BHF CENTRE OF RESEARCH EXCELLENCE

VASCULAR BIOMEDICINE SUMMER SCHOOL

15TH – 20TH JULY 2018

UNIVERSITY OF GLASGOW

SCOTLAND

A one week academic, hands-on summer school in vascular biomedicine for early stage researchers

Anatomy, Physiology, Pharmacology
Signalling, Pathophysiology
Vascular disease, Clinical aspects
Current and future challenges
Welcome

The British Heart Foundation (BHF) Centre of Research Excellence, embedded within the Institute of Cardiovascular and Medical Sciences (ICAMS) at the University of Glasgow, is hosting a high-level Summer School on Vascular Biology and Biomedicine from 15th -20th July 2018 in Glasgow, Scotland, UK.

The 5-day summer school will target early-career non-clinical and clinical researchers and the topics will cover everything ‘vascular’, from molecular biology to vascular medicine and will have many hands-on-opportunities to learn and perfect new skills, techniques and applications. This summer school, designed to encourage open discussion, is not only a special meeting to learn and share information, but also an excellent platform to build an effective network for communication and collaboration.

The faculty includes national and international experts and guest lecturers in the field of vascular biomedicine.

We would like to warmly welcome you to Glasgow and hope you will enjoy the Summer School!

Professor Rhian Touyz                                      Professor Christian Delles
Objectives and General Overview

During the five days of the Summer School we will:

- Provide an overview of anatomy, development and physiology of the vasculature.
- Discuss aspects of signalling within and between vascular cells
- Explain the role of physiological and pathophysiological mechanisms involving oxidative stress and inflammation.

The programme is characterised by strong links to vascular medicine and includes:

- Lectures on clinical conditions such as hypertension, renal disease and diabetes
- Discussion of novel therapeutic concepts
- Insights into the role of sex and gender in (cardio)vascular conditions.

The programme includes four afternoons with workshops and hands-on sessions including:

- In-vivo and ex-vivo techniques in preclinical vascular biomedicine
- Clinical vascular phenotyping
- Advanced vascular phenotyping by magnetic resonance imaging.

In addition we will:

- Discuss general research principles and research integrity
- Provide an overview of career opportunities in vascular biomedicine
- Create a platform for networking that will last beyond the Summer School and support delegates in their future career.
Course Directors

Prof. Rhian Touyz
BHF Professor of Cardiovascular Medicine
Director, Institute of Cardiovascular and Medical Sciences
Director, BHF Centre of Research Excellence Glasgow
University of Glasgow
United Kingdom

Prof. Christian Delles
Professor of Cardiovascular Prevention
Deputy Director, BHF Centre of Research Excellence Glasgow
University of Glasgow
United Kingdom

Prof. Duncan Stewart
Evelyne and Rowell Laishley Chair; Ottawa Hospital Research Institute
Executive Vice-President, Research; The Ottawa Hospital
Scientific Director, Canadian Vascular Network
University of Ottawa
Canada

Prof. Louise Pilote
Professor, Department of Medicine, Division of General Internal Medicine
Senior Scientist, McGill University Health Centre Research Institute
McGill University, Montreal
Canada
Professor Victor J. Dzau

Honorary guest

Professor Victor J. Dzau is one of the most influential physician scientists and leaders in medicine worldwide. He is President of the United States National Academy of Medicine.

He previously held prestigious positions at Duke University, Harvard Medical School, and Stanford University. He received his MD from the medical school at McGill university. He has had major impact in academic medicine through his pioneering research in cardiovascular medicine, his founding of the discipline of Vascular Medicine and his many leadership roles.

His work on the renin angiotensin system (RAS) paved the way for the contemporary understanding of RAS in cardiovascular disease and the development of RAS inhibitors as therapeutics. Dr Dzau pioneered gene therapy for vascular disease and was the first to introduce DNA decoy molecules to block transcriptions as gene therapy in vivo.

He pioneered the concept of preemptive gene therapy for myocardial protection. Importantly, his seminal work on stem cell “paracrine mechanism” and the use of microRNA in direct reprogramming provide novel into stem cell biology and regenerative medicine.

He has been at the forefront driving the field of Precision Medicine. Prof Dzau holds an honorary degree from the University of Glasgow and Chairs the External Scientific Advisory Board of the Institute of Cardiovascular and Medical Sciences.
Faculty

Dr Rheure Alves Lopes, University of Glasgow, UK
Prof. Charalambos Antoniades, University of Oxford, UK
Mrs Elisabeth Beattie, University of Glasgow, UK
Dr Katriona Brooksbank, University of Glasgow, UK
Mrs Ammani Brown, NHS Greater Glasgow & Clyde, UK
Dr Livia De Lucca Camargo, University of Glasgow, UK
Prof. John Cleland, University of Glasgow, UK
Dr Damien Collison, Golden Jubilee National Hospital
Prof. Dame Anna Dominczak, University of Glasgow, UK
Prof. Kim Dora University of Oxford, UK
Dr Noel Faherty, British Heart Foundation, UK
Miss Sonya Frazier, University of Glasgow, UK
Prof. Christopher Garland, University of Oxford, UK
Dr Delyth Graham, University of Glasgow, UK
Prof. Gerry Graham, University of Glasgow, UK
Prof. Iain Greenwood, St George's University of London, UK
Prof. Tomasz Guzik, University of Glasgow, UK
Mrs Laura Haddow, University of Glasgow, UK
Mr Joost Holthof, Fujifilm VisualSonics Inc., The Netherlands
Mrs Hayley King, NHS Greater Glasgow & Clyde, UK
Dr Patrick Lacolley, Inserm 1116, Université de Lorraine, France
Dr Sharon Mackin, University of Glasgow, UK
Dr Pasquale Maffia, University of Glasgow, UK
Prof. Patrick Mark, University of Glasgow, UK
Mr John McAbney, University of Glasgow, UK
Dr Christopher McCabe, University of Glasgow, UK
Dr John McClure, University of Glasgow, UK
Dr Alyson Miller, University of Glasgow, UK
Dr Augusto Montezano, University of Glasgow, UK
Prof. Keith Muir, University of Glasgow, UK
Prof. John Mullins, University of Edinburgh, UK
Dr Karla Neves, University of Glasgow, UK
Prof. Stuart Nicklin, University of Glasgow, UK
Prof. John Petrie, University of Glasgow, UK
Dr Aleksandra Radjenovic, University of Glasgow, UK
Dr Francisco Rios, University of Glasgow, UK
Dr Giacomo Rossitto, University of Glasgow, UK
Dr Marcus Salmon, Fujifilm VisualSonics Inc., UK
Ms Laura Stockwell, British Heart Foundation, UK
Mrs Jackie Thomson, University of Glasgow, UK
Dr Tom Van Agtmael, University of Glasgow, UK
Dr Lorraine Work, University of Glasgow, UK
Scientific Programme

Monday 16th July

**Chair of the Day**  Christian Delles

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8.30-9.00</td>
<td>Breakfast: Rhian Touyz/Christian Delles: Welcome and introduction</td>
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<tr>
<td>9.00-9.30</td>
<td>Duncan Stewart: Development of the vascular system</td>
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<td>9.30-10.00</td>
<td>TBC Physiology of vessels</td>
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<td>10.30-10.45</td>
<td>Coffee/Tea</td>
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<tr>
<td>10.45-11.15</td>
<td>Christopher Garland: Signalling between the endothelium and vascular smooth muscle cells</td>
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<tr>
<td>11.15-11.45</td>
<td>Kim Dora: Coronary arterioles – physiology and pathophysiology</td>
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<td>11.45-12.15</td>
<td>Tomasz Guzik: Inflammation in hypertension and vascular diseases</td>
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<tr>
<td>12.15-13.45</td>
<td>Lunch and Poster Session</td>
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<td>13.45-14.00</td>
<td>Break</td>
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<tr>
<td>14.00-17.00</td>
<td>Afternoon programme: Ex-vivo techniques in vascular biomedicine</td>
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**Faculty:** Laura Haddow, Karla Neves, Francisco Rios, Alyson Miller, John McAbney, Francisco Rios, Rheure Alves Lopes, Livia De Lucca Camargo, Jackie Thomson, Augusto Montezano

**Venue:** BHF GCRC and West Medical Building

Delegates will rotate through 2 workshops:
- Vascular Phenotyping - including wire/pressure myography and intravital microscopy.
- In-vitro Phenotyping of Hypertension - including live cell microscopy and assessment of oxidative stress in the cardiovascular system.
Tuesday 17th July

Chair of the Day  Duncan Stewart

8.30-9.00  Breakfast
9.00-10.00  Gerry Graham: Introduction to research and research integrity
10.00-10.30  Christopher McCabe: Imaging of the rodent brain
10.30-10.45  Coffee/Tea
10.45-11.15  Duncan Stewart: Pulmonary hypertension
11.15-11.45  Damien Collison: Ischaemic heart disease
11.45-12.15  Iain Greenwood: Vascular Kv7 channels: master regulators or slaves to fashion?

12.15-13.45  Lunch and Poster Session
13.45-14.00  Break

14.00-17.00  Afternoon programme: In-vivo techniques in preclinical models

Faculty: Delyth Graham, Lorraine Work, Christopher McCabe, Sonya Frazier, Elisabeth Beattie

Venue: BHF GCRC, Rooms C222, 243 and 349

Delegates will rotate through 3 workshops:

- Measurement of haemodynamic parameters: Blood pressure monitoring without anaesthesia and intra-arterial measures of cardiovascular parameters
- Techniques for cerebrovascular imaging
- Ultrasound imaging for assessment of vascular function

Evening  Professor Victor J. Dzau will give a talk on ‘My career- personal reflections’ at the dinner taking place in the Senate Room, University of Glasgow starting at 19:30
## Wednesday 18th July

**Chair of the Day**  
Pasquale Maffia

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<td>9.00-9.30</td>
<td><strong>Duncan Stewart</strong>: Vascular cells as therapeutics</td>
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<tr>
<td>9.30-10.00</td>
<td><strong>Anna Dominiczak</strong>: Genetic aspects of hypertension</td>
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<tr>
<td>10.00-10.30</td>
<td><strong>Pasquale Maffia</strong>: Immune mechanisms of atherosclerosis</td>
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<tr>
<td>10.30-10.45</td>
<td>Coffee/Tea</td>
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<tr>
<td>10.45-11.15</td>
<td><strong>Tom Van Agtmael</strong>: Using disease mechanism to develop therapeutic targets for haemorrhagic stroke</td>
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<td>11.15-11.45</td>
<td><strong>Charalambos Antoniades</strong>: The role of perivascular fat as a regulator of cardiovascular disease</td>
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<td>11.45-12.15</td>
<td><strong>Patrick Lacolley</strong>: Arterial stiffness</td>
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<td>12.15-13.15</td>
<td>Lunch</td>
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<td>13.15-14.00</td>
<td>Break and transfer to afternoon venue</td>
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<tr>
<td>14.00-17.00</td>
<td><strong>Afternoon programme</strong>: Vascular function and structure in clinical research</td>
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</tbody>
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Faculty: Sharon Mackin, Katriona Brooksbank, Giacomo Rossitto, Marcus Salmon, Joost Holthof, Hayley King, Ammani Brown, Christian Delles

Venue: Clinical Research Facility and Teaching & Learning Centre, QEUH

The programme will start with a seminar:
- Seminar: High-frequency ultrasound in vascular research

Delegates will then rotate through 5 workshops:
- Endothelial function: Flow-mediated dilation and peripheral artery tonometry
- Strain-gauge plethysmography for the assessment of forearm blood flow
- Vascular stiffness: pulse wave analysis and pulse wave velocity
- High-frequency ultrasound
# Thursday 19th July

**Chair of the Day**  
Rhian Touyz

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<td><strong>Rhian Touyz</strong>: Vascular biology of hypertension</td>
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<tr>
<td>9.30-10.00</td>
<td><strong>Stuart Nicklin</strong>: Renin-angiotensin-aldosterone system</td>
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<td>10.00-10.30</td>
<td><strong>Louise Pilote</strong>: Pre-eclampsia</td>
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<td>Coffee/Tea</td>
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<td>10.45-11.15</td>
<td><strong>John Cleland</strong>: Heart failure</td>
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<td>11.15-11.45</td>
<td><strong>Patrick Mark</strong>: Vascular disease and the kidney</td>
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<td>11.45-12.15</td>
<td><strong>Keith Muir</strong>: Stroke</td>
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<td>12.15-13.15</td>
<td>Lunch</td>
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<td>Break and transfer to afternoon venue</td>
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<tr>
<td>14.00-17.00</td>
<td><strong>Afternoon programme</strong>: Magnetic resonance imaging methods in clinical vascular research</td>
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**Faculty**: Keith Muir, Aleksandra Radjenovic

**Venue**: Imaging Centre of Excellence and QEUH
### Friday 20th July

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<tr>
<td>8.30-9.00</td>
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<td><strong>Gerry Graham:</strong> Chemokines</td>
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<tr>
<td>9.30-10.00</td>
<td><strong>John McClure:</strong> Statistics in biomedicine</td>
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<tr>
<td>10.00-10.30</td>
<td><strong>John Mullins:</strong> Zebrafish and vascular research</td>
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<tr>
<td>10.45-11.15</td>
<td><strong>Noel Faherty:</strong> Career options in cardiovascular sciences</td>
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<td>11.15-11.45</td>
<td><strong>Louise Pilote:</strong> Sex and gender aspects in cardiovascular diseases</td>
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<tr>
<td>11.45-12.15</td>
<td><strong>John Petrie:</strong> Diabetes and cardiovascular disease</td>
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<tr>
<td>12:15-12:45</td>
<td><strong>Laura Stockwell:</strong> The British Heart Foundation in Scotland and feedback session</td>
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<tr>
<td>12:45</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30</td>
<td>Summer school closes</td>
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</table>
Social Events

**Sunday 15th July**

You will meet Augusto Montezano at a central point in Glasgow City Centre (he will be in contact with you about this). Everyone will go to **Tennents Training Academy** for **6pm** where you will enjoy a Spanish Tapas and Sangria evening.

Tennents Training Academy
161 Duke Street
Glasgow
G31 1JD

**Monday 16th July**

**The Lighthouse 7pm-10pm.** This is a great chance to get to know each other and the faculty members in a lovely setting. The Lighthouse is a museum and a centre for design and architecture based in the centre of Glasgow). [http://www.thelighthouse.co.uk/](http://www.thelighthouse.co.uk/)

We have hired a spacious room here where you can have dinner and drinks and have fun taking part in a quiz organised by Augusto.

The Lighthouse
11 Mitchell Lane
Glasgow
G1 3NU
Tuesday 17th July

The Senate Room, University of Glasgow, 7pm-10pm. This is a formal dinner in the lovely grounds of the University of Glasgow. This event is for delegates, faculty members and guest speakers and our own academics and faculty who are attending the summer school. This will be a truly wonderful experience that includes a 3-course meal and provides an excellent opportunity to get to know the academics who are involved in the Summer School.

The Senate Room
University of Glasgow
Glasgow
G12 8QQ

Wednesday 18th July

Bowling at Glasgow Springfield Quay 7pm This is for all students and some of our helpful faculty members who will be showing you around our facilities throughout the week. It is a chance to relax and have some fun. We have hired lanes where you can show off your bowling skills and you will be brought food and drinks to your lane and have food once you are finished.

Hollywood Bowl
Glasgow Springfield Quay
Glasgow
G5 8NP
Thursday 19th July

**Hilton Glasgow Grosvenor, 7pm-10pm.** You can enjoy a 3-course meal at the Hilton Grosvenor which is less than a 10-minute walk away from ICAMS, BHF Glasgow Cardiovascular Research Centre. For some delegates this may be the last night in Glasgow if they are leaving on the Friday afternoon/evening so it is an opportunity to say your goodbyes and reflect of the week you have just had. The Hilton Grosvenor is a beautiful hotel in the Westend, just off a Byres Road. Byres Road has some lovely bars along it and you can walk down our very popular cobbled street Ashton Lane (off Byres Road, right beside Hillhead subway station) where delegates are welcome to try some of the most popular bars and restaurants.

Hilton Grosvenor Hotel

1 - 9 Grosvenor Terrace

Glasgow

G12 0TA

Friday 20th July

Augusto is currently planning a fun activity for the evening. Delegates will have had lunch at our Institute and there will be a feedback session. After that you may wish to go back to your room and pack or explore our city if you wish and you can meet Guto for the evening activity.

**Escape Reality Glasgow 4:30pm**

Merchant Square

Basement Unit 1

Corner of Candleriggs and Bell Street

Glasgow G1 1LE
Practical Information

Venue

Institute of Cardiovascular and Medical Sciences (ICAMS)
126 University Place
BHF Glasgow Cardiovascular Research Centre
University of Glasgow
G12 8TA

https://www.gla.ac.uk/researchinstitutes/icams/

There is a reception desk so in the morning you may let the janitor know who you are and that you are here for the Summer School.

Important Contacts

Professor Rhian Touyz, Director of Institute
Telephone: 0141 330 7775
Email: Rhian.Touyz@glasgow.ac.uk

Mrs Margaret Kinninmont, Personal Assistant to Prof. Rhian Touyz
Telephone: 0141 330 7774
Email: Margaret.Kinninmont@glasgow.ac.uk
Airport Transfers and Getting Around Glasgow

When arriving in Glasgow, whether it be by plane or train, there are plenty of taxis right outside the Airport and train station so you can get one to your destination.

Getting around Glasgow is very easy as there is the option of subway, train, taxis or bus. For further information please check the following websites:

- University of Glasgow maps and travel: https://www.gla.ac.uk/explore/maps/
- Travel to Gilmorehill Campus: https://www.gla.ac.uk/explore/maps/howtogetthere/
Taxi Services

Glasgow Airport Taxis
If you are arriving at Glasgow Airport there are taxis outside but this is an option if you want to pre-book.

https://www.glatransfers.com/
Email: sales@glatransfers.com
Tel: 0800689 5206

Glasgow Taxis
These can be either booked or you can flag one or go to a taxi rank in the city centre or west end.
Telephone: 141 429 7070

Hampden Cabs
These will only provide pre-booked rides but may be less expensive.
0141 332 5050

Westend Radio Cars
These will only provide pre-booked rides but may be less expensive.
0141 954 2000
Accommodation

Delegates will stay at Kelvinhaugh Gate:
5 Kelvinhaugh Gate
Glasgow
G3 8PE
Tel: 0141 221 6124
Email: kelvinhaughgate@glasgow.ac.uk
https://www.gla.ac.uk/undergraduate/accommodation/residenceprofiles/kelvinhaughgate/
Check-in: 4pm
Check-out: 10am
Please pick up your keys at the reception at Cairncross House, 20 Kelvinhaugh Place, Glasgow G3 8NH. There will be staff at the reception desk from 8am until 10pm and from 10pm onwards there will be a security guard present so you will not have an issue collecting your key. Cairncross house is a 2 minute walk to 5 Kelvinhaugh Gate.

Cairncross
Tel: 0141 221 9334 Email: cairncross@glas.ac.uk

Other contact options include:

Kelvinhaugh Residences
Tel: 0141 221 9334

University of Glasgow Accommodation Services
65 Hillhead Street
Glasgow
G12 8QF
Telephone: 0141 330 4743

Sanctuary Students
Web: www.sanctuary-students.com

Accommodation for faculty members will be communicated separately
Sponsors

The organisers would like to express their gratitude to the following sponsors who provided unrestricted grants in support of the Summer School:

**OMRON**
Omron Healthcare is a leader in medical equipment for therapy and health monitoring with a range of products that include blood pressure monitors, temperature measurement devices, respiratory therapy devices, electronic fever thermometers and body fat monitors.

**UNEX Corporation**
UNEX Corporation was established in November, 2003 with experts in technology and marketing for medical devices. As its abbreviation stands for, we will make every effort to provide Ubiquitous healthcare by Nobel technology for the EXcellent society.

**REPROCELL**
empowers research scientists and medical professionals to improve the quality of human life by providing unique products and services that accelerate breakthrough medical technologies and therapies.

**CLINICAL SCIENCE**
Clinical Science (www.clinsci.org) is a journal publishing original research and state-of-the-art review articles that links basic science to human health. Translating molecular bioscience and experimental research into medical insights, Clinical Science offers multi-disciplinary coverage and clinical perspectives to advance human health.