

## Professor Steve P. Watson

BHF Professor in Cardiovascular Sciences and Cellular Pharmacology

Cardiovascular and Respiratory Sciences

### Contact details

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### About

Steve Watson is a British Heart Foundation Professor in Cardiovascular Sciences and Cellular Pharmacology.

Steve is head of the Birmingham Platelet Group. The group undertakes a multidisciplinary approach to the investigation of platelet function in health and disease with a special focus on platelet receptors and their signalling pathways. The work includes translational studies in patients with platelet function disorders.

The group is recognised for the identification of the major signalling receptor for collagen receptor on platelets, the GPVI-FcR gamma-chain complex, and the C-type lectin receptor, which plays a key role in lymphatic development.

Steve is head of the Vascular Inflammation, Thrombosis and Angiogenesis (VITA) grouping in the Section of Cardiovascular Sciences.

Steve was the 2006 winner of the Nature/Nesta mid-career award for creative mentorin

Steve Watson is a leading member of the NIHR SRMRC. Find out more about the work of the research centre on the [SRMRC website \(http://www.srmrc.nihr.ac.uk/\)](http://www.srmrc.nihr.ac.uk/).

### Qualifications

- Fellow of the Academy of Medical Sciences 2002
- PhD Pharmacology 1983
- BSc Pharmacology (1<sup>st</sup>) 1980

### Biography

Steve originally trained in the Universities of Leeds and Cambridge before undertaking postdoctoral studies in Burroughs Wellcome, North Carolina. He moved to the Pharmacology Department in the University of Oxford in 1985 where he was supported by series of competitive fellowships, including a Royal Society University Research Fellowship. He moved to a British Heart Foundation Professorship in Birmingham in 2004.

Steve is currently an editor / senior editor on 9 journals including Trends in Pharmacological Sciences, Journal of Thrombosis and Haemostasis, Thrombosis and Haemostasis, Journal of Biological Chemistry and Biochemical Journal. Steve was a member of panel 1: Cardiovascular Sciences in the 2008 Research Assessment Exercise and is a former member of the British Heart Foundation Project Grants Committee.

Steve was awarded an Investigator Recognition Award in 2007 by the International Society of Thrombosis and Haemostasis for contributions to Haemostasis.

### Teaching

- 3rd Year BMedSci: lectures and dissertations
- Tutor groupleader
- Head of graudate studies

### Postgraduate supervision

- PhD students
- MRes Graduate Course: lectures and dissertations

### Research

We use a multidisciplinary approach that ranges from in vitro functional and biochemical assays, to cell biology based studies on immortalised and primary cell lines, and studies in mutant mice and patients with bleeding disorders. The work is divided into five main themes:

Signalling events that underlie platelet activation by glycoprotein receptors, with special emphasis on the collagen ITAM receptor, GPVI, the ITAM-like receptor, CLEC-2 and the major platelet integrin  $\alpha$ IIb $\beta$ 3.

The role of actin polymerisation in thrombus formation and signalling by platelet glycoprotein receptors.

The molecular basis of mild bleeding in patients with suspected defects in platelet function.

The events that underlie megakaryocytopoiesis and platelet formation.

The physiological and pathological role of platelets in a variety of cellular processes, including lymphangiogenesis, angiogenesis, inflammatory events, and major organ dysfunction (kidney, liver and lung)

## Other activities

Chair of the **Centre for Cardiovascular Sciences** (<http://www.birmingham.ac.uk/research/activity/mds/centres/cardiovascular/index.aspx>)

## Publications

Recent publications (since autumn 2012)

Jung, S.M., Moroi, M., Soejima, K., Nakagaki, T., Miura, Y., Berndt, M.C., Gardiner, E.E., Howes, J.-M., Pugh, N., Bihan, D., Watson, S.P. and Farndale, R.W. (2012) Constitutive dimerization of GPVI in resting platelets is essential for binding to collagen and activation through this receptor in flowing blood. *J. Biol. Chem.* 287: 30000-30013

Unsworth, A.J., Finney, B.A., Navarro-Nunez, L., Severin, S., Watson, S.P., C.J Pears, C.J. (2012). PKC $\epsilon$  and PKC $\theta$  double-deficient mice have a bleeding diathesis. *J. Thromb. Haemost.* 10: 1887–1894

Mazharian, A., Wang, Y.-J., Mori, J., Bem, D., Finney, B., Heising, S., Gissen, P., White, J.G., Berndt, M.C., Gardiner, E.E., Nieswandt, B., Douglas, M.R., Campbell, R.D., Watson, S.P. & Senis, Y.A., (2012). Mice lacking the ITIM-containing receptor G6b-B exhibit macrothrombocytopenia and aberrant platelet function. *Science Signaling* 5, 128-140.

Dawood, B.B., Lowe, G.C., Lordkipanidzé, M., Bem, D., Daly, M.E., Makris, M., Mumford, A., Wilde, J.T. and Watson, S.P. (2012) Evaluation of participants with suspected heritable platelet function disorders including recommendation and validation of a streamlined agonist panel. *Blood* 120:5041-5049

Mori, J., Wang, Y.-J., Ellison, S., Heising, S., Neel, B., Tremblay, M., Watson, S.P. and Senis, Y. (2012) Dominant role of the protein-tyrosine phosphatase CD148 in regulating platelet activation relative to PTP-1B. *Art. Thromb. Vasc. Biol.* 32:2956-2965

Haining, E.J., Yang, J., Bailey, R.L., Khan, K., Collier, R., Schickwann, T., Watson, S.P., Frampton, J., Garcia, P. and Tomlinson, M.G. (2012). The 8Cys subgroup of tetraspanins interact with A disintegrin and metalloprotease 10 (ADAM10) and regulate its maturation and cell surface expression. *J. Biol. Chem.* 287, 39753-39765

Calaminus, S.D.J., Guitart, A., Sinclair, A., Watson, S.P., Holyoake, T., Kranc, K. and Machesky, L.M. (2012) Lineage tracing of Pf4-Cre marks hematopoietic stem cells and their progeny. *PLoS ONE* 7(12): e51361

Hughes, C.E., Radhakrishnan, U.P., Lordkipanidzé, M., Egginton, S., Dijkstra, J.M., Jagadeeswaran, P. and Watson, S.P. (2012) G6f-like is an ITAM-containing collagen receptor in thrombocytes. *PLoS ONE* 7: e52622

Schachtner, H., Calaminus, S.D.J., Sinclair, A., Moneypenny, J., Blundell, M.P., Leon, C., Holyoake, T.L., Thrasher, A.J., Michie, A.M., Vukovic, M., Gachet, C., Jones, G.E., Thomas, S.G., Watson, S.P. and Machesky, L. (2013) Megakaryocytes assemble podosomes that degrade matrix and protrude through basement membrane. *Blood* 121:2542-2552

Hughes, C.E., Sinha, U., Pandey, A., Eble, J.A., O'Callaghan, C.A. and Watson, S.P. (2013) Critical role for an acidic amino acid region in signalling by the hemITAM receptor CLEC-2. *J. Biol. Chem.* 288: 5127-5135

Lowe, G.C., Sánchez Guiu, L., Chapman, O., Rivera, J., Lordkipanidzé, M., Dovlatova, N., Wilde, J., Watson, S.P., Morgan, N.V. (2013) The use of microsatellite markers provides a rapid approach for autozygosity mapping in Hermansky-Pudlak syndrome: identification of the second HPS7 mutation in a patient presenting late in life. *Thromb. Haemost.* 109: 766-768.

Manne, B.K., Getz, T.M., Hughes, C.E., Alshehri, O., Dangelmaier, D., Naik, U.P., Watson, S.P. and Kunapuli, S.P. (2013) Fucoidan is a novel platelet agonist for the CLEC-2 receptor. *J. Biol. Chem.* 288: 7717-7726

Tilley D.O., Albert M.A., Smolenski A., Cox D., O'Donnell J.S., Douglas C.W.I., Watson S.P., Kerrigan S.W. (2013) Glycoprotein Iba and FcgRIIa play key roles in platelet activation by the colonizing bacterium, *Streptococcus oralis*. *J. Thromb. Haemost.* 11, 941–950

Bender, M., May, F., Lorenz, V., Thielmann, I., Hagedorn, I., Finney, B.A., Vögtle, T., Remer, K., Braun, A., Bösl, M., Watson, S.P. and Nieswandt, B. (2013) Combined In Vivo Depletion of GPVI and CLEC-2 Severely Compromises Hemostasis and Abrogates Arterial Thrombosis in Mice. *Art. Thromb. Vasc. Biol.* 33:926-934

Cuker, A., Rux, A.H., Hinds, J.L., Dela Cruz, M., Yarovi, S.V., Brown, I.A.M., Yang, W., Konkle, B.A., Aprepally, G.M., Watson, S.P., Cines, D.B. and Sachias, B.S. (2013) Novel diagnostic assays for heparin-induced thrombocytopenia. *Blood* 121:3727-3732

Mazharian, A., Mori, J., Wang, Y.J., Heising, S., Neel, B.G., Watson, S.P. and Senis, Y.A. (2013) Megakaryocyte-specific deletion of the protein-tyrosine phosphatases Shp1 and Shp2 causes abnormal megakaryocyte development, platelet production and function. *Blood* 121: 4205-4220

## Expertise

Platelet activation in health and disease; platelet surface receptors and their signalling pathways, tyrosine kinase linked receptors; the platelet cytoskeleton; patients with platelet-bleeding disorders; taking antiplatelet drugs

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