2-YEAR SPECIALISED FOUNDATION PROGRAMMES AT IMPERIAL COLLEGE MEDICAL SCHOOL & PARTNER TRUSTS (IMP)

1. INTRODUCTION

Imperial College London, Imperial College Healthcare and partners have an international reputation for translating scientific breakthroughs to clinical practice. They host a critical mass of international leaders in clinical medicine, healthcare policy, academia and technology and innovation which is unparalleled in the UK. Imperial has strengths in clinical trials, drug discovery, public health, bioinformatics, artificial intelligence (AI), bioengineering, and 'omic' approaches. Imperial is an NIHR Biomedical Research Centre (BRC) and was the UKs first ever Academic Health Sciences Centre (AHSC). Imperial takes pride in offering the highest quality of academic training for its SFP trainees.

The Imperial Foundation Programme is led by Dr. Channa Jayasena (c.jayasena@imperial.ac.uk) with the support of the Imperial Clinical Research Training Office (CATO). We offer a wide selection of academic programmes covering several major specialities and within these there are possibilities for lab based or clinical research. Imperial specialised Foundation Trainees have access to a state-of-the-art educational programme alongside Academic Clinical Fellows, Research Fellows and Clinical Lecturers. This provides the ideal environment to enable interested trainees to undertake further research training and plan a future a clinical academic career. Our academic trainees routinely succeed in publishing and presenting the work they have undertaken in their academic placement.

Successful applicants are recruited to a specific 4-month academic F2 post within a generic 2 year foundation programme with 5 other clinical placements, balanced to enable acquisition of foundation competences. Applicants should note that clinical placements are subject to change dependent on service need and provisional until confirmed by the employing Trust.

2. DETAILS OF TRAINING PROGRAMMES

A spread sheet summarising all of the available programmes is available to download from https://london.hee.nhs.uk/recruitment/medical-foundation

Programme Reference	Programme Theme	Based at
2627/IMP/01	Academic Paediatrics	St Mary's Hospital
2627/IMP/02	Academic Paediatrics	St Mary's Hospital
2627/IMP/03	Academic Paediatrics	St Mary's Hospital
2627/IMP/04	Academic Medicine	Hammersmith Hospital
2627/IMP/05	Academic Medicine	Hammersmith Hospital
2627/IMP/06	Academic Medicine	Hammersmith Hospital
2627/IMP/07	Academic Medicine	Hammersmith Hospital
2627/IMP/08	Academic Medicine	Hammersmith Hospital
2627/IMP/09	Academic Medicine	Hammersmith Hospital
2627/IMP/10	Academic Primary Care	Charing Cross Hospital
2627/IMP/11	Academic Primary Care	Charing Cross Hospital
2627/IMP/12	Academic Primary Care	Charing Cross Hospital

2627/IMP/13	Academic: Cardiology, Respiratory & Cardiothoracics	National Heart & Lung Institute / Hammersmith Hospital / Royal Brompton
2627/IMP/14	Academic: Cardiology, Respiratory & Cardiothoracics	National Heart & Lung Institute / Hammersmith Hospital / Royal Brompton
2627/IMP/15	Academic: Cardiology, Respiratory & Cardiothoracics	National Heart & Lung Institute / Hammersmith Hospital / Royal Brompton
2627/IMP/16	Academic Obstetrics & gynaecology	Queen Charlotte's Hospital
2627/IMP/17	Academic Obstetrics & gynaecology	Queen Charlotte's Hospital
2627/IMP/18	Academic Obstetrics & gynaecology	Queen Charlotte's Hospital
2627/IMP/19	Academic Anaesthetics & Critical Care	Chelsea & Westminster Hospital
2627/IMP/20	Academic Anaesthetics & Critical Care	Chelsea & Westminster Hospital
2627/IMP/21	Academic Anaesthetics & Critical Care	Chelsea & Westminster Hospital
2627/IMP/22	Academic Vascular Surgery	Charing Cross Hospital
2627/IMP/23	Academic Vascular Surgery	Charing Cross Hospital
2627/IMP/24	Academic Vascular Surgery	Charing Cross Hospital
2627/IMP/25	Academic Surgery & Innovation	St Mary's Hospital
2627/IMP/26	Academic Surgery & Innovation	St Mary's Hospital
2627/IMP/27	Academic Surgery & Innovation	St Mary's Hospital
2627/IMP/28	Academic Clinical Trials & Translational Medicine	Hammersmith Hospital
2627/IMP/29	Academic Clinical Trials & Translational Medicine	Hammersmith Hospital
2627/IMP/30	Academic Clinical Trials & Translational Medicine	Hammersmith Hospital

Northwest Thames offers 30 jobs in the academic programme. In all cases the F1 year will be a standard F1 programme in order to ensure candidates can establish core clinical medical skills as described in the Foundation curriculum. However, doctors will have the opportunity to attend academic F1 early evening teaching sessions and will be encouraged to involve themselves in formal teaching commitments. All academic F1s are 'buddied' up with the F2 who is following the same programme as them for support and mentoring. We also arrange an evening meeting in January where academic F1s will meet their academic leads and start to plan their F2 academic placement in detail.

The F2 year will be based either at Imperial College Healthcare NHS Trust (Hammersmith, Charing Cross and St Mary's Hospitals), Northwick Park Hospital, or Chelsea and Westminster Hospital, in partnership with Imperial College London. Academic placements are grouped into the Academic Departments of Medicine, Metabolic Medicine, Surgery, Vascular Surgery, Paediatrics, Obstetrics & Gynaecology, Primary Care, and Anaesthesia. Imperial CATO offers a masterclass programme of teaching for all Clinical Academic Trainees, covering topics such as grant writing, statistics, big data, genomics, and career advice regarding ACF applications.

Common features of the SFP programmes include:

- A named academic educational supervisor/mentor for the whole year. Trainees will be encouraged to meet with their academic supervisor well in advance of commencing their F2 year. At the start of their academic placement, they will agree a personal academic development plan which would include exposure to research techniques, literature analysis, career advice on planning a career in research, grant funding etc.
- Attendance at research meetings within the academic department to which they are attached.
- At least termly whole day specialised foundation programme teach-ins covering all areas of academic medicine, research, and leadership.
- Core lecture programme (example, changes each year)

  - "My academic career" – talks from leading Clinician Scientists working at Imperial
  - Research Governance
  - Leadership workshop
  - Research Ethics
  - Translational Medicine
  - How to present scientific research
  - Guidance for a career as an academic clinician
  - Critical appraisal workshop

- Trainees will be encouraged to write a review article under the guidance of their academic mentor based an area related to their academic attachment, aimed for publication. During this they will learn critical literature analysis techniques.
- They will hopefully generate enough data from the 4 months laboratory or clinical research to contribute to a scientific paper. Clearly 4 months is not sufficient time to finish a project, but the time and work undertaken should have contributed significantly. Trainees are encouraged to submit their work for presentation at national and international symposia.
- They will have the opportunity to present their academic work at the Imperial CATO Symposium in the July, to other SFPs, as well as more senior clinical academic trainees and academic leaders.

Individuals will be working within routine busy clinical units and are expected to develop the same formal clinical F2 competencies as F2 doctors in non-academic programmes within 8 months instead of the standard 12. They will have named clinical supervisors in each placement who will ensure they address clinical skills in addition to the academic activity. All clinical placements have well established appraisal systems and on-going educational support.

3. PLACEMENTS

Programmes 1-3 - Academic Paediatrics - based at Hammersmith & St Mary's Hospitals
Reference: 2627/IMP/01
Reference: 2627/IMP/02
Reference: 2627/IMP/03

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme

This is a research post in Paediatrics which will be based at one of Imperial's main campuses (whichever campus the project supervisor is based at), most likely: South Kensington, Hammersmith, White City, St Mary's, or Chelsea and Westminster.

Employing trust:	*Academic placement based at:*
Imperial College Healthcare NHS Trust	Main campus location of academic supervisor

Brief outline of department

Academic Paediatrics at Imperial hosts diverse expertise in many specialist areas including infectious diseases, global health, allergy, emergency and intensive care, respiratory medicine, neonatology, child public health, health services research and evaluation of new models of care. This breadth of research is brought together through the Centre for Paediatrics and Child Health https://www.imperial.ac.uk/centre-for-paediatrics-child-health/

To help trainees to find specific projects and supervisors within their specialised Foundation Programme in Paediatrics we have three main themes where we suggest trainees base their time, although we are happy to discuss alternative proposals if there is a strong rationale for working in one of our other areas. The programme is led by Prof Aubrey Cunnington (Paediatric Infectious Disease) and Prof Dougal Hargreaves (Population Health) who can link you up with colleagues as needed.

Paediatric Infectious Disease combines basic, translational and clinical research aimed at understanding susceptibility and severity in childhood infectious diseases and improving methods of diagnosis, prevention and treatment (http://www.imperial.ac.uk/infectious-disease/research/paediatrics/). A particular area of strength is in "Platform Science" – the application of omics technologies and bioinformatics to healthcare problems. Different groups within the Section vary in focus on host, microbes and their interactions. The Section leads major international consortia (e.g. *https://www.diamonds2020.eu/* , www.digitaldiagnostics4africa.org) and has strong global connections in The Gambia, Ghana and South Africa. We have a proven track record of nurturing aspiring clinician scientists at every career stage from SFP and ACF through to clinical lecturers and beyond, leading to a high rate of success in obtaining independent PhD funding and research fellowships.

Paediatric Allergy, Respiratory & Sleep Medicine. ICHT hosts a busy academic Paediatric Allergy team, headed by Professor Adnan Custovic. Current programmes

include primary prevention of allergic disease using dietary and non-dietary approaches, investigation of the mechanisms of anaphylaxis, immunotherapy of allergic disease, temperature-controlled laminar airflow trials, and analysis of birth cohort data to define allergic disease phenotypes and their environmental and genetic determinants. There is also an active paediatric sleep medicine research programme, focussed on the development and validation of new approaches to the diagnosis of sleep-disordered breathing. Paediatric Respiratory Medicine, based National Heart and Lung Institute, combines diverse expertise spanning basic mechanism through to clinical trials in asthma, bronchiectasis, cystic fibrosis and primary ciliary dyskinesia.

Population Health and Health Services Research for Children and Young people. Prof Sonia Saxena, Prof Mireille Toledano and Prof Dougal Hargreaves in the School of Public Health lead major local and national collaborations to study and improve the health of children and young people (for example, through the NIHR Applied Research Collaboration NW London and the NIHR School of Public Health). Our team has experience of working with a range of routinely collected datasets to identify novel patterns and associations, and evaluate the impact of individual or service-level interventions to improve outcomes. We also have close links to the Connecting Care for Children team at St Mary's Hospital (led by Dr Bob Klaber and Dr Mando Watson) and many other local partners. In neonatology, primarily at Chelsea and Westminster campus, additional work with large datasets of routinely collected clinical data is being used to transform understanding of the determinants of outcomes for preterm infants across the life-course and to embed pragmatic clinical trials alongside routine delivery of care.

Additional areas of research interest include neonatal hypoxic ischaemic encephalopathy, intensive care interventions, emergency care triage and risk stratification, adolescent health, medical education, and paediatric surgery.

Clinical commitments during academic placement

There are no fixed clinical commitments and no on call duties during the Academic Paediatrics placement.

Departmental academic teaching programme (if applicable)

There are many opportunities here and the post-holder will be introduced to these when they start.

Academic Lead:

Prof Dougal Hargreaves d.hargreaves@imperial.ac.uk, Professor of Paediatrics & Population Health

Programmes 4-9 - Academic Medicine – based at Hammersmith Hospital

Reference: 2627/IMP/04
Reference: 2627/IMP/05
Reference: 2627/IMP/06
Reference: 2627/IMP/07
Reference: 2627/IMP/08
Reference: 2627/IMP/09

Individual Placement Descriptor (IPD) for the four month academic placement
Separate IPDs for clinical placements are available on foundation school website

<table>
<tr><td colspan="2">Type of programme

This a research post where the AF2 will have the opportunity to spend four months doing cutting-edge research within a research group anywhere with the very large Department of Medicine at Imperial College.</td></tr>
<tr><td>Employing trust:

Imperial College Healthcare NHS Trust</td><td>Academic placement based at:

Hammersmith Hospital</td></tr>
<tr><td colspan="2">Brief outline of department

The F2 can choose to be attached to any one of a number of world-class research units within the Faculty of Medicine at Imperial College – explore the website at https://www.imperial.ac.uk/medicine/research-and-impact/ to understand the breadth and quality of opportunities available.

The faculty comprises 7 world class Departments – Brain Sciences, Immunology & Inflammation, MRC Lab of Medical Sciences (LMS), Metabolism, Digestion & Reproduction, National Heart & Lung Institute (NHLI), School of Public Health, And Surgery & Cancer.

The Academic F2 can be attached to groups within any of these and undertake basic laboratory research, more clinical research and projects involving a mix and including innovative imaging and computing. Depending on the AF2's interests there are also possibilities for attachments in more diverse laboratories - e.g. Department of Bioengineering. We aim to facilitate the AF2 in finding the project and department that suits them and will allow them the greatest opportunity to achieve outstanding academic outputs. Many of our previous AF2s have produced first author papers and / or presentations by the end of their programme.</td></tr>
<tr><td colspan="2">The F2 year will consist of 4 months of Acute Medicine and 4 months of Renal medicine based at Hammersmith Hospital, and 4 months of Academic Medicine at any of the Imperial sites. Dr. Rohini Sharma oversees the Academic Medicine placements but the Academic F2 will be supervised during their academic placement by the relevant academic lead for the research project undertaken.

Dr. Rohini Sharma will help trainees find the right supervisor early on in their F1 year to facilitate planning and familiarity with the group and ensure that they get the most out of their 4-month placement by being fully prepared. Each trainee will identify an academic supervisor within their chosen research group who will meet with them</td></tr>
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regularly, set the academic learning objectives at the beginning of the placement and review progress at the end of the placement.

There is access to wide range of teaching and other learning opportunities within the department, and each doctor will be strongly encouraged to make the most of these to support their personal learning plan. There will also be the opportunity to develop important transferrable skills in the writing of ethics and grant applications, performing statistical analysis, and writing and revising manuscripts. Other learning opportunities, such as development of educational research skills or understanding quality improvement methodologies will be offered in accordance with the needs of the trainee and the project undertaken.

It is envisaged that doctors in this Academic Medicine placement will be successful in achieving journal publications and published abstracts, as well as presenting their work in regional and national meetings. The post will be an outstanding introduction to academic medicine, and high performance in the post will undoubtedly strengthen any potential application for CMT / ACF posts.

Clinical commitments during academic placement

There are no fixed clinical commitments and no-on call duties during the Academic Medicine placement.

Departmental academic teaching programme (if applicable)

specialised Foundation doctors will be expected to attend the weekly Department of Medicine Staff round, and any departmental seminars that they wish to attend. There will be different expectations of attendance at seminars within each research group and the academic supervisor will advise the trainees. They are also expected to attend their home Trust F2 weekly teaching session.

Academic Lead:

Prof. Rohini Sharma
Professor Clinical Pharmacology and Medical Oncology r.sharma@imperial.ac.uk

Programmes 10-12 - Academic Primary Care – based at St Mary's and Charing Cross Hospitals
Reference: 2627/IMP/10
Reference: 2627/IMP/11
Reference: 2627/IMP/12

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme This is a 4-month research and clinical placement in Academic Primary Care.	
Employing trust: Imperial College Healthcare NHS Trust	*Academic placement based at:* Charing Cross Hospital

Brief outline of department
The academic placement is located in the Department of Primary Care & Public Health at Charing Cross Hospital. The Primary Care and Public Health department includes a combination of GP educators (involved in both undergraduate and postgraduate medical education) and researchers in public health and primary care.

During their time in Academic Primary Care, trainees will be based within the Undergraduate Primary Care Education Unit, which is one of the largest undergraduate GP teaching departments in the UK, delivering teaching across the six year Medicine MBBS. We are an active education, research and teaching department. This provides a solid foundation in training for both academic and general practice careers.

We work closely with MEdIC (Medical Education Innovation and Research Centre), a translational centre brining cutting-edge evidence from health, education, community and policy into medical education innovations and research, that have a positive and sustainable impact on our society.

The wider department of Primary Care and Public Health has a number of research groups who aim to achieve better health by high-quality research and publications, and to influence health policies and programmes around the world. Research groups include the Child Health Unit, Global Digital Health Unit, Health Services Research Unity, Imperial Centre for Cardiology Prevention, Public Health Policy Evaluation Unit and the West London Primary Care Research Community Network. The department also hosts the WHO Centre for Public Health Education & Training which gives opportunities for working on international public health topics. There is also an opportunity to work in other departments and units of the Imperial College School of Public Health, such as the Department of Epidemiology & Biostatistics and the Clinical Trials Unit. See https://www.imperial.ac.uk/school-public-health/primary-care-and-public-health/ for further information.

Structure of academic project/what expected

The year will include four months of A&E at St Mary's Hospital, four months in either O&G at St Mary's or Gastroenterology at Charing Cross, and four months in Academic Primary Care.

The week is split between 2 days in a local general practice, and 3 days based in the department.

The trainee will receive training in teaching skills and pedagogical underpinnings via attendance at the Imperial TACTIC (Training Course for Teachers at Imperial College) course and will have the opportunity to be involved in the development, delivery and evaluation of the primary care curriculum and assessment within the undergraduate curriculum.

The trainee will have the opportunity to participate in medical education scholarly activities that promote critical thinking, reflection and a deeper understanding of the process of medical education. Examples of such activities may include contributing to research, articles or presentations and receiving feedback on their work, participating in the departmental Educational Communities of Practice (eCOPs), integrating educational theories into practice through research-informed curriculum development, teaching and assessment) and participating in MEdIC's dedicated educational research seminars enabling skill development in research methodology.

Within the wider department of Primary Care and Public Health there is the opportunity to get involved in primary care research activity within one of the well-established research groups. This research typically involves a systematic literature review, data gathering or analysis of a data set. There are regular departmental research seminars where there is the opportunity to present and receive feedback on work. There may also be opportunities to publish this work with the research team.

The academic lead for the programme is Dr Nina Dutta and Dr Sian Powell who are supported in this role by other academics in the department.

Please see this website for more details of the programme.

Clinical commitments during academic placement

There is a clinical commitment of 2 days a week in an accredited GP teaching practice. The details of the weekly timetable are negotiated between the academic department and GP surgery, although Wednesdays are compulsory for in-person attendance at the academic department due to the number of academic activities and meetings that take place.

Departmental academic teaching programme (if applicable)

Weekly departmental meetings and seminars as well as weekly Trust F2 teaching.

Academic Lead:

Dr Sian Powell
Primary Care Faculty Development Lead (Maternity Cover)
sian.powell@imperial.ac.uk

Programmes 13-15 - Academic: Cardiology, Respiratory & Cardiothoracics –based at National Heart & Lung Institute (NHLI)

Reference: 2627/IMP/13
Reference: 2627/IMP/14
Reference: 2627/IMP/15

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

<table>
<tr><td colspan="2">Type of programme

This is a 4-month research post based at one of the NHLI campuses across NW London.</td></tr>
<tr><td>Employing trust:

Imperial College Healthcare NHS Trust</td><td>Academic placement based at:

NHLI (7 sites across NW London): Royal Brompton, St Mary’s, Charing Cross and Hammersmith Hospitals and South Kensington campus</td></tr>
<tr><td colspan="2">Brief outline of department:

The National Heart and Lung Institute hosts diverse and world-leading expertise (with >130 Principal Investigators) in many specialist areas of cardiology, vascular and respiratory medicine across the lifecourse (https://www.imperial.ac.uk/nhli). It provides an ideal environment in which academic trainees can flourish (https://www.imperial.ac.uk/nhli/about-us/strategic-plan-2024/).

Trainees will spend their four-month academic block on a placement in a research group in Respiratory, Cardiology or Cardiothoracic Surgery. They will be supported by senior academics in exploring the spectrum of opportunities available at NHLI – which include both wet and dry lab work - and be able to choose the speciality and research project which most appeals to them. A small number of exemplar PIs are described below; there are many more and trainees will be encouraged to explore all that NHLI has to offer.

Professors Miriam Moffatt and Bill Cookson lead the Asmarley Centre for Genomic Medicine where state of the art genomic technology and expertise is used to study lung diseases including large-scale studies of asthma, atopic dermatitis, psoriasis, lung and pleural cancer, and sequence-based studies of the lung microbiome.

Professor Sejal Saglani runs a translational research programme focussed on investigating the mechanisms underpinning the onset of severe preschool wheeze, factors predicting progression to school-age asthma and identification of novel therapies for preschool wheeze and childhood severe asthma.

Dr Mo Shamji leads a research group in Immunomodulation and Tolerance and conducts research into respiratory allergies. His particular focus is on the role of disease-modifying treatments (such as allergen immunotherapy and novel biologics and immunomodulators), how they affect immunologic responses, and induction of immune tolerance.</td></tr>
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Professor Ajit Lalvani is Director of the NIHR Health Protection Research Unit in Respiratory Infections. He carries out translational research into severe respiratory infections: TB, pandemic influenza and COVID-19. This has including development of the IGRA diagnostic test for TB and insights into the action of TB, malaria and flu vaccines.

Dr Matthew Shun-Shin and Dr Graham Cole's group lead the UK UNITY collaborative that are working to develop artificial intelligence methods for echocardiography. Trainees joining this group will gain software programming skills and experience in machine learning and clinical cardiac imaging.

Dr Ranil De Silva has a research focus on interdisciplinary and translational research in atherosclerosis and coronary artery disease using invasive and non-invasive imaging to enhance the knowledge of disease mechanisms, development of new diagnostics, patient risk stratification and evaluation of novel therapies across the spectrum of coronary artery disease.

Dr Rasha Al-Lamee and Professor Darrel Francis lead the coronary artery physiology research theme, which studies all aspects of ischaemic heart disease (from acute to chronic, and from intracoronary pressures and flows to indices of ischaemia) and ultimately matches findings to patients' symptoms. They lead the ORBITA-2 multicentre RCT of coronary stenting for angina including studies of patient-facing symptom tracking methodologies and blinded physiological testing before and after intervention.

Dr Zach Whinnett, Professor Prapa Kanagaratnam and Professor Nick Peters lead the electrophysiology and devices clinical research, including running the HOPE-HF, C19-ACS, and other multi-centre randomised controlled trials. Their work studies new approaches using electrical stimuli to improve heart function outcomes (both short-term and longer-term) and the origin and mechanism of atrial fibrillation.

Prof Sian Harding and Prof Prakash Punjabi lead research into myocardial regeneration as a therapeutic and research tool. Clinically related initiatives include pharmacological release of bone marrow stem cell subsets and increased homing to the heart from external shockwave stimulation. In development are the use of large, engineered heart tissue constructs from human pluripotent stem cell derived cardiomyocytes, as well as exosome delivery of regenerative factors.

Brief outline of department:

Trainees will spend their four-month academic block in the AF2 year within a research department at one of the NHLI sites. Trainees will be under the overall supervision of Dr Johanna Feary (Academic Clinical Lead for SFP; Genomic and Environmental Medicine section) and Prof Darrel Francis (Cardiology; section head of Cardiovascular Trials and Epidemiology), Prof Seb Johnston (Respiratory; section head of Airways Disease and Director of the Asthma UK Centre in Allergic Mechanisms of Asthma) or Prof Prakash Punjabi (Cardiothoracic Surgery; Cardiac Function section), depending on the trainee's preference of research area. Supervision will be in the form of weekly meetings with day-to-day support from the wider team.

During the placement, there will also be the opportunity to develop invaluable and transferable research skills such as writing conference abstracts and ethics and grant applications, contributing to manuscripts, and performing statistical analyses.

It is envisaged that doctors in this Academic NHLI placement will be successful in achieving journal publications and published abstracts, as well as presenting their work in regional and national meetings. NHLI has a proven track record of nurturing aspiring clinical scientists, and the post will be an outstanding introduction to academia in cardiorespiratory medicine/surgery. High performance in the post will undoubtedly strengthen any application for further clinical training posts and research fellowships.
Clinical commitments during academic placement There are no clinical commitments and no on call duties during this placement.
Departmental academic teaching programme (if applicable) There are many learning opportunities; these will be discussed at the start of the post.
Academic Lead: Dr Johanna Feary Senior Clinical Fellow (NHLI) Consultant Respiratory Physician (Royal Brompton Hospital) j.feary@imperial.ac.uk

Programme 16-18 – Academic Obstetrics & Gynaecology – based at Queen Charlotte's Hospital
Reference: 2627/IMP/16
Reference: 2627/IMP/17
Reference: 2627/IMP/18

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme This is a 4-month research placement in Obstetrics & Gynaecology	
Employing trust: The North West London Hospitals NHS Trust	*Academic placement based at:* Queen Charlotte's Hospital
Brief outline of department Academic Clinical Obstetrics and Gynaecology at Imperial is closely linked to Imperial Academic Health Sciences Centre and NIHR Biomedical Research Centre, and the Institute of Reproductive & Developmental Biology (IRDB), one of the largest stand-alone research facilities in O&G in Europe. There is academic expertise in a range of clinical areas linked to Obstetrics and Gynaecology.	

Gynaecological oncology (Prof. Mara Kyrgiou and Prof. Sadaf Maghami)
Effect of treatment of cancer on reproductive performance (Prof. Mara Kyrgiou)
Miscarriage and early pregnancy (Prof. Tom Bourne, Prof. Lesley Regan, Prof Phillip Bennett, Dr Viki Male).
Ovarian Function and Polycystic Ovary Syndrome (Prof Stephen Franks)
Cardiovascular adaptation, placentation, fetal growth and pre-eclampsia (Prof. Christoph Lees, Dr Beth Holder)
Women's Health in Policy and Practice (Dr Edward Mullins)
Prematurity and Parturition (Prof. Phillip Bennett, Dr Vasso Terzidou, Dr Lynne Sykes, Prof. David Macintyre)

In addition, there are more basic science-oriented programs including:

Reproductive and neonatal immunology (Dr Viki Male, Dr Beth Holder, Dr Lynne Sykes)
Placental Biology and maternal-fetal communication (Dr Beth Holder)
Stem Cell Biology and early mammalian development (Dr Veronique Azura, Dr Wei Cui)
G-protein coupled receptor biology in women's health and nutrition (Prof. Aylin Hanyaloglu)
Systems Medicine, Microbiome and Metabolome (Prof. David MacIntyre, Prof. Phillip Bennett)

Recent major new initiatives include the role of the microbiome in reproductive health, and integration of large-scale biological data such as transcriptomics, genomics, metabonomics and miromics with clinical at metadata. We became both a Global Alliance Against Stillbirth and Prematurity (GAPPS) Research Centre, a 'Tommys' National Miscarriage Research Centre and the first European March of Dimes Prematurity Research Centre.

Recent O&G research success include criteria for miscarriage diagnosis, improved surveillance for IUGR, a paradigm shift in understanding miscarriage, miRNA markers to predict preterm birth, a link between vaginal microbiome, preterm birth and cervical cerclage, all leading to international changes to practice.

Structure of academic project/what expected

The AF2 year will contain a 4-month research block in Academic Obstetrics and Gynaecology based at Queen Charlottes Hospital and the Institute of Reproductive & Developmental Biology, Hammersmith Campus, Imperial College Healthcare NHS Trust. Prof. Aylin Hanyaloglu oversees the Academic placements but the Academic F2 will be supervised during their academic placement by the relevant academic lead for the research project undertaken.

Prof. Aylin Hanyaloglu will help trainees find the right supervisor early on in their F1 year to facilitate planning and familiarity with the group and ensure that they get the most out of their 4-month placement by being fully prepared. Each trainee will have an academic supervisor within their chosen research group who will meet with them regularly, set the academic learning objectives at the beginning of the placement and review progress at the end of the placement. The AF2 will have the opportunity to be part of a highly dynamic and supportive team of doctors, scientists and other health professionals working together in academic, service improvement and educational aspects of Obstetrics and Gynaecology.

The Academic F2 may select a project from any of the areas of research activity listed above. Depending upon the nature of the project there will be close 'clinic-side 'or 'bench-side' supervision from an appropriate clinical research fellow or scientist together with weekly meetings with the Principal Investigator. If desired, the Academic F2 can be allocated to an Academic Clinical Lecturer, Fellow, or Specialist Registrar mentor during their academic placement.

There is access to a wide range of teaching and other learning opportunities within the department. There will also be the opportunity to develop important transferrable skills in the writing of ethics and grant applications, performing statistical analysis, and writing and revising manuscripts. Doctors in this academic placement should be successful in achieving journal publications and published abstracts, and present work in regional and national meetings. The post will be an outstanding introduction and steppingstone into academic Obstetrics and Gynaecology,

Clinical commitments during academic placement

There are no fixed clinical commitments and no on call duties during the placement.

Departmental academic teaching programme (if applicable)

The department has a comprehensive program of teaching and seminars which the post holder will be encouraged to take part in.

Academic Lead:

Prof Aylin Hanyaloglu,
Professor in Molecular Medicine, Head of Reproductive and Developmental Biology
a.hanyaloglu@imperial.ac.uk

Programmes 19-21 - Academic Critical Care and Anaesthetics – based at Charing Cross/St Mary's/Hammersmith or Chelsea and Westminster Hospitals
Reference: 2627/IMP/19
Reference: 2627/IMP/20
Reference: 2627/IMP/21

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme

This is a 4 month research placement in Academic Critical Care and Anaesthetics.

Employing trust:	*Academic placement based at:*
Chelsea and Westminster Hospital NHS Foundation Trust	Charing Cross, St Mary's, Hammersmith or Chelsea and Westminster Hospital

Brief outline of department

The Division of Anaesthesia, Pain Medicine and Intensive Care is an academic division sitting within the Faculty of Medicine of Imperial College London. Academic activities occur at both Imperial College Healthcare NHS Trust and Chelsea and Westminster Hospital NHS Foundation Trust. Across the two Trusts there is a wide spectrum of Critical care and Anaesthetic activity, for example trauma, burns, neuro-critical care, and cardiac and obstetric anaesthesia. As such a wide range of projects are offered.

The Division is led by Professor Anthony Gordon and is the home to many well-respected academics from the fields of Critical Care, Anaesthesia and Pain. The research activities of the Division cover a variety of subjects from biological profiling of critically ill patients using cutting edge techniques such a metabolic or transcriptomic profiling to machine learning in healthcare and improving the understanding of inflammation.

Website: https://www.imperial.ac.uk/department-surgery-cancer/research/apmic/

Structure of academic project/what expected

The AF2 year will include four months of Emergency Medicine at Chelsea & Westminster Hospital, four months in Intensive Care at the Royal Marsden Hospital and four months of academic activity at one of the associated hospitals, depending on the project. The academic placement can cover projects in anaesthesia, critical care, outreach, post-operative recovery and pain relief research, based on the AF2's skills and preferences. The posts are well suited for those wishing to gain a basic grounding in peri-operative medical research and have been highly valued by previous AF2s. Work done by previous AF2s on this program has been presented internationally and published.

Education is a key objective for the academic department with medical student (including BSc) and postgraduate training. The AF2 would be expected to contribute to education in all areas of anaesthesia and pain management.

Clinical commitments during academic placement There is no fixed clinical commitment during the academic placement. However, there is the opportunity to develop clinical skills if desired.
Departmental academic teaching programme (if applicable) There are weekly academic meetings as well as weekly Trust F2 teaching. The AF2 would also be welcome to attend clinical departmental teaching whist on the academic placement.
Academic Lead: Dr. David Antcliffe Clinical Senior Lecturer in Critical Care Medicine d.antcliffe@imperial.ac.uk Professor Anthony Gordon anthony.gordon@imperial.ac.uk

Programme 22-24 - Academic Vascular Surgery – based at Charing Cross Hospital
Reference: 2627/IMP/22
Reference: 2627/IMP/23
Reference: 2627/IMP/24

Individual Placement Descriptor (IPD) for the four month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme This is a research post in Vascular Surgery at Charing Cross Hospital.	
Employing trust: Imperial College Healthcare NHS Trust	*Academic placement based at:* Charing Cross Hospital
Brief outline of department The research methods employed within the group include clinical projects, including clinical trials, molecular and cellular biology, material science, ultrasound and contrast enhanced ultrasound imaging, health economics, biostatistics, systematic reviews, metabonomics and fluid dynamics. For more information, please visit the Academic Section of Vascular Surgery website: http://www.imperial.ac.uk/AP/faces/pages/read/Home.jsp?person=a.h.davies&_adf.ctrl-state=usx90ksw9_3&_afrRedirect=2815034464756649	
Structure of academic project/what expected The AF2 year will be based at Charing Cross hospital and will consist of four months of Vascular Surgery and four months of A&E at St Mary's, and four months Academic Vascular Surgery at Charing Cross. The Academic Surgery placement will be based in	

the Academic Section of Vascular Surgery at Charing Cross under the supervision of Professor Alun Davies.

During the four months the AF2 will have the opportunity to be part of a dynamic and productive research team investigating carotid atherosclerosis, chronic venous insufficiency, and varicose veins. The combination of clinical pathology and research techniques will be tailored to accommodate the interests of the AF2 as far as possible, selecting from a number of research projects which are running in parallel.

Supervision from Professor Davies will take the form of weekly meetings, with day-to-day support coming from a team of clinical research fellows, one of whom will be the lead research fellow on the assigned project.

There is access to a number of surgical clinics for the undertaking of clinical research projects and for postgraduate exam preparation as required. There is the opportunity to develop important transferrable skills in the writing of ethics and grant applications, performing statistical analysis, and writing and revising manuscripts.

The previous Academic F2s who have completed this placement have been successful in achieving first name author publications, including journal publications, book chapters, letters, and published abstracts, as well as presenting their work in national meetings and winning local and national prizes. Furthermore, they have been supported in applying for core training and academic training jobs and have been successful in securing posts in their chosen specialties.

Clinical commitments during academic placement

There are no fixed clinical commitments and no on call duties during the Academic Surgery placement.

Departmental academic teaching programme (if applicable)

In addition to the Foundation Programme teaching, there are weekly research meetings. Courses will be offered in accordance with the needs of the trainee and the project undertaken. Many of the clinical research fellows teach relevant skills such as statistical analysis, critical appraisal and how to prepare a manuscript at a regional level.

Academic Lead:

Prof Alun H Davies
Professor of Vascular Surgery
a.h.davies@imperial.ac.uk

Programmes 25-27 - Academic Surgery & Innovation – based at St Mary's Hospital
Reference: 2627/IMP/25
Reference: 2627/IMP/26
Reference: 2627/IMP/27

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme

This is an Academic surgical research programme based at St Mary's Hospital.	
Employing trust: Imperial College Healthcare NHS Trust	*Academic placement based at:* St Mary's Hospital

Department Overview

The Department of Surgery is an internationally leading centre which is highly multi-disciplinary and includes multiple internationally renowned academic and clinical foci including surgical technology development, discovery biochemistry, cancer biology and medicine, reproductive medicine, critical care and pain management.

Their goals are to harmonise and develop existing research themes across the Department, and also to capitalise on world leading molecular phenotyping and metabolic profiling research capabilities to create a new healthcare paradigm based on a molecules-to-medicine approach. In particular, we will channel exciting new technology developments into clinical practice with particular emphasis on development of personalised healthcare and patient and patient stratification strategies across all our clinical delivery programmes.

Overview of Cross-Cutting Research Themes and Research Facilities
Cross cutting research themes of the Division of Surgery include:

- Surgical Technology
- Robotics
- Clinical Trials
- Cancer Prevention and Early Diagnosis
- Surgical Education
- Metabonomics
- Clinical Safety and Quality
- Health Policy
- Design for Healthcare

The research facilities and infrastructure available are world-class, in terms of space, technology and teaching faculty. The department has strong collaborative links with many centres that have a successful track record in accommodating ambitious blue-sky research projects with proven track-record of successful supervision of ACFs/ACLs. Fellows and lecturers participate in research that intersects many disciplines and departments at Imperial supported by world leading researchers, laboratories, centres and environments, including:

Imperial Phenome Centre (NPC) (Takats) - delivers access to world-class capabilities in metabolic phenotyping, with a range of services from profiling, untargeted assays to targeted assays.

Hamlyn Centre for Robotic Surgery (Rodriguez Y Baena, Darzi) – is at the forefront of imaging, sensing and robotics research and hosts the EPSRC Micro-Engineering Facility for Medical Robotics and UK Robotics and Autonomous Systems Network.

HELIX Design and Innovation Studio (Darzi) – collaboration between ICL and the Royal College of Art (www.helixcentre.com), which brings together clinicians, designers, and behavioural scientists to harmonise digital health and design to support patients and clinicians e.g. "Hark" - an innovative clinical task management platform (acquired by Google DeepMind, 2016).

EPSRC Centre for Mathematics in Healthcare (Darzi, Barahona) - brings together mathematicians with researchers in computing, engineering and medicine to capitalise on healthcare data and turn it into useful information for clinical decision-making.

NIHR-London In Vitro Diagnostic Co-operative (Hanna) – a collaboration between clinicians, scientists, and industry for evidence generation on diagnostics including laboratory validation and clinical studies, human factors, cost-effectiveness and mitigating barriers to adoption in clinical practice.

ICTU-Surgery (Hanna, jointly with the ICTU hub) – provides opportunities for training and grant applications in clinical trials and surgical quality assurance methods in different disciplines of surgery, minimal access interventions and cancer.

Description of the Research Component and Themes

Overview of Research Opportunities

Academic training will be based on a structured individualised post-graduate training programme. The research opportunities will include as follows:

- ***Robotics and Biosensing –*** body sensor networks, low power/ power scavenging, biocompatible and implantable sensors, micro-robotic design and fabrication, clinical trial (e.g. Micro-IGES, Cyclops), computer navigation systems and image-guided intervention(s).
- ***Health Policy and Safety*** - development, uptake and diffusion of innovative, evidence-based health policy in the UK and around the world; behavioural insights; health economics; patient safety; mHealth; design.
- ***Metabonomics and systems biology -*** lipidomics, metabolic pathway analysis, volatile organic compound analysis using mass spectrometry techniques such as GC-MS, PTR-TOF-MS, SIFT-MS, and ambient ionisation techniques include REIMS and DESI, MALDI and SINS, tandem mass spectrometry, NMR spectroscopy, big data analysis, bioinformatics, and statistical modelling.
- ***Microbiome research*** – 16S rRNA and shotgun metagenomic sequencing, culture, organoid, and synthetic gut models (robo gut and gut on a chip). Animal model validation.
- ***Technical Skills Assessment*** - the use of novel technologies including simulation in medical education, technical skills training, team performance assessment(s) including theatre and emergency medical teams, objective assessment strategies and the translation of educational research into educational practice within diverse healthcare environments.
- ***Clinical Trials*** – the Division of Surgery has a bespoke unit for surgical trials and established arrangement with ICTU to support fellowships in clinical trials and clinical scientists applications. ICTU provides methodology and statistical

expertise for clinical trials. Surgical quality of international high profile RCTs such as NeoAGIS, COLOR III, ADDICT.

Structure of academic project/what expected

This AF2 year is based at St Mary's hospital and consists of four months General Surgery, four months A&E, and four months in Academic Surgery which will be based in the Division of Surgery at St Mary's Hospital. The post holder will be responsible to the Head of Department of Surgery & Cancer, Professor George Hanna, Professor Ara Darzi, and Mr Stefan Antonowicz.

The purpose of this post is to provide a protected period of time and support to achieve competencies in different fields of academia as outlined in the Specialised Foundation portfolio. The post is particularly focused on enabling Academic F2 doctors to gain experience in research and build a research profile from which they can apply for ACF posts and apply for research fellowships towards a higher degree.

They will be assisted to develop their teaching and managerial/leadership skills and to contribute to undergraduate teaching. The F2 will have access to clinical and non-clinical academics who can guide them in the development of their academic and research programmes.

F2s will be introduced to the research themes of the department and potential projects from the Division of Surgery that would be suitable for the period of research. They will be free to choose the supervisor and project that most appeals to them provided it is likely to enable the trainee to meet the aims of this programme.

Clinical commitments during academic placement

During the academic surgical placement, the F2 will participate in a low intensity on-call rota at SHO level but will be free of routine elective clinical work.

Departmental academic teaching programme (if applicable)

There is weekly departmental teaching as well as weekly Trust F2 teaching.

Academic Training Lead:

Mr Stefan Antonowicz
s.antonowicz@imperial.ac.uk

Programmes 28-29 - Academic Clinical Trials & Translational Medicine – based at Hammersmith Hospital
Reference: 2627/IMP/28
Reference: 2627/IMP/29
Reference: 2627/IMP/30

Individual Placement Descriptor (IPD) for the four-month academic placement
Separate IPDs for clinical placements are available on foundation school website

Type of programme

This is an Academic research programme based at the NIHR Imperial Clinical Research Facility (NIHR ICRF) at Hammersmith Hospital.

Employing trust:	*Academic placement based at:*
Imperial College Healthcare NHS Trust	Hammersmith Hospital

Brief outline of department

The COVID pandemic highlighted the importance of having dedicated Clinical Research Facilities to conduct high quality research that cannot be done elsewhere in the NHS.

The NIHR Imperial Clinical Research Facility (ICRF) at Hammersmith Hospital is one of 28 NIHR funded Clinical Research Facilities in the UK. It is a state-of-the-art environment that enables medical staff and scientists to work together to investigate disease, and trial the latest scientific ideas for improving diagnosis and treatment. Its aim is to capitalise on the ground-breaking science conducted daily by Imperial College biologists, chemists, engineers, mathematicians and medical staff as well as external partners, including the pharmaceutical industry and start-up companies. As a result, it has a track record of hosting cutting edge studies investigating new vaccines, gene therapies, small molecule drugs, diets and devices in a wide range of diseases that include cancer, cardiovascular, metabolic medicine, infectious disease and neuroscience. ICRF research is published in high impact scientific journals and has appeared in a wide range of popular science and news programmes. Equally important, the ICRF provides an environment for the next generation of academic healthcare professionals to learn how to bring new science into the clinic.

4 months at the ICRF is an excellent opportunity for clinicians aspiring to a research career in any speciality to gain experience of clinical research in a leading research organisation.

Structure of academic project/what expected

This post differs from other AF2 placements in day structure.

50% of each day will be spent conducting trial study visits for a small number of clinical trials (typically 2-4 studies of any specialty) which are running and need support at the time of your placement. This will provide you hands-on training in conducting high-quality clinical research e.g. research consent, governance, monitoring, study documentation, determining eligibility, and assessing adverse events.

The remaining 50% of each day will be spent focus on working with one of the research teams running the trials you are supporting. This may involve working with a PhD fellow to analyse data, and gain experience in academic writing and publishing. We will work with you to choose the most suitable trial to focus on. If instead you are already involved in a research project with another researcher at Imperial and would like to use this time to continue to pursue it, that may also be possible depending on time commitment.

This placement is ideal for candidates who want get experience running and providing an important contribution to big, ambitious clinical trials. It is not suitable for those who want to lead a project during their placement, because a standard clinical experiment is carried out over 2-3 years (from conception to write up) which is not commensurate with a 4 month placement.

Clinical commitments during academic placement

There are no NHS duties.

Departmental academic teaching programme (if applicable)

The AF2 will benefit from access to Clinical Research teaching seminars, as well as Trust F2 teaching.

Academic Lead:

Dr David Owen

Reader in Molecular Pharmacology and Experimental Medicined.owen@imperial.ac.uk

4. THE MEDICAL SCHOOL AND PARTNER TRUSTS

Imperial College London

Imperial College London is one of the world's leading universities. The quality of the college's research has been judged consistently to be of the highest international standard and the proportion of income from research grants and contracts is one of the highest of any UK university. The concentration and strength of research in science, engineering and medicine gives the college a unique and internationally distinctive research presence.

The college operates on a number of central London campuses: The South Kensington campus along with Charing Cross, Chelsea & Westminster, the Hammersmith, the Royal Brompton, St Mary's, Northwick Park and Central Middlesex hospitals.

Academic Health Science Centre

Imperial College Healthcare NHS Trust was created on 1 October 2007, by merging Hammersmith Hospitals NHS Trust and St Mary's NHS Trust. The Trust is the largest NHS Trust in the country, providing general and specialist care for patients nationwide as well as serving a large local community in west London. The new Trust and Imperial College London formed a unique partnership and together they became the UK's first Academic Health Science Centre (AHSC). On 9 March 2009, they received official recognition as an AHSC from the UK government.

The AHSC is a new approach to healthcare in the UK, bringing a university and the NHS together and running them hand in hand to provide the best healthcare in the world, free at the point of delivery. It represents a concentration of doctors, nurses, scientists and managers all dedicated to providing the best quality healthcare and finding new ways to treat diseases and conditions that affect your health.

The vision for Imperial's academic health science centre is that the quality of life of patients and local populations will be vastly improved by taking the discoveries that are made and translating them into medical advances - new therapies and techniques - and by promoting their application in the NHS and around the world, in as fast a timeframe as is possible.

The AHSC mission is to become one of the top five AHSCs in the world within the next ten years, channelling excellence in research to provide world-class healthcare for patients. Achieving this challenging mission will significantly improve the quality of healthcare for the local community, London and the UK as a whole, and enhance the UK's position as a global leader in biomedical research and healthcare.

Royal Brompton Hospital

Royal Brompton & Harefield NHS Foundation Trust is the largest specialist heart and lung centre in the United Kingdom. Clinical teams at Royal Brompton and Harefield hospitals care for patients with a wide range of complex cardiac conditions, including congenital (present at birth), inherited and acquired. Their hospitals are world leaders in the diagnosis, management and treatment of lung disease. Children's services provide care from before a child is born, throughout childhood and into adolescence, before managing a smooth transition to our adult teams.

Chelsea & Westminster Hospital

Chelsea and Westminster Hospital NHS Foundation Trust is an undergraduate teaching hospital that is part of Imperial College School of Medicine and provides a wide range of specialist hospital services within an environment of academic specialization as well as general local services for people living locally. The hospital is a modern purpose designed and built facility which opened in May 1993. Most services are based at the Chelsea and Westminster Hospital site, but the Trust also runs a highly successful network of HIV and sexual health centres. There are five Clinical Directorates: Anaesthetics & Imaging, Medicine, Surgery, Women & Children, and HIV & Sexual Health.

The hospital has developed increasing academic strength and taken on significant new research and development commitments. For example, they were successful in securing more than £1 million in funding for the Eagle Simulator, a virtual operating theatre located at Chelsea and Westminster for training in anaesthesia and critical care. The Simulation Centre forms part of a Good Clinical Practice Centre, which incorporates a Clinical Skills Laboratory, Manual Handling training and Resuscitation training. The Centre is at the forefront of multi-disciplinary education and training.