

Curriculum Vitae

Professor Stephen John Payne CEng FIMechE FIPEM FHEA FRCO

Professor and Yushan Scholar, Institute of Applied Mechanics, National Taiwan University, Taiwan

Visiting Professor, Department of Engineering Science, University of Oxford

Editor-in-Chief, Medical Engineering and Physics

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<http://www.cerebralhaemodynamics.com>

Employment

Professor (2021-): Institute of Applied Mechanics, National Taiwan University, Taiwan

Yushan Scholar (2021-): Ministry of Education, Taiwan

Visiting Professor (2021-): Department of Engineering Science, University of Oxford

Editor-in-Chief, Medical Engineering and Physics (2021-)

Professor of Engineering Science (Biomedical Engineering) (2018-21): University of Oxford

- Deputy Head of Department and Chair of Faculty (2021)
- Associate Head of Department (Teaching) and Chair of Faculty (2017-20)

University Lecturer / Associate Professor in Biomedical Engineering (2006-18): University of Oxford

- Associate Head of Department (Graduates) and Director of Graduate Studies (2015-16)

Fellow and Tutor in Engineering Science (2006-21): Keble College, Oxford

- Sub-Warden, Keble College (2018-20)
- Deputy Bursar, Keble College (2017-20)
- Dean, Keble College (2012-14; 2017-18)

Research Fellow and Tutor in Engineering Science (2004-5): Keble College, Oxford

Departmental Lecturer in Electrical Engineering (2003-5): University of Oxford

Post-doctoral Research Assistant in Electrical Engineering (2001-2): University of Oxford

Education

DPhil degree in Mechanical Engineering (1997-2001): University of Oxford

MEng degree in Engineering Science, 1st class honours (1993-7): University of Oxford

Research overview

The research focus of my group (the Cerebral Haemodynamics Group) is cerebral blood flow and metabolism. My research was originally based in the Institute of Biomedical Engineering, part of the Department of Engineering Science (and winner of a Queen's Anniversary Prize for Higher and Further Education in 2015). Since 2021, I have been based at NTU, where I currently run a group of some 5 people. My work aims to understand how the brain regulates blood flow across the cerebral vasculature and how this is affected in diseased states. The primary clinical application has been ischaemic stroke patients, although I am now extending this work into different cerebral diseases such as dementia.

In 2016 I published the first book on Cerebral Autoregulation; this was described by one reviewer as a 'landmark' in the field. I also published the first book on a quantitative approach to cerebral blood flow and metabolism in 2017. I am currently serving as Chair of the Cerebrovascular Research Network (CARNet), the international group in this area, and was the Chair of the Organising Committee for the Royal Society meeting on 'Integrated Control of Cerebral Blood Flow', December 2018. I also chaired the International

Conferences on Cerebral Haemodynamic Regulation in 2018, 2019 and 2021. Since June 2021, I have been the Editor-in-Chief of the international journal Medical Engineering and Physics (IF = 2.24).

Research funding

At Oxford I raised research funding of £1.2M as a PI, as well as having been a Co-Investigator (and one of three theme leaders) on the Centre of Excellence in Personalised Healthcare, and the iBrain project (total funding ~£2.5M). Since my arrival at NTU, I have been awarded both a Yushan Scholarship (16.5M NTD) and a first MOST grant ('Engineering Better Brain Health', 4.5M NTD). Every grant has been interdisciplinary, all of them with clinical co-investigators and many also having industrial partners (mostly SMEs). These grants have funded 13 individual post-doctoral researchers.

Grant title	Sponsor	Duration	Value
Yushan Scholarship	MoE, Taiwan	08/21 – 07/24	16.5M NTD
Engineering Better Brain Health	MOST, Taiwan	02/22 – 01/25	4.5M NTD
INSIST (IN-Silico trials for treatment of acute Ischaemic Stroke) [Oxford PI]	ERC	11/17 – 10/21	£420k
Diversity in blood flow control to the brain [Oxford PI]	EPSRC	03/14 – 09/17	£262k
GO-SMART (A Generic Open-End Simulation Environment for Minimally Invasive Cancer Treatment) [Oxford PI]	ERC	04/13 – 03/16	£265k
Computerised fetal heart analysis in labour (Co-Investigator)	Action Medical Research	01/12 – 12/15	~£140k
iBrain (Co-Investigator) <i>[£3M total award]</i>	BBSRC	01/10 – 12/14	~£200k
Treating cerebrovascular disease (Theme leader) <i>[£8.2M Centre of Excellence in Personalised Healthcare]</i>	EPSRC/Wellcome Trust	10/09 – 09/14	~£1M
IMPPACT (Image-based Multi-scale Physiological Planning for Ablation Cancer Treatment) [Oxford PI]	ERC	09/08 – 08/11	£235k

Publications

I have published 3 books; over 100 journal papers in international peer-reviewed journals (with > 100 different co-authors); 1 book chapter; and many international peer-reviewed conference papers. I have >3100 citations and an h-index of 32 (Google Scholar, 1.v.22). My books are:

- Payne, S.J. Cerebral Blood Flow and Metabolism. World Scientific, 2017.
- Payne, S.J. Cerebral Autoregulation. Springer, 2016. [Chinese edition, 2022]
- Chappell, M.A. and Payne, S.J. Physiology for Engineers. Springer, 2016 (1st ed.), 2020 (2nd ed.).

Graduate supervision

I have supervised 26 PhD students to successful completion and am currently supervising 17 further PhD students. Of the completed students, eight have taken up Faculty positions elsewhere around the world, whilst the remainder are working in a variety of other areas (some Engineering-related and some not). I have supervised >40 Master's students both at Oxford and at NTU.

Administration

At Oxford I served in multiple administrative roles. In my department, I served as Chair of Faculty and Deputy Head of Department, having previously served as Associate Head of Department (Teaching). I also completed the Academic Leadership Development Programme at Oxford in 2016-17. I was previously Director of Graduate Admissions (2014-15) and Director of Graduate Studies (2015-16). Within Keble college I served as Dean (2012-14; 2017-18), Deputy Bursar (2017-20) and Sub-Warden (2018-20). As Sub-Warden, I chaired Equality, HR, Research and Fellowships committees.