ACADEMIC TRAINING PROGRAMME

Brighton and Sussex Medical School
Kent, Surrey and Sussex Deanery
Partnership NHS Trusts

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Introduction

This document is aimed at those doctors who are considering an academic career in medicine and who, we hope, will be tempted to come and work in the Kent, Surrey and Sussex (KSS) Deanery. The main academic centre is based at Brighton and Sussex Medical School (BSMS) with the clinical base at the Royal Sussex County Hospital (RSCH).

The Academic Pathway

Those pursuing an academic career can apply at several levels for specifically designed academic posts approved by the NIHR – National Institute for Health Research:

1. Academic Foundation Post – The South Thames Foundation School administers these posts with recruitment occurring during final year of medical school training.
2. Academic Clinical Fellowship (ACF) – Post-foundation training posts with entry at ST1 or ST3 level. They are 25% academic / 75% clinical and intended to lead onto a higher degree (MD/PhD).
3. Academic Clinical Lectureship (ACL) – Post-doctoral training posts that are 50% clinical / 50% research and are intended for career academics undertaking specialist clinical training.

These specifically designed academic posts are approved by the National Institute for Health Research (NIHR). Further details on career pathways are available on the BSMS and KSS Deanery websites.

Governance and Accountability

The Academic Training Programme is jointly overseen by both BSMS and KSS in close collaboration with the relevant partnership NHS Trusts (Brighton and Sussex University Hospital Trust and Sussex Partnership Foundation Trust). This Partnership is coordinated via the Academic Training Advisory Group which meets bimonthly to oversee key aspects of the academic training programme including recruitment and appointments, training days, ARCP organisation, trainee-related issues, and future academic plans. The Advisory Group is accountable to the BSMS Research Subcommittee and to the KSS Operational Group. It liaises closely with the South Thames Foundation School who oversees the management of the academic foundation posts and the National Institute for Health Research who fund and organise the Academic Clinical Fellowship and Lectureship schemes.

Part I: The Medical School and its Partners

Brighton and Sussex Medical School (BSMS) is committed to providing first class undergraduate and postgraduate training which links clinical medicine to basic science and research. Strong, internationally recognised research groups have been established in the fields of infectious diseases, immunity, international health, neuromuscular biology, oncology and primary care. Teaching within the Institute of Postgraduate Medicine (IPGM) focuses on primary care, public health, clinical specialties, psychiatry and community health, leadership and professional development, and medical education. Research expertise within the DME embraces cardiology, psychiatry, public health, general practice and aspects of health informatics. The Medical School has state-of-the-art clinical teaching facilities in the Audrey Emerton building, the education centre at the Royal Sussex County Hospital (RSCH), and the education centre at the Princess Royal Hospital in Haywards Heath. There are three teaching and research buildings at the University's adjacent sites at Falmer, including the Clinical Imaging Sciences Centre (CISC) incorporating fMRI and PET-CT instruments. In addition there is a 10 bed purpose-built Clinical Investigation and Research Unit (CIRU) on the RSCH site. The research programme of the School is growing rapidly. It is focused around major themes that include neuroscience, oncology, and infection and inflammation. Within these we have particular strengths in elderly care medicine, primary care and epidemiology and in imaging. There is a joint Research Office that handles NHS R&D contracts forging strong links between BSMS research faculty and NHS colleagues.

Brighton and Sussex Medical School

Since its inception in 2003, the school has proved highly successful, offering an innovative integrated teaching programme that has attracted increasing numbers of undergraduate applicants. Indeed, as testament to its success, the ratio of applications to places offered is higher for BSMS than for any other medical school in the country. Our aim is to become the UK's pre-eminent 'new' medical school, not just in undergraduate training, but also in biomedical and clinical research. Our faculty has been highly successful in generating external grant income from the funding councils and other sources. The existing postgraduate training schemes in many disciplines at both Brighton & Sussex University Hospitals and Sussex Partnership Foundation NHS Trusts have enviable national reputations.

Appointees to the fellowship programme will be given dedicated time and space to develop an area of research in line with the chosen group's current portfolio. The academic and clinical supervisors will provide joint mentoring and appraisal to ensure a balanced development of clinical and research skills during the course of the appointment. In addition, we shall offer each of the candidates the opportunity to achieve a Masters level qualification through the Division of Medical Education (DME). By developing successful programmes and increasing opportunities for high calibre clinical academics and trainees we will contribute to the ongoing development of the local NHS and in particular the position of BSUH and SPNHST as the major providers for healthcare in Sussex.

Research Infrastructure

Brighton & Sussex Medical School (BSMS), its partner Universities of Brighton & Sussex, and Brighton & Sussex University Hospitals NHS Trust (BSUH) and the Sussex Partnership NHS Trust (SPNHST) give research a high priority. The group is uniquely placed within the local health economy to deliver high-quality clinical research and teaching in acute and chronic illness and mental health. BSUH is the major provider of medical care to a stable population of over one million people; it is a regional centre for Cancer, Cardiology, Nephrology, Paediatrics & Neonatology, Infectious & Inflammatory Diseases, HIV & GU Medicine, Respiratory Medicine, Neuroscience, Ophthalmology and Surgery. SPNHST provides mental health, specialist learning disability and substance misuse services for the entire region. It is our aim to teach our undergraduate and postgraduate students in a research-rich environment, and to develop a research programme that embraces both basic and applied aspects of clinical science. BSUH employs 270 Consultants and 300 junior doctors. It has been given Run-Through Training Grades in all specialities including the new Acute Common Stem for A&E training and Neurosciences Stem. There are approximately 63 Foundation 1 (F1), 50 Foundation 2 (F2) and 9 Academic F2 doctors within BSUH. The Trust has a Foundation Faculty group with junior doctors' representation and an active Junior Doctor Forum representing views from all specialities within BSUH. Appointees to the fellowship programme will benefit from library services which are available from the University of Sussex, the University of Brighton and the NHS sites at Brighton, Haywards Heath and Hove. Resources include extensive collections of journals (print and online), books (print and online), key databases and evidence based summaries. Support is provided by the BSMS Library Services team in information skills required for research. The dedicated clinical skills area has a Clinical Skills Trainer.

The group has made a very substantial investment in research infrastructure to support our activities. On the Falmer campus the basic science Medical Research Building provides an outstanding resource for approximately 50 medical scientists, with core laboratory facilities and specialist equipment. At the Royal Sussex County Hospital site, the Clinical Investigation and Research Unit (CIRU) opened in September 2006. Incorporated within this unit is a dedicated cell labelling facility, laboratory space, oncology trials unit, a 9 bed day-patient unit and consulting suites. Also on the Falmer site the Clinical Imaging Sciences Centre (CISC), equipped with both magnetic resonance (MR) imaging and positron emission tomography (PET), opened in January 2007. Together, these units represent a major investment in capacity that will provide first class resources for clinical research. They will provide a focus for the training and development of new clinical researchers and act as the focal point for delivering high quality patient-centred research.

It is clear that BSMS, as a new organisation, cannot aspire to be nationally or internationally competitive across the whole spectrum of medical research, and for this reason, we have been careful to identify and develop those areas of biomedical and clinical research which were already strong within the local health economy and universities (for example HIV, Oncology, and Neuroscience), and in parallel to make a number of strategic clinical academic appointments at Professorial and Senior Lecturer level. New areas of research are being developed by the programme leads, focusing on the expertise and interests of the individuals that have applicability across a range of traditional clinical sub-specialities.

Additional academic input into our programme of work will be provided from the Universities of Brighton and Sussex, in particular the School of Life Sciences; the School of Pharmacy & Biomedical Sciences; the Health Professions and Institute of Nursing & Midwifery; and the NHS Research & Development Support Unit.

Part II: Clinical and Academic Training Overview

Clinical Training Programme

Each of the ACF programmes will offer clinical training that is tailored to the particular needs of the Fellow, thereby allowing them to achieve a level of competency that is commensurate with their experience and in keeping with other doctors at the same stage of training. Clinical experience will be provided within the framework of the existing medical rotation, which is based on 4 month modules in a number of specialties including Cardiology, Stroke Medicine, Geriatric Medicine, Renal Medicine, Respiratory Medicine, Gastroenterology, Rheumatology, and Infectious Disease. A clinical tutoring scheme exists to monitor progress of general medical trainees and this will be adapted and developed to serve the learning needs of the new training grades. Progress with clinical competences will be assessed by regular appraisal, which will be fed back to the academic and clinical supervisors. We anticipate that the fellows will aim to sit the membership examination required for completion of core clinical training at the earliest practical opportunity during the fellowship.

Academic Training Opportunities

We believe that the goal of the fellowship programme is threefold. Firstly, to enable the fellow to achieve clinical competency through completion of core training culminating in success in the relevant professional membership examination; secondly, to complete an academic training programme through a credit bearing Masters degree course that will allow them be awarded an MRes or equivalent qualification; and thirdly, to undertake a period of research that will form the foundation for securing funding for a doctorate in their chosen field.

Each ACF will be provided with a personal plan for their fellowship that incorporates both academic and clinical training. This plan will be timetabled to encompass protected time for both research and taught modules while maintaining a satisfactory balance of dedicated clinical and academic time necessary to meet the training goals. The supervisory arrangements will encompass a university academic supervisor who will aim to meet with the fellow weekly and be responsible for signing off their academic training plan. In addition, there will be an educational supervisor to oversee on-going professional learning and a clinical supervisor from the Trust responsible for signing off the clinical training plan. Finally, the Deanery Training Programme Director for ACFs will maintain overview of the fellows' professional development as stipulated by the Postgraduate Medical Education and Training Board.

Masters Degree Programme

BSMS is in an excellent position to provide the ACFs with access to modular Masters degree courses via the Institute of Postgraduate Medicine (IPGM) that will allow the Fellow to attain a Masters of Research (MRes) degree or equivalent qualification within the period of the fellowship programme. The research project that the ACFs undertake as part of their fellowship will form a major contribution to the Masters degree with additional credits gained through the taught courses. The MRes course is intended to run over 9 months which will be accommodated within the 25% protected academic time of the three-year fellowship. The research project will contribute half of the total number of credits required for the MRes degree. Since we anticipate that the numbers of ACFs at BSMS will initially be rather modest, we will be able to tailor the training needs to each

fellow on an individual basis. For those ACFs who have already achieved a Masters level qualification, we shall consider alternative training primarily arranged by the academic supervisor. Where possible this might conceivably lead on to an MD degree or contribute towards a PhD. Should the fellow already hold a higher degree, then the goal will be to secure funding for a senior fellowship.

The IPGM is located on the Brighton University Falmer campus of the medical school and offers a broad range of postgraduate training courses. The major areas of focus include primary care, public health, community health, medical education, and leadership and professional development. The research training programme for the Academic Clinical Fellows at Brighton and Sussex Medical School will be primarily delivered through the DME. The MRes programme is designed to give a broad education in generic research skills. The curriculum covers aspects of quantitative analysis, statistics, epidemiology, study design, ethics and governance issues, paper writing and grant applications, leadership skills and other topics. The programme is modular and credit bearing with half of the necessary credits awarded for completion of a research project. The aim will be for the degree programme to be completed over a period of 2-3 years running concurrently with the academic fellowship. Most of the modules will be run three times per year allowing ACFs plenty of opportunity to complete each module during their allotted academic periods (or during clinical periods where study leave permits). The research project represents the major goal of the MRes programme and will be supervised by the academic supervisor.

ACFs will be invited to attend research training courses and academic career days that will be distinct from the research training (MRes) programme. These will be held annually and cover various topics relevant to generic research skills and academic careers. A recent course held at BSMS included the following topics: research governance and good clinical practice, research ethics, quantitative methods and study design, analysing qualitative data, reading papers, writing grant proposals, and academic career advice.

ACFs will be released from clinical duties for a block of time during each year in order to conduct research and undertake teaching modules. These are scheduled several times during the year enabling the ACF to complete each module at their convenience and thereby accrue sufficient credits to gain an MRes degree. Because the numbers of ACFs will be relatively small at BSMS, we will have considerable flexibility in accommodating the trainees' schedules. The total amount of time allocated for research and academic training will amount to 25% as per NIHR funding of the scheme. Some specialties have expressed a preference for a fixed 1.5 days per week protected academic time or alternatively a condensed period of research post-membership in year three of the fellowship. Where possible, we shall endeavour to accommodate these alternative patterns of protected academic time in order to allow ACFs to achieve their goals.

Access to relevant training for the ACF and progress within the research training programme will be reviewed at regular intervals by the academic supervisor and by the programme director. This will occur on a formal basis annually, as per the ARCP, and on an informal ad hoc basis throughout the fellowship. Each ACF will have named clinical and educational supervisors to oversee their clinical training and an academic supervisor to oversee their research periods. The academic supervisor will also provide mentoring support and regular tutorial sessions during the research periods. Finally, the programme director will provide confidential and personal support to the ACF where this is required.

Part III: Academic Specialties

This section provides an overview of the academic medical specialties available at Brighton and Sussex Medical School in partnership with KSS Deanery and local NHS Trusts.

Allergy / Respiratory

Clinical Allergy is a distinct discipline which addresses the causes, mechanisms and treatment of disorders which involve allergic responses. This includes conditions such as anaphylaxis, allergic rhinitis, allergic asthma, eczema, reactions to food and drugs, etc. Academic studies in allergy cover a broad range including epidemiological work, cellular and molecular biology (of both the regulation of IgE responses and the individual clinical conditions), pharmacology, clinical trials, and health services research. Clinical research will be undertaken within our new Clinical Investigation & Research Unit, based on the Royal Sussex County Hospital site, and supported by our R&D unit. Laboratory work will be in the Department of Immunology (led by Professor Florian Kern), based in the new BSMS biomedical research facility at Falmer on the University of Sussex campus. Professor Kern's laboratory is fully equipped for basic immunological and cell biology research with major interests in the pathophysiology of TB, host responses to parasitic infection, and the immunobiology of cancer. A new programme in the cell biology of allergic responses is being developed with Professor Frew and Senior Lecturer in Immunology, Dr Mike Tarzi. The trainee will meet formally with Professors Tony Frew and Florian Kern on a regular basis to review progress.

www.bsms.ac.uk/ florian-kern/
www.bsms.ac.uk/ michael-tarzi/
www.bsms.ac.uk/research/our-research/infection-immunology/

Gastroenterology / Hepatology

Dr Sumita Verma is investigating non-cirrhotic hypertension in patients with HIV, in collaboration with the infectious diseases team. Non-cirrhotic portal hypertension (NCPHT) is an emerging clinically significant liver disease in patients with HIV. The underlying mechanisms are unknown but may be related to an increased tendency to a pro-thrombotic state. The reasons for this pro-thrombotic tendency are unclear. However, there is recent data to indicate increased prevalence of protein C and S deficiency in patients with HIV. Long term therapy with certain anti-retroviral drugs, especially didanosine, may also contribute. This pro-thrombotic state puts these patients at risk of obliterative portal venopathy, nodular regeneration hyperplasia and extra hepatic portal vein occlusion. The aim of this study will be to identify 20 consecutive patients with HIV who have NCPHT and 20 controls. The patients will then undergo a detailed liver screen, imaging and a thrombophilia screen. The hypothesis will be that, compared to the controls, patients with HIV and NCPHT will have an increased prevalence of an abnormal thrombophilia screen and/or be more likely to be exposed to certain anti-retroviral therapy such as didanosine. If our hypothesis is correct then anti-coagulating such patients or modifying their anti-retroviral therapy may prevent disease progression. Interested candidates should contact Dr Verma for more details.

www.bsms.ac.uk/ sumita-verma/
www.bsms.ac.uk/research/our-research/infection-immunology/

General Practice

Professor Helen Smith holds the chair in General Practice. The academic GP attachment is based in the Division of Public Health & Primary Care at Brighton & Sussex Medical School. The attachment will provide an opportunity to gain experience of the discipline of Academic General Practice through research and teaching activities. The Division has a large portfolio of health services research with particular expertise in epidemiology, psychology, anthropology, education and statistics. The research focuses on mixed method evaluation and pragmatic trial design in the clinical areas of sexual health, allergy, cancer and mental health. In addition, there is a large body of work around the electronic patient record. The F2 doctor will have the opportunity to contribute to an existing research project, and to develop a discrete aspect of it that they can then present at a national Primary Care Conference (Society of Academic Primary Care or Royal College of General Practitioners). The F2 doctors will also have access to the research courses and training offered by the University of Brighton and the University of Sussex.

The department contributes to academic teaching in all years of the undergraduate curriculum. In Phase I the teaching is around generic clinical and communication skills and in later years, general practice and public health. The opportunities for participating in teaching and assessment will vary depending on the phase in the academic cycle, but all F2s will have the opportunity for some formal training and involvement in the General Practice curriculum. The Division has a weekly academic seminar programme with external speakers and speakers from our parent universities. This meeting attracts both local clinicians and academics. Recent and controversial publications are discussed in our monthly journal club and a regular Research in Progress meeting provides a forum for emerging ideas and recently collected data.

www.bsms.ac.uk/helen-smith/

www.bsms.ac.uk/research/our-research/primary-care/

Elderly Care and Stroke Medicine

Professor C Rajkumar is the Charles Hunnisett Foundation Chair in Elderly Care and Stroke. His research areas are around cardiovascular laboratory-based research into the ageing process of arteries and epidemiology research into hypertension and ethnic differences in cardiovascular disease. The potential projects will investigate non-invasive ways of measuring cardiovascular risk factors in patients with diabetes, renal disease and stroke. These include assessment of vascular stiffness, LV function and the role of sympathetic nervous system activity using 24 hour Holter and ambulatory BP monitoring. In addition, the candidates also take part in a number of clinical trials which are conducted by the unit. The unit is part of the South East Network for Stroke Research and there are a number of clinical studies. In the past few years, candidates who have held this post have ended up publishing in international journals, presenting at national and international meetings and have also been successful in obtaining positions for future careers in academic medicine.

There are two senior lecturers, Dr Juliet Wright and Dr Khalid Ali who are based at the Royal Sussex County Hospital and Princess Royal Hospital respectively. They conduct research in various related areas of elderly care medicine and have active interdisciplinary collaborations with other investigators. In addition to potentially participating in various projects, the candidates have an opportunity to work in a research active environment with excellent infrastructure provided by the Clinical Investigation Research Unit of the hospital and a 50-bedded stroke unit. The candidates also have the opportunity to be trained in various research techniques to run clinical trials. Training in

good clinical practice guidelines, use of statistical packages including SPSS, training in the use of Endnote and other research packages are also part of the process.

www.bsms.ac.uk/ chakravarthi-rajkumar/

www.bsms.ac.uk/ juliet-wright/

www.bsms.ac.uk/ khalid-ali/

www.bsms.ac.uk/research/our-research/elderly/

Haematology

Haematology research at BSMS is overseen by Dr Timothy Chevassut, Senior Lecturer and Director for academic training. Dr Chevassut runs an active translational research programme. The research focuses primarily on understanding the biology of leukaemia, myelodysplasia and myeloma with a view to exploring new therapeutic strategies in these diseases. We are particularly interested in characterising the leukaemia stem cell and identifying novel ways of targeting this to improve treatment outcomes in acute myeloid leukaemia (AML). The laboratory is based at the Medical Research Building on the Sussex University campus at Falmer where we maintain a tissue bank of patient samples. We have a number of fruitful collaborations with various other investigators working on areas to do with drug-sensitivity, signal transduction, genomic instability, DNA methylation and epigenetics. Dr Chevassut also runs early phase clinical trials in AML through the Clinical Investigation Research Unit at the Royal Sussex County Hospital with five other consultant colleagues who collectively manage a busy level 2 haematology service and laboratory with in-house immunophenotyping facilities. Brighton has strong clinical links with King's College Hospital and the Royal Marsden where we currently refer patients for autologous and allogeneic stem cell transplantation. Interested candidates are encouraged to look at the research section of Dr Chevassut's website profile for further details:

www.bsms.ac.uk/timothy-chevassut/

HIV / GUM

The F2 doctors will work in the HIV/GUM research unit at the Royal Sussex County Hospital, part of the Department of HIV/GUM which is the largest HIV treatment centre in the UK outside London. The Genito-Urinary Medicine clinic, based at the Claude-Nicol Centre at RSCH, provides both general and specialist GUM services and sees 25,000 patients each year. The team is involved in research into HIV and Ageing; HIV transmission; Testing for HIV and STIs; patient management and monitoring and toxicity related to anti-retroviral therapy. Specifically, an F2 doctor would be expected to integrate into the existing research team, and would develop skills in:

- Literature searches using electronic databases such as MEDLINE
- Ethical Committee approval process and principles of Good Clinical Practice (GCP) for research
- Collating and inputting data into statistical software packages (e.g. SPSS)
- Specific laboratory techniques or questionnaire methodology pertinent to the concurrent research activities

Professor Jackie Cassell is the Chair in Epidemiology with an interest in genitor-urinary medicine. She is principal investigator on a number of sexual health projects.

www.bsms.ac.uk/ jackie-cassell/

Infectious Diseases

'Infection and Inflammation' is a priority theme within the BSMS research strategy. Professor Cohen, Dean of BSMS and Chair of Infectious Disease, has an international reputation in the pathogenesis and treatment of severe bacterial infection and septic shock. Other areas of academic interest include a range of infections including tuberculosis, *Staphylococcus aureus*, *Clostridium difficile* and CMV as well as vaccine responses as surrogates for infection and non-infectious areas notably vasculitic disease. A range of disciplines (and associated methodologies) including molecular microbiology, genetics, immunology, microarray and bioinformatics are being applied to address important research questions within these areas. BSMS has strong links with relevant departments at both parent universities as well as with overseas research institutions. The academic focus of ID posts will generally relate closely to the clinical work of the infectious diseases team.

Dr Martin Llewelyn is particularly interested in the clinical management of healthcare-associated infections such as *Staphylococcus aureus* bacteraemia and *Clostridium difficile*. Professor Melanie Newport works on genetic regulation of immune responses and susceptibility to infectious disease. A specific project will be developed with the appointee considering his/her interests and aptitudes and could be patient-focused or lab-based (microbiology, immunology or genetics). Previous academic foundation trainees have been successful in presenting their work at national and international conferences, publishing in leading journals and have gone on to secure sought-after academic and clinical specialist trainee and PhD posts. Interested candidates for appointments should visit:

www.bsms.ac.uk/ jon-cohen/
www.bsms.ac.uk/ melanie-newport/
www.bsms.ac.uk/ martin-llewelyn/
www.bsms.ac.uk/research/our-research/infection-immunology/

Leadership

Effective management and leadership skills are essential to the future development of healthcare. These posts offer trainees the opportunity to develop skills in leadership, management, education and professionalism at an early stage in their medical careers. This programme combines both workplace based learning and academic study to introduce Foundation Year 2 Doctors [F2s] to the practice and theory of leadership, management and education in clinical settings. In addition to the well established educational provision available to all foundation doctors at BSUH NHS Trust, the trainees will have a 4 month block specifically dedicated to leadership. They would be expected to complete a project on a particular aspect of leadership, professionalism or education and to prepare an article, based on their project, to be submitted for publication. On call commitments: the clinical posts are all banded 1b apart from A&E which is unbanded. Teaching will be provided by a Faculty comprising expertise drawn from Brighton and Sussex University Hospital NHS Trust (BSUH), Brighton and Sussex Universities, Brighton and Sussex Medical School (BSMS) & KSS Deanery Education Department; Workplace based supervision and support for F2s will be led by the Leadership Champions and Director of Medical Education at Brighton and Sussex University Hospital, a foundation faculty programme director with particular responsibility for this group of foundation doctors and innovative course design and provided by a Local Faculty Group comprising clinicians who hold or are in process of gaining a Master's degree in Education in Clinical Settings.

Medical Education

The Medical Education Unit is led by Dr Inam Haq, Senior Lecturer in Medical Education and Rheumatology and the candidate will be supported by clinical and non-clinical members of the Unit including, academic teaching fellows. Members of the Medical Education Unit are: Dr Wesley Scott-Smith, Clinical Education Fellow and Module Leader for Clinical Practice Modules in Phase 1; Dr Jim Price, Acting Deputy Head of DME, Programme Leader for Professional Development; Tim Vincent, BSMS Learning Technologist; and Darren Beaney, BSMS Admissions Tutor (Widening Participation).

The academic trainee in medical education will work as part of the Medical Education Unit at Brighton & Sussex Medical School and also within acute medicine at the Trust. They will integrate into existing research teaching and curriculum development carried out by the Unit and will develop skills in:

1. Medical education theory and applying this to teaching both small and large groups
2. Undergraduate student supervision and mentoring
3. Question writing for undergraduate written and practical examinations
4. Collaborating in current education research being carried out by the Unit in electronic learning, professionalism, clinical reasoning, curriculum design, student selection and Widening Participation into the Medical School
5. The successful candidate will develop skills in questionnaire development and analysis, quantitative and qualitative, research methodologies.

Interested people are encouraged to review the following website:

www.bsms.ac.uk/about/meu/

www.bsms.ac.uk/ inam-haq/

www.bsms.ac.uk/research/our-research/medical-education/

Neurology

The Department of Neurology benefits from two senior academics based at BSMS (Professor Nigel Leigh and Dr Dennis Chan) as well as research-active consultants in the clinical division who support an expanding portfolio of clinical studies. In addition to the senior clinical staff and clinical trials team, the current research team consists of two clinical research fellows, two PhD students and one postdoctoral research fellow. An Academic Clinical Fellow in Neurology was appointed in 2011.

The main research focus of the Department is in the field of neurodegenerative disorders. Professor Leigh leads research into motor neuron disease comprising laboratory-based research on animal and cell models of MND (PhD student with Dr Majhid Hafezparast and Dr Sarah Newbury) and clinical research focusing on developing new models of early phase neuroprotection trials incorporating biomarkers, neuroimaging, and genetics. Dr Chan leads a research programme using functional MRI to detect brain changes in Alzheimer's disease prior to the onset of dementia. In addition to the senior clinical staff, the current research team consists of two clinical research fellows, two PhD students and one postdoctoral research fellow. Dr Chan and Professor Leigh have a developing portfolio of clinical trials in dementia, MND, and 'parkinson plus' disorders. Potential research projects include:

1. Medial temporal lobe function in prodromal Alzheimer's disease; behavioural fMRI studies.
2. Analysis of resting state brain networks in frontotemporal dementia.
3. A study of extracampine hallucinations in Lewy body dementia.
4. Hippocampal function in HIV-associated cognitive impairment.
5. Developing new cell models of MND using induced pluripotent cells

6. Investigating the role of microRNAs in MND pathogenesis
7. Studies of blood and CSF biomarkers in response to riluzole in MND
8. New quantitative MRI approaches to defining genotype and phenotype in MND

Informal queries can be addressed to Professor Nigel Leigh or Dr Dennis Chan.
www.bsms.ac.uk/ nigel-leigh/
www.bsms.ac.uk/ dennis-chan/
www.sussex.ac.uk/neurodeg/index
www.bsms.ac.uk/research/our-research/neuroscience/

Nuclear Medicine

Nuclear Medicine comprises the application of radioisotopes for the purposes of medical diagnosis and therapy. Nuclear Medicine diagnosis frequently entails the production of images which display the distribution of previously administered radioisotopes within the body. By focussing on the demonstration of disease through changes in molecular or physiological function, Nuclear Medicine can detect pathology missed by other anatomically-based imaging techniques. Radioisotope therapy offers a "magic bullet" in which radiation treatment is targeted to a specific organ or disease site on account of selective uptake of the radioisotope. Imaging is increasingly used as a research tool in many branches of medicine and in drug development. Post-holders will become involved in research in at least one of the following areas: imaging of tissue vascularity and metabolism to assess tumour aggression and evaluate response to therapy; imaging of multi-drug resistance; assessment of lymphoedema; radio-labelling and imaging of blood cells and/or proteins; computer-assisted diagnosis; evidence-based evaluations of diagnostic imaging technologies; functional neuroimaging to include neurotransmission molecular imaging of dopaminergic system and addiction mechanism.
Research is currently being led by Professor Mike Peters in collaboration with Dr Sabina Dizdarevic.
www.bsms.ac.uk/ mike-peters/
www.bsms.ac.uk/research/our-research/imaging/

Oncology

Professor Schmid has recently been appointed to the chair of Oncology. Both clinical and lab-based research projects are available. The Cancer in the Elderly Research Programme was developed in 2008 by Dr Alistair Ring to address the complex needs of the increasing number of older patients with cancer. Current projects are addressing such issues as fitness for cytotoxic chemotherapy, nutritional status, social support, biological markers of ageing and poly-pharmacy in older cancer patients. In addition, aspects of the epidemiology of cancer in the elderly and treatment preferences are being addressed in partnership with colleagues at the University of Sussex (Sussex Health Outcomes Research & Education in Cancer) and BSMS Department of Epidemiology. The Schmid laboratory studies the epigenetics of cancer. This is a novel research area of high significance for cancer prevention, diagnosis, treatment and patient outcome. We are currently carrying out research into mapping the epigenetic 'signatures' of different cancers to be able to better treat patients with the right medicine for their specific disease. The aim is to ensure the right medicine for the right patient and to reduce the number of patients subjected to medicines which cause them uncomfortable side effects needlessly. Whilst performing this genetic and epigenetic mapping the

research also aims to find new specific targets for new medicines to be specifically developed for that target.

www.bsms.ac.uk/ peter-schmid/

www.bsms.ac.uk/ alistair-ring/

www.bsms.ac.uk/research/our-research/cancer1/

Paediatrics

The Royal Alexandra Children's Hospital has a long history of successful research especially within the area of respiratory paediatrics. The tertiary paediatric surgery/urology unit and tertiary neonatal services also offer both clinical and research opportunities. Research facilities are available within the new Children's Hospital. Professor Somnath Mukhopadhyay is the Head of the Academic Department of Paediatrics. The principal research interest of the Academic Department of Paediatrics lies in the study of gene-environment and pharmacogenetic interactions in the area of children's asthma and allergy. The group, which collaborates with Dundee, the Royal Free Hospital (London) and a number of other centres, have recently reported a number of high profile discoveries. This includes the description of a new mechanism underlying children's asthma and allergy (series of papers between 2006 and 2010). The group has recently reported reduced efficacy with common asthma treatments in relation to genetic variation (2009). Both discoveries are of international significance, and have been reported prominently in the paper editions of all the leading UK newspapers, and other international news agencies, e.g. the Australian Broadcasting Corporation.

The Clinical Investigation and Research Unit and the Clinical Imaging Sciences Centre provide additional facilities for clinical research. The Children's Hospital is a purpose built 100-bedded children's hospital providing both in-patient and out-patient facilities and a clinical investigation area. The new building provides comprehensive paediatric services including paediatric surgery, high dependency and intensive care. There is an increasing development of paediatric sub-specialties within the new children's hospital year after year. There are thus excellent opportunities for clinical, academic and research training within paediatrics, particularly in the areas of respiratory medicine, allergy and infectious disease. Dr Katy Fidler is the Senior Lecturer in paediatrics with an active interest in HIV and TB.

www.bsms.ac.uk/ somnath-mukhopadhyay/

www.bsms.ac.uk/ katy-fidler/

www.bsms.ac.uk/research/our-research/paediatrics/

Psychiatry

Sussex Partnership NHS Foundation Trust is a teaching trust of Brighton and Sussex Medical School (BSMS) and the Mental Health Provider for a population of 1.5 million across Sussex. The Trust, in conjunction with BSMS, is equipped to provide a comprehensive programme of clinical academic training in psychiatry and mental health, combining clinical expertise, service innovation and NHS research investment with academic strengths in clinical neuroscience research. Academic Psychiatry within the Brighton & Sussex Medical School has key strengths in areas of biological psychiatry, notably neuroimaging, psychophysiology and neuropsychoimmunology. Lab-based research within the Universities of Brighton and Sussex are linked to patient-focused studies at Sussex Partnership NHS Foundation Trust and include work in areas of neurodevelopmental disorders, neurodegeneration, , psychosis and psychopharmacology. There is a strong interest in mechanisms

underlying psychopathology, including the role of cytokines and neuronal growth factors in depression and neurodegeneration.

Key people overseeing the clinical academic programmes within Psychiatry include Prof Hugo Critchley, Dr Neil Harrison (Wellcome Fellow), Dr Nick Medford (Neuropsychiatry), Dr Ayana Gibbs (Forensic psychiatry), Dr Naji Tabet (Old Age psychiatry) and Dr Richard Whale (Psychopharmacology). BSMS Psychiatry is a central group within the Sackler Centre for Consciousness Science (SCCS) at the University of Sussex (Co-Directors Dr Anil Seth and Prof Hugo Critchley). Further information can be found at:

www.bsms.ac.uk/hugo-critchley/

www.bsms.ac.uk/neil-harrison/

www.bsms.ac.uk/research/our-research/psychiatry/

Radiology

Research activities in imaging will be based at the Clinical Imaging Sciences Centre (CISC) at the Brighton & Sussex Medical School, Falmer. This centre houses a 1.5 T MRI, PET-64 slice CT and an image-processing suite. The clinical PET-CT service for the Sussex Cancer Network is provided at CISC, occupying 50% of the available scanning time. The remaining 50% is protected for research (as is 80% of MRI scanning time). In addition, there is access to a small animal bioluminescence imager in the department of anatomy, X-ray fluoroscopy in the medical school dissecting room and bone densitometry in the BSMS Clinical Investigation and Research Unit along with clinical imaging devices in the Brighton & Sussex University Hospitals (BSUH). A computer training suite linked to an electronic archive of diagnostic images for educational purposes (derived from BSMS and BUSH imaging devices) is also available at BSMS for development and delivery of image-based educational activities.

Other academic activities will include co-supervision of higher degree students and involvement in the development, delivery and quality assurance of undergraduate imaging education at BSMS. Academic competencies will be documented using a range of assessment tools, some of which have been developed at BSMS (e.g. "case-based discussion" around a research paper, DOPs for teaching activities). Trainees will also maintain an academic portfolio (alongside their clinical portfolio) which will form the basis of regular appraisal (3-6 monthly) by the Academic Imaging Lead. Clinical competencies will be assessed by the usual ARCP process.

www.bsms.ac.uk/cisc/

www.bsms.ac.uk/research/our-research/imaging/

Renal

A Professor in Renal Medicine is in the process of being appointed. The unit has established research in Haemodialysis (HD) as a vital treatment for many patients with end-stage renal disease. However, many sessions are complicated by episodes of hypotension, which contribute to morbidity and mortality of kidney disease. A potential project would be to investigate whether impedance cardiography (which provides continuous, non-invasive monitoring) can be used to predict and thus potentially allow pre-emptive action to avoid hypotensive episodes, thus improving the patient experience and safety of haemodialysis. Another option would be to analyse data from a longitudinal cohort study of patients with chronic kidney disease to investigate whether parameters such as vascular stiffness can tell us anything about prognosis in terms of cardiac death or other cardiac

events. The renal service is the largest within Kent, Surrey and Sussex and comprises a total of seven full-time consultants in Brighton.

Rheumatology

Professor Kevin Davies holds the Chair of Medicine for BSMS and also rheumatology with a particular interest focus on autoimmune conditions, notably systemic lupus erythematosis and rheumatoid arthritis. He has a broad experience of clinical and laboratory research in this area and works closely with Dr Sandra Sacre, Senior Lecturer in cell biology and immunology, who is working on new therapeutic strategies in these conditions. Professor Davies also works closely with collaborators at the Clinical Imaging Sciences Centre (CISC) on neurological complications of lupus.

Dr Karen Walker-Bone runs a weekly rheumatology clinic for patients with HIV infection and has diagnosed a wide-range of pathologies ranging from inflammatory connective tissue diseases such as SLE through to regional pain syndromes and fibromyalgia. These clinical observations have led to a variety of fascinating research questions pertaining to hyper-uricaemia and gout, premature osteoarthritis of the hip and treatment of inflammatory rheumatic diseases in the context of prevalent HIV infection. She is also incepting a cohort of male HIV positive patients for investigation of osteoporosis. Within this large cohort study, several sub-studies are envisaged exploring for example; bone markers, dietary factors, exercise, lean and fat mass changes. Other projects include involvement in a national randomised controlled trial of the management of arm pain in primary care. Interested individuals are advised to contact the relevant researchers for further information:

www.bsms.ac.uk/ kevin-davies/
www.bsms.ac.uk/karen-walker-bone/
www.bsms.ac.uk/ sandra-sacre/
www.bsms.ac.uk/research/our-research/rheumatology/

Appendix

Quotes from our current academic trainees:

'I would definitely recommend this programme'
'Well supported clinically and academically'
'Good programme structure'
'Excellent mix'

Contact details for the integrated academic programme:

Dr Timothy Chevassut
Director for Academic Training
t.chevassut@bsms.ac.uk