

RESEARCH AND IMPACT STRATEGY

1. The Institute

The Institute of Life Course and Medical Sciences brings together two of the Faculty of Health and Life Science's major clinical disciplines: Medicine and Dentistry, with areas of internationally recognised research excellence in Cardiovascular and Metabolic Medicine, Musculoskeletal and Ageing Science, Women and Children's Health, and Eye and Vision Science.

Our research benefits the local, national, and global health economy by producing translational research resulting in novel treatment and intervention. Our staff are world-leading research scientists and clinicians, and our teaching is built on their wide reach and expertise ensuring translation of laboratory research to the bedside. Our graduates are equipped with the knowledge skills and values essential for a confident medical and dental career in a 21st-century healthcare environment.

1.1 Departments and Schools

Department of Musculoskeletal and Ageing Science (MAS)

MAS uses advanced facilities and techniques to focus on new ways of understanding, treating, and preventing the age-related conditions of skeletal muscle, bone, joints, cartilage, tendons, and ligaments

Department of Eye and Vision Science (EVS)

EVS works to transform our understanding of the eye and the process of 'seeing'. Working from cornea to cortex, and from bench to bedside, to uncover how basic mechanisms, processes and structures relate to vision

Department of Cardiovascular and Metabolic Medicine (CMM)

CMM unites world-leading researchers and clinical specialists in cardiovascular science and metabolic medicine to address the causes that lead to cardiovascular and metabolic diseases. Multidisciplinary research will focus on applied health and translational research to improve health outcomes and reduce the burden of disease, locally, nationally, and internationally.

Department of Women's and Children's Health (WCH)

The department investigates the conditions, diseases, and physical changes specific to women and children, as well as advising on policy to promote a higher standard of health among the population through infancy to old age.

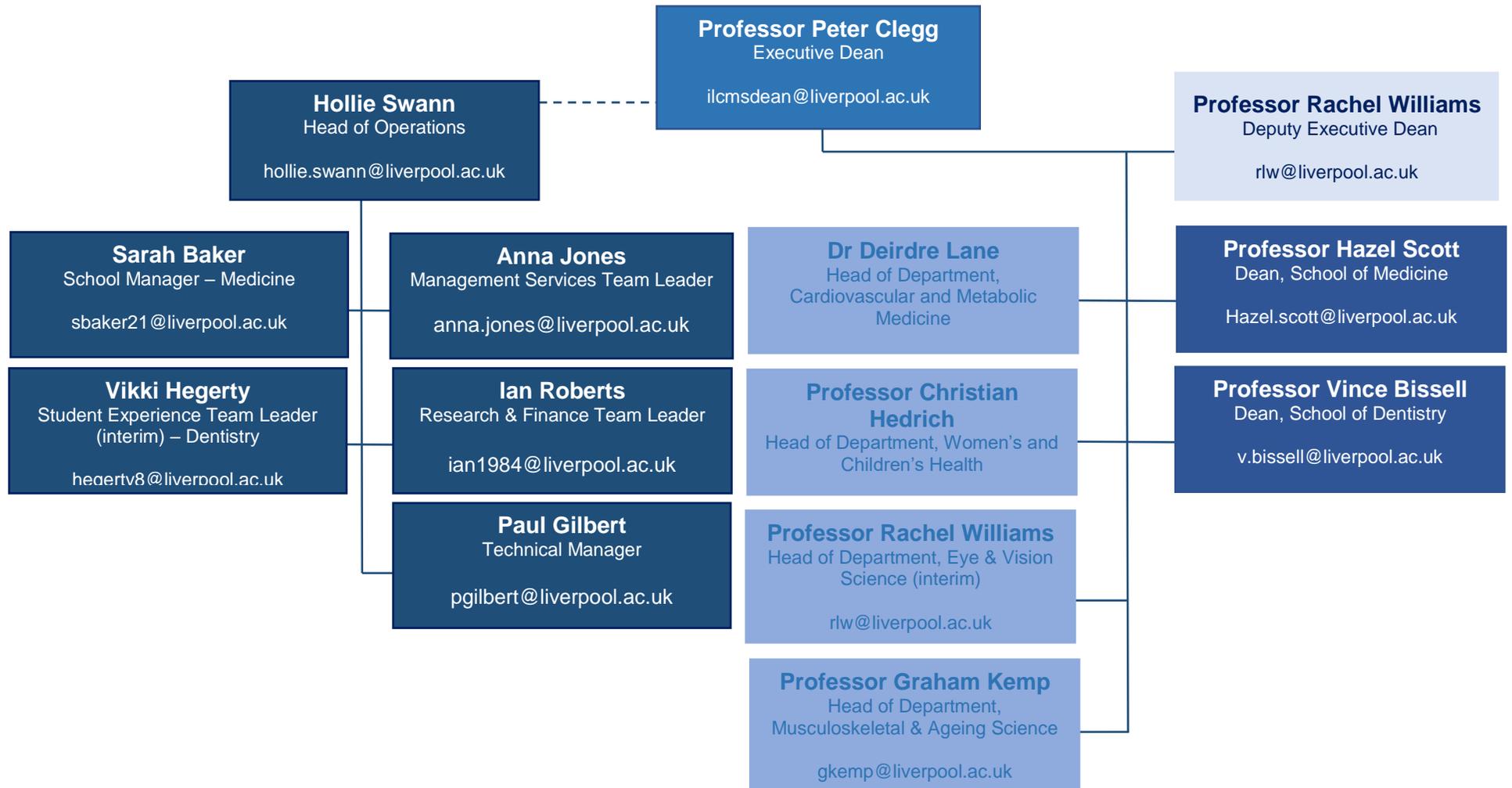
School of Medicine

The School of Medicine develops doctors throughout their careers, enabling them to use the latest technology and understanding to provide exceptional care. The School delivers teaching for both undergraduate and postgraduate students.

School of Dentistry

The School of Dentistry utilises a multi-skill laboratory and world-leading teaching staff to ensure that the considerable number of undergraduates at the school receive the absolute best training, preparing, and supporting them on the pathway to success.

1.2 Institute Leadership Team



1.3 Institute size and shape

| Staff Role | No. (headcount) |
|--|-----------------|
| Academic Research Only | 71 |
| Academic Teaching and Scholarship | 41 |
| Academic Teaching and Research | 48 |
| Academic Teaching Only | 36 |
| Clerical | 76 |
| Clinical Academic Research Only | 7 |
| Clinical Academic Teaching and Scholarship | 75 |
| Clinical Academic Teaching and Research | 39 |
| Clinical Academic Teaching Only | 85 |
| Nurse | 2 |
| Professional Management Specialist Admin | 58 |
| Technical | 34 |
| TOTAL | 572 |

2. Vision and Strategy

2.1 Vision Statement:

“To advance the place of the Institute as a world-leading comprehensive centre for life course centric basic, clinical and translational research, transforming the health of all by developing and implementing an integrated, research strategy with ground-breaking research at its root”

2.2 Our Strategy is to further develop and sustain research excellence in themes where we have significant critical mass of outstanding researchers and infrastructure.

2.3 Ambition Statement:

A global institution for life course research.

- Research is for everyone; all staff should be involved in research
- Seamless integration between research and teaching
- Infrastructure design (physical and organisational) and development to enable our ambition.

2.4 Research Themes:

Our Research Strategy is built around the following research themes:

- Research Culture
- Stakeholders
- Partnerships

- iv. People
- v. Infrastructure

i. Research Culture

Strategy for improving research culture

New opportunities

Major strategic opportunities have been highlighted in the SWOT analysis below.

We will develop new cross-department collaborations, including novel areas for translational research with clinical colleagues in medicine, dentistry, and veterinary science to exploit our expertise and build internationally leading teams in areas identified in the SWOT analysis, resulting in translational impact.

The weekly ILCaMS Seminar Series highlights expertise within the institute and features international expert collaborators from all departments. We provide grant mentoring through the Institute Research Support Group (RSG) but also specific training for Early Career Researchers (ECRs) and those who have not been successful in recent grant funding applications. We are planning a series of 'Sandpit' events to develop new cross-disciplinary research ideas, which will be underpinned with pump priming funds. Furthermore, we are engaging with Liverpool Health Partners (LHP) programmes to enable and catalyse collaboration across institutions within the Liverpool city region. Up to date funding opportunities are distributed to staff weekly via the Research Professional emails which are tailored specifically to individual staff research strength areas.

Funding priorities – SWOT Analysis

A SWOT analysis for each department has been undertaken and collated into an institute SWOT, overleaf

STRENGTHS

- Strong clinical and non-clinical collaborations with translational impact across key areas including:
 - Women's and Children's health (inflammation/rheumatology, Wellbeing for preterm births, integration with LHP 'starting well', active phase II/III clinical trials and input into NICE guidelines)
 - Cardiovascular and Metabolic Medicine (stroke, cardio-renal, -oncology, -respiratory, drug cardiotoxicity, inherited disorders, bioengineering, stroke, diabetes, obesity, data science and epidemiology)
 - Ophthalmology (AI/image analysis/diagnosis and prognostic modelling, biomaterials, infection, inflammation, fibrosis and wound repair, Inherited disorders and RNA-based therapeutics)
 - Dentistry (pulp therapy, inflammation, oral cancer, bioengineering)
- Potential for cross-department collaboration in key areas including:
 - Ageing science in areas including all musculoskeletal tissue, cardiovascular and eyes
 - Inflammation, wound repair and scarring
 - Molecular, genetic and epigenetic mechanisms of disease
 - Role, composition and treatments using extracellular vesicles
 - Bioengineering (of tissues, biomaterials, in silico modelling, regenerative medicine, gait analysis)
 - *In vitro*, *ex vivo* and *in vivo* models (including multi-cell cultures, gastruloids, in silico, genetically modified mouse models)
 - Epidemiology using quantitative and qualitative methods
 - Disease diagnosis and risk stratification using AI and big data
- UoL Centres (EATC4C, Harris Centre, LCCS, CIMA)
- Good industrial collaborations across several areas
- Excellent cross-faculty collaborations including locally and NHS
- Research addresses local, national & global health challenge
- Internationally recognised education scholarship (SoM and SoD)
- Extensive engagements with public and patient groups and stakeholders
- Biobanks for human and animal-related studies

WEAKNESSES

- Wide variation in Departmental size (MAS large, EVS and CMM small)
- Limited large programme-type grants, partly due to lack of UoL infrastructure to support (i.e., Horizon Europe)
- Over-reliance on charity funding
- Limited UKRI and industrial funding
- Geographical spread of Departments leading to lack of integration
- Limited clinical input to MAS although 'one medicine' approach with vets is good
- Existing strengths too narrow in some areas
- Limited number and seniority of academic staff in WCH and CMM able to lead larger grants with clinical academics and enabling academic pipeline
- Limited industrial collaborations in some areas (MAS)
- Relatively low impact publication area (MAS, EVS, Dentistry)

ILCaMS SWOT analysis

OPPORTUNITIES

- Potential to develop strong collaborations across Departments with strong RSG support for large grants (inflammation/fibrosis/wound repair, epigenetics, bioengineering, in vitro/ex vivo/in vivo models)
- Continuing focus of government research strategy on ageing-related issues including sarcopenia
- Potential of research output to lead to impact (including impact case studies)
- Significant number of honorary clinical posts across all levels including new consultants (St Paul's) being encouraged to have a more proactive input into the Institute
- Large number of ECRs with strong mentoring scheme in place to support their development leading to growth across all areas
- State-of-the-Art facilities (WHD, Inst in the Park) with the possibility of sharing of facilities across the whole Institute
- Excellent integration with specialist trusts (Alder Hey, Heart and Chest, Women's, Walton, LUFT) leading to a growth in our clinical impact
- Access to clinical and post-mortem samples (WCH, Liverpool Eye bank, Leahurst) underpinning grants and attracting external collaborators
- Good MSc/MRes pipeline to PhD students
- Strong PhD, DSc, ACF and ACL with potential to build strong PGR community
- New PGT under development with shared modules across Departments
- Enthusiasm to build on scholarship activity across SoM and SoD with access to excellent data sets
- Strong national and international collaborations across many areas with specific connectivity with Malawi (WCH, EVS) to underpin research in global healthcare challenges
- Cross-department expertise with potential to lead to new RNA- and EV-based therapeutics including basic science, clinical and industrial partnerships

THREATS

- Increased teaching loads
- Major clinical commitments of many of the clinical academics, at both SL and Professorial level
- Lack of commitment and investment in current NIHR ACLs in establishing Clinical Senior Lecturer positions
- Lack of understanding within T&S community of scholarship
- Very poor communications via lack of progress on external and internal website
- Tough funding landscape
 - Charity loss of finance
 - Loss of ODA funding
 - Lack experience in EU funding
 - Fewer funding opportunities for PhD studentships
 - Lack of information on UKRI/ARIA/EU funding landscape
- End of funding for CIMA
- Longer-term impacts of COVID-19 and unequal impacts on individuals.
- Low staff morale due to COVID-19 and Project SHAPE
- Concern around our ability to attract / retain brightest and best staff following BREXIT
- Over-reliance on grant income from a small percentage of staff
- Lack of institute input into infection although some pockets of infection research exist
- Lack of timely support from RSO and Legal and Contracts
- Although access to high specification equipment for 'omics research is available through the SRF the pricing is not competitive with external sources and the facilities for immunology techniques is not broad enough
- Access to support from the Clinical Trials Centre is limited
- Lack of timely support for approval of sponsorship of clinical trials
- Succession planning necessary

The SWOT analysis highlighted potential areas for focused research and cross-department collaboration:

- Ageing science in areas including frailty, all musculoskeletal tissue, cardiovascular and eyes
- Inflammation, wound repair and scarring
- Molecular, genetic and epigenetic mechanisms of disease
- Role, composition and treatments using extracellular vesicles
- Bioengineering (of tissues, biomaterials, in silico modelling, regenerative medicine, gait analysis)
- *In vitro*, *ex vivo* and *in vivo* models (including multi-cell cultures, gastruloids, in silico, genetically modified mouse models)
- Epidemiology using quantitative and qualitative methods.
- Expertise in experimental animal surgery and anaesthesia through collaborations with clinical veterinary staff at Leahurst Campus.

Scientific Advisory Board

We will develop an Institute Scientific Advisory Board to act a 'critical friends' to help us focus our research strategy targeting research themes where we have identified strengths but aligned to present funding landscape. They will constructively critique our strategy in order to improve our competitiveness. The board will consist of national and international experts from a wide variety of backgrounds including basic science, clinical science, translation and industry. There will be 5-6 members and will meet twice yearly.

Longer and larger grants

ILCaMS recognises the need to apply for longer and larger grants. We have identified several funding streams for these types of high value grants and this list will be circulated annually to staff (UKRI/Wellcome/Horizon-EU). In addition, staff are informed of any Horizon-EU-related events and encouraged to be part of this scheme and we will identify staff with the relevant track record/capacity. We will provide support in a variety of ways; by focusing development on activities for all staff but in particular ECRs around key areas which could be competitive; organisation of sandpits to bring people together; freeing up time/capacity through teaching sabbaticals; focus on development activities to build track record (particularly ECR); providing support for staff with caring responsibilities. We recognise issues around small number of staff with relevant track record/infrastructure support for large grants in particular EU grant schemes. Additionally, there are issues with capacity for those with experience due to other roles/responsibilities. There is currently a lack of infrastructure support to develop EU bids. This is a problem as there are several members of staff with experience in securing EU funding, but lack of an EU office means that we cannot lead a bid (only as co-PI).

Mentoring

In PDRs mentoring is discussed, and institute members are made aware of various mentoring schemes (university, professional and through societies) and encouraged to be mentors as well as attain mentors for themselves.

Mentoring for grants and fellowships at writing stage through RSG but also post award to debrief and determine plans to move the research idea forward.

For PDRAs there is the opportunity (and we encourage) to enrol in PROSPER. PROSPER's goal is to open up the huge talent pool that exists within the postdoctoral research community, to the benefit of postdocs themselves, Principal Investigators, employers and the wider UK economy. PDRAs are annually supported by an independent review outwith their direct PI line management to ensure support and direction is being offered in terms of future career opportunities.

Peer review through Institute Research Support Group

The Institute Research Support Group (RSG) is responsible for reviewing and providing peer review for research funding applications. RSG considers renewal of existing, and request for new equipment and makes recommendations to Research Strategy Committee (RSC). Meetings are monthly and regular agenda items include evaluation and panel/mentoring recommendations for grant applications over £250,000. ILCaMS staff writing grants for less than this do not have to submit an RSG form for approval by the committee but can ask for mentorship or help if required. The EDIW lead will be invited to the RSG meetings to provide advice in this area for grant applications and training.

The RSG membership includes formal representation from the constituent Departments, Professional Services Teams and Research Directorate. Researchers are encouraged to submit an RSG form as far ahead of the application deadline as possible to be provided with the best support. At RSG meetings the committee members suggest academics to support the application. This may be in the form of reading and commenting on the main application or discussing the grant application at a panel meeting. When necessary 'mock' panel interviews are given to applicants. For MRC applications a faculty peer review process is available.

Whilst peer review is a requirement for bids >£250,000 we will offer peer review support for all that request it via our Research Support Group and all grants less than this value must fill in a separate Research Support Group form.

Simple Grant Submission

We will follow the Faculty guidelines for submitting a grant which includes peer review. We have developed a flow chart (below) to aid researchers;

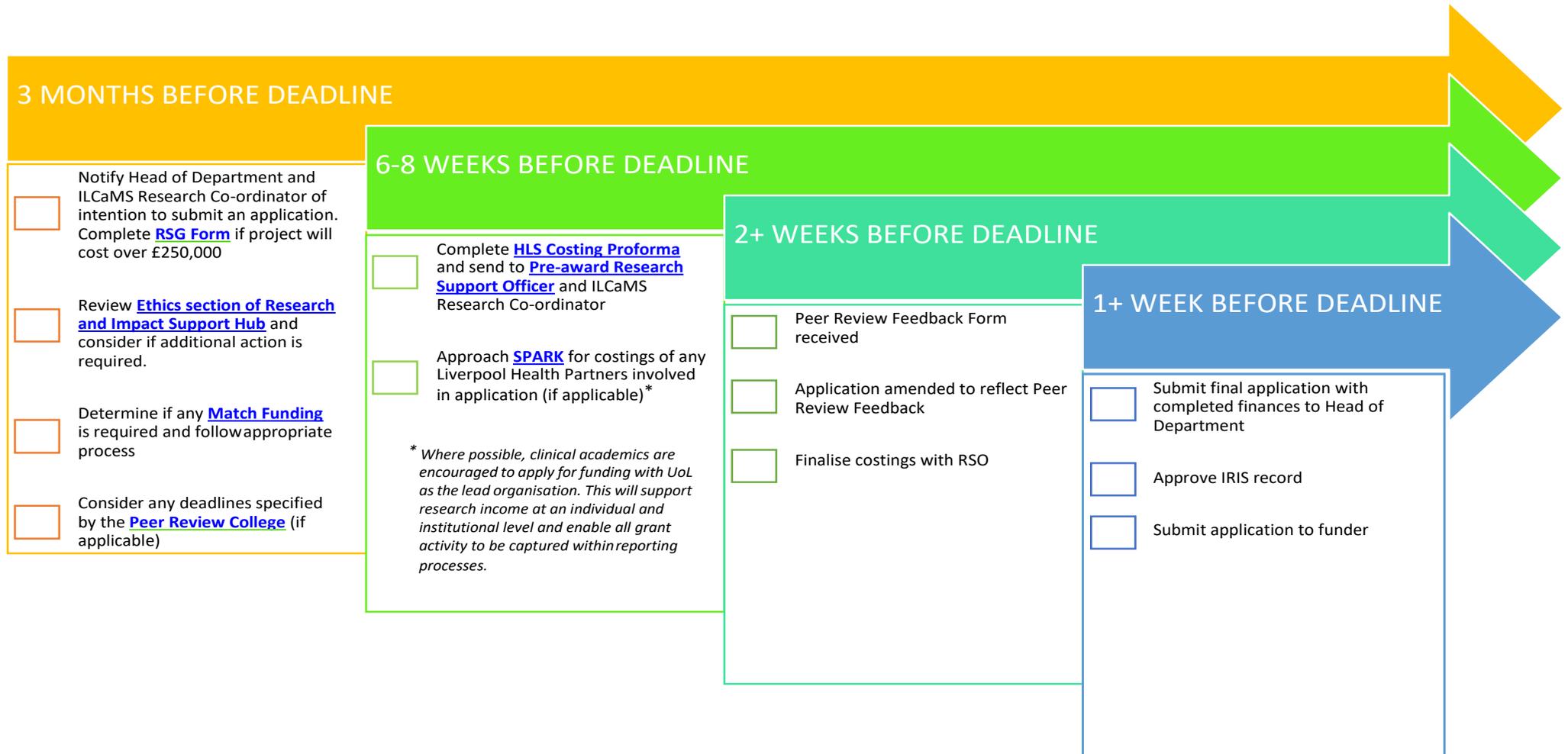


Figure 1 - Timeline Overview: UoL Research Grant Applications

Research outputs

We will develop a broader focus, including Institute processes to improve output quality and impact case development.

Our strategy is to further develop and sustain research excellence in themes where we have significant critical mass of outstanding researchers and infrastructure. We have appointed a reading programme lead, Professor Eithne Comerford. This role will ensure that we continue to deliver high-quality, research output across our Institute. The Reading Programme lead will work closely with Professor Mandy Peffers, Institute Research Lead, and our Heads of Department to monitor our research outputs and develop a strategy to support and enhance our research output portfolio. We will endeavour to involve all grades of staff to contribute and advise the Reading Programme Lead. This person will establish a reading team, including at least one ECR, assess and score research output from academic staff using REF benchmarks and develop a programme to support and mentor academic staff to enhance the quality of research output from the Institute. The Reading Programme Lead team will offer presubmission advice on papers in preparation in order to spot potential areas for further experiments to increase impact or change journal direction. The Reading Programme Lead will also develop an institute authorship policy so that everyone who has contributed to a research article is recognised as an author or through acknowledgements including technicians, professional services, students. They will also develop a 'tips' document to improve output quality.

Research impact

We have appointed an Impact Lead, Dr Yalin Zheng. This role will ensure that we continue to promote awareness of impacts, improve culture, support potential cases and deliver high impactful cases across our Institute. The Impact Lead will work closely with Professor Mandy Peffers, Institute Research Lead, and our Heads of Department, Faculty impact team, to monitor and identify our research cases and develop a strategy to support and enhance our impact cases. The lead will establish an impact team, including at least one rep per department, promote use of Elements, capture emerging impact, update and triage Elements records. The lead will promote awareness and promote culture of impact in the form of Newsletter, events (e.g. Institute seminars and Impact matters) & email. The lead will attend departmental meetings and make sure impacts will be an agenda for PDR/Portfolio. The lead will offer advice on case development and help to seek Faculty/Institute support for further development and evidence gather to increase impact.

Networks/away days/focused social meetings

We will facilitate research discussion and collaboration through engagement with UKRI networks, our seminar series and Institute away days.

We will make the most of our three successful bids for BBSRC/MRC funded ageing networks to enable further collaborations, potentially leading to grant applications. These include;

- 'Extracellular matrix aging across the life course interdisciplinary research network' – Dr Elizabeth Laird (MAS)
- 'MRC Network for Musculoskeletal Ageing' led by MRC Lifecourse Epidemiology Centre (LEC) but including CIMA, MRC Versus Arthritis Centre for Musculoskeletal Ageing Research (CMAR), MRC Integrative Epidemiology Unit - Bristol, MRC Epidemiology Unit – Cambridge, and MRC Lifelong Health and Ageing Unit – UCL.

- ‘An interdisciplinary ageing alliance: cellular metabolism over a life-course in socioeconomic disadvantaged population’ Queen Mary University of London, London School of Hygiene and Tropical Medicine, University of Liverpool (Aphrodite Vasilaki, co-applicant).

Seminars and Away Days

The ILCaMS Seminar Series, organised by Drs Sunil Logantha, Masoud Isanejad and Professor Christian Hedrich runs weekly institute seminars, which include international external speakers presenting their work across a range of areas relevant to ILCaMS. Faculty Impact Matters seminars are embedded within the series. Staff are encouraged to attend and PGR students are requested to attend as many as possible.

Liverpool Centre for Cardiovascular Science (LCCS)/CMM have a separate seminar series, which have attendees across a number of HEIs and NHS Trusts. The LCCS seminar programme (once per month) is followed by brainstorming with speaker and interested parties to discuss research ideas. All CMM staff and students attend.

The CMM department also has research collaborative groups (cardio-stroke, cardio-renal, cardiology-surgery, cardio-oncology) that meet quarterly. There is an annual LCCS workshop with attendees from across HEI, Trusts, charities with breakout sessions to facilitate research discussion.

An annual institute away day takes place each summer, the date is set at the beginning of the academic year, to enable maximum attendance, particularly for clinical colleagues, and the agenda has input from staff across the Institute. It is a mix of strategic development and a non-work/ team building tasks. The winners of the ILCaMS Staff Awards are also announced during the day.

We plan to hold an annual Academic Away Day to promote collaboration (and new grants) and discuss our institute research strategy and examples of best practice in research.

Our ECRs have a weekly online coffee meeting organised by the ECR lead.

We will develop facilities (such as online coffee mornings, lab visits) and activities to foster social connection across sites.

Communication policy

We are developing a communications strategy that ensures all stakeholders can rely on consistent and regular communications, including: grant calls, recent successes, challenges and improvements. We are working to improve communication and feedback mechanisms between the Faculty’s Research and Impact Directorate, group-based research teams and clinical teams that enables individuals and groups to identify and resolve issues of concern, develop relationships and celebrate success.

Current communication methods:

| What? | Who? | When? | How? |
|-------------------------------|--------------------------------------|-----------------|---|
| General updates and good news | All Institute Staff and PGR Students | Weekly (Friday) | Weekly Bulletin, put together by the HLS Comms Team. Items to be sent to hlsfacultynews@liverpool.ac.uk by 12 noon on Thursdays |

| | | | |
|---|--------------------------------------|---------------------------------------|--|
| Good news and highlighting external events | Social Media Audience | Ad hoc | Twitter |
| Strategic Committee decision making and key discussions | All Institute Staff | Following Strategic Committee Meeting | Via the Weekly Bulletin |
| Quarterly All Staff Meetings – General Update from the EDIW and key topic for discussion | All Institute Staff | Quarterly | Via Zoom – recording saved to ILCaMS Intranet |
| ILCaMS Away Day Development and networking Presentation on key topics with break out groups. Non-work activity | All Institute Staff | Annual | In person full day meeting usually off campus. |
| Intranet Site Host forms and key pieces of information for staff and students including specific section for new starters | All Institute Staff and Students | n/a | Intranet site |
| Urgent/ very important Updates Include safety / lab or access related updates Changes to key senior staff (IMT level) Important events and requests for support | All Institute Staff and PGR Students | Ad hoc | Via Executive Dean of ILCaMS Email Address If relating to the building – staff on site will walk the building Signage in buildings put up where relevant |
| Weekly Seminar Series | All Institute staff and students | Weekly – Wednesday Lunchtime | Via Zoom to maximise attendance. Recordings uploaded to intranet site following the meeting here |

Institute strategy to support additional challenges

Post-Covid-19 recovery

Through our PDR discussions we are identifying researchers for whom COVID-19 had the highest negative impact. They are signposted to funds available via Wellcome ISSF.

Underrepresented groups

Additionally, we provide support for other underrepresented groups through our EDI activities. We will follow advice following the outcomes of Project [RISE \(Research in an Inclusive and Sustainable Environment\)](#), which is currently canvassing ideas, insights and opinions from colleagues from across the Institution, from both Academic and Professional Services backgrounds, to help address the challenges research-related staff may be facing.

Engagement with the Faculty Researcher EDIW Toolkit project

We will engage with the emerging EDIW Toolkit. We have an EDI representative on our Research Support Group.

ii. STAKEHOLDERS

Drive knowledge and understanding of both the Institute's research portfolio and priorities.

- Open opportunities for patients to access research wherever they are treated or in contact with our research centres.
- Make finding information about our research and innovations easy, by redeveloping our web presence, undertaking social media campaigns and developing other communication methods in a sustained manner.
- Work with patients, relevant national bodies and other collaborators to review and rationalise the current research consenting process (in particular for use of data) to ensure that it reflects information governance requirements, improves patient awareness of how data may be used and reduces administrative complexities and delays.

Public and Patient Involvement (PPI)

Public Involvement in research is key to ensuring that our research remains relevant and addresses questions that are important and improve health. Within veterinary research, a number of public client/patient involvement panels have been set up (equine musculoskeletal diseases and canine musculoskeletal diseases).

Within the Institute we will continue to develop our PPIs. Currently these are within specific institutes and research areas to maximise the benefits of such panels. For example, within CMM we convene disease-specific and/or project specific patient and public discussion groups to actively involve members (patients, families, caregivers, health and social care users) in discussing and developing research ideas and projects and include interested members as co-applicants and/or Patient Advisory Groups on grant applications. We also collaborate with the ARC NWC Public Advisors and local and national charities and patient organisations to develop research ideas and further strengthen and enrich our research teams.

Through our musculoskeletal Patient Involvement Panel (PIP), we are increasing awareness of patient involvement in research. The aim of the PIP is to facilitate public and patient involvement in grant applications and on-going projects, focusing on musculoskeletal and ageing themes. The panel is made up of patient partners from diverse backgrounds, all of whom are living with arthritis. The PIP was established in 2017 by Liverpool Health Partners and organisation of the group was taken over by Dr Helen Wright in ILCaMS (then IACD). Currently, patient partners are asked to review a variety of research proposals from a patient perspective to provide input on study design and development of specific research questions. The panel meet three times per year and these meetings provide a forum for researchers from the institute to present project concepts and ideas for discussion and feedback. The panel may also provide feedback on lay summaries and patient information sheets for grant or ethics applications where required. Since 2020 the PIP has met via zoom and this format has meant that the size of the group has increased. We now have PIP members who have been diagnosed with a range of musculoskeletal conditions including people who have undergone joint replacement surgery for osteoarthritis and those who take biologic therapies for severe inflammatory arthritis.

We work closely with the Patient and Public Involvement in Eye Research Group (PPIER) which is an advisory group which helps shape the direction of research priorities and informs the design of eye research across St Paul's Eye Unit and the University of Liverpool's

Department of Eye and Vision Science. Membership of the group is open to people with all types of eye conditions, their carers and members of the public as well as health professionals from St Pauls Eye Unit and the University Department of Eye and Vision Science. The PPIER group has been in existence since 2011 and has a patient Chair. The group meets at least four times per year and has experience in providing a patient perspective for grant applications, providing letters of support and comments on study protocols and patient experience information materials. It also helps to set research priorities, inform design of clinical and research studies, and gauge acceptability of proposed treatments.

The Institute has also organised patient involvement seminars, including talks from the local CLAHRC and the University of the West of England Bristol, the latter focussing on patient partnering on research grant project management teams, with presentations from both the researcher and the patient partner.

Researchers who have been successfully awarded funding following review by our PIPs can report back to the group during the lifetime of the research grant, to update the patient partners on the progress of the research, and to generate discussion about future directions of the project. We also encourage our PhD students to engage with our patient partners by presenting concepts in basic laboratory science at our PIP meetings. This activity has been led by a CIMA PhD student. In addition, we invite our annual cohort of CIMA MRes students to give flash talks to the PIP, and this has been very well received by the patient group generating a lot of interest and providing a snapshot of the broad range of research topics within ILCaMS.

The Institute has recently advertised for a Public Engagement Lead, who will develop Public Engagement activities which will engage some of our stakeholders (public, patients, animal clients) but also enable training of our students in this area.

iii. PARTNERSHIPS

Key external partnerships will be through established centres (CIMA; Newcastle University and University of Sheffield; EATC4Children; Universities of Bristol and Sheffield) but also through the newly granted BBSRC/MRC ageing networks; (MRC CLUSTER: Manchester and GOSH) and NIHR Clinical Research Facilities (Royal and Alder Hey) and BRC involvement (GOSH-lead Excellence in Paediatrics Network).

Hosted Centres

Medical Research Council Versus Arthritis Centre for Integrated Musculoskeletal Ageing (CIMA)

<https://www.cimauk.org/>

The MRC-Versus Arthritis UK Centre for Integrated research into Musculoskeletal Ageing (CIMA) is a collaboration between researchers and clinicians at the University of Liverpool, University of Sheffield and Newcastle University. We are funded by the Medical Research Council and Versus Arthritis (formerly Arthritis Research UK). The Centre was established in 2012 and its success was recognised by the renewal of its funding in 2017.

Liverpool Centre for Cardiovascular Science (LCCS)

<https://www.liverpool.ac.uk/health-and-life-sciences/lccs/>

The Liverpool Centre for Cardiovascular Science (LCCS) is a strategic research platform, bringing together world-leading research and clinical specialists in cardiovascular science. The University of Liverpool, the Liverpool Heart and Chest Hospital Trust, Liverpool John Moores University and Liverpool Health Partners have allied to tackle the stark issue of cardiovascular health in the North West.

Experimental Arthritis Treatment Centre for Children (EATC4Children):

<https://www.liverpool.ac.uk/eatc-for-children/>

The EATC4Children was created in 2014 following an award by Arthritis Research UK (now Versus Arthritis), along with the University of Liverpool, Alder Hey Children's Charity, and Alder Hey Children's NHS Foundation Trust. The EATC4Children is fully integrated with both national and international efforts to drive forward the translation of knowledge from molecular studies to patient care and back. The EATC4Children was renewed in 2019 following a competitive application process (Versus Arthritis).

Harris-Wellbeing Preterm Birth Centre:

<https://www.harris-wellbeingresearchcentre.co.uk/about-us/>

The Centre is home to a research programme aimed at improving understanding of what causes preterm birth and what can be done to prevent it. Preterm birth is the single biggest cause of neonatal morbidity and mortality in the UK and worldwide. The central hypothesis of our research centre is that preterm birth has a wide range of causes, which if present in a particular configuration will contribute to preterm birth.

The institute will engage more with the university's international partnerships as historically the institute has not engaged with the university's international partnerships a great deal. We will hold annual workshops to advertise these schemes to researchers

iv. PEOPLE**Develop our people so that we are capable of anticipating and delivering current and future research and innovation needs.**

Attract and retain staff focused on Research and Innovation by enabling progression and development at all stages of their career;

Where researchers with poor grant performance, or those who have not been submitting grants recently, we will develop a 'coaching' approach supported by the academy. We will encourage staff training in coaching so that we have a pool of individuals to support researchers. Coaches are different to mentors as the process helps the "coachee" to explain the problem (ie why not writing any grants), identify the solutions and set plans in motion. Action learning sets may also be useful for some cohorts of staff, perhaps as a debrief post unsuccessful grant/paper submission.

Increase the amount of impactful research being undertaken across professional groups. Develop a consistent model for recruitment and development of fellows within the Institute to drive significant increase in both the number and output of fellows.

The institute will embed the principles of the Researcher Development Concordat and will promote awareness of the UoL 'Concordat Action Plan' and 'Statement of Expectations' to all research staff. As an institute we will commit to ensuring that our progress against the UoL Concordat Action Plan is monitored and recorded.

Fellowships

- Acknowledge the potential future skills gap in academics by developing strategies to encourage individuals both inside and outside the organisation into fellowships.
- Increase the number of fellows across departments, creating a broad cohort of fellows to advance the Research and Impact of the Institute working with

departments, and the Faculty Research and Impact Directorate to ensure appropriate marketing and communication of fellowship availability.

- Ensure that the research outputs of the fellows are identified and monitored to ensure best value is gained for investments made.
- Develop consistent administration and support process for fellows prior to and during their time at the Institute, and ensure fellows take part in the Institutes Exit process so that recurrent issues and concerns can be addressed.

We are currently creating a fellowship panel from across the departments to proactively identify people we believe should be applying for fellowships. The panel will also include a PDRA and ECR representative, professional services (through one of our Research Support Officers), and EDIW representation. We will support candidates applying for fellowships but importantly we will identify potential fellows early on so that we can aid in their research and CV development. We will continue to provide mentor, peer support in our Research Support Group and signposting to the UoL fellowships resource.

<https://www.liverpool.ac.uk/intranet/health-and-life-sciences/research/fellowships/>

An extensive list of fellowship opportunities is available on the site which is searchable by career stage. Researchers considering applying for fellowships will be encouraged to discuss this with you're their Head of Department at the earliest stage.

Enable training opportunities to be accessed by all

Obligatory training modules are flagged to staff via the induction process. Staff are also reminded through an automated email when their obligatory training requires renewal. IT access is removed where staff have not completed some of the obligatory training modules and line managers will follow up with individuals. The ILCaMS induction pack highlights the obligatory training requirements locally.

Additional training opportunities will be communicated to all staff, as well signposting to other training opportunities; unconscious bias, research integrity, neurodiversity, microaggression, EDIW, mental health first aid.

Develop an internationally competitive range of learning and development opportunities

Qualifications

- Align with other institutes to facilitate cross-disciplinary and cross-institute collaboration with fellow researchers, providing extensive pastoral and practical support and continued professional development.
- Develop masters-level qualifications (e.g. MSc,) within the Faculty and potentially other interested parties that create a pipeline of talent that can then be used by the organisation to further expand its research capacity
- Work with DTPs to support cross-training of researchers (Masters and PhD degrees and specialty Fellowships) and the co-mentoring with the pairing of data scientists with basic, translational and clinical researchers.

Training

- Develop with the Academy formal pathways and packages of training
- Work with the CBF to develop generic data skills offering at all levels from beginning to advanced levels across all staff groups.

- Work closely within specialties, and the international team to develop structured learning, externships, and other opportunities to be made available nationally and internationally which showcase our knowledge and abilities.

Develop resilient and successful Early Career Researchers (ECRs)

The Institute ECR lead communicates with ECR groups in other institutes to share best-practice, foster collaborations (need better mechanisms for this), and bring up faculty-wide issues at ECR leadership group.

We will develop a 'buddy system' to help new ECRs integrate into the Institute and working on improving our on-boarding system to prevent new ECRs from falling through the cracks (e.g., left off email lists, missing opportunities, left out of collaborations). We will establish better communication between HR and Department representatives to identify new ECRs and match them with buddies before their first day. HoD and ECR reps will collaborate to identify an appropriate staff member to act as a 'buddy'. This peer-buddy system could easily be adapted to any new staff member.

We will revise our orientation and on-boarding material to better cover essential information for new researchers and signpost them to further resources

Currently weekly coffee socials help build supportive community environment and problem-solve with peers.

Postgraduate Researchers (PGRs)

We will increase the number of PGR students.

To increase PGR students, we will advertise on Find a PhD for self-funded students. Applications are sent to RSO to upload and log all applications uploaded to this site. A major issue at the moment is the UoL website as it is hard to find potential supervisors' pages. We hope this will be addressed by Faculty indicatives in this area.

We will investigate funding and recruit of PGRs for medical and dental education projects, and international PGRs, including through collaborations. Faculty internal funding has been used to lever matched funding from NHS Trust partners, RCUK, charity, industry, and other sources. This includes an award within our Institute for Dunhill funded PhD studentships.

The Institute will engage more with the university's international partnerships as historically the institute has not engaged with the university's international partnerships a great deal. WE will hold annual workshops to advertise these schemes to researchers. Our PGR team will encourage strategies to attract international students by;

1. Providing easily accessible information on the ILCaMS website.
 - Information that is particularly pertinent to international students should be clearly visible and easy to access by creating a dedicated webpage for international admissions. This will include specific project information to excite interest but be open to negotiation.
 - Mobile-friendly website is key to make prospective students stick around your site long enough to gain an interest in your institution and is key in ranking on search engines.
 - Links to key pages of interest, such as scholarships, financial aid, and visa application information.

Key contact details so students from abroad can contact an international admission counsellor.

2. Offering virtual tours of our institute and research facilities.
3. Boosting engagement with infographics.
4. Using testimonials from our current and past students.

5. Being innovative with social marketing.

We will prepare our PGRs as the next generation of academic principal investigators.

The Institute follows the Researcher development framework - the PGR DNA is used and is a research skills toolbox. We will develop a culture amongst PGRs and Postdocs (and PIs) of regularly up skilling (research CPD). We plan to have a monthly meeting that is run by PGRs/postdocs with short research talks around research skills/techniques. This will develop additional skills but also enable networking (for example if we invite external stakeholders e.g., patients, clinicians, industrial, patent lawyers) opportunities. We will promote, strongly encourage and expect this from all concerned.

ILCaMS is piloting a process this year that is requiring all PGR students registered since October 2021 to use the Data Management Portal and create a Data Management plan to ensure data curation and accessibility. This will be developed further for PGRs.

We will support post-doctoral researchers

The postdoctoral group meet every 6 months. However, since Covid it has been primarily communication via email or an informal chat prior to the departmental meetings. The group is currently small in terms of post docs due staff leaving academia. The priorities for this group are career development and several the members are also enrolled on PROSPER.

v. INFRASTRUCTURE

We will implement infrastructure design (physical and organisational) and development to enable our ambition.

Physical

The Faculty level Infrastructure and Environment Directorate facilitates access to sustainable, state-of-the-art facilities in addition to coordinating strategic investment in innovative technologies such as: pre-clinical imaging, microscopy, research computing, multi-omic technologies and animal husbandry. The Institute collates capital and equipment requests from the research departments, and prioritised them based on research strengths, priorities for investment and value for money /usage.

We will identify following consultation a set of desirable facilities that multiple staff in the Institute wish to access and discuss with SRF.

Organisational

Utilise Professional services to optimise all research activities from pre-submission to award, publication and translation. Our PS will support leads to enable our vision to meet reality. Our RSO will support researchers in grant applications, submissions, and awards.

Technical

The institute will actively encourage and support continued skills and career development of technical staff in accordance with the University Technician Commitment action plan and Statement of Expectations

<https://www.liverpool.ac.uk/media/livacuk/researcher/techhub/Tech,Statement,of,Expectations.pdf>.

The institute will organise core technical staff to ensure that relevant skills are aligned to key areas of support. Encourage leads to cost appropriate technical support into grant costs and introduce institute policy to make some core technical time available to support research projects.

Technical staff will be acknowledged and recognised in publications where appropriate, as per the university Fair Attribution guidance:

<https://www.liverpool.ac.uk/media/livacuk/researcher/techhub/Fair,Attribution,Guidelines.pdf>