The Institute of Cardiovascular & Medical Sciences (ICAMS) is one of seven research-intensive Research Institutes within the College of Medical, Veterinary and Life Sciences at the University of Glasgow. This is our eighth annual report and highlights the achievements and successes of the Institute over the 2020 calendar year.

ICAMS is a world leading research-intensive institute focusing on cutting-edge cardiovascular discovery science, and state-of-the-art biomedicine through excellence in research, teaching and learning. The mission of ICAMS is to enhance human health through research into the fundamental mechanisms of cardiovascular disease and associated metabolic disorders and to empower its staff and students to carry out and support these endeavours to the highest possible standards. We are also working closely with the public through outreach programmes to help educate and spread the word to all about cardiovascular health and disease. Our researchers have also played important roles in providing expert opinion and guidance to government bodies relating to public policies in the field of cardiovascular health.

Research in ICAMS is thematically-based and focuses broadly on vascular research, cardiac research, cardiometabolic research and clinical trials. Within these themes, underpinning diseases that are studied include heart failure, arrhythmias, cardiac microvascular disease, ischaemic heart disease, hypertension, atherosclerosis, stroke, vascular dementia, cardiovascular complications of diabetes and metabolic and kidney disease.

2020, the year of the COVID-19 pandemic, was an extraordinary year that will be remembered by all. Like all aspects of life, COVID-19 had a major impact on ICAMS activities. Labs were closed, research projects were interrupted, many of our staff and students volunteered to work at the Lighthouse, equipment was relocated to support the Lighthouse and learning and teaching strategies were modified to online courses and virtual classes. Of major significance many of our clinical academics generously devoted many hours supporting colleagues in the NHS in managing the huge clinical burden caused by COVID-19. Not only did COVID-19 provide challenges to continue day-to-day activities in ICAMS, but it shaped new research directions. It became evident early on that COVID-19, while a disease primarily of the respiratory system, impacts the heart, vessels and kidneys leading to cardiovascular and kidney disease, through unknown mechanisms. Our ICAMS staff quickly adapted research activities to address the unknowns linking cardiovascular disease and COVID-19. This is now a major theme within ICAMS as highlighted in this report.

In spite of the difficulties posed by the COVID-19 pandemic in 2020, ICAMS researches have continued to be extremely productive. Our discovery science unravelling mechanisms of cardiovascular pathologies together with translational and clinical studies and trials defining new approaches in the diagnosis and treatment of heart and circulatory diseases have been published in the highest impact cardiovascular journals, with many papers appearing in the top 5% of journals. Our clinical trialists have played a major role in paradigm-shifting trials that have impacted clinical guidelines and practice. During 2020, ICAMS researchers published more than 300 papers. These contributions, together with the excellence in training of our non-clinical and clinical students places ICAMS amongst the best cardiovascular research institutes globally. Our successes during 2020, despite the COVID-19 pandemic, certainly reflect this and truly emphasizes the resilience, fortitude and strength of the staff and students in ICAMS.

It is with enormous pride that I share with you, in the following pages, some ICAMS highlights covering the 2020 academic year.

Professor Rhian Touyz
Director of the Institute of Cardiovascular & Medical Sciences
The vision of ICAMS is to be a world leader bridging the gap between cutting-edge cardiovascular science and state-of-the-art cardiovascular medicine through excellence in research and teaching.

1.1 Mission

Our mission is to enhance human health through research into the causes of cardiovascular disease and to advance and implement discoveries leading to improved prevention, diagnosis and treatment of these diseases.
1.2 Structure

**Learning & Teaching Committee**
*Remit:* Management of students
*Chair:* Prof S Nicklin

**Athena SWAN Committee**
*Remit:* To ensure equal career opportunities
*Chair:* Dr P Welsh

**Network for Early Career Researcher Development**
*Remit:* To provide a supportive framework for early career researchers
*Chairs:* Dr A Montezano and Dr S Robertson

**Health & Safety Committee**
*Remit:* To manage health and safety
*Chair:* Dr W K Lee

**Operations Committee**
*Remit:* To manage facilities and operations
*Chair:* Dr W K Lee

**BHF Centre of Research Excellence in Vascular Science and Medicine**
*Directors:* Prof R Touyz and C Delles

**Scientific Steering Committee:**
*Research & Management*
*Remit:* To cascade University and College information, develop scientific strategies and drive research excellence.
*Chair:* Prof R Touyz
*Membership:* Senior staff

**Research & Knowledge Exchange (R&KE) Committee**
*Remit:* To manage R&KE and impact activity. To oversee Research Excellence Framework-related activities
*Chairs:* Prof G Smith and Dr P Jhund

**Open Forum**
*Remit:* To cascade University, College & Institute policies, procedures and information.
*Chair:* Prof R Touyz & Executive
*Membership:* All staff

**Leadership & Executive**
*Remit:* To provide high level leadership and to manage, implement and deliver Institute, College and University Strategies

- *Chair:* Prof R Touyz
  - Director

- Prof C Delles
  - Deputy Director

- Prof J McMurray
  - Deputy Director

- Prof G Smith
  - Deputy Director

- Ms Jillian Blair
  - Head of Administration
## 1.3 Committees

### EXECUTIVE COMMITTEE

**Director of Research Institute**  
Professor Rhian Touyz

**Deputy Director**  
Professor Christian Delles

**Deputy Director**  
Professor John McMurray

**Deputy Director of BHF**  
Professor Godfrey Smith

**Head of Administration**  
Ms Jillian Blair

### OPERATIONS COMMITTEE

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<tr>
<th>Chair</th>
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<tr>
<td>Learning and Teaching</td>
<td>Professor Stuart Nicklin</td>
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<td>Postgraduate Research (PGR)</td>
<td>Dr Delyth Graham</td>
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<td>Finances</td>
<td>Ms Jillian Blair</td>
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<td>Health &amp; Safety</td>
<td>Dr Wai Kwong Lee</td>
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<td>Web &amp; Communications</td>
<td>Ms Tracy McArthur</td>
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<td>Internationalisation</td>
<td>Professor Christopher Loughrey</td>
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<td>Athena SWAN</td>
<td>Professor Rhian Touyz</td>
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<td>Network for Early career researcher development (NERD)</td>
<td>Dr Stacey Robertson</td>
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<td>Dr Guto Montezano</td>
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<td>Mentoring</td>
<td>Professor Rhian Touyz</td>
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<td>BHF Centre of Excellence</td>
<td>Mrs Karen Trofimova</td>
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<td>Clinical/NHS</td>
<td>Dr Robert Lindsay</td>
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### RESEARCH THEMES

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<th>Chair</th>
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<td>Vascular</td>
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<td>Professor Christian Delles</td>
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<td>Cardiac</td>
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<td>Professor Christopher Loughrey</td>
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<td>Metabolic Disease/ Diabetes</td>
<td>Professor Naveed Sattar</td>
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<td>Professor John Petrie</td>
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<td>Cardiovascular Oncology</td>
<td>Professor Rhian Touyz</td>
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<td>Dr Ninan Lang</td>
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<td>Stroke</td>
<td>Professor Jesse Dawson</td>
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<td>Kidney</td>
<td>Professor Patrick Mark</td>
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<td>-Oomics</td>
<td>Professor Sandosh Padmanabhan</td>
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### RESEARCH AND KNOWLEDGE EXCHANGE COMMITTEE

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<td>Professor John McMurray</td>
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<td>Professor Jason Gill</td>
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<td>Professor Mark Petrie</td>
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### BHF RESEARCH CENTRE OF EXCELLENCE (BHFCORE)

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<td>Mrs Karen Trofimova</td>
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The BHF Centre of Research Excellence (CoRE) brings together a critical mass of outstanding cardiovascular scientists conducting world-leading basic, translational, clinical and population research at the forefront. Our Director (Prof Touboul) and Deputy Director (Prof Delles), together with the PIs, Profs Berry, Cleland, Guzik, Leiper, McInnes, McMurray, Nicklin, Padmanabhan, Petrie and Sattar provide strategic scientific leadership.

2.1 Overview

Our research covers the spectrum from mechanistic science to clinical medicine, where we focus on two clearly defined areas of world-leading research in the University of Glasgow, namely 1) “Molecular and vascular mechanisms in the development of cardiovascular disease” and 2) “Heart failure: from molecules to new therapeutic approaches”. To help achieve our goals, the CoRE offers unique training programmes to clinicians and basic scientist post-doctoral fellows and runs three core facilities that provide expert support to our researchers.

Our research covers the spectrum from mechanistic science to clinical medicine, where we focus on two clearly defined areas of world-leading research in the University of Glasgow, namely 1) “Molecular and vascular mechanisms in the development of cardiovascular disease” and 2) “Heart failure: from molecules to new therapeutic approaches”.

The scientific framework and multidisciplinary approach underpinning the BHF CoRE Glasgow 2019-2024: Ambition of research: Small vessels to heart failure

The overall goals of our research are to advance knowledge regarding mechanisms of cardiovascular disease and to develop new approaches to diagnosis, prevention, and therapy through a combination of discovery science, translational research, clinical and population studies.

The COVID-19 Cardiovascular Research Theme is embedded in the BHF CoRE with research spanning basic to clinical and population science cross-cutting the ICAMS Cardiac, Vascular, Metabolic and Diabetes, Renal and Stroke Research Themes.

For full details see section 3.1 ‘Research Themes’ for our COVID-19 Research Response.

RESEARCH AXES

Our current research portfolio, which builds on the achievements of the first Centre of Research Excellence (2014-2019), includes:

Endothelial dysfunction and arterial fibrosis at the heart of cardiovascular disease

- Identifying factors that promote endothelial dysfunction and arterial stiffening.
- Elucidating molecular and cellular mechanisms of arterial fibrosis.
- Studying the role of vascular ageing, risk factors and arterial fibrosis in cardiovascular disease.
- Discovering putative fibrosis-specific targets.
- Investigating vascular mechanisms in cardio-oncology.

Heart Failure: Population science to identify (endo)phenotypes, disease pathways and therapeutic targets.

- Identification of novel disease (endo)phenotypes and targeted treatment approaches.
- Elucidating pathways of disease progression.
- New approaches to enhance and reinforce traditional epidemiological approaches.
- Investigating novel pathways of disease progression in epidemiologically representative populations.
- Creating a new mechanistic and translational trials programme.
2.2 Training the Next Generation of Scientists Through the BHF CoRE

Providing the next generation of cardiovascular researchers with a strong training in laboratory and clinical research, from bench-to-bedside, and from beds-to-bench, is a priority for us. We are now strengthening the already established unique training programmes in the BHF CoRE Glasgow.

3 year fully-funded PhD in cardiovascular biomedicine for clinicians.

- The CoRE has funding to train a number of high-calibre Clinical Research Fellows. Over the past year, we have appointed 5 fellows, through a highly competitive application process.

The Clinical Observership Programme. This unique programme brings basic scientists into the clinic through a 12-week Observership providing opportunities for scientists to contextualise their research in the clinic and through real patient experiences.

- In 2020, six early post-doctoral researchers from ICAMS contextualise their research in the clinic and through real patient programmes brings basic scientists into the clinic through a unique Clinical Observership Programme.

CLINICAL RESEARCH FELLOWS’ PROJECTS

Each of our Clinical Research Fellows undertakes a fully-funded 3-year PhD. Projects are developed together with chosen supervisors and align with our CoRE research axes.

1. Dr Leanne Mooney is investigating age-related clonal haematopoiesis and inflammation in patients with heart failure via a prospective cohort study. Supervisors: Dr Ninian Lang and Professor Mark Petrie.

2. Dr Carly Adamson is looking at how we can use new statistical techniques to analyse information from patients with heart failure with the aim to help tailor care for each individual patient. Supervisor: Dr Pardeep Jhund.

3. Dr Su Em Yeo is undertaking a multi-centre, open-label, randomised controlled clinical trial. Diuretic resistance in heart failure is difficult to treat and she aims to study if combination diuretic therapy with SGLT2I results in greater diuresis compared to combination diuretic therapy with thiazide diuretic in diuretic resistant heart failure patients. Supervisors: Dr Ross Campbell, Professor Mark Petrie, and Professor John McMurray.

4. Dr Michael Freeman is studying the interactions between scar after a heart attack and the development of dangerous abnormal heart rhythms. Dr Freeman’s work will examine how this interaction could be tested objectively in patients to work out who is at high risk and why. Supervisors: Dr Rachel Myles, Professor Godfrey Smith, and Professor Colin Berry.

5. Dr Helen Casey is studying the role of endothelial damage in acute conditions such as sepsis or pre-eclampsia and how this translates to long-term cardiovascular outcomes. Dr Casey is particularly interested in the interaction between sex steroids and endothelial function. Supervisors: Professor James Leper and Professor Christian Dellez.

Two of our Clinical Fellows who joined the CoRE during our first funding period are both in the final stages of their PhDs now and will soon be re-entering their clinical training programmes:

1. Dr Paul Connelly is researching the effect of sex and gender on vascular function and physiology and is undertaking a series of studies to carefully assess vascular phenotypes, structure and function in people utilising gender-affirming hormone therapy, which will help us understand how sex hormones influence vascular health and impact risk of cardiovascular disease. Supervisors: Professor Rhian Touyz, Professor Christian Dellez and Dr Gemma Currie.

2. Dr Stephen Dobbin is undertaking a prospective study in patients with cancer. His project is using detailed heart and blood vessel scans, blood pressure monitoring and blood tests before and during treatment with VSPIs to monitor patients receiving these medications. Dr Dobbin’s work will help to offer cancer patients the best possible treatment without unacceptable heart and blood vessel side-effects or risks. Supervisors: Dr Ninian Lang, Professor Mark Petrie, and Professor Rhian Touyz.

2.4 Research Highlights 2020

New Nature Paper Co-led By Professor Naveed Sattar

Professor Naveed Sattar as one of five co-leads, and Dr Paul Welsh were co-authors on a paper published Feb 2020 in Nature which reports how the most commonly used diabetes drug in the world, metformin, leads to weight loss. The work sheds light on metformin’s ability to increase GDF-15 synthesis in the distal intestine and kidney which then signals to the brain stem to lessen appetite. This peptide hormone is also of interest to heart failure and cancer specialists where substantially elevated levels may, paradoxically, lead to unintentional and harmful weight loss.


JACC: Cardiooncology Publication

Former BHF CoRE Clinical Research Fellow, Dr Alan Cameron, and Dr Ninian Lang had their paper entitled “Comprehensive Characterisation of the Vascular Effects of Cisplatin-Based Chemotherapy in Patients with Testicular Cancer” accepted for publication in JACC: CardioOncology. Cisplatin-based chemotherapy is associated with an increase in the risk of cardiovascular and renal disease. The paper defined the time-course, pathophysiology, and approaches to prevent cardiovascular disease associated with cisplatin-based chemotherapy. The work was supported by the BHF Centre of Research Excellence grants.


Public Health England Report on Obesity And COVID-19

Professor Naveed Sattar is one of the key contributors to Public Health England’s (PHE) recent report on COVID-19 and obesity. The report, based on several studies, found evidence consistently suggests that people with COVID-19 who are living with overweight or obesity, compared with those of a healthy weight, are at an increased risk of serious COVID-19 complications and death.

Characteristics and Outcomes Of COVID-19-Associated Stroke

Dr Tony Quinn is co-author of a new study published in the Journal of Neurology, Neurosurgery & Psychiatry which looked at an analysis of patients presenting to more than a dozen stroke centres in England and Scotland and which provides clinicians an updated look at trends and outcomes of stroke patients with COVID-19 compared to their counterparts without the disease. The study is called “Characteristics and outcomes of COVID-19-associated stroke: a UK multicentre case-control study”, and has generated impact by being featured by a number of media outlets since publication.

Nature Communications Publication – Tissue sodium excess is not hypotonic and reflects extracellular volume expansion.

Former Clinical Research Fellow Dr Giacomo Rosito published a study he led which reappraised the tissue Na+ + theory, disproving its water-independence in both experimental salt-sensitive hypertension and hypertensive subjects and suggests systemic isotonic (IT) Na+ excess as an important player in the pathogenesis of cardiovascular disease, particularly in association with the process of aging.


EMPEROR-Reduced Trial Top ESC 2020 Output

Congratulations to Professor Naveed Sattar, who is co-author of the EMPEROR-Reduced clinical trial, which featured as one of the top outputs at ESC 2020 and is published in the NJEM (New England Journal of Medicine). The EMPEROR-Reduced trial substantially strengthens the role of SGLT2i class in heart failure treatment. This paradigm has been explored further in John Jarcho’s editorial to the NJEM paper.

Diabetes UK
**Effects of COVID-19 Pandemic on Diabetes Risks and Outcomes in UK**
Professor Naveed Sattar is leading the collaborative work on this grant which will highlight areas of diabetes care that need urgent attention to reduce risk of complications/inform strategies for future pandemics.

Award – £303,398

**EPSRC**
**EPSRC Impact Acceleration Account. “Cardiac endotypes in COVID-19: quantification and mechanisms of cardiac injury”**
Xiaoyu Luo, Nicholas Hill, Colin Berry, Kenneth Mangion, Hao Gao, Dirk Husmeier. Award – £48,304, for 12 months from 1 January 2021.

**Heart Research UK**
**Longer-term effects of COVID-19 infection on blood vessels and blood pressure.** Professor Sandosh Padmanabhan is leading the HRFU-funded study into the links between COVID-19 infection and high blood pressure which may help to improve the long-term outcomes for survivors of COVID-19. Award – £250,000.

**UKRI**
**The COVID-HEART Study:** Demographic, multi-morbidity and genetic impact on myocardial involvement and its recovery from COVID-19. Professor Colin Berry is Co-I on the COVID-HEART Study which, using an MRI scan of the heart, aims to investigate how often, and in what way, the heart becomes damaged, and how the heart recovers 6 months later.

Award – £775,096.

**Wellcome Trust ISSF**
**• Developing COVID19 inhibitor peptides of the ACE2 – Spike Protein complex.** Dr Connor Blair from the Bailie Lab was awarded this grant and is leading the project.

• ACE2 signalling and host responses to SARS-CoV-2 in vascular cells – implications in cardiovascular toxicities in COVID-19. Dr Augusto Montezezono on being awarded is leading this collaborative project. Award – £60,000.

• A vascular biology sub-study nested in the Cardiovascular Imaging in SARS-CoV-2 (COVID-19) (CISCO-19) project.
Dr Kenneth Mangion was awarded this grant and is leading the sub-study. Mangion K, Nicklin S, Touyz RM, Berry C.
Award – £10,000, 1.8.20 – 31.1.21

• Effects of Type I and Type III IFN on ACE2 and the immune response in vascular cells: implications in SARS-CoV-2 infection. Dr Francisco Rios is leading the project.

• Host Mitochondria dysfunction by viral hijacking as a key pathogenetic mechanism in COVID-19. Dr Ian Salt is Co-I on this project, led by Prof Kostas Tolkaditis. Award – £6,000.

**OTHER SIGNIFICANT FUNDING**

Dr Ninian Lang’s New BHF-Funded Study
Dr Ninian Lang, based at ICAMS, was awarded a grant of £282,000 from the BHF to better understand what causes side effects such as high blood pressure in some anti-cancer drugs and how they can impact the pumping activity of the heart, leaving patients at risk of heart failure, heart attack, stroke, and kidney failure. The study will identify patients at highest risk of such complications and find ways of preventing them. The project will run over the next three years and will involve regular scanning and monitoring of cancer patients before, during and after treatment.

Astra Zeneca
BHF CoRE Clinical Research Fellow Dr Su Em Yeoh is leading the Heart Failure team for successfully leveraging an award of £1.1million in Pharma funding from Astra Zeneca. The funding was awarded in November 2020 and will be used for the implementation of the DAPA-RESIST clinical trial. DAPA-RESIST is a multi-centre, open-label, randomised controlled clinical trial investigating Sodium glucose cotransporter-2 inhibitor DAPagliflozin versus placebo in diabetic patients with heart failure and diuretic RESiStance.

**PUMP PRIMING**

During 2020, the CoRE awarded Pump Priming grants to 2 successful recipients following applications in response to the Call. The objective of these awards is to provide seed funding to generate essential pilot data for grant applications that have a high likelihood of grant success. Applications were reviewed by an external panel of experts and the following two awards were made:

• Professor Chris Loughrey was awarded £20,000 to establish the mouse model of HFpEF in the CoRE for use by multiple groups to investigate the pathogenesis of the syndrome and inform the development of new therapeutic strategies to treat patients with HFpEF.

• Dr Paul Connely was awarded £15,847 to undertake miRNA analysis in a subset of the GENESIS-PRAXY cohort in collaboration with Professor Louise Piloto, the GENESIS-PRAXY Principal Investigator, Professor of Medicine, James McGill Chair, and lead investigator.

An additional £20,000 pump priming was made available to Professors Berry and Nicklin, designated for use at their discretion, as leaders of the COVID-19 research axis within the CoRE.

**2.5 Core Facilities**

The BHF CoRE Glasgow now has 3 very well-established CoRE facilities, available for use by all researchers in ICAMS and beyond. These include:

• Non-invasive clinical vascular phenotyping in patients with cardiovascular disease.

• Myography and imaging Core to assess vascular function and structure in human models of cardiovascular disease.

• Clinical Trials Core.

In addition, our cohort of bioinformaticians, data scientists and statisticians will be enriched to provide expertise underpinning our data-driven studies, especially linked to heart failure.
2.6 Partnerships and New Initiatives

A major positive outcome of the 2014-2019 BHF CoRE has been the partnerships and networks fostered with vascular organisations in Europe and North America.

North American Partnerships
One highlight has been the continued and strengthened scientific collaboration with the Canadian Vascular Network, through activities such as Vascular Summer Schools in both Glasgow and Canada, as well as student/professor exchanges, seminars, sharing of resources, reagents and protocols, joint publications, and the generation of opportunities for new funding.

UK-wide Partnerships
Throughout 2020 we have continued to build close links with research institutes across the University, BHF Scotland, the other UK-wide BHF Centres of Research Excellence and the wider scientific community. Our online presence has increased substantially as a result of continued efforts to share our research outputs and engage with the scientific community and general public on Twitter.

ESH-ISH
Members of the BHF CoRE have worked in collaboration with the European Society of Hypertension (ESH) for the joint ESH-ISH 2020 meeting which has been postponed until 2021, and for which a dedicated BHF CoRE symposium focussing on Hot Topics in Cardiovascular Research is being planned as a satellite symposium of the main event.

Cardio-oncology Initiative
During 2020, the new Cardio-oncology research initiative was further developed and has generated > £2m in new funding. The research focuses on the effects of cancer and its treatment upon cardiovascular disease. The BHF CoRE is exploring new opportunities for strategic collaborations with the Mayo Clinic in the US.

Despite the challenges presented by the impact of the COVID-19 pandemic, we were able to proceed with the majority of our plans for the year.

BHF Parliamentary Reception
BHF Scotland hosted its annual BHF Parliamentary Reception 2020 at the Scottish Parliament, Holyrood. Each year, the event is organised as a get-together and celebration for supporters, donors, researchers and MSPs. It is a chance to network and discuss the vital life-saving research and work being carried out all across Scotland supporting the BHF’s mission to beat heartbreak forever. A number of our staff and students attended including Professor James Leiper, Professor Christian Delles, Eleni Charla (BHF 4 Year Programme), Simon Fisher (BHF 4 Year Programme), Dr Martin McBride and Antoniya Pashova (BHF 4 Year Programme).

June
• Successfully Completed PhDs
The entire BHF CoRE extended its warm congratulations to both Dr Angela Lucas-Herald and Dr Lyn Ferguson on the successful completion of their PhDs. Angela’s PhD is entitled “Androgen Signalling and Vascular Health in Boys with Hypoplastic.” Lyn’s PhD is entitled “Cardiometabolic conoritities in psoriatric disease and modulation by phosphodiesterase (PDE) 4 inhibition”.

Angela and Lyn belonged to the very first cohort of Clinical Research Fellows at the BHF CoRE Glasgow. We were delighted to see them successfully defend and complete their PhDs and wish them the best in their future careers.

August
• STV News Came to BHF CoRE Glasgow
STV News and BHF Scotland visited BHF CoRE Glasgow at the beginning of August to film a news piece, which highlighted the ever-pressing need for funding of medical research. The BHF faces a 50% drop in medical research funding next year, in light of the COVID-19 pandemic and crisis and Professors Touyz and Leiper spoke to STV News about the vital cardiovascular research being undertaken here in Glasgow.

December
• Successful Chancellor’s Fund Award
The BHF CoRE put in a successful application to the Chancellor’s Fund in the latest autumn 2020 call. Our thanks go to Professor Christian Delles for outlining a very highly rated application for funds to support our unique Clinical Observership Programme. The Chancellor’s Fund award will allow us to further develop and to support the transition to a remote programme, in light of current COVID-19 restrictions on students and post-docs undertaking practical observations in clinical settings. In particular the Chancellor’s Fund award will support:

1. The development of a book/’primer’ on the programme.
2. A guest lecture series on translational research, bridging the gap between basic and clinical research.
3. The hosting of a dedicated translational research day with Observers presenting their clinical projects.

NEWS AND AWARDS

April
• Glasgow Cardiovascular Summer School 2020 Postponement
The Organising Committee made the decision to postpone the Glasgow Cardiovascular Summer School 2020 due to a varied programme driven by an in-depth hands-on demonstrations and lab work which is not possible to conduct online. We look forward to welcoming our participants to Glasgow when it is safe and practical for us to hold our event.

The news piece also featured 8-year-old Scarlett who was born with hypoplastic right heart syndrome and whose family fundraise for the BHF each year.

• Successful Chancellor’s Fund Award
Our former Clinical Research Fellow Dr Daniele Kerr successfully graduated in Winter 2020 and her PhD thesis title was “Studies into the Cardiovascular and Respiratory Effects of Electronic Cigarettes”. Daniele was supervised by Professor Christian Delles and Professor Farian Touyz. We were delighted to see her successfully defend and complete her PhD and wish her the best in her future career.

November
• Successful Chancellor’s Fund Award
The BHF CoRE put in a successful application to the Chancellor’s Fund in the latest autumn 2020 call. Our thanks go to Professor Christian Delles for outlining a very highly rated application for funds to support our unique Clinical Observership Programme. The Chancellor’s Fund award will allow us to further develop and to support the transition to a remote programme, in light of current COVID-19 restrictions on students and post-docs undertaking practical observations in clinical settings. In particular the Chancellor’s Fund award will support:

1. The development of a book/’primer’ on the programme.
2. A guest lecture series on translational research, bridging the gap between basic and clinical research.
3. The hosting of a dedicated translational research day with Observers presenting their clinical projects.

• Best Abstract and Best Paper Awards
Dr Fraser Graham won the prize for the top scoring abstract in the Heart Failure category at the British Cardiovascular Society (BCS) Annual Conference 2020, for his abstract entitled “Haemoglobin and Serum Markers of Iron Deficiency in People With or At Increased Risk of Heart Failure”. PhD student Yola Jones won the Best Paper Award in Bioengineering at BIBE 2020, alongside co-authors Fani Deligianni and Jeff Dalton. The winning paper is entitled “Improving ECG Classification Interpretability using Saliency Maps” and was presented at the 20th International Conference on Bioinformatics & BiEngineering (BIBE). Both recipients are based at the Robertson Centre for Biostatistics.

3. The hosting of a dedicated translational research day with Observers presenting their clinical projects.
Research Themes and Priorities

Our Research Themes

- Cardiac Research
- Vascular Research
- Metabolic Disease And Diabetes Research
- Cardiovascular Oncology
- COVID-19 Research response

Emerging Themes

- Renal Research
- Stroke Research
- -Omic Research & Diabetes Research

3.1 Research Themes

Research has a vital role within the Institute, forming the central core around which all of our other activities take place. To achieve our stated mission, we must not only continue to support our areas of strength but also concentrate additional effort and resources on emerging areas with the potential to attain research excellence.

Our Research Themes

- Cardiac Research
- Vascular Research
- Metabolic Disease And Diabetes Research
- Cardiovascular Oncology
- COVID-19 Research response

Emerging Themes

- Renal Research
- Stroke Research
- -Omic Research & Diabetes Research

Cardiac Research

Theme leaders: Professor Godfrey Smith, Professor Christopher Loughey, Dr Rachel Myles

Our Principal Investigators are internationally recognised and world leading in the clinical and basic science of heart failure. We have considerable expertise in studying various aspects of heart failure and sudden cardiac death, including their principal causes: coronary heart disease, myocardial infarction, hypertensive heart disease and cardiomyopathy. Our basic science uses human samples and a range of animal experimental models of heart disease to investigate all aspects of heart disease, including arrhythmias. Strong translational links exist within the Cardiac Research theme to academics who are world leaders in clinical pharmacology, imaging (echocardiography, computed tomography, magnetic resonance imaging [MRI]), epidemiology and clinical trials. Our clinicians work at tertiary care hospitals in the NHS Greater Glasgow and Clyde Health Board. They are also based at the Golden Jubilee National Hospital, which hosts the West of Scotland Heart and Lung Centre and the National Services in Adult Congenital Heart Disease, Advanced Heart Failure and Pulmonary Vascular Disease.

glasgow.ac.uk/researchinstitutes/icams/research/cardiac/

Vascular Research

Theme leaders: Professor Stuart Nicklin, Professor Christian Delles

Our vascular research brings together many internationally recognized basic, translational and clinical research group leaders. Our research programmes adopt a wide range of approaches and techniques; from genomics, proteomics and molecular/cell biological analysis of vascular cell signalling, through to assessment of vascular physiology and function in animal models and patients. In close collaboration with the BHF Centre of Research Excellence, we have further developed core facilities including the imaging and myography core; clinical trials core; and clinical vascular phenotyping core. These facilities are firmly established within ICAMS and tightly linked to projects within the Vascular Research Theme.

Work within the Theme is driven by three principles:

- First, we aim to take findings from basic research to clinical practice and vice versa. This translational approach is evident in a wide range of research projects into high blood pressure, atherosclerosis, sepsis, vascular remodelling in restenosis/ vein graft disease, inflammation and vascular complications of conditions such as diabetic nephropathy.
- Second, our work is collaborative in nature and crosses disciplines and clinical specialties. Novel approaches including imaging, vascular function measurements, and gene delivery approaches in experimental and clinical studies are researched. Tissue samples from patients with vascular diseases are used to understand the underlying pathophysiology, including in international multicentre projects employing systems biology approaches to describe clinical conditions.
- Third, within the Theme we focus on training and knowledge exchange by hosting research days, poster sessions for PhD students and postdoctoral research associates and by providing constructive feedback on draft grant proposals and scientific papers that result from the work of our members.

Across all members of the Theme, we share an interest in endothelial and smooth muscle cell biology with respect to inflammation, oxidative stress, mitochondrial function, nitric oxide biology and signalling to understand the processes of vascular diseases, vascular remodelling and early vascular ageing.

glasgow.ac.uk/researchinstitutes/icams/research/vascular/

Metabolic Disease And Diabetes Research

Theme leaders: Professor John Petrie, Professor Naveed Sattar, Professor Jason Gill

As a group of established Principal Investigators and early career researchers, we encourage and foster collaborations within ICAMS and the University of Glasgow, as well as forging external relationships both nationally and internationally. Through conducting clinical trials, epidemiological investigations and translational studies, we aim to:

• Discover the pathways and processes linking obesity and physical inactivity to cardiovascular and metabolic disease.
• Understand the mechanisms underlying cardiovascular complications associated with diabetes, obesity, dyslipidaemia and renal disease.
• Explore the implications of our findings for the wider population, including groups defined by ethnicity, sex and deprivation.
• Use this knowledge to develop new therapies (or better understand their mechanisms of action) and lifestyle interventions to prevent and treat metabolic disease.

Our expertise ranges from molecular, biomarker and “-omic” techniques through to clinical investigation, clinical trials and population-level epidemiology (particularly using routine clinical data from NHS Scotland and the UK Biobank, as well as other national datasets). We are making key contributions to UK cohort studies and clinical trials aiming to understand and improve outcomes from COVID-19, with particular emphasis on diabetes and obesity-related risks from COVID-19.

glasgow.ac.uk/researchinstitutes/icams/research/metabolicdiabetes/research/
**RESEARCH THEMES**

**Cardiovascular Oncology Research**

Theme Leaders: Professor Rhian Touyz, Dr Ninian Lang

The cardiovascular-oncology theme in ICAMS, initiated in 2018, focuses on the effects of cancer and its treatment upon cardiovascular disease. Modern anticancer drugs improve cancer survival. However, this is associated with cardiovascular toxicities, the mechanisms of which remain largely unknown. Our mission is to address this gap.

Our pre-clinical studies provide cellular mechanistic insights into cancer therapy-related cardiovascular toxicity, while our clinical research aims to inform better prediction, prevention and treatment of potential or established cancer therapy-related cardiovascular toxicity. We aim to minimise the competing risks of cardiovascular disease in patients with cancer. This theme is truly at the interface between cardiovascular medicine and cancer – at the research and clinical levels.

Our bench-to-bedside-to-bench translational approach is achieved via broad ranging expertise and background of theme members. Molecular, cellular and vascular mechanistic studies are performed in the laboratory of Prof Touyz.

The clinical research basis comes via Dr. Lang’s dedicated cardiovascular-oncology clinic, established 2017. This is the only specialist service of its kind in Scotland and based at the Beatson West of Scotland Cancer Centre (BWoSCC), the busiest cancer centre in the UK in terms of clinical activity and patient numbers as well as being the second largest cancer centre in the UK. This is the nucleus for clinical-academic collaboration and a major source for research participant recruitment. With support from the NHS, a second consultant cardiologist (Dr. Caroline Coats) now provides a dedicated recruitment. With support from the NHS, a second consultant cardiologist (Dr. Caroline Coats) now provides a dedicated recruitment.

**ICAMS Covid-19 Research Response**

Theme Leaders: Professor Colin Berry, Professor Stuart Nicklin

glasgow.ac.uk/researchinstitutes/icams/bhfcoeglasgow/
themesprojectsandoutputs/covid19cardiovascularresearch/

The COVID-19 Cardiovascular Research Theme is embedded in the BHF Centre of Research Excellence with research spanning from basic to clinical and population science cross-cutting the ICAMS Cardiac, Vascular, Metabolic and Diabetes, Renal and Stroke Research Themes, as highlighted in the figure below. Our researchers are also collaborating with Institutes across the University including the MRC Centre for Virus Research.

The COVID-19 pandemic triggered by the recent emergence of a new beta coronavirus strain, SARS-CoV-2, is arguably the greatest public health challenge in a generation.

In many patients SARS-CoV-2 can be a mild or even asymptomatic infection. However, certain sub-groups of patients are at higher risk, including black and ethnic minority groups, older individuals, and those with co-morbidities including obesity, diabetes, hypertension and cardiovascular disease. COVID-19 infection can lead to a severe respiratory illness and an overwhelming immune response requiring hospital treatment and associated with high morbidity and mortality.

Respiratory COVID-19 illness can also lead to systemic infection, affecting multiple organs including the heart, blood vessels and kidneys. The SARS-CoV-2 infects cells via a receptor expressed on the surface of cells, angiotensin converting enzyme 2, that has an additional function as a regulator of cardiovascular function in many cells and organs.

**OBJECTIVES**

- To advance new knowledge on the risk factors for acquiring COVID-19 infection, with a focus on cardiovascular co-morbidities and ethnicity.
- To investigate and understand the mechanisms of cardiovascular damage following SARS-CoV-2 infection.
- To lead and support multidisciplinary, multicentre healthcare and research initiatives for survivors of COVID-19.
- To develop small molecules as novel treatments for COVID-19.
- To improve treatments for groups at particular risk of poor outcomes from COVID-19 – chronic kidney disease, dementia, diabetes, frailty, obesity and stroke.
- To lead and support BHF-NIH Portfolio studies*

*In response to the coronavirus pandemic, the NIHR-BHF Cardiovascular Partnership provided a robust framework for the set-up and delivery of impactful Covid-19 research projects across the UK. Seven projects were approved BHF New Framework for Covid-19 Research: New framework for Covid-19 research - NIH | British Heart Foundation (bhf.org.uk)

**COVID-19 RESPONSE**

**4 CORNERSTONES**

- Rapid Response Projects
- Long Covid & Therapies
- National Trials Platform
- COVID-HEART and PHOSP-COVID

**BENCH TO BEDSIDE**

- 7 Basic Science Projects
- 14 Clinical Studies

**IMPACT**

- Advancing the knowledge and science of SARS-COV-2
- > 50 Publications
- Flagship level UK-wide and International Collaborations
- Long Covid and therapy-oriented proposals

**GRANT FUNDING**

- £10m leveraged
EMERGING THEMES

Renal Research
Theme leader: Professor Patrick Mark

Patients with chronic kidney disease (CKD) have a greatly increased risk of premature cardiovascular disease. This risk is not explained by conventional cardiovascular risk factors such as smoking, high cholesterol levels or diabetes. For patients with kidney failure requiring dialysis, the risk of cardiovascular disease is even higher, at between five and twenty times that of someone of a similar age from the general population with normal kidney function. Receiving a successful kidney transplant improves both cardiovascular outcomes and quality of life; however, this treatment does not set the cardiovascular risk back to baseline. The Renal Research theme is developing strategies to reduce cardiovascular risk and improve outcomes for patients with CKD. We use a number of targeted approaches to address this problem, including:

- Imaging studies of the heart, kidneys, blood vessels and brain to examine sites of cardiac and vascular damage to establish new targets for treatment that aims to reduce cardiovascular risk among patients with CKD
- Collecting blood and urine samples from cohorts of patients with CKD
- Undertaking clinical trials of interventions that aim to reduce cardiovascular risk among patients with CKD
- Examining healthcare data to identify patterns of cardiovascular disease and stroke among patients with CKD

We are interested in the effect of all grades of CKD on cardiovascular risk among patients with CKD, co-morbidities or genetically modified strains (and controls) and a transient model of occlusion with recanalisation. Research is focused around identification of novel mechanisms that contribute to deficits in cerebrovascular function and resultant impaired brain perfusion following stroke (e.g. ADMA-DDAH pathway; brain resident macrophages). Also, this research focuses on identifying treatments that target key central pathways and processes through polytherapy approaches (e.g. microRNAs) and to identify strategies to modify post-stroke systemic complications, including weight loss and muscle wasting, which are prime determinants of stroke outcome. We also have programmes investigating the molecular basis of cerebral small vessel disease and intracerebral haemorrhaging using both human genetics as well as animal and tissue culture models. A particular focus here is the role of the extracellular matrix and collagen, which we have identified causes rare genetic forms of stroke and small vessel disease, and is a risk factor for stroke in the general population. The long term aim of our mechanistic work is to develop and deliver novel therapeutic targets and/or strategies.

Furthermore, our research has become increasingly focussed on the role of cerebral small vessels in the disease processes affecting the brain after stroke, as well as the causes and consequences of small vessel disease and stroke on vascular cognitive impairment.

Stroke Research
Theme leader: Professor Jesse Dawson

Our research groups focus on translational and clinical research into the causes and treatment of stroke. The theme’s Principal Investigators are internationally recognised researchers and hold substantial government, charitable and commercial funding as well as having senior leadership roles in national and international professional societies. We are co-located between the BHF Glasgow Cardiovascular Research Centre, The Davidson Building, the Queen Elizabeth University Hospital in Glasgow and the Glasgow Royal Infirmary. This set-up provides access to state-of-the-art imaging facilities housed in the Imaging Centre for Excellence at the QEUH and we assess patients from the whole West of Scotland area.

- Omics Research
Theme leader: Professor Sandosh Padmanabhan

The term ‘omics’ encompasses research fields that use data-intensive methods to map genes, proteins and small molecules, their interactions and their regulation with the ultimate aim of understanding complex biology and disease processes. Traditionally, genes and proteins have been analysed individually; however, with the emergence of ‘omics technologies capable of measuring gene sequence variation, expression and other biomarkers on a global scale, we have entered the era of high-dimensional biology. The use of ‘omics naturally leads to big data and navigating and analysing the resulting information deluge is a key challenge for the research community that requires sophisticated bioinformatics, data science and statistical expertise. Some of the technologies that have attained a level of maturity in the ‘omics arena include:

- Genomics – the systematic study of an organism’s genome and differences in DNA sequence between individuals
- Proteomics – the study of all expressed proteins in a cell, tissue or organism with the aim of characterising information flow within the cell and the organism, through protein pathways and networks. The proteome is a dynamic reflection of both genes and the environment and is thought to hold particular promise for biomarker discovery.
- Metabolomics – the study of global metabolite profiles in a cell, tissue or organism. The metabolome is the final downstream product of gene transcription and is closest to the phenotype of the biological system studied.
- Transcriptomics – the study of the transcriptome (i.e. the complete set of RNA transcripts that are produced by the genome, under specific circumstances or in a specific cell) using high-throughput methods, such as microarray analysis.
- Glycomics – the study of the structure and function of carbohydrates (sugars) in biological systems
- Lipidomics – the study of cellular lipids

The ‘Omics Research theme is an evolving and growing collaboration of researchers who use ‘omics technologies in their research, with the aim to share methods and solutions across themes, assist new researchers into the ‘omics arena and facilitate the development of an interdisciplinary environment to accelerate discovery science into clinical applications.

glasgow.ac.uk/researchinstitutes/icams/research/-omicsresearch/
### 3.2 Clinical Trials

**Professor Colin Berry’s Group**

In 2020, Professor Berry’s group published several analyses from clinical trials in patients with ischaemic heart disease. The trials were focused on patients with either chronic coronary syndromes or acute myocardial infarction.

**COLCOT –** In 2019, UK investigators, led by Professor Berry and the NHS Glasgow Clinical Research Facility, published the COLCOT trial [1]. In this trial, 4745 patients were enrolled within 30 days of a heart attack and randomly assigned to placebo (HR=0.52, 95% CI 0.32-0.84), in contrast to patients in whom colchicine was initiated <day 3 compared to placebo. The results showed that colchicine led to a significantly lower risk of adverse cardiovascular events, including cardiovascular death, resuscitated cardiac arrest, myocardial infarction, stroke or urgent hospitalisation for angina leading to coronary revascularisation. In 2020, the COLCOT investigators reported an analysis of the relationship between time-to-treatment initiation and clinical outcomes. We found that significant reduction in the incidence of the primary endpoint for patients in whom colchicine was initiated < day 3 compared to placebo (HR=0.96, 95% CI 0.93-0.99, p<0.001). The results concluded that empagliflozin was able to significantly reduce the size of abnormally large hearts, which helps explain how they reduce the risk of hospitalisation and cardiovascular death in patients with heart failure.

Professor Berry’s group have led several investigator-initiated clinical trials in NHS Greater Glasgow and Clyde Health Board and NHS Golden Jubilee. New clinical trials include the BHF-funded CorCMR pilot trial [NCT04058614], which is an international clinical trial of stratified medicine in angina that builds on the success of the CorCMa pilot trial [NCT03193284]. They published additional findings from CorCMa, including an association between genetic variants affecting endothelin gene expression and the severity of angina [3], and the NRHEM/E funded TTIMM trial highlighting that in situ effects of intracoronary fibrinolysis increase with the duration of ischaemic symptoms [4].

**References**


**Professor Navees Sattar’s Group – Metabolic Medicine Team**

Led by Professors Naveed Sattar and Mark Petrie, and Dr Matthew Lee, the results of a major trial “Effect of empagliflozin on left ventricular volumes in patients with type 2 diabetes, or prediabetes, and heart failure with reduced ejection fraction (SUGAR-DM-HF)” were presented by Dr Lee to the American Heart Association in November 2020 (virtually, of course, due to COVID-19 travel restrictions) and simultaneously published in the journal Circulation. The trial, sponsored by Boehringer Ingelheim, tested the effects of empagliflozin on the structure and function of the heart in patients with heart failure, which is the most common reason for hospitalisations in over 65-year olds in the UK.

Empagliflozin is one of a class of drugs known as SGLT2 inhibitors and is originally a treatment for patients with type 2 diabetes. The results concluded that empagliflozin was able to significantly reduce the size of abnormally large hearts, which helps explain how they reduce the risk of hospitalisation and cardiovascular death in patients with heart failure.

105 patients were recruited from 15 hospitals in Scotland, and the research was a wonderful collaboration of experts spanning several disciplines – including doctors, nurses, pharmacists, cardiologist, metabolic medicine, diabetes, nephrology, radiology, biomarker lab technicians, and statisticians.

Dr Matthew Lee said:

“By chance, these drugs were found to be excellent drugs for heart failure in patients with and without diabetes. Very importantly, these findings help us explain, for the first time, why this new class of drugs have such powerful benefits to lessen chances of people with heart failure being admitted to hospital or dying.”

**Tables and Figures**

#### Left ventricular end-systolic volume index

- **Empagliflozin** (n=42)
  - End-systolic volume index (mL/m²)
    - Between-group difference*: -1.5 (-4.6 to 1.7)
    - -7.9 (-11.5 to -4.3)

- **Placebo** (n=50)

#### Left ventricular global longitudinal strain

- **Empagliflozin** (n=42)
  - Global longitudinal strain (%)
    - Changing in GLS from baseline (%)
      - Between-group difference*: 0.35% (95% CI -0.25 to 0.95); p=0.25

- **Placebo** (n=50)

---

**By chance, these drugs were found to be excellent drugs for heart failure in patients with and without diabetes. Very importantly, these findings help us explain, for the first time, why this new class of drugs have such powerful benefits to lessen chances of people with heart failure being admitted to hospital or dying.”**
3.3 Funding

In 2020, ICAMS held 141 active research grants or contracts, with a total proportioned value to the Institute of more than £43m.

**TOP FIVE FUNDERS OF ACTIVE RESEARCH PROJECTS**

<table>
<thead>
<tr>
<th>Funder</th>
<th>Sum of Investigator Ownership Proportioned Price</th>
<th>Number of Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Heart Foundation (BHF)</td>
<td>£12,138,924</td>
<td>28</td>
</tr>
<tr>
<td>Medical Research Council (MRC)</td>
<td>£6,628,672</td>
<td>11</td>
</tr>
<tr>
<td>Wellcome Trust</td>
<td>£4,671,104</td>
<td>2</td>
</tr>
<tr>
<td>National Institute for Health Research (NIHR)</td>
<td>£2,725,426</td>
<td>6</td>
</tr>
<tr>
<td>European Commission (EC)</td>
<td>£1,921,305</td>
<td>3</td>
</tr>
</tbody>
</table>

During 2020, the Institute was awarded 27 new projects, with over £7.1m coming to the Institute. The largest funders for new awards, by value were:

**TOP FIVE FUNDERS OF NEW RESEARCH PROJECTS**

<table>
<thead>
<tr>
<th>Funder</th>
<th>Sum of Investigator Ownership Proportioned Price</th>
<th>Number of Awards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbott Laboratories (UK)</td>
<td>£1,671,405</td>
<td>1</td>
</tr>
<tr>
<td>British Heart Foundation (BHF)</td>
<td>£1,578,105</td>
<td>5</td>
</tr>
<tr>
<td>Vifor Pharma (CH)</td>
<td>£1,465,500</td>
<td>1</td>
</tr>
<tr>
<td>AstraZeneca (UK)</td>
<td>£335,979</td>
<td>1</td>
</tr>
<tr>
<td>Roche Diagnostics International</td>
<td>£399,080</td>
<td>1</td>
</tr>
</tbody>
</table>
3.4 Publications

Members of ICAMS published a total of 346 manuscripts and 2 books and book chapters during 2020.

8.5% of ICAMS papers in 2020 are in the top 1% most highly cited papers

31.7% of ICAMS papers in 2020 are in the top 10% most highly cited papers

ICAMS 2020 publications are cited 6.32 times more than similar publications across the world in their field

*data can only be retrieved for 331 out of 346 records. The above statistics have been compiled from the data received from the 331 publications

Top 5 publications in ICAMS, by number of citations:


- 2019 ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD.

- Association of Inpatient Use of Angiotensin-Converting Enzyme Inhibitors and Angiotensin II Receptor Blockers with Mortality among Patients with Hypertension Hospitalized with COVID-19.


- Cardiovascular and renal outcomes with empagliflozin in heart failure.

The full list of publications are contained in Appendices 5.4

"University of Glasgow Institute of Cardiovascular & Medical Sciences Annual Report 2020"
3.5 Postgraduate Research

ICAMS provides a vibrant and supportive environment for postgraduate research students, who come from a wide variety of professional backgrounds and disciplines.

In 2020, a total of 123 postgraduate research students were registered within ICAMS: 110 on a Doctorate of Philosophy (PhD) programme and 13 on a Doctorate of Medicine (MD) programme (see Appendices included). In addition, a total of 32 PhD, two MD degrees and one MSc by Research (MRes) were awarded during the year.

PhD

Ahmad Dzulkarnain Bin Ismail
Thesis: Resistance training, insulin sensitivity & metabolic health

Aisling McFall
Thesis: Modulating the counter regulatory renin angiotensin system axis in experimental ischaemic stroke

Alessandro Giommi
Thesis: Does the small conductance Ca2+-activated K+ currentISK flow under physiological conditions in rabbit and human atrial isolated cardiomyocytes?

Alexandra Helen Riddell
Thesis: Exercise pathophysiology and the role of exercise therapy in Pulmonary Arterial Hypertension

Amsal Faraj A Alrehalli
Thesis: Fatty acid metabolism and adipocyte function in healthy and gestational diabetes mellitus pregnancy

Amy Tibbo
Thesis: Compartmentalized cAMP signalling via the PDE4-Popeye Protein Complex

Angela Katrina Lucas-Herald
Thesis: Androgen signalling and vascular health in boys with hypospadias

Annette Marie Mazyncka
Thesis: Novel Insights into the Assessment and Therapeutics of Microcirculatory Injury in Acute Myocardial Infarction

Anubhav Bussooa
Thesis: Development of a cell sensing and electrotherapeutic system for a smart stent

Ashley Bradley
Thesis: Investigation of the role of Runx1 in a mouse heart post-myocardial infarction

Cherry Alexander
Thesis: Mechanism of Ventricular Arrhythmias in the long QT Syndrome

Christopher James Rush
Thesis: Prevalence of coronary artery disease and coronary microvascular dysfunction in heart failure with preserved ejection fraction

Daniele Michele Isabel Kerr
Thesis: Studies into the cardiovascular and respiratory effects of electronic cigarettes

Faris Fahad A Aba Alkhayl
Thesis: A Comparison of Skeletal Muscle Metabolic Responses to Resistance Training Exercise between South Asians and White Europeans Males

Geethash Vijuvel Satchith Jayasekera
Thesis: Unravelling the role of the left and right ventricles in pulmonary arterial hypertension: patient and small animal cardiac MRI studies

Gerard Urimubenshi
Thesis: Implementing stroke unit care in selected hospitals in Rwanda

Hala Fouad Azhari

Jennifer Susan Lees
Thesis: Investigating the effects of vitamin K on vascular health and disease

Linsay Ann Christina McCallum
Thesis: Serum Chloride: epidemiology and genetic dissection of a novel marker for cardiovascular risk

Naomi Holman
Thesis: Use of routinely collected data to assess outcomes in people with diabetes

Sarah Jane McNeilly
Thesis: Investigation of the role of angiotensin-(1-8) in neointimal formation

Sanjeet Singh Avtaar Singh
Thesis: Creating a multivariable model to predict primary graft dysfunction after heart transplantation in the United Kingdom using the 2014 International Society of Heart and Lung Transplantation Consensus Definition

Sarah Jane McNeilly
Thesis: The role of altered collagen IV levels in vascular disease

Sinead Gael Griffin
Thesis: Regulation of the Mg2+ transporter TRPM7 by growth factors – implications in vascular function in health and disease

Grace Marie McDoell
Thesis: Telemedicine in Home NIV: Developing Health Informatics, assessing Physiological response and improving Patient Outcomes – THE HIPPO Study

Samuel Rodgers
Thesis: Mortality amongst adults with congenital heart disease in Scotland: A population study

MSc (MRes)

Faheem Ahmad
Thesis: Congestion in acute heart failure trials and registries: a systematic review

University of Glasgow Institute of Cardiovascular & Medical Sciences Annual Report 2020
4.2 Athena Swan

The Athena Swan (Scientific Women’s Academic Network) Charter recognises commitment to advancing women’s careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.

ICAMS is committed to pursuing the ideals of the Charter, ensuring that all staff are afforded the same career opportunities and representation regardless of gender, race, religion, or intersectionality.

Recognising our work to meeting this commitment, ICAMS was awarded an Athena Swan Bronze award in the November 2015 round, and a Silver award in the April 2019 round, following approval this was extended to April 2024.

The new ICAMS self-assessment team (SAT) had its inaugural meeting in December 2019, and the action plan was accordingly updated. We are committed to transparency and staff participation, therefore we have our action plan readily available online:
glasgow.ac.uk/researchinstitutes/icams/athenaswan/

*The action plan is updated annually.

The COVID-19 pandemic has had some impact on our timelines for specific actions, but actions are being updated and mitigated where possible.

Committed to our Staff:

- We undertook a pulse survey of staff to assess the impact lockdown was having in June 2020. New actions include keeping staff "in the loop" during the pandemic, and promotion flexible working wherever possible.
- We have added information on the ICAMS/MVLS academic promotion procedures to the website; this may be particularly useful for new staff. The academic promotion application website has also been updated.
- For International Women’s day and Women in Science Day 2020, we held a coffee morning event, and devoted space to advertise the inspiring variety of roles and opportunities and representation regardless of gender, race, religion, or intersectionality.

4.1 Early Career Researchers

The Network for Early Career Researcher Development (NERD) is organised by 3 of the MVLS institutes, ICAMS, III and ICS. NERD is coordinated by an engaged and enthusiastic committee of ECRs drawn from all three member institutes, 5 of which are from ICAMS. NERD strives to understand the challenges facing ECRs and advocate for their needs to senior management. NERD events provide support, information and advice, foster collegiality, facilitate collaboration & sharing of resources. NERD communication is via our twitter feed @iiii_NERD, on our dedicated webpages, monthly newsletters and through our Moodle pages. For more information see: glasgow.ac.uk/colleges/mvls/supportforresearch/nerd.

As a result of NERD advocating for wider ECRs representation, we now have ECR representation at the ICAMS senior management meeting and the college management group meeting.

This year has been difficult for all. The COVID-19 pandemic resulted in a rapid shut down of all laboratory work and everyone adjusting to the challenges of working from home. Many NERDs joined the fight against COVID including our members based at the Centre for Virology. In ICAMS, clinical ECRs took time out of their studies to revert to full time clinical fellows. This has been well received and gives our ECRs a platform to informally ask questions, share information and get to know each other better.

NERD events hosted in 2020 have included:

1. A networking and planning Social event in January
2. ‘Efficient research communication using “F1000Prime” and “Workspace”’ by Chris Murawski in February
3. A series of Coffee Break Zooms at beginning of lockdown
4. ‘Overview of the impact of COVID on BHF operations’ by Noel Faherty (Senior Research Advisor & Grant committee advisee, British Heart Foundation)

ICAMS NERD members together with the ICAMS Athena Swan self-assessment team were awarded ISSF funds in March 2020. These funds will support the various events and set up of initiatives which aim to improve diversity and equality in ECR groups in ICAMS. These events will run once restrictions allow. In 2021, NERD will continue to support ECRs by highlighting opportunities, providing information on careers and acting as a platform for ECRs to collaborate and share resources.

2021 virtual events in the pipeline include:

- The Post-Academic Career Mentorship & Advice Network (PACMAN) launch event. PACMAN will provide advice and guidance on post-academic careers to ECRs.
- A series of events to highlight Mental Health Awareness in ECRs and academia.
- A series of Coffee Break Zooms at beginning of lockdown
- ‘Overview of the impact of COVID on BHF operations’ by Noel Faherty (Senior Research Advisor & Grant committee advisee, British Heart Foundation)
- A networking and planning Social event in January

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- For International Women’s day and Women in Science Day 2020, we held a coffee morning event, and devoted space to advertise the inspiring variety of roles and opportunities and representation regardless of gender, race, religion, or intersectionality.
4.3 Postgraduate Teaching

ICAMS is committed to excellence in undergraduate (UG) and postgraduate teaching (PGT), to training the future world leaders in cardiovascular science and medicine and to empowering its staff to carry out and support these endeavours to the highest possible standards.

ICAMS had 248 PGT students registered for either Master of Science (MSc) or Master of Research (MRes) degrees. Of these, 158 were international students and 90 home students.

The MSc Sport & Exercise Science & Medicine attracted the highest number of international students (33.8%) with the MSc Stratified Medicine & Pharmacological Innovation programme attracting the highest number of home students (30%).

<table>
<thead>
<tr>
<th>Programme</th>
<th>Home</th>
<th>International students</th>
<th>Total</th>
<th>Change since 2018–2019</th>
</tr>
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<tbody>
<tr>
<td>MSc Stratified Medicine &amp; Pharmacological Innovation</td>
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<td>6</td>
<td>33</td>
<td>-2</td>
</tr>
<tr>
<td>MSc Sport &amp; Exercise Science and Medicine</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Distance Learning)</td>
<td>13</td>
<td>32</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>MSc (Med Sci) Clinical Pharmacology</td>
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<td>46</td>
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<td>+7</td>
</tr>
<tr>
<td>MSc Sport &amp; Exercise Science &amp; Medicine</td>
<td>16</td>
<td>54</td>
<td>70</td>
<td>+21</td>
</tr>
<tr>
<td>MSc (Med Sci) Cardiovascular Sciences</td>
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<td>11</td>
<td>19</td>
<td>+3</td>
</tr>
<tr>
<td>MSc Clinical Trials &amp; Stratified Medicine</td>
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<td>1</td>
<td>-6</td>
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<tr>
<td>MRes Translational Medicine</td>
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<tr>
<td>MSc in Precision Medicine with Specialisms</td>
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<tr>
<td>Total</td>
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<td>248</td>
<td>+46</td>
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</table>

PGT Feedback

“ICAMS is committed to excellence in undergraduate (UG) and postgraduate teaching (PGT), to training the future world leaders in cardiovascular science and medicine and to empowering its staff to carry out and support these endeavours to the highest possible standards. ICAMS had 248 PGT students registered for either Master of Science (MSc) or Master of Research (MRes) degrees. Of these, 158 were international students and 90 home students.

The MSc Sport & Exercise Science & Medicine attracted the highest number of international students (33.8%) with the MSc Stratified Medicine & Pharmacological Innovation programme attracting the highest number of home students (30%).”

“I have thoroughly enjoyed my experience of the BHF 4-year programme so far. The MRes year provides the perfect opportunity to gain experience in a wide variety of experimental techniques and to identify where your interests lie before selecting a PhD project. I am fortunate to have very encouraging and supportive PhD supervisors, and it is inspiring to be surrounded by highly motivated scientists working in such diverse areas of cardiovascular research.”

“I have found everyone in the Programme really helpful, they all have tried to give me as much lab experience as possible despite of covid. In my three rotations so far all my supervisors have been really supportive. I have learned a lot in this short period of time and I feel more confident going into my PhD.”

University of Glasgow Institute of Cardiovascular & Medical Sciences Annual Report 2020
4.4 Educational Events

ICAMS hosts regular educational meetings, such as lectures, seminars and symposia. Due to the pandemic, we were unable to host our events as normal. We held Guest Lectures virtually, where we could, and some were postponed to a later date.

We are looking forward to welcoming our guests back to the institute in 2020-21.

<table>
<thead>
<tr>
<th>2020</th>
<th>Speaker</th>
<th>Title</th>
<th>From</th>
</tr>
</thead>
<tbody>
<tr>
<td>29th January</td>
<td>Professor Thomas Luscher</td>
<td>Is ageing a disease?</td>
<td>Professor of Cardiology, Imperial College</td>
</tr>
<tr>
<td>3rd March</td>
<td>Professor Dan Cutler</td>
<td>Storage, Secretion and Function of von Willebrand Factor: the Importance of Organ size Control in Haemostasis.</td>
<td>Professor Daniel Cutler, Group Leader, MRC Laboratory for Molecular Cell Biology, University College London.</td>
</tr>
<tr>
<td>11th September</td>
<td>Lydia Sorokin</td>
<td>Laminins and endothelial cell function including inflammation</td>
<td>Director of Institute of Physiological Chemistry and Pathobiocchemistry at the University of Muenster.</td>
</tr>
<tr>
<td>26th October</td>
<td>Rory McCrimmon</td>
<td>Hypoglycaemia: The Good the Bad and the Ugly.</td>
<td>Professor of Experimental Diabetes and Metabolism, and Dean, School of Medicine, University of Dundee.</td>
</tr>
</tbody>
</table>

**Online careers seminar for ICAMS PGR students**

An online careers seminar for all ICAMS postgraduate research (PGR) students was held on 31st of August 2020. This student-led seminar via Zoom aimed to provide all PhD/MD students with an opportunity to hear personal stories of careers in academia and industry.

The seminar included talks from:

**Dr. Rachel Myles, Senior Clinical Lecturer in Cardiology at the University of Glasgow**

**Dr. Augusto Montezano, Walton Research Fellow in Cardiovascular Medicine at the University of Glasgow and a Senior Medical Writer at McCann Health Medical Communications**

**Professor. Gwyn Gould, Principal Investigator at the Institute of Pharmacy and Biomedical Sciences, University of Strathclyde.**

**Dr Sarah Mancini, Associate Medical Writer at McCann Health Medical Communications**

The seminar included talks from:

- Balancing clinical duties, home life and research activities
- Grant writing
- Publishing
- Fellowship Application
- Writing
- Balancing clinical duties, home life and research activities

This interactive seminar allowed time for students to post questions to our experienced speakers about the range of topics they will cover, and we hope it was beneficial to students at all stages of their degree.

**Advances in research (AIR) presentations**

The Advances in Research (AIR) programme is a series of oral presentations given by PhD students, early career researchers and occasionally includes presentations from senior members of staff that prove very popular. Although AIR is primarily designed as a training opportunity for young researchers, it also has the benefit of keeping ICAMS students and staff informed of ongoing research areas within the Institute. The AIR programme allows research students to discuss their projects in an informal setting, providing an opportunity to get advice and feedback. It is not a forum for completed studies, although it can be used to practice for conference presentations. The programme also allows 2nd and 3rd year students to Chair sessions, providing invaluable experience of how to facilitate oral sessions for participation at future Scientific Conferences. The AIR programme takes place from the start of October to the end of June every academic year and incorporates special sessions such as the 1st Year PhD/MD day symposium, the Graham Wilson Travelling Fellowship presentations and feedback session from the BHF Clinical Observership programme.

The Graham Wilson Travelling Fellowship fund was established to honour the memory of the late Professor Graham Wilson. The fund is held by the Greater Glasgow and Clyde NHS Endowment Funds Office and offers support to junior members of staff or students who wish to visit a centre in the UK or abroad to learn specific clinical or research techniques, particularly those transferable to Glasgow. Professor Wilson’s principal interests were in clinical pharmacology, hypertension, endocrinology/metabolism, gastroenterology and medical education. More than one scholarship is available each year, each having a maximum value of around £1,000. A special Advances in Research session is held annually (April or May), where Prof Graham Wilson’s son, Dr John Wilson presents the awards to each of the successful Graham Wilson Travel Fellowship recipients, and recipients from the previous year present the outcomes of their visits at AIR.

The Clinical Observership programme provides research scientists the opportunity to spend time with clinical colleagues in their day to day setting providing an invaluable experience at the cutting edge of patient care. This experience has proved important for scientists to see how their research contribution impacts patient care, but also it has promoted discussion between themselves and clinicians. This will most likely lead to the expansion of the programme to involve clinicians experiencing life in the laboratory and should lead to further project development and closer working between clinicians and research scientists. Presenting and reporting back their experiences of the Clinical Observership programme at a special AIR session means that everyone in the Institute can benefit.

**Efficient research communication using ‘f1000prime’ and ‘workspace’ by Chris Murawski in February**

F1000 Workspace is an innovative reference manager that makes scientific communication easier. Dr Chris Murawski from F1000 talked about how to make use of these tools for efficiently communicating our science projects. Chris provided a information on signing up for a free Workspace account and trial versions of Prime.

‘Overview of the impact of COVID on BHF operations—early career researchers who are considering funding applications’ by Noel Faherty (Senior Research Advisor & Grant committee advisee, British Heart Foundation)

Noel Faherty (Senior Research Advisor, BHF) provided an overview on the impact of COVID-19 at BHF, their current funding situation, and his general advice in terms of making a good application in the current circumstances. In particular, Noel discussed BHF ECR applications; he assured those that attended that the BHF are still determined to keep all funding streams operational, and internally there is a clear emphasis on continuing to make fellowship awards.

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The topics covered within the seminar included advice on:

- Mentors
- Publishing
- Fellowship Application
- Writing
- Balancing clinical duties, home life and research activities

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4.5 Public Engagement Activities

The 2020 Covid-19 Pandemic greatly affected our Public Engagement activities. We are looking forward to being able to pick up our engagement in the coming years.

ICAMS tour for BHF fundraisers

We’ve had the pleasure of welcoming two fabulous fundraisers, Ewen & Fraser Cameron, to ICAMS. The father and son duo, spent time over the Summer walking 200 miles from Skye to Crieff on the Old Drover’s Road to raise funds for British Heart Foundation - Scotland and the Scottish Air Ambulance Charity. BHF funded PhD students from ICAMS gave Ewen & Fraser a tour of the building and offered an insight into how their valuable funds are invested in research.

Fundraisers got to know the connection between DNA and heart condition, they also got to use some of the microscopes. We would like to thank Ewen & Fraser for their fundraising to help us beat heartbreak forever.
5.1 Members of the External Scientific Advisory Board

Professor Victor J. Dzau

Professor Victor J. Dzau is one of the most influential physician-scientists and leaders in medicine worldwide. He is the Chancellor for Health Affairs and James B. Duke Professor of Medicine at Duke University (Durham, NC, USA) and the President and Chief Executive Officer of Duke University Health System. Professor Dzau was previously the Hersey Professor of Theory and Practice of Medicine and Chairman of Medicine at Stanford University (Stanford, CA, USA). Professor Dzau has made a substantial impact through his pioneering research in cardiovascular medicine, his founding of the discipline of Vascular Medicine, and his leadership in healthcare innovation. His work on the renin–angiotensin system paved the way for the contemporary understanding of this system in cardiovascular disease and led to the development of various therapeutic agents that inhibit these molecules. Professor Dzau pioneered gene therapy for vascular disease and was the first to introduce DNA decoy molecules to block transcription as gene therapy in vivo. He pioneered the concept of preemptive gene therapy for myocardial protection. Importantly, his seminal work on the stem cell ‘paracrine mechanism’ and the use of microRNA in direct reprogramming provide novel insight into stem cell biology and regenerative medicine.

Among his honours and recognitions are the prestigious Gustav Nylin Medal from the Swedish Royal College of Medicine; the Max Delbruck Medal from Humboldt University, Charite and Max Planck Institute; the Commemorative Gold Medal from Ludwig Maximilian University of Munich and the Frey-Werle Foundation; the inaugural Hutter Award from the Medical Research Council of South Africa; the Polzer Prize from the European Academy of Sciences and Arts; the Ellis Island Medal of Honour of USA; the Novartis Award for Hypertension Research; the American Heart Association Distinguished Scientist Award; and an American Heart Association Research Achievement Award for his contributions to cardiovascular biology and medicine. He is elected to the American Academy of Arts and Sciences; the European Academy of Sciences and Arts; and the Institute of Medicine of the National Academies. He has received six honorary doctorates.

Prof Dzau serves on the Council of the Institute of Medicine, the Board of Directors of Research America and the Board of Health Governors of the World Economic Forum. He is also Chair Elected of the Association of Academic Health Centers; has chaired the National Institutes of Health Cardiovascular Disease Advisory Committee, as well as the American Heart Association Council of Atherosclerosis, Thrombosis and Vascular Biology; and has served on the Advisory Council to the Director of the National Institutes of Health.

Professor Christopher Garland

Professor Christopher Garland is currently Professor of Vascular Pharmacology at the University of Oxford, UK; and a Fellow and Tutor in Medicine at the University’s Magdalen College. Previously, he was Professor and Head of Pharmacology in the School of Pharmacy, University of Bath, UK (2000-2008) and Reader then Professor of Cardiovascular Pharmacology, University of Bristol, UK (1993-2000). Since 2013, he has been a Visiting Professor at the University of Queensland, Australia. He also held Visiting Professorships at the University of Bath (2009-2012), Nagoya City University Medical School, Japan (2011); Monash University, Australia (2000-2003); and the National Academy of Sciences, Taiwan (2003).

Professor Garland is an Associate Editor for Pharmacological Reviews, an Editorial Board member for Vascular Pharmacology and The Journal of Vascular Research, previously the British Journal of Pharmacology. He was a Vice-President of the British Pharmacological Society and Council member of the Royal Society of Biology and has served on grant panels for the Wellcome Trust, BHF and Medical Research Council. In 2009, he was awarded the JR Vane Medal by the British Pharmacological Society, in recognition of his contributions in vascular pharmacology.

His research aims to understand the cellular mechanisms that control the smallest arteries, thereby enabling them to regulate blood pressure and flow. A particular focus has been investigating how the endothelium generates hyperpolarisation (endothelium-dependent hyperpolarisation) and how it then passes through the artery wall to cause vasodilation. EDH is the predominant vasodilator mechanism in small arteries. Professor Garland has made seminal contributions in this area, most notably discovering that two types of calcium-activated potassium channel are responsible for EDH. These channels are located in the endothelium and cluster to form signalling microdomains in endothelial projections, which link with the smooth muscle. His current research is probing interactions between intercellular calcium movement and potassium channel activation in the development of vasomotion and vasospasm.
Professor David Eisner

(B.A. Cambridge, Natural Sciences, 1976; D.Phil Oxford, Physiology, 1979). He spent the period 1980-1990 in the Department of Physiology at University College London. From 1990-1999 he was Professor of Veterinary Biology at Liverpool University before moving to University of Manchester as Professor of Cardiac Physiology in October 1999. He was appointed to the BHF Chair in Cardiac Physiology in 2000.

He has received the Pfizer Prize for Biology (1985), the Wellcome Prize in Physiology (1988), and the Peter Harris Distinguished Scientist Award of the International Society for Heart Research (2008), the Dorothy Wedgwood Lecture for Young People (2008), the Peter Baker Memorial Lecture (2010), the Nanjan Dhalla Lecture of the International Academy of Cardiovascular Sciences, the GL Brown (2014) and Annual Review (2017) Lectures of The Physiological Society. He has been elected a Fellow of the Academy of Medical Sciences and a member of Academia Europaea as well as to Honorary Fellowship of the Royal College of Physicians. He has received an honorary degree from the University of Debrecen, Hungary. He is Editor-in-Chief of The Journal of General Physiology and has served as Chair of the Editorial Board of The Journal of Physiology and as Editor-in-Chief of The Journal of Molecular and Cellular Cardiology. He was Chair of the British Society for Cardiovascular Research, President of the Federation of European Physiological Societies (FEPS) and President of the International Society for Heart Research (European Section). He is currently President of The Physiological Society. He chaired the International Scientific Programme Committee for the 2013 meeting of the International Union of Physiological Sciences (IUPS). He has served on panels for the Research Assessment Exercise (RAE) in 2001 and 2008 and the Research Excellence Framework (2014).

His research is focused on calcium regulation in the myocardium. Much of his work has concentrated on the basic mechanisms that regulate the amplitude of the systolic calcium transient and, in particular, the properties of the sarcoplasmic reticulum. His recent work had also shed light on the relationship between abnormalities of Ca regulation and the genesis of arrhythmias. He is currently studying the mechanisms responsible for the regulation of diastolic Ca.

Professor Marc Alan Pfeffer

Marc Pfeffer, M.D., Ph.D. is the Dzau Professor of Medicine at Harvard Medical School, and Senior Physician in the Cardiovascular Division at the Brigham and Women’s Hospital in Boston. A noted researcher, Dr. Pfeffer, along with his late wife, Dr. Janice Pfeffer, and Eugene Braunwald MD, is credited with introducing the concept that angiotensin-converting enzyme inhibitors (ACEIs) could attenuate adverse ventricular remodeling following myocardial infarction and that this use would result in a prolongation of survival and other clinical benefits. Since this initial discovery, he has had a principal role in several practice-changing clinical outcome trials. Dr. Pfeffer is considered as a team builder and takes pride in academic advancement of trainees and junior faculty collaborating on the trials. He is known for his fairness in data sharing and assisting others in developing meaningful scholarly works from study databases. He sets high standards for relationships with the sponsors whether industry or NHLBI. Dr. Pfeffer serves on the Data Safety Monitoring Boards of major international trials. An internationally recognized expert in the field of cardiology, he was recognized by Science Watch as having the most ‘Hot Papers’ (highly cited) in all of clinical medicine. Dr. Pfeffer was listed as one of the highly influential biomedical researchers of 1996-2011 in the European Journal of Clinical Investigation. He is the recipient of the William Harvey Award of the American Society of Hypertension, the Okamoto Award from Japan’s Vascular Disease Research Foundation, the American Heart Association Clinical Research Prize and the James B. Herrick Award. The Distinguished Scientist Awards from both the American Heart Association as well as the American College of Cardiology. The Lifetime Achievement Award from both the Heart Failure Society of America and the Heart Failure Association of the European Congress of Cardiology. The Gold Medal Award from the European Society of Cardiology in 2018. Dr. Pfeffer has Honorary Doctoral Degrees from Sahlgrenska Academy and the University of Gothenburg, Sweden and from the University of Glasgow, Scotland.
5.2 Honoring Staff

Professor John Mcmurray awarded ESC Gold Medal

We were extremely proud to announce ICAMS Professor John McMurray had been honoured with a European Society of Cardiology (ESC) Gold Medal for his outstanding achievements in cardiology and clinical trials.

“The ESC is proud to be able to recognise these exceptional cardiologists for their contribution to medicine and hope that by recognising them, they will be an inspiration to future generations.”

Prof McMurray talks with ESC: www.escardio.org/Congresses-&-Events/ESC-Congress/Congress-resources/Congress-news/esc-gold-medal-award-winner-professor-john-mcmurray

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/june-august2020/headline_738728_en.html

Professor Colin Berry Executive Editor of the European Heart Journal

Professor Colin Berry was invited to serve as Executive Editor of the European Heart Journal

The European Heart Journal which is the leading cardiovascular journal published on behalf of the European Society of Cardiology https://academic.oup.com/eurheartj.

A linked editorial highlighting the mission of the European Heart Journal is now available: https://academic.oup.com/eurheartj/advance-article/doi/10.1093/eurheartj/ehaa674/5898944

This role will add further to the University of Glasgow’s global reputation in cardiovascular research.

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/june-august2020/headline_738762_en.html

Professor James Leiper appointed BHF Associate Medical Director

Professor James Leiper was announced as an Associate Medical Director for Research for the British Heart Foundation (BHF).

He started on 1 April 2020 and join the senior research team at the BHF, which sets the charity’s research strategy and oversees its funding of around £100 million in research grants each year.

Professor Leiper said: “It is an honour to be appointed Associate Medical Director for Research at the British Heart Foundation. I am extremely fortunate to be able to combine this role with my position of Professor of Molecular Medicine within ICAMS. Taking on this new role has only possible with the fantastic support of Professor Touyz and colleagues within the Institute”

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/december-february2020/headline_724587_en.html

Professor Peter Langhorne, Professor of Stroke Care, received a Lifetime Achievement Award

Professor Peter Langhorne, Professor of Stroke Care, received a Lifetime Achievement Award from the UK Stroke Forum in recognition of services to stroke.

He received the award from the Chair of the UK Stroke Forum, Dame Professor Caroline Watkins. Peter was delighted to receive the award but less thrilled to see his dancing at the conference dinner feature on Twitter…

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/december-february2020/headline_710504_en.html

ICAMS Professors Christian Delles & Matthew Walters were among six UofG academic recognised in the Queen’s Birthday Honours

Professor Christian Delles of the Institute of Cardiovascular and Medical Sciences: Member of the Most Excellent Order of the British Empire (MBE)

Professor Matthew Walters, Professor of Clinical Pharmacology and Head of the School of Medicine, Dentistry and Nursing: Member of the Most Excellent Order of the British Empire (MBE)

“On behalf of the entire University, I offer my warmest congratulations to each of the colleagues recognised in the Queen’s Birthday Honours.

“They each bring unique expertise to the University from across the fields of computing science, physics, medicine and virology, and their honours are richly deserved.”

Full article available here: glasgow.ac.uk/news/headline_757562_en.html
Congratulations to our staff who were selected as 2020 Paul Dudley White International Scholars

ICAMS Staff Karla B. Neves, Hannah Morris, Rheure Alves-Lopes, Augusto C. Montezano and Professor Rhian M. Touyz were selected as 2020 Paul Dudley White International Scholars for an abstract submitted to the Hypertension 2020 Scientific Sessions. The event took place virtually between 10-13 September 2020.

Title of awarded abstract: Peripheral vascular dysfunction in a model of small vessel disease of the brain (CADASIL) involves impaired redox-sensitive cyclic GMP/PKG signaling.

This award recognizes authors that contributed to the highest ranked accepted abstract from each country.

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/september-november-2020/headline_765549_en.html

Congratulations to ICAMS Professor John McMurray and Professor Naveed Sattar who are among Web of Science’s most highly cited researchers for 2020

ICAMS Professor John McMurray and Professor Naveed Sattar who are among Web of Science’s most highly cited researchers for 2020.

Prof Sattar was awarded the prestigious Camillo Golgi Prize by the European Association for the Study of Diabetes (EASD).

The Camillo Golgi Prize recognises outstanding contributions in the field of the histopathology, pathogenesis, prevention and treatment of the complications of diabetes mellitus. Professor Sattar said: “It’s a huge honour to have been chosen as the recipient of this award and to have my work recognised on a European scale is hugely rewarding. I am very appreciative to my excellent colleague and friend, Professor Martin Rutter who took the time to submit my nomination, but also to the incredible and dedicated people I have worked with throughout my career, who without them, I simply would not have been able to have done a lot of the research I’ve carried out.”

Full article available here: https://diabetestimes.co.uk/professor-naveed-sattar-wins-easds-camillo-golgi-prize/

ICAMS Professor Naveed Sattar awarded the Camillo Golgi Prize 2020

ICAMS Dr Rheure Lopes awarded the prize of Best Art in Science

Dr Lopes was awarded the prize of ‘Best Art in Science’ at the 2020 European Council for Cardiovascular Research Meeting.

Rheure’s Image was selected to take pride of place as the front cover of our 2018-19 Biennial report.

We thank him for allowing us to use this fabulous image.

Full article available here: https://diabetestimes.co.uk/professor-naveed-sattar-wins-easds-camillo-golgi-prize/

ICAMS staff @ The Lighthouse Lab

The Lighthouse Laboratory in Glasgow – a major new COVID-19 testing facility based in Scotland

The Lighthouse Lab, which officially started testing samples for COVID-19 in 2020, is part of what will be the biggest network of diagnostic testing facilities in British history, alongside other Lighthouse Lab sites in Milton Keynes and Alderley Park, which were opened in recent days. The Lighthouse lab project is funded by the UK Government.

Eight Technical and post-doctoral staff from ICAMS were elected to be seconded to the Lighthouse Lab to analyse COVID-19 samples. The skills and expertise they possess made the transition to this work very easy.

ICAMS Staff expressed how rewarding the work was and the fantastic team spirit amongst the staff who come from various Institutes across the University.

We applaud their dedication in the Fight against the Pandemic.

Full article available here: glasgow.ac.uk/researchinstitutes/icams/newsandevents/march-may-2020/headline_725480_en.html
5.3 Research awards (Proportioned value)

New grants > 10k awarded in 2020 in which Institute members were investigators. The funding stated is the amount that has to come to the University of Glasgow which, for some grants, may be less than the total amount awarded. The list does not include any grants which are confidential in nature.

Biomarker and imaging characterisation of BRAF and MEK Inhibitor Induced Cardiovascular Toxicity: A Prospective Study in Patients with Cancer
PI: Dr Ninian Lang
Co-I: Professor Mark Petrie
£399,080

Defining the role of the ADMA-DDAH1 pathway in ischaemic stroke
PI: Dr Alyson Miller
Co-I: Professor James Leiper
£248,779.69

Development of a model of insulin-stimulated glucose transport in human cardiomyocytes
PI: Professor Godfrey Smith
£13,905.80

Early Supported Discharge in patient admitted to hospital with Heart Failure: ESD-HF
PI: Dr Ross Campbell
Co-I: Professor John McMurray
Co-I: Professor Mark Petrie
£389,341.71

Effects of Covid-19 pandemic on diabetes risks and outcomes in UK
PI: Professor Naveed Sattar
£83,409.30

Investigating the long-term cardiac sequelae of statin/ statin therapy
PI: Dr Kenneth Mangion
Co-I: Dr Ninian Lang
Co-I: Professor Colin Berry
£19,640

Kappa Bioscience – [T-C.RID32175]
PI: Dr Stuart Gray
£135,950.64

mHealth trial for the management of gestational diabetes & hypertensive disease in pregnancy in India
PI: Professor Sandosh Padmanabhan
£51,335.92

New care home admission after hospitalisation – understanding trajectories and predictors using linked health and social care data
PI: Dr Jennifer Burton
Co-I: Dr Teresa Quinn
£43,405.80

NIHR Global Health Group in Non Communicable Disease – Stroke Care In Sierra Leone - SISLE
PI: Professor Peter Langhorne
£10,805.21

Pharmacological and dynamic-clamp narrowing of the calcium current window to inhibit human atrial early after depolarisations and atrial fibrillation.
PI: Dr Antony Workman
Co-I: Dr Rachel Mylne
Co-I: Professor Godfrey Smith
£262,420.73

Real-world treatment effectiveness in people with type 2 diabetes: Maximising the applicability of clinical trials
PI: Dr Robert Lindsay
£38,403.528

RELyspsa Intervention for oEdema in Heart Failure (RELIEHF)
Co-I: Professor Mark Petrie
£146,550

Targeting RUNX to Attenuate Adverse Cardiac Remodelling
PI: Professor Christopher Loughrey
Co-I: Professor Colin Berry
Co-I: Professor Stuart Nicklin
£1,023,145.485

The Influence of COVID-19 pandemic on the Scottish congenital heart disease population
PI: Mr Mark Danton
£12,000

The SofTMech Statistical Emulation and Translation Hub
Co-I: Professor Colin Berry
Co-I: Professor Godfrey Smith
£162,064.182

The THISTLE study: identiFying the microRNA Signature of cerebrovascular disease
PI: Dr Josephine Fullerton
£12,832

Treatment of diuretic resistance with the sodium glucose transporter inhibitor dapagliflozin versus thiazide diuretic in diabetic patients hospitalized with heart failure and diuretic resistance: a multi-center, open-label, randomized controlled clinical trial
Co-I: Dr Kieran Docherty
Co-I: Dr Ninian Lang
Co-I: Dr Pardeep Jhund
Co-I: Dr Ross Campbell
PI: Professor John McMurray
Co-I: Professor Mark Petrie
£835,979.1546

Using Big-data to Understand the Interactions between Lifestyle, Deprivation and health outcomes to support Intervention Development in deprived areas (BUILD): a mixed methods programme
Co-I: Professor Jason Gill
£39,789.70

£1,671,404.748
£20,000
£29,852.90


230. Simpson, J. et al. (2020) Prognostic models derived in RAPID-HF can be validated in THROMBOSPHERE and the Swedish Heart Failure Registry to predict mortality and morbidity in chronic heart failure, a comparison to the VSFT. Heart Failure Medicine, 9(4), pp. 438-441. (doi: 10.1016/j.amjhf.2019.08.003) (PMID:31959519)


5.5 Book sections and chapters


5.6 PhD students

Solange Liliana Parra Solo
Jose Alfonso, Bernal Moyano
Claire Caroline Lorraine Green
Michael Lynch
Anas Hussain H Dighiri
Lulwa A A D Alabdullah
Rachel Livingston
Stephen Dobbin
Alastair J Rankin
Alice Jackson
Simon Beggs
Claire Glen
Jirapitcha Boonpor
Eman Oboud S Alsheikh
Sarah Hamda D Alanazi
Arun Flynn
Gabriela Gerganova
Elka Galenova Kyukchieva
Thomas Andrew Wright
Chloe Tammaye Gulliver
Leanne Mooney
Carly Adamson
Su Ern Yeoh
Michael McMahon
Russel Grant
Jiayue Ling

Ryan Ghita
Anne Stillas
Xuan Gao
Rachanchal Chawangwongsanukun
Robert Pearson
Michael Sullivan
Stephanie Shields
Paul McCaughey
Wai Saad
Mohammed Abdulghaffar S Bazuhair
Peter Bliss Mortensen
Emma Elliott
Miriam Rol Garcia
Hanab Khaled H Alghibiwi
Julian Tristan Schwartze
Xie He
Bogna Anna Droztocka
Peter McCartney
Rosemary Elizabeth Brown
Lewis Steell
Saleh Abdulaziz A Alkhedhairy
Amrita Lucretie Asrivatham
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