

MEDICAL RESEARCH COUNCIL (MRC) SKILLS DEVELOPMENT FELLOWSHIPS (SDF) GUIDANCE FOR SUPERVISORS FOR 2018 APPLICANTS TO IMPERIAL COLLEGE

EXCELLENCE OF RESEARCH TRAINING STRATEGY AND ENVIRONMENT

RESEARCH TRAINING STRATEGY

Imperial's vision

To build national research capacity in the priority skills areas identified by MRC in the context of two international centres of excellence with strong reputations for developing and applying priority skills to public and global health research: the MRC Centre for Outbreak Analysis and Modelling (MRC-COAM), and the MRC-PHE Centre for Environment and Health (MRC-CEH). Both Centres are hosted by SPH, enabling research cross-fertilization and delivery of a unified, coherent programme training and career development opportunities. A hub and spoke model will be used to deliver the SDF programme. The MRC Centres are the primary focus and research home, but projects and supervision will encompass other key departments and centres with particular disciplinary strengths and/or research foci. This structure will maximise the programmes ability to attract the best candidates from mathematics, computer sciences and engineering – by allowing us to better link to the professional networks in those disciplines, and also by providing fellows with a dual home where appropriate. All projects must involve substantial engagement with external academic collaborators and/or public health partners. Building on the existing excellence of both MRC Centres in supporting career development of independent research fellows, the SDF programme will deliver individually-tailored training, career development support and research experience with external collaborators. Imperial shares the MRC's vision for fellowship support and this programme will provide fellows with the inter- and multi-disciplinary skills required in modern biomedical research, drawing upon both Centres' track records in applied quantitative research on infectious and non-infectious diseases and the College's wider proven excellence in mathematics, statistics and computing.

SDF research themes

Imperial's research environment is the ideal setting for skills development training. Reflecting the MRC's investment in Imperial, it's broader portfolio of biomedical research and strategic needs, Imperial's core themes for the SDF award (below), strongly align with the SDF priority skills areas of mathematics, statistics, computation and informatics, and health economics.

- **Infectious Disease Analysis and Modelling:** a quantitative, interdisciplinary research area, spanning 'classical' epidemiology, biostatistics, mathematical modelling, ecology, genetics, evolutionary & genomic analysis, and health economics. Infectious disease epidemiology is also a priority research theme for the Faculty, and an area in which the College is a world-leader. MRC-COAM is a world-leading group undertaking basic research on infectious disease dynamics and applied collaborative work with national and international agencies to support policy planning and response operations against infectious disease threats.
- **Health Informatics:** MRC-CEH aims to advance understanding of the aetiology, pathogenesis, pathways and mechanisms of chronic human disease, via research on extensive, highly phenotyped patient and population cohorts and e-Health resources. A core strength is in work on molecular pathways, mechanisms and biomarkers, linking omics data to the phenome/exposome. The Centre has a growing programme in the integration, analysis and interpretation of omics data, generating and analysing large amounts of such data, both in its cohorts, and via leadership of international programmes. Health informatics underpins the analysis and interpretation of metabolomic and associated multi-omic data within MRC-CEH, using computational biology, biostatistics, bioinformatics and chemometrics – all recognised priority specialties. It has unprecedented access to huge volumes of metabolomic and associated phenotype data, providing a distinctive and world-leading opportunity. To translate their research into public health policy and guidance, the Centre work closely

with NGOs, local authorities, PHE, Defra, international agencies, and with advocacy and patient groups.

- **Health economics:** In addition, focussed research excellence is provided via the Centre for Health Economics & Policy Innovation (Business School) and MRC-COAM's health economics unit. The former contributes to new knowledge about key issues in healthcare delivery and producing research to inform policy and practice. The latter undertakes work on integrating health economic, econometric and financial modelling into disease transmission and intervention policy models – informing investment decisions by the Global Fund, Gavi and product development partnerships.

TRAINING ENVIRONMENT

Training and career development

A focus on capacity-building and career-development for early-career researchers has been central to the success of both MRC Centres in SPH. Underpinning this record has been a shared mission to provide optimal training and career development opportunities to allow their postdoctoral staff to flourish.

Collaboration and translation

A key aspect of an SDF fellowship is working and spending time with external scientific collaborators (often with different disciplinary backgrounds) and public/global health bodies. Fellows will benefit from the range of internal and external collaborations and partnerships Centres have fostered. Internally, SPH has strong links with the Departments of Mathematics, with health economists in the Business School and IGHI, and with DSI/Department of Computing. Externally, both MRC Centres have many scientific collaborations with academic centres of excellence, and partnerships with key public/global health organisations. Both MRC Centres are WHO Collaborating Centres, and work closely with and are funded by nearly all major global health organisations involved in infectious diseases control. Engagement with industry has also strengthened in recent years, and links with academic centres of excellence and governments in low and middle-income countries (LMICs) are also exceptionally strong and growing. Both MRC Centres have close partnerships with PHE. Staff sit on a multitude of national and international policy advisory committees. Last, fellows benefit from the opportunity to participate in both Centres' extensive range of public engagement activities.

Imperial's offer for SDF candidates

To bring together the best elements of the individual training and career-development programmes of both MRC Centres in SPH into a single overarching structure, ensuring greater consistency while retaining the flexibility for discipline-specific provision where appropriate. The strategy for maximising the effectiveness of an SDF award for both capacity-building in priority skills areas and in developing the careers of individual fellows has several elements:

1. **Recruiting the best** – attracting the best applicants from the widest range of disciplines requires recruitment to be more than just advertising fellowships and assessing applications. This programme will build on past experience of recruiting fellows from both quantitative and biomedical backgrounds, recognising the differing training needs of each, with particular emphasis on attracting more candidates from mathematics, physics, engineering and computer science.
2. **Tailoring training to individuals** – experience has shown training plans must be dynamic, evolving with individual needs. Identifying training needs must be a continuous process, starting with the initial contact candidates make prior to any formal application, and continuing to the end of their fellowship and beyond. Training must equip fellows with the skills to develop a successful career, not just to deliver a specific research project. Thus, plans will combine training in specific technical skills with broader cross-cutting skills development. An individually-tailored approach to training is vital for MRC SDFs, since fellows are likely to have a broad range of disciplinary backgrounds and

levels of postdoctoral experience. Training has several components, including: (a) selecting appropriate supervisors covering the fellow's areas of scientific and methodological interests; (b) research-driven topic-specific methodological training provided by the MRC Centres and possibly other London-based modelling and informatics groups; (c) access to MSc modules and other post-graduate/doctoral training courses provided by SPH, the Depts. of Mathematics and Computing and other Imperial centres; (d) technical and cross-cutting research and management skills training provided by Imperial's CPD and the PDC; (e) spending time working with world-leading collaborators in the UK and overseas.

3. **Interactive working to identify scientifically interesting, high impact, yet achievable projects** –Key to success is developing self-contained but not entirely isolated projects, identifying questions the fellow can lead on and take ownership of, but which contribute to wider disease or topic-specific research programmes. This maximises the interaction between fellows and other Centre researchers, allowing fellows to lead on their own projects but contribute to a range of others.
4. **Maximising external collaboration and engagement opportunities** – a key emphasis in developing research projects is to maximise their research and societal impact and the training and career development potential they offer. These goals are best achieved via projects which are collaborative with external research groups, combining both methodological and applied research and, where appropriate, offering fellows the opportunity to work with public health bodies or industry partners. It is a requirement for all applications to involve projects requiring fellows to spend substantial time (>6 weeks) with external collaborators and/or public health/industry partners.
5. **Equipping fellows for the transition to independence** – in addition to the career-development support (e.g. writing grant/fellowship applications, mock interviews, learning to supervise and manage a group) provided by the MRC Centres and the PDC, we will also ensure research projects are designed to give greater flexibility and responsibility to fellows as they progress.
6. **Effective feedback mechanisms and programme evaluation** – these will be essential for the SDF programme to be responsive to fellows' needs, to identify issues of potential concern before they become problems and to further refine and improve the training and support provided to fellows.

UNIQUE SELLING POINTS AND SUCCESS

The SDF programme will be distinguished by:

1. Delivery of training and research combining cutting-edge biomedical and methodological skills development in MRC priority areas with applications to topics of immediate public health policy-relevance, providing unique opportunities to interact with national and international research leaders and major public/global health partners;
2. Unique, coherent career-development support provided to postdoctoral researchers in the MRC Centres, delivered in association with Imperial's prize-winning PDC;
3. The ability to maximise the opportunity of SDF fellows for cross-department interaction via existing links SPH has across the university and by including fellows in the bespoke training and development events offered to the cross-faculty cohort of fellows funded via the Imperial College Research Fellowship scheme.

It's anticipated successful outcomes will include: (i) increased mobility between quantitative disciplines and biomedicine, (ii) equipping fellows for careers in biomedicine (indicated by: first-author publications in top specialist/high-impact generalist journals; experience working with external collaborators; success winning intermediate research fellowships or other research funding; or academic appointments); (iii) maximising the ability of fellows to deliver research with translational impact (indicated by fellows working on research topics of direct relevance to policy or industry, having gained substantial experience working with partners in public/global health organisations or industrial/product-development partners).

MANAGEMENT & GOVERNANCE

SDF PROGRAMME GOVERNANCE ARRANGEMENTS

- **Management Committee:** to be composed of the members of the academic leadership team, plus the administrative SDF host lead.
- **Recruitment process:** As well as advertising through scientific press and recruitment websites, the SDF programme management team will work with the Faculties of Natural Sciences and Engineering to target advertising at internal and top external departments and key professional networks in those disciplines. Recognising the potentially long lead-time required for candidates to identify supervisors and develop research and formal training proposals, advertising will begin 6 months before the internal application deadline, with potential applicants being encouraged to contact the SDF programme team as early as possible. To enable candidates to narrow their research interests in an informed manner, advertising will be accompanied details of supervisors available on the website; including their research interests as overlapping with the SDF research programme themes. Potential applicants are encouraged to contact potential supervisors as early as possible to enable as much time as possible to develop research and formal training proposals. Drawing on the administrative and academic resources of the two MRC Centres and the research vice-Deans of Medicine, Natural Sciences and Engineering, the SDF programme will also assist in 'match-making' candidates with potential supervisors where required. To mitigate the risk of internal candidates gaining a home advantage, we will avoid conflicts of interest on the selection panel, maximise provision of online material, use of Skype for contacting supervisors, and encourage and fund candidates to visit. A selection panel will be formed to assess applications, with representation from the two MRC Centres and other departments participating in the SDF programme. The panel will not include supervisors named on applicant proposals. At least two panel members will score each application. Shortlisted applicants will be interviewed by the panel, with the final ranking of applications being endorsed by the SDF management committee. Successful applicants may be advised to modify proposals prior to submission to MRC based on selection panel feedback.
- **Supporting fellows and monitoring programme performance:** Once selected, successful applicants will be supported by MRC Centres in submitting their proposal details to MRC. Upon starting their fellowship, and after discussion between the MRC Centre Directors and the fellow, each fellow will be assigned an academic mentor not involved in their supervision. Fellows will be free to request a change of mentor at any time. Initial training plans will be finalised following discussion and review by the fellow, the supervisors, the mentor and the relevant MRC Centre Training Coordinator. During their fellowships, fellows will be supported and provided training, research and outreach opportunities. In addition to supervisory meetings, mentors will be expected to meet with fellows every three months in the first year to track progress and identify any issues requiring resolution. Thereafter, meetings with mentors should occur at least every six months. The SDF programme committee will monitor the progress of fellows via confidential web-based surveys of fellows and supervisors, two in the first year of each fellowship and one in each of the second and third years. Supervisors and fellows will be expected to update training plans at least annually (e.g. as part of each fellow's PRDP) and to submit updated plans to the SDF management committee as part of a light-touch annual report on each fellowship (which will also include a summary of research accomplishments). By the end of the second year of each fellowship, fellows will be expected to have drawn up clear plans for next steps (e.g. applying for intermediate fellowships or academic posts), supported by their supervisors and the wider career development support mechanisms provided by the MRC Centres and Imperial College. Fellows will be given support in applying for follow-on grant or fellowship funding, including independent internal review and feedback on proposals and provision of mock-interviews. The SDF programme management committee will meet at least annually to individually review progress of each fellow and to evaluate

overall programme performance. In supporting fellows, the MRC Centres will continue to work closely with Imperial's PDC which provides career-development courses/workshops and follow-up one-to-one guidance and mentorship.

SELECTION OF SUPERVISORS AND PROJECTS

Academic staff wishing to be included in the supervisor pool must provide short details of their research interests that overlap with the SDF programme research themes. All SDF fellows will have at least 2 supervisors; the lead supervisor must be in one of the MRC Centres within Imperial and one must be from outside those Centres – drawn from the wider SDF supervisor pool within Imperial, CEH members at King's and St George's, and/or a key external project-specific collaborator. Membership of the supervisor pool will be updated annually. Applications will be required to involve fellows spending substantive time working with external collaborators and/or public health/industry partners. Development of projects is a joint responsibility between candidates and supervisors. Senior academic staff from both MRC Centres with experience of supervising SDF and comparable fellowships will mentor less experienced potential supervisors in developing projects and training plans with candidates. This approach will allow us to (a) recruit the strongest candidates to our proposed research themes while maximising project choice within these themes, and (b) give fellows a primary academic home in two internationally leading MRC Centres with deep experience of supporting research fellows through to independence.

FELLOWSHIP COSTS

The salary scale available is Academic and Research Family, Level B £36,800 (sp 29) - £40,840 (sp 33) at the estimated start date in October 2018, depending on experience. Incremental progression through the salary scale will be determined in accordance with Imperial College procedures. The available salary scale may be limiting for some candidates and so candidates already at the top end of the scale in terms of research experience and salary requirements should give this careful consideration before applying. Typically, up to a maximum of £5,000 p.a. contribution towards research, training, skills development, travel and working with collaborators for the three-year duration may be requested, if fully justified by the nature of the research. Exceptionally requests up to £10,000 p.a. will be considered but applicants must consult with both their proposed supervisors and the relevant Centre administration team before applying. Potential supervisors may also enhance the funds available to fellows using their own available funding. Budgets will be calculated based on the appropriate costs associated with the project and training programme requirements, and will be reviewed by the SDF Management Committee, and the appropriate Departmental Administration.

SUBMISSION OF FELLOWSHIP DETAILS

Once selected by the College, fellows will apply to the MRC individually for their fellowships via Je-S. The MRC Centres and SPH administrative team will provide administrative assistance to complete applications in a timely and accurate manner.

CRITERIA FOR SELECTING CANDIDATES

1. Academic excellence of the applicant

Although at an early stage of their career, the candidate should have demonstrated that they can deliver high-quality research and be able to show their potential as an independent researcher. Where the applicant is at the upper end of the postdoctoral research experience criteria (3 years post doc), the Review Committee should be confident that the SDF is an appropriate route for the candidate. The SDF scheme may not satisfy the salary expectations of those at the upper end or they may find the contract offered (Level B Academic and Research Family) limiting – i.e. it is a researcher contract, not an academic one.

2. Alignment with SDF programme research themes and wider objectives

Candidates should have research interests that address the core themes of Imperial's SDF award, namely infectious disease analysis and modelling, health informatics and health economics, as described more fully above. The themes have been designed to strongly align with the SDF priority skills areas of mathematics, statistics, computation and informatics, so candidates should be developing skills in at least one of these areas.

3. Novelty and feasibility of the research project proposed

Candidates should be addressing an important research question and have proposed a high-quality research programme to achieve their objectives. The originality and innovation of the proposal and its potential to contribute to the current understanding of the chosen research field should be considered.

4. Quality, coherence and feasibility of the proposed training plan and skills development goals

Training plans must be tailored to individuals: they should be dynamic, evolving with individual needs throughout the project, and should combine specific technical skills with broader cross-cutting skills development. Training plans may include research-driven topic-specific methodological training provided by the MRC Centres and possibly other London-based modelling and informatics groups. Fellows should also spend substantial time (>6 weeks) with external collaborators and/or public health bodies/industry partners. Training plans may be developed with input from potential supervisors prior to application, but for successful applicants these should be revised as the fellowship progresses according to need.

5. Ability of the research proposal to provide the opportunity of an independent career

Candidates are expected to propose achievable and realistic objectives that will provide the opportunity of an independent career in the future. Applicants who intend to remain working with their current supervisor will be required to demonstrate how the fellowship will allow them to develop their independence.

6. Appropriateness of the supervisor and host Centre

There should be adequate consideration given to the choice of supervisor from the available supervisor pool. Supervisors should ensure that there is suitable access to relevant equipment and space for the applicant's research proposal. It should be evident that the proposed supervisor recognises that the fellowship is to promote the growth and independence of the applicant. Supervisors should be able to dedicate time and resources to help nurture the career of the fellow.

6a Appropriateness of the co-supervisor

Consideration should be given to the choice of co-supervisor. Co-supervisors should ensure that there is suitable access to relevant equipment as appropriate for the applicant's research proposal. It should be evident that the proposed co-supervisor recognises that the

fellowship is to promote the growth and independence of the applicant. Please consider carefully, any supervisors that may be part-time or not fully based at the College campuses.

INTERVIEWS

Interviews should be conducted using the guidance from HR
<http://www.imperial.ac.uk/human-resources>

The interview format usually consists of a short presentation from the applicant, followed by questions. Interviews should be approached as an interview for fellowship funding with the College acting as a funding body rather than a job interview. It is expected that the research will have been reviewed and the aim at interview is to ensure that the candidate shows potential for independence and could act as an ambassador for the College and this fellowship scheme in particular. It is useful to find out at interview stage if the candidate has applied for any other fellowships so we can be aware when making offers of award.

It is important to ascertain the candidate's vision for their career management for the term of the fellowship and beyond (there is no expectation that fellows should remain at Imperial past the terms of the fellowship). The SDF scheme is an opportunity to bridge from a post-doc career to an independent research career and it is expected that those receiving funding would take full advantage of this.

It is also important to investigate the appropriateness of the match between candidate and Supervisor. This relationship will be of particular importance to the experience of the fellow whilst at Imperial. Supervisors are required to promote the growth and independence of the fellow by acting as a mentor and contributing to their career development. It is also their responsibility to ensure that

- regulatory and legal requirements are met in order to conduct the research;
- necessary licenses and approvals have been obtained before the research commences;
- necessary equipment is in place.

When scoring the candidate at interview please take into account the benefits of this scheme to the candidate (i.e. that the opportunities provided by the scheme will be fully exploited) and the benefits of the candidate to the Centre, Department, Faculty and/or College.

Practicalities:

- Standard/economy public transport fares within the UK can be reimbursed from MRC Centre funds on receipt of travel tickets.
- Keep copies of documentation i.e. authorisation to work (as prescribed in the Immigration,
- Asylum and nationality note) and certificates until the outcome of the interviews.
- Feedback should be provided by the interview panel to all candidates reaching the interview stage.