortium, YEAR Consortium, Wilson AG, Bax DE, Morgan AW, Emery P, Steer S, Hocking L, Reid DM, Wordsworth P, Harrison P, **Thomson W, Barton A, Worthington J**. Association of CD40 with rheumatoid arthritis confirmed in a large UK case-control study. *Ann Rheum Dis* 2010; **69**(5): 813-816.
8. **McBeth J, Nicholl BI, Cordingley L, Davies KA**, Macfarlane GJ. Chronic widespread pain predicts physical inactivity: Results from the prospective EPIFUND study. *Eur J Pain* 2010; **14**: 972-9
9. Craddock N, Hurles ME, Cardin N, Pearson RD, Plagnol V, Robson S, Vukcevic D, Barnes C, Conrad DF, Giannoulatou E, Holmes C, Marchini JL, Stirrups K, Tobin MD, Wain LV, Yau C, Aerts J, Ahmad T, Andrews TD, Arbury H, Attwood A, Auton A, Ball SG, Balmforth AJ, Barrett JC, Barroso I, **Barton A**, Bennett AJ, Bhaskar S, Blaszczyk K, **Bowes J**, Brand OJ, Braund PS, Bredin F, Breen G, Brown MJ, **Bruce IN**, Bull J, Burren OS, Burton J, Byrnes J, Caesar S, Clee CM, Coffey AJ, Connell JM, Cooper JD, Dominiczak AF, Downes K, Drummond HE, Dudakia D, Dunham A, Ebbs B, Eccles D, Edkins S, Edwards C, Elliot A, Emery P, Evans DM, Evans G, **Eyre S**, Farmer A, Ferrier IN, Feuk L, Fitzgerald T, Flynn E, Forbes A, Forty L, Franklyn JA, Freathy RM, Gibbs P, **Gilbert P**, Gokumen O, Gordon-Smith K, Gray E, Green E, Groves CJ, Grozeva D, Gwilliam R, Hall A, Hammond N, Hardy M, Harrison P, Hassanali N, Hebaishi H, Hines S, **Hinks A**, Hitman GA, Hocking L, Howard E, Howard P, Howson JM, Hughes D, Hunt S, Isaacs JD, Jain M, Jewell DP, Johnson T, Jolley JD, Jones IR, Jones LA, Kirov G, Langford CF, Lango-Allen H, Lathrop GM, Lee J, Lee KL, Lees C, Lewis K, Lindgren CM, Maisuria-Armer M, Maller J, Mansfield J, Martin P, Massey DC, McArdle WL, McGuffin P, McLay KE, Mentzer A, Mimmack ML, Morgan AE, Morris AP, Mowat C, Myers S, Newman W, Nimmo ER, O'Donovan MC, Onipinla A, Onyiah I, Ovington NR, Owen MJ, Palin K, Parnell K, Pernet D, Perry JR, Phillips A, Pinto D, Prescott NJ, Prokopenko I, Quail MA, Rafelt S, Rayner NW, Redon R, Reid DM, Renwick, Ring SM, Robertson N, Russell E, St CD, Sambrook JG, Sanderson JD, Schuilenburg H, Scott CE, Scott R, Seal S, Shaw-Hawkins S, Shields BM, Simmonds MJ, Smyth DJ, Somaskantharajah E, Spanova K, Steer S, Stephens J, Stevens HE, Stone MA, Su Z, **Symmons DP**, Thompson JR, **Thomson W**, Travers ME, Turnbull C, Valsesia A, Walker M, Walker NM, Wallace C, Warren-Perry M, Watkins NA, Webster J, Weedon MN, Wilson AG, Woodburn M, Wordsworth BP, Young AH, Zeggini E, Carter NP, Frayling TM, Lee C, McVean G, Munroe PB, Palotie A, Sawcer SJ, Scherer SW, Strachan DP, Tyler-Smith C, Brown MA, Burton PR, Caulfield MJ, Compston A, Farrall M, Gough SC, Hall AS, Hattersley AT, Hill AV, Mathew CG, Pembrey M, Satsangi J, Stratton MR, **Worthington J**, Deloukas P, Duncanson A, Kwiatkowski DP, McCarthy MI, Ouwehand W, Parkes M, Rahman N, Todd JA, Samani NJ, Donnelly P. Genome-wide association study of CNVs in 16,000 cases of eight common diseases and 3,000 shared controls. *Nature* 2010; **464**(7289): 713-720.
10. Wu FC, **Tajar A**, Beynon JM, **Pye SR**, Silman AJ, Finn JD, **O'Neill TW**, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Boonen S, Vanderschueren D, Labrie F, Huhtaniemi IT, European Male Ageing Study Group. Identification of late-onset hypogonadism in middle-aged and elderly men. *N Engl J Med* 2010; **363**: 123-35

Current Funding

Arthritis Research UK core grant ref. no. 17552.

Other funding sources include:

British Society for Rheumatology

Medical Research Council

Wellcome Trust

Lupus UK

The British Heart Foundation

National Institute for Health Research

European Union

Training of Fellows in Research

Excellent training opportunities are available for clinical and non-clinical research fellows at pre- and post- doctoral level. Funding for fellowships is obtained from a variety of sources and we work closely with prospective fellows to secure funding. A vibrant training programme is available within the Unit, including taught courses in Epidemiology and Statistics in addition to regular seminars and journal clubs. Training in generic skills is available within the Faculty of Medicine and Human Sciences.

WebPage

<http://www.medicine.manchester.ac.uk/musculoskeletal/research/arc/>