Pulmonary Vascular Research Institute
Annual Report 2017

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Introduction

Throughout 2017, the PVRI continued its development based on the effective reorganisation of 2014/15 and delivered on all its planned activities. Moreover, the Board met for a two-day meeting and undertook a strategic planning exercise covering the next five years.

Captain’s Blog, Star Date: 8 December 2017

It seems strange to note that the date when the UK and Europe managed to agree on the way forward and establish a detailed negotiating plan to effect Brexit coincided with the adoption of the Flag of Europe in 1955. Other notable events that took place on 8 December included the US declaration of war on Japan 1941, the murder of John Lennon in 1980 and the dissolution of the Soviet Union in 1991. The date is also firmly fixed in my mind since it is my wife’s birthday, so unashamedly I wish her a very Happy Birthday.

Highlights this year included great progress in the joint strategic pharma-academic partnership leading to the PVRI Pharma Task Force ably led by Peter Fernandes, Sylvia Nikkho and Lawrence Zisman. The Pharma Task Force focuses on engagement with regulatory bodies and experimental clinical trial design, including novel endpoints.

We aligned with The Dinosaur Trust, under the leadership of Jamie Strachan, and together with joint funding from PVRI we were able to provide £300,000 of Research and Fellowship grant funding, a new endeavour for the PVRI. Thanks to all members of the Grant Advisory Committee for reviewing the many applications we received.

We provided travelling Fellowships for eight young investigators from the UK to attend the ESC and ERS conferences and have successfully produced the first phase of our e-learning programme, which will be unveiled in Singapore. Both these latter activities were supported by GSK. Thanks particularly to Colin Church and Martin Johnson, who have driven the e-learning project forward.

We continued to provide regional meetings in Cuba, Malaysia, Italy, Argentina and Dubai, often collaborating with local societies.

Our journal Pulmonary Circulation was awarded an initial impact factor of over 2.0 which brings us great academic credit and thanks are due to Jason Yuan, Nick Morrell, Kurt Stenmark, Irene Lang, Mary Reynolds, Michael Brown and Sheila Glennis Haworth for their invaluable contributions which led to this success plus, of course, the membership who sent in their manuscripts.

We also had a wonderful Drug Discovery & Development Symposium in Berlin organised by John Newman, Ardi Ghofrani and Stuart Rich. The Symposium was attended by many members, though notable for the absence of your President who was stranded in New Zealand as a result of an aircraft failure!

Exciting projects in early development include increased joint working beyond our current Memorandum of Understanding with the Australian & New Zealand PH Society and plans for a major educational venture in East Africa in collaboration with the Royal College of Physicians in London.

I hope you agree with me that we have made substantial progress towards achieving our mission and none of this would have been possible without the terrific support and hard work from our staff, Stephanie, Georgie, Margaret and our IT Guru Aaron. They are a most wonderful example of how inspiration and perspiration in equal measure is a highly productive combination and have demonstrated wonderful commitment to the PVRI. On your behalf, I thank them all.

2017 also saw my first visit to HQ in Canterbury and I was fortunate to stay overnight within the grounds of Canterbury Cathedral, the spiritual home of the Church of England. I hesitate to add that I stayed in a Lodge, not amongst tombstones! Quite by chance, on 8 December 1864, Pope Pius IX issued a document entitled: the Syllabus Errorum (Syllabus of errors) condemning 80 heretical acts and spearheading an attack on liberalism, modernism, moral relativism, secularisation and the political emancipation of Europe from the tradition of Catholic monarchies.

‘Plus ça change’, I hear you say!

Finally, I record that my term of office will cease in January 2018 when I pass on the baton to Paul Hassoun. I cannot think of a better person to take on the challenge and lead us successfully through the next two years. It has been both a humbling experience and a source of pride to be able to represent you as President for the last two years and I thank you all for the faith you have shown in me.
PVRI Chief Executive Officer’s Report 2017
Stephanie Barwick, CEO

2017 has been my fourth year at the PVRI and, in many ways, a landmark year of success. However, from an operational standpoint, it has also been one of the most challenging!

It is still an inspiration to me to see the PVRI working as powerfully as it does in so many areas and I cannot recall a time in my career when I have had the opportunity to work alongside so many gifted colleagues and volunteers, who give so much to this organisation above and beyond anything we could reasonably expect.

Executive Summary
Running the PVRI has never been as complex as in 2017! Juggling the priorities of a small company with a very small team, with the complexities of running a global organisation with multi-currency bank accounts, operating within cyber security controls, international banking regulations and data protection laws, is certainly not an easy task and can come with many unexpected surprises.

However, it is the gift of resilience and perseverance that ultimately ensures success and longevity and that is certainly true in business, as it is in science.

During our 10th Anniversary year, we have...
- invested £200,000 into new BMPR2 research in collaboration with The Dinosaur Trust.
- launched the PVRI Fellowships worth £100,000.
- awarded 35 educational grants to our members worth over £50,000.
- held our biggest Annual World Congress in Miami with over 300 delegates.
- sponsored international scientific meetings in the UK, USA, Cuba, Italy, Germany, Dubai, Malaysia, China and Argentina reaching out to over 1,250 delegates.
- received our first impact factor of 2.178 for our journal Pulmonary Circulation.
- expanded our network to 6,000 PH professionals from 75 different countries.
- developed Phase 1 of the PVRI Digital Clinic, an e-learning tool for clinicians to better diagnose and manage PVD in their patients.
- held fundraising events to raise awareness about PH.

The human effort required to maintain the PVRI and all of our activities around the world is quite breathtaking and I would like to put on record my gratitude to all my colleagues, proactive members, sponsors and supporters for giving their all to the PVRI family.

Finally, I would like to thank our President Paul Corris. It has been a privilege to work alongside him over the past two years. His visionary leadership has seen the PVRI rise to new heights, establishing a sound platform on which to build on. His unfailing commitment to the PVRI and hard work are tribute to our success.

The following pages outline our activities and achievements during 2017.

I thank you all for your continued support and wish you a very happy and successful 2018!
OPERATIONAL ACTIVITIES

PVRI Board of Directors/Trustees Meetings & Annual General Meeting

Board of Director meetings, to oversee the strategic direction of the PVRI, were held twice a year in January in Miami and in July in Berlin, ahead of our two major scientific conferences. The Annual General Meeting was held on the first evening of our 11th Annual World Congress in Miami on 26 January 2017 and attended by all the members who joined us in Miami.

Changes to the Board

These include the appointment in March of Professor Gérald Simonneau, Université Paris-Sud, France, as well as the resignation of Treasurer John Harrington. Martin Wilkins has reassumed the position of Treasurer. We would like to express our sincere thanks to all our Board members for their continued voluntary commitment and support to our society.

BOD Strategy Day to determine future direction

In March, our Board of Directors met in London for a Strategy Day to determine the future direction of the PVRI. Seven specific priority areas have been agreed which include the writing of PH guidelines for developing countries, working towards building a global baseline database of PVD and developing a PVRI Reference Service where clinicians from around the world can receive instant advice for their patients. We would like to thank Andrea Sobrio of Executive Insights for facilitating the day and helping us shape our future.

PVRI Finances

Thanks to the continued Roundtable Membership contributions from the pharma industry, support from the Cardiovascular Medical Research and Education Fund (CMREF), income from registration fees to our scientific meetings, effective fundraising activities and funds raised for special projects, we are now in a solid position to take the PVRI to the next level. Quarterly management accounts for review by the Executive Committee and annual audited accounts in both the UK and USA have been produced. In addition to our HSBC bank accounts we opened new accounts with Handelsbanken in April, in both the UK and USA, all of which are now managed by the main office in the UK.

MARKETING ACTIVITIES

Website and Social Media

This year, the PVRI website has seen a greatly increased level of interaction by new audiences and professional groups around the world. We have had a 62% increase of total site views and an increase of 28,178 unique page views. This means that on average around 2,300 more people interact with the site every month, compared to last year. The homepage film has been played over 30,000 times.

Facebook advertising saw increased success this year, with two-paid campaigns reaching 50,000 professionals. This resulted in a little over 16,000 new younger professionals visiting our site and an increase in abstract submissions to our Annual World Congress in Singapore. These particular campaigns saw a click-through-rate of 5.57%, compared with an industry average of 0.83% in healthcare. This puts the PVRI’s Facebook campaign management among the global top 1% based on the CTR performance indicator. Facebook likes have increased by 31% year on year to 1058 and Twitter followers are up by 24% year on year totalling 666.

Our e-learning materials have been viewed by 54% of visitors, who also clicked on more than five pages of related content. Electronic adverts promoting the PVRI and our Annual World Congress in Singapore were placed in ‘PH News’ reaching out to over 6,000 PH professionals in the USA, as well as email campaigns by the International Society for Lung & Heart Transplantation (ISHLT) and the American Heart Association (AHA) to their members and then PHA in the USA, and American Journal of Physiology (Cardiology & Respiratory). Thank you to everyone who has helped promote our Congress.

The PVRI online newsletter featuring the ‘President’s blog’ and other current topics was produced quarterly and reached out to over 6,000 PH professionals in 75 different countries from across the world.

This is a great result and a massive thank you goes to Aaron Shefras, our Marketing Manager.

INTERNATIONAL SCIENTIFIC MEETINGS

As has become tradition in the PVRI calendar, during 2017 we held two major international conferences – the 11th Annual World Congress on PVD in Miami from 25-29 January and the 4th Annual Drug Discovery & Development Symposium in Berlin on 10-11 July. In addition to these, the PVRI Committee for Young Clinicians & Scientists (CyCS) organised its 2nd Annual Symposium & Retreat for Young Investigators, which was held in Germany from 14-17 September.

Annual World Congress

We started the year with our biggest meeting in Miami with 312 delegates from 25 countries and 86 accepted abstracts. Our three and a half day scientific programme was rated as excellent by 76% of delegates.
The most popular topics were the ‘Clinical and Basic Science Rapid Fire Abstract Presentations’ as well as Ardi Ghofrani’s session on What’s in the PAH therapeutic pipeline? and David Badesch’s session on Use of endpoints that combine morbidity and mortality, overstate therapeutic benefit of PAH.

Further highlights were the pre-Congress meetings of the Pre-clinical & Molecular Science and the Paediatric & Congenital Heart Disease Task Forces, each attended by in excess of 40 people, as well as the inaugural meeting of the PVRI Pharma Task Force.

Many thanks to the Scientific Planning Committee under the leadership of Stephen Archer and Kurt Stenmark, assisted by Brian Graham, Bradley Maron, Mark Ormiston and Thenappan Thenappan, for putting together a great scientific programme and, of course, Andrea Rich, our Events Manager, for the exciting mix of social activities including, a tour of ‘Down Town Miami’ and the famous Everglades.

During the Gala Dinner, we presented the PVRI Awards.

2016 PVRI Award Winners

We celebrated the achievements of some of our most distinguished and active members during the Gala Dinner at Miami Beach accompanied by songs from our very own Julio Sandoval.

The following members received awards:

**Best Clinical & Abstract Awards**
- The two best ‘Clinical’ Abstract Awards were presented to Rebecca Vanderpool and Nick Rahaghi
- The two best ‘Basic’ Abstract Awards were presented to Kurt Prins and David Frank.
- The Butrous Foundation Award went to Jocelyn Dupuis, who was unanimously voted the winner of the overall best abstract.

**CYCS Awards**
- Certificates for most active engagement during 2016 were presented to Djuro Kosanovic, Michiel Alexander de Raaf, Mariola Bednorz, Michael Seimetz and Rebecca Vanderpool.

**Main PVRI Awards**
- The Lifetime Achievement Award 2016 was presented to Ghazwan Butrous in recognition of all that he has done for the PVRI since its inception.
- The Humanitarian Award 2016 went to Michael Fishbein for his unfailing support to the PVRI.
- The Achievement Award 2016 went to Martin Wilkins for his outstanding contribution to medical research and the PVRI.
- The Certificate of Excellence 2016 was presented to Kurt Stenmark and Stephen Archer, for organising the Annual World Congress in Miami and their work as North America Task Force leaders.

Congratulations to all our winners. The prize winners of 2017 will be announced at our Gala Dinner in Singapore in January 2018.

**Drug Discovery & Development Symposium**

Our Berlin Drug Symposium was attended by 97 delegates, from academia, industry and regulatory bodies, who participated in stimulating discussions and debates over a day and a half. Sincere thanks to our Co-chairs Stuart Rich, John Newman and Ardi Ghofrani for putting together a diverse scientific programme featuring excellent talks on newly developed drugs with anti-inflammatory properties and reviews for potential drugs targeting serotonin, tyrosine-kinas and mRNAs. Over 70% of delegates rated the sessions as ‘excellent’ with the most popular three talks being:

- Tyrosine Kinase Inhibitors as a treatment of PAH - Lessons Learned and Future Challenges by Ralph Schermuly, University of Giessen, Germany.
- Tocilizumab in the Treatment of Pulmonary Arterial Hypertension (TRANSFORM-UK) by Mark Toshner, University of Cambridge, UK.
- CXA-10 (10-nitro-oleic-acid) for Pulmonary Hypertension by Tanja Rudolph, University of Cologne, Germany.

An ‘Open House’ PVRI Pharma Task Force lunch was held where leaders Peter Fernandes and Sylvia Nikkho presented the various workstreams to a very large audience.

**Symposium & Retreat for Young Investigators**

CYCS President Michel de Raaf together with Mariola Bednorz organised the 2nd PVRI Annual Symposium & Retreat for Young Investigators, which was held in the beautiful spa town of Wiesbaden, Germany, in September. Twenty five young scientists from around the world attended the event, which was spread over a weekend and included stimulating scientific sessions as well as an exciting social programme enjoyed by all delegates. Our thanks to Michiel and Mariola for organising a great event. We hope that this will become a regular annual meeting attracting more young researchers from around the world.

Last, but not least, a big thank you to Andrea Rich, the PVRI Events Manager, for looking after all the logistics of our scientific meetings and making sure everything runs smoothly. With a participation of over 300 delegates at some of our meetings, this is by no means a small task!

**ATS Get-Together Social Gathering**

This year’s ATS Get-Together was held at the Kimpton Monaco Hotel on 23 May in Washington DC and was attended by over 100 PVRI members and guests. All enjoyed meeting new friends over a glass of wine and some canapes, courtesy of the PVRI.

For more information on all meetings, please have a look at pages 21-24.
MEMBERSHIP

PVRI Membership
The PVRI network has expanded to over 6,000 people, spread around 75 different countries. We are immensely proud of our international reach and global representation, as the PVRI is the only global PVD charity. Thank you to everyone for your continued support.

Industry Support & Roundtable Membership 2016
I would like to express my sincere thanks to all our industry partners who have supported us during 2016 and engaged in the PVRI Roundtable Membership, which is the PVRI-industry alliance. Without their continued sponsorship and support, we simply could not fulfil our mission. Roundtable Members for 2016 included Bayer/Merck, Bellerophon, Gilead, GSK and United Therapeutics.

In addition to the Roundtable Membership, particular thanks go to GSK and Bayer. GSK provided substantial support over two years to our e-learning initiative, ‘The PVRI Digital Clinic’ and Bayer helped us to kick-start the PVRI Pharma Task Force with sufficient funds to sponsor meeting costs and other overheads. Thank you to both!

Task Force Activity
The unsung heroes of the PVRI are our Task Force leaders and all the active members throughout the world. It is through them that we fulfil our mission and bring the PVRI to the rest of the world. A sincere thanks to everyone who is involved in a Task Force, leaders and members, for all their hard work, commitment and support.

Our Task Forces have had a great year with many regional PH meetings held in Cuba, Dubai, Argentina, USA, UK, Malaysia and Italy. Our newly established South East Asia Task Force, ably led by Helmy Haja Mydin and Roslina Adnb Manap organised their first PVRI Task Force meeting, which was held in Kuala Lumpur, Malaysia, in July and attended by 70 participants. Our EU Task Force leaders, Dario Vizza and Stefano Ghio, organised the first PVRI EU Task Force meeting in Palermo in October with over 60 delegates from Southern, Central and Eastern Europe.

The Pre-clinical & Molecular Science and Women’s Health & Pregnancy Task Forces, led respectively by Mandy McLean and Anna Hemnes, organised a meeting ahead of the Annual World Congress in Miami entitled ‘Sex talks’ with participation from 40 scientists. The Paediatric & Congenital Heart Disease Task Force, led by Ian Adatia, Rachel Hopper and Maria Jesus del Cerro, also organised a Pre-Congress meeting in which over 45 delegates participated.

During the year, we have established the new Pharma Task Force under the leadership of Peter Fernandes, Sylvia Nikkho and Lawrence Zisman. A full report is available on pages 46-47.

Our thanks go to all present and past Task Force leaders for their immense hard work and a warm welcome to everyone who’s joined during the year.

For further information on all Task Force activity, please have a look at pages 25-50.

PUBLICATIONS

Pulmonary Circulation
2017 has been an exceptional year for Pulmonary Circulation with our new publisher SAGE taking over the publication of journal in January, the announcement of our first impact factor of 2.178 in June and the recruitment of a second Deputy Editor, Irene Lang, who joined the team in the Spring.

Journal Committee meetings, which are chaired by Past-President Sheila Glennis Haworth CBE, were held quarterly.

We are immensely proud of Pulmonary Circulation and our thanks go to everyone who is involved in the journal, but most importantly Jason Yuan and Nick Morrell.

It is they who have made the journal what it is today by devoting endless hours of their voluntary time to Pulmonary Circulation. We cannot thank them enough for all that they do!

A full report on Pulmonary Circulation is on pages 18-19.
PVRI GRANTS
During the year, we have awarded many grants to PVRI members and we have launched our newly established PVRI Fellowship and Research Grants. We would like to express our sincere thanks to The Dinosaur Trust who have sponsored the PVRI Research Grants through their own fundraising efforts.

The following grants have been awarded during the year.

Travel Grants
35 Travel Grants were awarded to various PVRI members in support of national and international PVRI meetings and initiatives. These included 15 Travel Grants for young scientists and investigators to participate in our 11th Annual World Congress on PVD in Miami, USA. The remaining Travel Grants were provided in support of the SAPH 2016 Annual Symposium in Dubai in April, the 2nd Latin American Symposium on PH in Children in Buenos Aires in April, the 1st Malaysian Task Force meeting in Kuala Lumpur, the CYCS Retreat in Wiesbaden in September and the 1st EU Task Force meeting in Palermo in Italy.

ERS/ESC Educational Travel Grants
In collaboration with GSK, we have awarded eight Travel Grants to UK based young scientists and investigators to attend the European Respiratory Society (ERS) Conference in Milan in September and the European Society of Cardiology (ESC) Conference in Barcelona in August. All grant recipients presented abstracts at the conferences and produced a full report upon their return. Grant winners and their reports are detailed on pages 13-17.

PVRI Fellowship Grants
We are immensely proud to have been able to launch the newly established PVRI Fellowship Grants during the year. We received 34 applications, of which eight were shortlisted to the second stage. The two winners announced in September were:

- Katharine Clapham of Yale University, USA
- Bradley Wertheim of Harvard Medical School, USA

Both winners benefit from a grant of £50,000 each.

Further details on the two winners and their research is detailed on pages 12.

PVRI Research Grants sponsored by The Dinosaur Trust
Collaborating with The Dinosaur Trust, who has raised all funds through their own fundraising efforts, we have been able to sponsor BMPR2 Research Grants worth £200,000. We received a total of 12 applications and the two winners announced in October were:

- Sébastien Bonnet, Laval University, Canada and Frederic Perros, University of Paris-Sud, France
- Hyung Chun, Yale University, USA

Both winning applications benefit from a grant of £100,000 each.

Further details on the two winners and their research is detailed on pages 12.

Congratulations to all our winners and a big thank you to all our sponsors and donors who supported these grants.

E-LEARNING
E-learning Course ‘The PVRI Digital Clinic’
We are proud to launch the first phase of our newly developed e-learning course on PVD, the ‘PVRI Digital Clinic’. This is the result of months of hard work and research into how to best deliver an e-learning tool and make it relevant to PH clinicians anywhere in the world.

The course is based on three real patient cases from anonymised data and brings all the latest research together to make it relevant in the clinic environment. We feel this is the closest the market currently has to offer to shadowing a real PH clinician. The ‘PVRI Digital Clinic’ was developed with the aim of educating professionals looking to take their first step towards becoming a pulmonary vascular specialist and as a tool for clinical discussion amongst our membership. It was built thanks to a grant from GSK and we would like to express our gratitude for their support and sponsorship.

All content has been produced by independent medical content writers, Drs Martin Johnson and Colin Church from the University of Glasgow, under the peer-review process of Andrew Peacock and Ghazwan Butrous. The course has found its success through the unparalleled commitment of Martin and Colin, who we cannot thank enough for their continued hard work.

The ‘PVRI Digital Clinic’ is a learning tool and encourages the user to intensify their knowledge on PVD. It includes peer-reviewed reference materials as well as PVRI generated digital learning materials at each decision-making stage to encourage the user to further their understanding on the disease.
PVRI FUNDRAISING ACTIVITIES

Annual Fundraising Event
Under the leadership of Lynette Swift, a committed volunteer who is directly affected by PVD through her son, the PVRI organised various fundraising activities throughout the year. These included the ‘PVRI Charity Concert’ on 5 May to mark World Pulmonary Hypertension Day. The concert was held in St James’s Church in central London and over 100 guests enjoyed a repertoire of diverse classical pieces. Our thanks go to internationally acclaimed conductor Stephen Barlow and the Festival Chamber Orchestra.

A total of £6,000 was raised for the PVRI and we are extremely grateful to Lynette for all her hard work and support.

A BIG THANK YOU TO:
• our committed hardworking staff in the UK and USA.
• our PC journal team and exceptional editors.
• our members all over the world and our hard-working Task Force leaders.
• the many young clinicians and scientists who contribute to our work.
• our industry partners and Roundtable members.
• the Cardiovascular Research and Education Fund.
• Jamie & Julia Strachan and The Dinosaur Trust.
• all our supporters, donors and sponsors.
• our Board of Directors.
PVRI 2017 Grants

We have awarded many grants to PVRI members during the year and we have launched our newly established PVRI Fellowship and Research Grants.

PVRI Scientific Grants Advisory Committee
The PVRI Grants Advisory Committee was established in February 2017 to review all grant applications and awards.

This consists of the following members:

- Paul Corris, PVRI President 2016/17, Newcastle University, UK
- Paul Hassoun, PVRI President 2018/19, Johns Hopkins University, USA
- Mandy MacLean, Glasgow University, UK
- Nick Morrell, Cambridge University, UK
- Martin Wilkins, Imperial College London, UK
- Marc Humbert, University Paris-Sud, France
- Anna Hemnes, Vanderbilt University, USA
- Aaron Waxman, Brigham & Women’s Hospital, Harvard Medical School, USA
- Qadar Pasha, CSIR Institute of Genomics & Integrated Biology, India
- Jamie Strachan, The Dinosaur Trust, UK

The following grants were awarded during the year:

PVRI FELLOWSHIP GRANTS

We are immensely proud to have been able to launch the newly established PVRI Fellowships. Following a call for applications in May 2017, we received 34 high quality applications from all over the world, of which eight were shortlisted to the second stage. The two winners, who each benefit from a grant of £50,000, were announced in September. These are:

- Katharine Clapham from Yale University, USA for her proposal entitled: Novel Mechanisms of EndoMT in Pulmonary Arterial Hypertension. This proposal will test the hypothesis that pulmonary arterial hypertension (PAH) is driven in part by the transformation of endothelial cells to mesenchymal cells (EndoMT) in response to mutation of a specific component of the bone morphogenetic protein signalling component BMPR1A (ALK3). Dr Clapham proposes to use mice deficient in BMPR1A and genetically manipulated cells to test her hypothesis. Ultimately, the findings, and the specific role of BMPR1A in the development of PAH, will be tested using endothelial cells obtained from patients with PAH. Dr Clapham is a postdoctoral fellow in the Department of Medicine, Division of Cardiovascular Medicine at Yale University. Her mentor, Dr Hyung Chun, is Associate Professor of Medicine and Pathology at Yale School of Medicine.

- Bradley Wertheim from Brigham and Women’s Hospital, Harvard Medical School, USA for his proposal entitled: Mechanisms of Disease Inception in Pulmonary Arterial Hypertension. This proposal will test the hypothesis that a pro-fibrotic protein, NEDD9, contributes to pulmonary vascular scar formation by altering right ventricular-pulmonary vascular coupling advanced pulmonary arterial hypertension (PAH). Dr Wertheim will be using an animal model of severe PAH (the sugen hypoxia rat) as well as pulmonary artery endothelial cells. Using systems biology, the investigator will determine pathways that regulate NEDD9 and targets involved in the process of NEDD-9 dependent collagen synthesis. Dr Wertheim is a post-doctoral fellow in the Division of Cardiology at the Brigham and Women’s Hospital, at Harvard Medical School. His mentor, Dr Bradley Maron is an Assistant Professor of Medicine at Harvard Medical School, Division of Cardiology, and Department of Medicine.

PVRI RESEARCH GRANTS SPONSORED BY THE DINOSAUR TRUST

In collaboration with The Dinosaur Trust, who have raised all funds through their own fundraising efforts, we have been able to sponsor new BMPR2 research worth £200,000. We received a total of 12 applications and the two winners, who will each benefit from a grant of £100,000, were announced in October. We would like to express our sincere thanks to Jamie & Julia Strachan of The Dinosaur Trust for their collaboration and funds provided to us.

The winners of the BMPR2 2017 Research Grants are:

- Sébastien Bonnet, Professor in Medicine, University of Laval, Canada, and Frederic Perros, INSERM U999 - University of Paris-Sud, France

Pulmonary arterial hypertension (PAH) is a devastating disease characterised by a progressive increase of arterial blood pressure in the lungs. Endothelial cells (EC) dysfunction and aberrant proliferation of pulmonary arterial smooth muscle cells (PASMC) contribute to a progressive obliteration of the precapillary vessels that leads to
increased pulmonary arterial pressure and ultimately, right heart failure and death. Among identified molecular factors that promote PAH, the alteration of the BMPR2 signalling pathways seems to play a role in the pathogenesis. Mutations on the BMPR2 gene are the main genetic risk factors for PAH and are found in 75% of familial and 20% of idiopathic PAH. Nevertheless, the average penetrance of PAH among the mutation carriers is low (20%), thus suggesting that other triggers are necessary to initiate PAH pathogenesis. Because 94% of patients with pulmonary hypertension due to heart diseases and 34% of patients with idiopathic PAH display at least two characteristics of metabolic syndrome, and as the decrease in BMPR2 signalling alter metabolism we hypothesised that BMPR2 deficient signalling may worsen metabolic disorders that in return act as the second trigger that worsen PAH development.

Hyung Chun, Associate Professor of Medicine, Section of Cardiovascular Medicine, Yale School of Medicine, USA

Pulmonary arterial hypertension is a rare disease with the hallmark of vascular remodelling of the pulmonary arterioles. Although our understanding of the signalling perturbations in the disease paradigm has advanced, the translational advancement of these findings has been limited, as reflected upon the limited number of drug targets currently utilised in the clinical setting. A key signalling paradigm that has been demonstrated to underlie both the clinical context and experimental models is that mediated by Bone Morphogenetic Protein Receptor Type 2 (BMPR2). We recently defined a key, previously undefined interaction between BMPR2 and Vascular Endothelial Growth Factor Receptor 3 (VEGFR3 or FLT4) that provides a novel paradigm for endothelial BMP signalling. In our studies, generously supported by the PVRI Dinosaur Trust BMPR2 grant, we will elucidate the VEGFR3-BMPR2 interaction by characterising the key molecular domains that are critical to the VEGFR3-BMPR2 association as a key regulatory mechanism of BMPR2 function. Moreover, we will demonstrate the significance of VEGFR3-BMPR2 interaction in vivo using genetic and experimental models of PH, using mice with endothelial specific Vegfr3 and Bmpr2 deletions, as well as delivery of VEGFR3 coding messenger RNA to the lungs using lung endothelial targeting nanotechnology.

ERS/ESC EDUCATIONAL TRAVEL GRANTS

In collaboration with GSK, we have awarded eight Travel Grants to young UK scientists and investigators to attend the European Respiratory Society (ERS) Conference in Milan in September and the European Society of Cardiology (ESC) Conference in Barcelona in August.

The successful applicants were:

- Dr Alexi Crosby, Cambridge University, Basic Scientists, attended the ERS Congress in Milan
- Dr Andrew Constantine – London Brompton, Clinical Trials Co-ordinator, attended the ESC Congress in Barcelona
- Dr Logan Thirugnanosothy, Newcastle University, Clinical Fellow, attended the ERS Congress in Milan
- Dr Sarah Woolcock, Newcastle University, Clinical Fellow, attended the ERS Congress in Milan
- Dr Alison MacKenzie, Glasgow University, Clinical Fellow, attended the ERS Congress in Milan
- Dr Kathryn Wilson, Glasgow University, Basic Scientist, attended the ERS Congress in Milan
- Andrew McNair, Glasgow University, PhD Student, attended the ERS Congress in Milan
- Dr Kathry Wilson, Glasgow University, Basic Scientist, attended the ERS Congress in Milan
- Dr Sarah Woolcock, Newcastle University, Clinical Fellow, attended the ERS Congress in Milan
- Louise Harlow, Cambridge University, Basic Scientist & Clinical Trials Co-ordinator, attended the ERS Congress in Milan
- Dr Andrew Constantine – London Brompton, Clinical Fellow, attended the ESC Congress in Barcelona

The applicants were required to produce a meeting report (see below) and submit an abstract to the respective conference.

Meeting reports

All delegates found the Congresses in Milan and Barcelona very interesting and reported that they were able to attend many of the different scientific sessions, although some were scheduled at the same time.

The following meeting reports were received.

ERS Congress 2017 // 9-13 September 2017, Milan, Italy

Louise Harlow // Clinical Research Manager for the PVD Unit at Papworth Hospital

Louise attended the following ERS sessions:

- Symposium: Rational strategies for specific treatment situations in lung cancer
- ERS Clinical Research Collaborations (EMBARC)
- Cardiac function assessment in pulmonary hypertension
- New insights into pulmonary hypertension from recent trials
- ERS statements and technical standards on diagnosis and monitoring.
- ERS/ESC joint session “open questions in pulmonary hypertension”
- Poster Discussion Outcomes and new treatment strategies in pulmonary hypertension
- State of the art session “Interstitial lung disease and pulmonary vascular diseases”

Louise said:

“I have recently been involved in managing a multi-centre study in PAH and wanted to attend the CRC meeting to gain some insight into setting up collaborations. I found the session extremely useful and was particularly impressed with the talk on the EMBARC. This collaboration is extremely successful with 44 countries involved and numerous studies and guidelines achieved since its inception. I also found the talk RISE-1IP: Riociguat for the treatment of pulmonary hypertension associated with idiopathic interstitial pneumonia from Steven D Nathan extremely interesting as this study had to be stopped due
to safety events. Attending the meeting is a great opportunity to share experiences with other centres. I was fortunate to attend the Actelion meeting on the Monday evening. This was a small group discussion around selected abstracts and presentations from the meeting to date. This meeting allowed a more informal in-depth discussion than time allows during the actual conference. It was useful to hear experiences from other centres, including international centres.'

Kathryn Wilson // Post-doctoral Research Scientist at Glasgow University

Kathryn is investigating novel therapies in pulmonary hypertension and sees attending congresses, such as the ERS, a vital part of her early career training.

She reported:
‘The oral presentation on cardiac function assessment in pulmonary hypertension was of interest as one of my research interests is the right ventricular changes in experimental models of pulmonary hypertension. We are currently trying to establish methods to monitor disease progression in animal models so this session offered an insight into features observed in humans and possible routes of exploration in rodents.

Another oral presentation, new insights into pulmonary hypertension from recent trials, was also of interest as my current research involves the use of an ASK1 inhibitor in a rodent model of pulmonary hypertension. One of the presentations at this session was summarising the key findings of the ARROW study—a phase 2 clinical trial using an ASK1 inhibitor in patients. The main finding from the study was that ASK1 inhibitor given orally once daily for 24 weeks did not lead to a significant reduction in pulmonary vascular resistance in patients with pulmonary arterial hypertension. This data is in contrast to our research, and that of others, which demonstrates a reduction in right ventricular systolic pressure. There was quite a lot of discussion after this presentation, and my own oral presentation with a lot of opinions being given from other delegates regarding the relevance of pre-clinical research in drug development. It was great to hear world leaders in my field discuss work which I have a direct interest in. There were a number of poster sessions which were of interest to me. One poster discussed the differences between the response of human and mouse ET-1 pre-contracted pulmonary arteries when exposed to nintedanib. The study demonstrated that human pulmonary arteries relaxed more potently than mice. This poster was of particular interest given the strong discussion in the new insights into pulmonary hypertension from recent trial session (above). Another poster discussed the differences in vascular resistance and vasoactive agents between male and female rats housed in hypoxic conditions as a potential explanation for the sexual dimorphism in the progression of pulmonary arterial hypertension.

The opposing and differing results between animal models of pulmonary hypertension and patients displayed at the congress highlights the need to understand better the underlying cellular and molecular mechanisms involved in the disease pathogenesis. It is also clear that there is still a great deal of research to be carried out.’

Alexi Crosby // Post-doctoral associate at Cambridge University

Alexi who has been researching pulmonary arterial hypertension for 10 years, reported:
‘I particularly enjoyed the ERS session entitled, ‘New insights into pulmonary hypertension from recent trials’. There was an interesting talk by Marius Hoeper looking at the effect of riociguat on pulmonary arterial compliance. The importance of pulmonary arterial compliance as a measurement was emphasised. Another particularly interesting talk in this session was by Tildman Kramer who showed that iron treatment improved the measured parameters in the trial.'
Another interesting session was the session entitled 'New perspectives form experimental models on pulmonary hypertension'. Of particular interest was the talk given by Ayumi Sekine. Interestingly, they showed that in three animal models of pulmonary arterial hypertension reducing BMP9 signalling protected against disease. The mechanism they proposed was that it was through reducing endothelin-1 in pulmonary arterial endothelial cells.

The scientific quality of the talks was good – however, there were more clinical and fewer scientific sessions than I expected. I had time to chat to a number of delegates during the conference.

Andrew McNair // Second year PhD student at Glasgow Caledonian University

Part of Andrew’s PhD involves collaborating with the Scottish Pulmonary Vascular Unit based in the University of Glasgow, and he was keen to attend the ERS Congress to improve his knowledge and to give him new ideas for his PhD project, which is looking at the role of connexions in pulmonary arterial hypertension.

Andrew reported:

I attended many interesting sessions, such as New insights into pulmonary hypertension from recent trials and New perspectives from experimental models of pulmonary hypertension, as well as the thematic poster sessions, which I presented at and also had the chance to look around and see others research. I found sessions like these to be both very interesting as I liked the opportunity to see the latest ideas and research in the field from both a clinical and basic science perspective. Also getting to present my own work and get feedback from many of the leading experts in pulmonary hypertension was an invaluable experience. The suggestions and ideas I received to help further my research will be very helpful going forward into the final year of my PhD. I really enjoyed meeting other delegates from around the world and learning about their experiences. The diversity of the other delegates at the conference also allowed me to chat to both fellow PhD students of my own age about their work and also network with potential future employers about opportunities (or me after my PhD).'

Logan Thirugnanasothy // Associate Clinical Researcher, Newcastle University

Logan, who has just completed his higher specialist training in Respiratory and General internal Medicine is due to take up his substantive Consultant post at the Queen Elizabeth hospital, Gateshead. His specialist training in respiratory medicine has included a MD in pulmonary hypertension research, part of which he presented at the ERS in Milan.

Logan reported:

I selected a wide range of sessions to attend, including the clinical year in review, clinical grand round, occupational lung diseases and the lung cancer interactive MDT. I also visited multiple thematic poster sessions and engaged the presenters. Specific to pulmonary hypertension, I attended the symposium “from acute clots to CTEPH” and the smaller sessions, including “Outcomes and new treatments in pulmonary hypertension” and “New insights into pulmonary hypertension from trials”. I presented my pulmonary hypertension research in a thematic poster discussion entitled: “Imaging and lung disease in pulmonary hypertension”. The standard of the talks delivered at the symposium was very high given the well selected speakers with great expertise in their sub-specialty field. Additionally, the smaller oral and posters sessions led by several facilitators provided lively discussion.

Each session was an opportunity to interact with other delegates during the conference, including respiratory colleagues from the north east, as well research fellows from other UK Pulmonary hypertension centres centre, such as Glasgow.

Over the last few years, I have attended several international meetings such as the ERS and ATS annual meetings. Such large scale meetings are a very important for my continuing professional development. These meetings cover the entire breadth of respiratory medicine, as well as allied specialties, such as intensive care and cardiothoracic surgery. Therefore, attendance helps keep knowledge and skills up to date, provides networking opportunities and offers new ideas to take back to my own centre, such as developing patient care and services, as well as research ideas.'
Alison MacKenzie // Pulmonary Vascular Fellow at the Scottish Pulmonary Vascular Unit

Alison reported:
"Attending the conference allows me to fulfil three key tasks:
1. Attend the ERS Task Force meeting on exercise rehabilitation in pulmonary hypertension
2. Present two posters, both from a PAH specific exercise rehabilitation study I am coordinating
3. Attend other relevant symposia, oral and poster sessions.

1 - ERS Task Force meeting
I am a member of the ERS Task Force on exercise rehabilitation in pulmonary hypertension. Part of my role in this group involved preparing sub-sections of a forthcoming guideline. I had the opportunity to present and obtain feedback on the first draft of these sections and listen to presentations from other group members. This stimulated very interesting and constructive discussion regarding the current state of exercise therapy in PAH and future directions for research in this field. It also facilitated useful opportunities to discuss shared research projects and foster new collaborations.

2 - Presentations
My main research interest is in exercise physiology and exercise therapy in pulmonary arterial hypertension. I am currently coordinating a clinical study looking at the efficacy and feasibility of exercise therapy for patients with PAH in the UK.

I presented data on the haemodynamic changes seen at right heart catheterisation before and after exercise therapy. I received very positive feedback and useful advice from PH experts regarding the changing physiology that we have observed. I also presented data with a physiotherapy colleague on compliance to rehabilitation in patients with PAH and factors that interfere with rehabilitation. This was again a very positive session and we had interaction from a wide variety of health care professionals from Europe and Australia.

3 - Conference sessions
Between my presentations and attending the Task Force meeting, I had the opportunity to attend some excellent sessions relevant to both pulmonary hypertension and exercise physiology in pulmonary diseases.

Particular highlights were:
• The lungs and the heart during exercise: This session covered a variety of pulmonary conditions including PAH. I was particularly interested in the findings of a study assessing the positive impact of COPD rehabilitation on endothelial function.
• Cardiac function assessment in pulmonary hypertension: The group I work with at the Scottish Pulmonary Vascular Unit has a strong interest in imaging and this session was therefore useful from a research perspective and to hear my colleagues present. I particularly enjoyed hearing about the prognostic relevance of right atrial function in PAH and also RV strain differences between IPAH and SSc PAH, as these are two specific areas that are being studied in our unit.
• New insights into PAH: key findings from large scale drug studies in PH. This was a useful session from a clinical perspective, particularly regarding the efficacy of the endothelin receptor antagonist Macitentan in CTEPH. I was also interested in discussion around the use of Selonsertib in the ARROW study. Our group had been involved in phase 1 and 2 studies of this drug. Although the ARROW study was negative, the results stimulated interesting discussion on trial design and pathways.
• From acute clots to chronic thromboembolic pulmonary hypertension. In addition to chronic thromboembolic pulmonary hypertension, I am also involved in the management of acute pulmonary embolism in Glasgow, including advanced rescue therapies, such as catheter directed thrombolysis. This session was useful to hear the latest insights into risk stratifying patients with acute pulmonary embolism and also looking at RV function in CTEPH.

Sarah Woolcock // Specialist Registrar within the Northern Pulmonary Vascular Service at the Freeman Hospital in Newcastle

Sarah who recently completed her MD research project with the team reported:
"The basis of my research is to explore the role for specialist palliative care in the management of patients with PAH. As part of my research I carried out interviews with patients and clinical staff involved in caring for those with PAH, to explore attitudes towards palliative care and evaluate how palliative care is currently delivered in PAH. I am currently in the process..."
of publishing and disseminating my research findings. Whilst I did not present my research findings at this year’s ERS meeting, the meeting provided an invaluable opportunity for me to establish collaborations in this field. The conference also provided opportunity for me to gain further knowledge of current updates in pulmonary vascular disease as well as other respiratory conditions.

Particular highlights of the conference included symposiums I attended on the topics of lung cancer, lung transplantation, COPD and pulmonary vascular disease. The lung cancer ‘Grand Round’ was especially helpful in discussing the management of difficult cases with a mock MDT setting. I also attended a symposium on smoking cessation which was very relevant to clinical practice. In addition, I also attended a symposium on interstitial lung disease and pulmonary vascular disease which gave a good summary of updates in the management of chronic thromboembolic pulmonary hypertension and acute pulmonary embolism. I was also able to spend time looking at the posters, which were excellent and very interesting.

All of the talks and symposiums I attended were of very good quality and were very applicable to my clinical practice. Each talk provided relevant, up to date research and information and were extremely helpful. Overall I felt that there was a well-balanced programme covering detailed scientific material as well as clinical application. In addition to the teaching programme, the conference provided excellent opportunity to meet with other delegates and discuss my research findings. I hope that I will also be able to build on discussions from the conference and build collaborations in the future.

I am very grateful to the PVRI for supporting my attendance at the ERS for what was an excellent conference, providing good educational and collaborative opportunities which have been invaluable to my ongoing research.’

Andrew who is completing his cardiology training found that attending the ESC allowed him to keep up to date with the most recent trials in cardiology and more specifically with his chosen field of congenital heart disease and pulmonary hypertension. In addition, he stressed that networking with colleagues and communicating directly with companies at the cutting edge of technology was extremely beneficial.

Andrew said:

‘I have attended a good number of very interesting sessions over the five days of the congress. Highlights have been the sessions on cardiology in the digital world including, the Inaugural session on “Cardiovascular Medicine in the Digital Era” by Eric Topol, as well as the great number of sessions on congenital heart disease and pulmonary hypertension. These have provided important updates with regards pulmonary valve replacement outcomes and acute dissection in Tetralogy patients, including from our research group at the Brompton.

Generally, I was impressed with the scientific quality and standard of the talks. Even at the smaller sessions, including at the rapid fire abstract presentations, the data presented have been of a very high standard. There has been an inevitable variation in the standard of the speakers themselves, based on their experience and grasp of English, but generally these have also been of a good standard (impressive when considering English is a second language for many speakers at the congress). I could meet and talk to many of these speakers; sharing ideas and thoughts about published and future research has been a highlight of the conference for me. My talk was well received and provided important data of a very large number of women with CHD and PAH undergoing pregnancy.’

**TRAVEL GRANTS**

A total of 35 Travel Grants were awarded during the year. These include:

- 15 Travel Grants for young scientists and investigators to participate in our 11th Annual World Congress on PVD in Miami, USA. The awardees are
- The remaining Travel Grants were provided to international speakers in support of the SAPH 2017 Annual Symposium in Dubai in April, the 2nd Latin American Symposium on PH in Children in Buenos Aires in April, the 1st Malaysian Task Force meeting in Kuala Lumpur, the CYCS Symposium & Retreat in Wiesbaden in September and the 1st EU Task Force meeting in Palermo in Italy.

Congratulations to all grant winners and applicants. A big thank you to The Dinosaur Trust and to all our sponsors and donors!
PVRI Pulmonary Circulation Report 2017
Jason Yuan & Nick Morrell

The year 2017 has been an exciting one for Pulmonary Circulation! We have seen historic high numbers of submitted manuscripts; citations and downloads of journal articles have increased; we received our first impact factor and developed an excellent partnership with our new publisher in our first year with them.

New Impact Factor
In June, Pulmonary Circulation received its first impact factor of 2.178. This is a measure of the frequency that an average article in a journal has been cited in a given year. With our new impact factor, Pulmonary Circulation ranks 69 out of 126 journals in the cardiology category and 40 out of 59 journals in the respiratory category. For a young journal, these rankings are particularly outstanding.

In 2017, we published 86 articles, including high-quality review articles, original research articles, and case reports. With more promotion and our first impact factor, submissions increased from 91 in 2016, to 176 as of 31 October 2017. We are on track to double the number of submissions from 2016.

Editorial Team
In addition to our Editors-in-Chief, two Deputy Editors now also guide the journal.

Kurt Stenmark, MD, is Director of the Cardiovascular Pulmonary Research Laboratory at the University of Colorado and is a world-leading cardiovascular and pulmonary scientist.

Irene Lang, MD, is Deputy Chair of the Department of Cardiology, at the Medical University of Vienna, in Austria. A world-renown clinician and researcher, she leads a clinical and experimental group in vascular medicine focusing on pulmonary vascular biology and right ventricular function. Along with the Editors-in-Chief, Dr Stenmark and Dr Lang invite review articles from authors, invite experts to review manuscripts, and participate in strategic planning for the journal’s future.

Sheila Glennis Haworth CBE chairs the PVRI Journal Committee. Meetings have been held quarterly to oversee the business plan and to support the editors in scientific direction.

Mary Reynolds, Editorial Associate, manages the day to day operations of the journal, copiedits editorials and articles, promotes the journal on social media, and participates in strategic planning for the journal.

Michael Brown, Business Manager, oversees the business elements of the journal, liaises with the publisher and, together with the Editors, develops the future commercial strategy for the journal.

First year with SAGE Publishing
We have completed our first year with our new publisher SAGE Publishing. SAGE is one of the world’s leading journal publishers and publishes many journals in science and medicine. This year, Pulmonary Circulation benefitted from increased global visibility, faster publication times and SAGE’s commitment to scholarship and innovation. In addition, our website for Pulmonary Circulation now includes innovative tools to use and share articles, and we continue to post articles online immediately after they are accepted.

Sustainable Publishing Model
From the beginning of 2017 we changed our business model for Pulmonary Circulation. Previously supported by grant funding, from January the journal adopted a self-sustaining model in which publishing costs would be recovered from journal income. To make this possible we increased the article processing charges (APCs).

For two years our APCs were very low in comparison with other open access journals at $1,000 for a research article and lower fees for other article types. With the success and expansion of the journal, it was not possible to keep the APC below that of other journals. We therefore increased it to $2,000 to enable us to work towards a sustainable model and continue publishing the journal in the long term. We are pleased to say that article submissions continued to increase, a sure sign that Pulmonary Circulation is considered a high-quality journal and a favoured venue of publication for physicians and scientists in our field.

Pulmonary Circulation APC remains considerably lower than the majority of open access journals in PVD.

Promotional Activities
Pulmonary Circulation’s Editors and our publisher SAGE promoted the journal at various international conferences, including the PVRI Annual World Congress, the PVRI Drug Discovery and Development Symposium, the American Thoracic Society (ATS) International Conference, the ATS Grover Conference, and the American Heart Association Scientific Sessions. In addition, we have increased promotional email campaigns, continue to grow our mailing lists and are sustaining our work on developing a social media presence for the journal and increasing its visibility on various platforms.
Looking forward to 2018

The changes we have implemented during 2017 will bring a number of benefits for our authors and readers. With the help of dedicated reviewers, we plan to reduce our reviewing time. Our target for manuscript submission to first decision is three weeks, reduced from the current average of four weeks. Pulmonary Circulation and SAGE negotiated with PubMed to ensure faster listing of articles on PubMed.

In the past, articles did not appear on PubMed until the entire issue was published. Starting with Volume 8, Number 1 (our first issue of 2018), articles will appear on PubMed when SAGE publishes the final version online, usually within 20 days after the article has been accepted.

We will broaden our readership through wider visibility of content and cross-promotion of articles with PVR educational resources in order to increase the likelihood of those articles being cited.

Our goal is to make our journal one of the world’s leading outlets for research on pulmonary vascular disease. We are ambitious in pursuing this goal, and during 2017, we have laid the foundations for growth that we will build on during the years to come and we will be actively seeking to publish the highest quality articles. We look forward to receiving your submissions.

Articles Published up to and including Volume 7, Number 4, December, 2017 (all years).

Total: 608 items

- Editorials – (44) 7%
- Reviews – (116) 20%
- Original Research Articles – (310) 51%
- Guidelines & Other – (75) 12%
- Case Reports – (63) 10%

15 top accessed articles (2017 YTD)


15. Pulmonary Hypertension in Patients with Heart Failure and Preserved Ejection Fraction: Differential Diagnosis and Management, Nehal Hussain, Athanasios Charalampopoulos, Sheila Ramjug, Robin Condliffe, Charlie A. Elliot, Laurence O’Toole, Andrew Swift, David G. Kiely, Vol. 6, No. 1, March 2016: 3 #Accesses 322
The 11th PVRI Annual World Congress on Pulmonary Vascular Disease was held in Miami, Florida USA, from 26 – 29 January 2017.

**MIAHI CONGRESS FACTFILE**

- **Duration:** 4 days
- **Content:** 10 plenary sessions, 56 presentations
- **Participation:** 312 delegates from 25 different countries
- **Abstract submissions:** 86 moderated poster presentations
- **Additional meetings:** 4 Task Force meetings

**PVRI 2017 Scientific Planning Committee**

- Stephen Archer
- Kurt Stenmark
- Brian Graham
- Bradley Maron
- Mark Ormiston
- Thenappan Thenappan

The meeting gathered together 312 basic and clinical researchers for four days of discussion and debate on recent advances in pulmonary vascular disease and right ventricular dysfunction, as well as related topics in the fields of developmental biology and genomics.

The meeting featured a wide range of interactive presentation formats, including lively debates and ‘talks from one slide’ as well as 86 trainee-presented abstracts, delivered as either rapid-fire presentations or posters.
Gala Dinner & Award Presentations

The Gala Dinner in Miami Beach provided the venue for the presentation of the 2016 PVRI awards, including:

- **The Achievement Award** to Martin Wilkins.
- **The Humanitarian Award** to Michael Fishbein.
- **The Lifetime Achievement Award** to Ghazwan Butrous.
- **Certificates of Excellence** to the co-chairs of the meeting’s Scientific Planning Committee, Kurt Stenmark and Stephen Archer.
- Trainee Awards included **Certificates of Achievement** for the PVRI Committee for Young Clinicians & Scientists to Djuro Kosanovic, Michiel de Raaf, Mariola Bednorz, Michael Seimetz and Rebecca Vanderpool.
- Awards for **best abstracts** were presented to Rebecca Vanderpool and Nick Rahghi (clinical) and Kurt Prins and David Frank (basic science).
- **The Butrous Foundation Young Investigator Best Overall Abstract Award** was presented to Jocelyn Dupuis.

With a record attendance and several days of active discussion, the meeting fulfilled its role in bringing together world leaders in pulmonary vascular research.
The 4th PVRI Annual Drug Discovery & Development Symposium Report 2017
Stuart Rich, John Newman & Ardeschir Ghofrani

The 4th PVRI Annual Drug Discovery & Development Symposium for Pulmonary Hypertension was a great success based on the very positive reviews of those who attended.

**BERLIN DRUG SYMPOSIUM FACTFILE**

- **Duration**: 2½ days
- **Participation**: 97 delegates from science, pharma and regulatory bodies
- **Content**: 14 presentations on new trials, new targets, new drugs

This year we had more representation from industry than in years past. As has been the case in prior years, the format of a 20-minute presentation followed by a 40-minute discussion resulting in spirited and highly informative interactions among the attendees.

There were four presentations of drugs under development that had anti-inflammatory properties, reflecting a change in the industry approach to treating pulmonary vascular disease away from vasodilators and towards addressing underlying mechanisms of disease. Reviews of the potential for drugs targeting serotonin, tyrosine kinases, and mRNAs were all thought provoking.

Experiences of a multimodality approach to CTEPH utilising surgical pulmonary endarterectomy, pulmonary balloon angioplasty, and riociguat in the same patients suggest this is a field that will be evolving in the near future.

We also saw the creation of the PVRI Pharma Task Force as a collaborative effort between academia, regulatory, and industry to work together ‘to create and provide a platform for early and continuous dialogue on innovative clinical and regulatory development strategies’ in the area of pulmonary vascular disease. This effort was well received by everyone in attendance, and will be an ongoing feature of future symposia.
Apart from the preparations for the AGM prior to the 11th Annual World Congress in Miami, our year fully started in Miami. With great acknowledgement of the leadership of Djuro Kosanovic and Michael Seinmetz, Michiel Alexander de Raaf and Mariola Bednorz started as the new President and Secretary of the PVRI Committee of Young Clinicians & Scientists (CYCs). Our theme for 2017 was: “Friendship & Support”, reminding CYCs members of their core motivation and acknowledging the PVRI as a platform enabling us to have global friendships.

With 15 CYCS members present during the Annual Meeting in Miami, we managed to interview many attending researchers in the field of pulmonary vascular disease (PVD) and gave ‘a voice’ to the personal motivation as to why people are dedicated to working so hard to fight PVD. With the great support of Rebecca Vanderpool and Andrea Rich, the CYCS organised a social event in Miami – entitled: CYCS epic evening, which was a great success.

A big assignment this year has been the CYCS contribution to the planned historical PVRI 10th Anniversary Celebration Booklet. For this purpose, CYCS members have travelled towards the ‘storytellers’ of the PVRI, as for example Prof. Dr. Ghazwan Butrous.

The PVRI became much more visible this year on social media. CYCS members Ipek Vartürk and Mira Goekyildirim maintained the administration of our Social Media accounts on Facebook and Twitter. With the help of Xiaohui Li and Janice Tsui, we also started Social Media accounts on the Chinese platforms Weibo and Wechat. The Twitter account @presidentCYCS was opened to involve more CYCS members to social media.

We have welcomed 31 new CYCS members this year through our programme which encourages CYCS members to invite people from countries of interest to join.

The highlight for the CYCS this year was its 2nd Symposium and Retreat for Young Investigators. After the success of the 1st CYCS Symposium & Retreat in Waldeck (Germany), the Retreat this year, held in Wiesbaden (Germany), was again organised by Mariola Bednorz and attended by 25 members. Our Retreat started with a round of introduction. Everybody signed the ‘Act of Collaboration, Friendship & Support’, which states that we come together to help each other: sharing knowledge with those who need it, in an atmosphere of mutual respect. Every attendee gave a presentation about his/her research focus. Making our Retreat further unique, we invited life coach Alexandra Götze to address some of the challenges related to a life in science. Some of these challenges, we, as young investigators face, appeared to be common denominators and ‘how to solve’ these was discussed. We ended the Retreat by giving the participants an opportunity to present their work through an elevator pitch, ie in a very succinct and persuasive way.

I am very happy to report that the CYCS has reached a higher level of friendship and I can see that people are actively contacting and helping each other. By stepping beyond national and cultural differences, we will make from our hard work today, tomorrow’s possibility.

This photo shows the presentation of all attendees and the ‘Act of Collaboration, Friendship & Support’, signed by all CYCS-attendees of the Retreat in Wiesbaden, 2017. By this, we reached a level of friendship that made it possible to present unpublished data and talk about future plans.
Regional Task Force Reports

Annual Report 2017
The Central Asia PVRi Task Force (CAPH) brings together leading experts in the field of pulmonary hypertension from the countries of Central Asia, which include: Kyrgyzstan, Kazakhstan, Mongolia, Uzbekistan and Tajikistan. Its main mission is the education of physicians and their local inhabitants, the research and implementation of new methods for the diagnosis and treatment in the field of pulmonary hypertension, the improvement of quality of care by reducing mortality and thereby enhancing quality of life for patients.

PVRi Central Asian Task Force activity for 2016-2017
- We had active and continued contributions from PH centres in Kyrgyzstan and Kazakhstan, with good teams and experience, important programmes and lessons.
  We have:
  - Started a register for patients with PH.
  - Trained specialists.
  - Provided equipment and ensured basic drugs are available.
  - Improved the quality of medical care in PH.
- We started to organise and create a second PH expert centre in Osh city (southern region of the Kyrgyz Republic).
- We created the first Association of patients with pulmonary hypertension in Kyrgyzstan. We organised and conducted a Joint international symposium for pulmonary hypertension with the Saudi Association for Pulmonary Hypertension (SAPH) and CAPH on 28-29 September 2016, in Cholpon-Ata, Issyk-Kul, Kyrgyzstan, with the participation of Ghazwan Butrous, Stefano Ghio and other colleagues from the SAPH and CAPH. The symposium included training for Doppler echocardiography and a masterclass for the right heart catheterisation with the support from SAPH and the PVRI and with the participation of leading experts from Italy, Oman and Saudi Arabia. Also during the workshop, we held a round table with the participation of experts from the PVRI and CAPH, where an action plan for 2016/17, with possible joint research projects and programmes was discussed.
- We developed and approved national guidelines (clinical protocol) for the management of pulmonary hypertension for Kyrgyzstan and Kazakhstan.
- We organised and promoted PH educational schools in different regions in Kyrgyzstan and Kazakhstan.
- We have participated in an international project - we started a registry for chronic thromboembolic pulmonary hypertension (with the support of Bayer).
• In the summer of 2017, we conducted the final five year high-altitude scientific expedition to the Aksai valley (3200-3800 m) in the Naryn area, Kyrgyzstan. The study involved more than 300 people and a group of patients who participated in the “HAPH registry study from 2012”. We would like to note, and are very grateful for, the grant from the PVRI to support this research in 2015. All received data are subjected to processing and analysing.

• With great support from Professor Ghazwan Butrous, we created a website for the CAPH Task Force, which contains information about current activity, as well as important events and access to free lectures.

• On 28-29 September 2017, the 10th Congress of the Euro-Asian Respiratory Society and VII Congress of The Kyrgyz Thoracic society was held in Bishkek. Within the framework of the congress, we conducted a large online symposium on pulmonary hypertension with the participation of specialists such as Professor Konrad E. Bloch and Professor Silvia Ulrich, from Zurich University Hospital, Switzerland.

**Action Plans for 2018**

• To plan the 4th CAPH meeting to be held in Almaty, Kazakhstan or in Ulan Bator city, Mongolia, which will bring together leading experts in the field of pulmonary hypertension in our region.

• To organise a roundtable for discussion between the Ministry of Health and Insurance funds to include patients with pulmonary hypertension in the programme. The main objectives of the round table is to help patients to receive expensive medicines by the state insurance programme in Kyrgyzstan.

• To conduct a second meeting of the Patients Association with Pulmonary Hypertension in Kyrgyzstan, where patients can share their experiences and problems with doctors and representatives of the Government.

• To conduct an awareness day for pulmonary hypertension in all Central Asian PVRI countries.

• To further engage colleagues from Turkmenistan and Tajikistan in the work of CAPH, by visiting schools and master classes for pulmonary hypertension.
The Pulmonary Vascular Research Institute (PVRI) China Task Force has continued its active participation in organising national and international conferences and education courses of pulmonary vascular diseases (PVDs) in China, aiming to extend/update the understanding of pulmonary embolism and pulmonary hypertension among Chinese physicians, exchange clinical experiences and create future international collaboration opportunities.

The PVRI China Task Force has encouraged collaboration at international level. Joint research has brought in several international joint publications and promoted both clinical and translational science PVD research in China.

The 9th National Congress on Pulmonary Embolism and Pulmonary Vascular Diseases and the 7th International Conference of Pulmonary Circulation Disorders through collaboration between the PVRI and the Chinese Thoracic Society was held in Changsha, China, 14-16 April 2017. The conference covered a broad range of topics based on the expertise of leaders in PVD. The topics covered the most updated guidelines of venous thromboembolism (VTE) and pulmonary hypertension, especially the updated antithrombotic and prevention of thrombosis guidelines and pulmonary hypertension guidelines, which provided the latest knowledge of diagnosis, treatment and prevention of pulmonary embolism and pulmonary hypertension. The PVRI also enhanced its educational programme during the meeting.

From 1-7 May (5 May 2017 - World Pulmonary Hypertension Day) Physicians from different cities organised meetings to raise awareness of pulmonary hypertension by staging various events on a national scale, involving both the scientific community and general public. A series of educational and social activities for pulmonary hypertension were held in Beijing, Guangzhou, Shanghai, Shandong, Tianjin, Shenyang. More than 100 multidisciplinary physicians and 200 patients and family members participated in the activities. The issues of health education, social support, medical insurance and standardised treatment for Chinese pulmonary hypertension patients were discussed.

August 2017 - China Heart Congress. The one and a half days pulmonary vascular disease session was attended mostly by cardiologists. Lectures by Xianzheng Chen, Lan Zhao, Jason Yuan covered topics in advances in PAH, as well as in congenital heart disease and medical and surgical treatment of chronic thromboembolic pulmonary hypertension.

22-25 September 2017 - The 17th National Conference of Chinese Thoracic Society was held in Xi’an, China. This meeting provided a communication stage that would ensure further progress in the diagnosis and treatment of pulmonary vascular disease, including pulmonary embolism and pulmonary hypertension for physicians, scientists and other health care providers in China.

May & July 2017 - Two education programmes on standardising the diagnosis and treatment of pulmonary vascular diseases were tabled in the Chinese Medical Journal. These courses provided updates on several important aspects, including diagnosis and treatment of pulmonary hypertension, diagnosis technology, and standard thrombolytic and anticoagulant therapy, and clarified a standardised operational procedure for imaging pulmonary hypertension. More than 10 multidisciplinary physicians jointly explored and distributed some special points on the clinical practice of evaluation and management of pulmonary embolism and pulmonary arterial hypertension.

A multidisciplinary consultation platform for diagnosis and management of pulmonary vascular diseases was set up in the China-Japan Friendship Hospital. At the end of October 2017, more than 400 complicated PVD patients had been discussed since its inception. This platform provided a good support for individualised diagnosis and treatment of pulmonary embolism and pulmonary hypertension. The platform also provided excellent learning and communication opportunities for physicians.

Pulmonary Hypertension Academy, a multicentre and multidisciplinary education platform for the diagnosis and management of pulmonary vascular diseases was set up in Beijing China, which includes: China-Japan Friendship Hospital, Peking Union Hospital, Fuwai Hospital, Anzhen Hospital, Chaoyang Hospital and Beijing Hospital. This academy provides excellent learning and communication opportunities for young physicians who have great interest in pulmonary hypertension.
10-15 October - to mark World Thrombosis Day on 13 October, activities were organised during the whole week, including education for patients and the public, MDT consultation for PE-DVT patients, social media activity to increase awareness of WTD, and a two-day education programme for physicians.

Major Publications


Educational Events/Meetings

The following scientific and educational activities took place in 2017:

- PH Awareness Day
- 27 February 2017, King Fahd Specialist Hospital, Dammam, KSA
- 27 February 2017, Khamis Mushait Military Hospital, KSA
- March 2017, Saud Babtain Cardiac Center, Dammam, KSA
- 26 March 2017, King Saud Medical City, Riyadh, KSA
- 15 April 2017, Buraydah, KSA
- 25 November 2017, Qassim, KSA
- PH Management Updates
- 19 April 2017, Qatif, KSA
- 9 May 2017, Tabuk, KSA
- 10 May 2017, Alhasaa, KSA
- 8 October 2017, KKNGH, Jeddah, KSA
- 8 October 2017, Jeddah, KSA
- 9 October 2017, Saud Babtain Cardiac Center, Dammam, KSA
- 9 October 2017, KFSH, Dammam, KSA
- PE to CTEPH
- 23 March 2017, Riyadh, KSA
- 23 May 2017, Dammam, KSA

Number of Members

Total local/regional members: 120
Regional Activities
• SAPH 10th Annual Conference, 2-4 February 2017, Dubai, UAE
• MENA Pulmonary Hypertension Forum (in collaboration with Actelion), 6-7 October 2017, Muscat, Oman
• 140 participants from 13 countries, 6 international speakers (Germany, Italy, France & Belgium), 1.5 days meeting with 27 talks & debates
• PHUTURE (in collaboration with Bayer)
• 16-18 February 2017, Muscat, Oman
• 5-6 May 2017, Beirut, Lebanon

Research (Current Research Initiatives)
• EMEA CTEPH Registry: An international prospective registry investigating the epidemiology, diagnosis and treatment of CTEPH patients in EMEA countries
• EXPERT, EXPosurE Registry RiociguaT in patients with pulmonary hypertension
• SystemAtic prospective follow Up for better unDerstanding of clinical characteristics of patients with PH disease (SAUDIPH) registry
• Prevalence of genetic factors in Saudi patients with idiopathic pulmonary hypertension
• Transitioning Pulmonary Arterial Hypertension Patients from Bosentan to Macitentan: Efficacy and Safety Data (Under publishing)

Change of Leadership in 2018
Majdy Idrees will handover the presidency of SAPH to Abdullah Aldalaan.

Goals for Year 2018
SAPH is planning to continue expanding its activities and reaching out to as many practicing physicians as possible.

We will continue seeking to increase the number of active members and help raise awareness and improve the knowledge in the field of pulmonary hypertension at the national level.

Summary of Activities for 2018
• Organise the SAPH 11th Annual Conference: SAPH2018 to be held in Dubai, UAE from 5-7 April 2018
• Continue holding a series of awareness days in different regions of the Kingdom
• Conduct 2 PH master classes every year in the leading hospitals in Riyadh

We will also continue to expand on research.
The first meeting of the PVRI European Task Force took place at Santa Flavia, in a splendid location near Palermo, Italy, on 6 October 2017.

The host was Dr Patrizio Vitulo, Medical Chief of the Lung Transplant Programme at ISMETT - an Institute for Scientific-based Care and Research (IRCCS) in the fields of end-stage organ failure treatment and research and a Transplant Centre serving as Reference Hospital for the entire Mediterranean area.

The Scientific Committee included Dr Stefano Ghio and Professor Dario Vizza, as co-leaders of the European Task Force, and Dr Patrizio Vitulo.

There was an astonishing turn out with faculty from Europe and USA with approximately 100 delegates attending from 30 Italian centres.

The meeting was introduced by Paul Hassoun, President-elect of PVRI, who reminded everybody of the mission of the PVRI: education and research.

AMIP President Vittorio Vivenzio presented the Association’s mission and activity and described its recent European collaborations. AMIP is one of the two Italian associations established for patients with pulmonary hypertension.

Five round tables focused on the gaps in evidence in the 4 PH groups. On each round table, an introductory presentation summarised the most important clinical issues to be debated, in an open and proactive setting, by the audience and international experts. Most importantly, the time dedicated to the discussion was longer than the time dedicated to the presentation.

In group 1 (PAH) Khodr Tello and the discussants, Sean Gaine and Dario Vizza, debated the best PAWP threshold for differentiation between PAH and post-capillary pulmonary hypertension. They addressed the issue of a possible misclassification of pulmonary hypertension when PAWP is taken as an isolated parameter, ignoring the clinical context and imaging. An interesting discussion took place on the additional value of the fluid challenge test for borderline cases. Furthermore, it was emphasised that PAWP levels were associated with different responses to PAH specific drugs; the lower the PAWP value, better the response.

In the second part of the session, Tomas Pulido discussed the results of the recent morbi-mortality trials showing a significant reduction of the event rate, but a mild effect on classical surrogate endpoints such as 6MWT, BNP and WHO functional class. He concluded that surrogate endpoints were very useful for individual use but composite morbi-mortality endpoints in event-driven studies provided more important information.

Finally, Raymond Benza discussed the use of risk scores/equations and risk tables. He presented some case studies and emphasised that the ESC/ERS table was more useful to predict a low risk. In contrast, the REVEAL risk score was better to predict an intermediate or high risk.

In Group 2 PH Michele D’Alto introduced the debate presenting the latest evidence on the hemodynamic definitions of PH-LHD.

Recently, such definitions have been modified in the European Guidelines to better approach the characteristics required to reflect the presence of pulmonary vasculopathy. Two different types of post-capillary PH have been identified, ie isolated post-capillary pulmonary hypertension (Ipc-PH) and combined post-capillary and pre-capillary pulmonary hypertension (Cpc-PH). This has fuelled the intense debate in the literature. Another hot topic was whether the pathophysiologic determinants of PH were different in HFrEF vs HFpEF patients, as new data in the literature seemed to suggest.
Chair Stefano Ghio and two discussants, Robert Naeije and Stylianos Orphanos, stimulated the discussion by involving the audience and forcing experts to provide their personal ideas and beliefs over and above what the guidelines suggested.

In Group 3 John Wort and Patrizio Vitulo introduced Lucilla Piccari, from August Pi i Sunyer Biomedical Research Institute – IDIBAPS, Barcelona, with the topic on two major gaps in evidence: are the hemodynamic thresholds suggested by the European Guidelines to grade the severity of PH useful to start treatment in Group 3 PH patients? Is it time to differentiate between PH-COPD and PH-IPF?

During the lively discussion, the supporting evidence distinguishing PH-COPD and PH-IPF based on genetics, pathophysiology, and response to specific PH therapies was recounted.

Millions of people over the world suffer from that condition. While promising pilot studies suggest a haemodynamic benefit in severe PH-COPD treated with PH specific drugs, there is major concern for PH-IPF. More questions than answers are still on the table on the definition of the group III phenotype in order to better understand the mechanisms underlying the development of PH in the individual components of Group 3 and the definition of appropriate outcomes for future trials. All the attendees agreed on the need for an international network on Group 3.

In Group 4 the discussion was around the gaps in evidence in CTEPH. Adam Torbicki introduced the topic focusing on the prevalence of chronic thromboembolic disease as a continuum from the persistence of perfusion defect after adequate anticoagulation therapy to the overt disease of CTEPH.

Another point was the definition of persistent PH after a procedure of pulmonary endarterectomy.

Finally he presented an update on balloon pulmonary angioplasty (BPA) and its indication.

The discussion among the three chairs and the experts in the audience highlighted the need for a better understanding of the pathophysiological link between chronic thromboembolic disease and CTEPH, and how to follow up patients after an episode of pulmonary embolism. Joana Pepke-Zaba discussed the evolving technique of BPA, and how new strategies were able to reduce the occurrence of adverse events. Finally Andrea D’Armini pointed out the need for a second opinion on the patient’s operability before proceeding to PBA.

This ended the meeting and the leaders of the European Task Force invited all to join them again in 2018.

A splendid evening dinner was hosted by the EU Task Force leaders and all delegates enjoyed a wonderful social evening.
In 2017, the Hyderabad PH Club, established in 2016, continued to meet on a quarterly basis to discuss cases of interest.

After many years as the Task Force leader, Dr BKS Sastry stepped down and passed the baton to Dr Prashant Bobhate. The PVRI would like to formally thank BKS for all his hard work spreading awareness about the disease and welcome Dr Bobhate as a Regional Task Force leader.

Objectives 2018

New Leader Prashant Bobhate has set the 2018 objectives for the Task Force and said:

‘First of all I would like to thank the PVRI and Dr BKS Sastry for giving me the opportunity to head the PVRI India Task Force. We would like to devote 2018 to two main areas: patient education and creating awareness among medical practitioners about PH.

For the patient and general public education, we are in the process of building a website and creating a forum where the patients can interact with each other, as well as with PH specialists. Similarly, we are also in the process of developing an Android-based app. This app will have patient education material (videos and written material) in different regional languages.

For medical practitioners, and with the help of the Paediatric Cardiac Society of India, we will have a special session of paediatric PAH at the Annual National PCSI Conference, which is going to be held in Ahmedabad in 2018.

We are also planning to have a PH conclave in Mumbai in the middle of next year. This will be targeted at cardiologists and other physicians, who treat and care for patients with PH.

And last, but not least, we hope to have a day and a half symposium for paediatric PAH in the later part of the year’.
The PVRI 2017 World Congress was held in Miami, Florida in January. This was the first time this prestigious meeting was held in the United States and it was a rousing success. With over 300 attendees, it was the largest Congress to date. We hosted an exciting array of speakers from around the world and were most pleased by the interactions between all attendees at the meeting.

Following the World Congress several other prominent international meetings, involving the pulmonary circulation, have taken place. In May, the PVRI was well represented at the International American Thoracic Society (ATS) Conference, which took place in Washington, DC. The PVRI Get-Together was well attended and served to introduce members of the Pulmonary Circulation Committee to all the great things the PVRI is doing. Members of the PVRI were prominent in presentations throughout this prestigious meeting.

Next was the Bi-Annual Grover Conference. This meeting was held in September at a ranch near the base of Pikes Peak in Sedalia, Colorado. This conference focused on endothelial dysfunction in the setting of acute and chronic lung vascular diseases. Again, members of the PVRI community played essential roles in this conference.

Most recently, the American Heart Association (AHA) International Meeting occurred in Anaheim, California. The primary organisers of this meeting, Mark Gladwin, Sébastien Bonnet and Paul Yu, are all prominent members of the North American Task Force.

The meeting was very well attended and the presentations were outstanding. The AHA continues to be excited about its partnership with the PVRI.

During the year, Task Force leader Stephen Archer stepped down. The PVRI would like to express their sincere thanks to Stephen for all his support.

New co-leaders Sébastien Bonnet, Canada and Rubin Tuder, Denver, Colorado, USA have been appointed to assist Kurt Stenmark in his task. We would like to formally welcome Sébastien and Rubin and wish them luck in their new roles.
The most important activity this year for the South America Task Force was the Second Latin American Symposium on Pulmonary Hypertension in Children, held on 20 - 21 April 2017 and organised by Dr Dora Fabiana Haag, Paediatric Cardiologist from Buenos Aires Argentina, and a very active member of PVRI.

The symposium, in part sponsored by the PVRI, was held in Buenos Aires and was a total success. It was attended by more than 155 doctors, 35% of which were doctors studying for their specialisation, from eight countries, including Argentina, Colombia, Mexico, Chile, Uruguay, Spain, United Kingdom and the United States. The scientific level was of high calibre.

At the symposium, the third Latin American Symposium on Pulmonary Hypertension in Children was approved. It will be organised in Mexico by Dr Humberto Garcia, also a member of PVRI, and will be held in 2019.

In Colombia, Task Force Leader Dr Gabriel Dias began to organise workshops on pulmonary hypertension in children at altitude. The first workshop, in collaboration with Dr Sonia Munoz, Paediatric Cardiologist, and a PVRI member, was held on 17 February 2017 in Pasto (south of Colombia), which located at 2,550 metres (around 8,360 feet) above sea level. Thanks to Dr Munoz’s excellent work, the workshop gathered 45 professionals. Dr Munoz will attend the PVRI 12th Annual World Congress in Singapore.

On 17 August, the Task Force organised a workshop on pulmonary hypertension in children at altitude in Quito, Ecuador, located at 2,850 metres above sea level, with the participation of an important group of Paediatric Cardiologists, pulmonologists and general cardiologists.

The Second Workshop on Pulmonary Hypertension in Children at Altitude was held, in collaboration with Dr Carlos Gomez, Paediatric Cardiologist of Tunja, on 8 November 2017 in Tunja. Tunja, a city close to Bogota, is located at 2,810 metres (around 9,210 feet) above sea level.

These workshops are organised with the objective to increase knowledge on PH in children at altitude, including some research on this topic.
As we look back on another year for the Task Force, we have the opportunity to reflect on what has been achieved, as well as looking at the challenges that lie ahead.

This has been a year marked by political upheaval and uncertainty, which is then magnified in a society with vast inequalities in resources. It is all too easy to allow this to distract us from our specific goals and give in to despondency.

It is a relief to realise that one is a part of the PVRI global community of like-minded professionals who, facing challenges of their own, are willing, indeed eager, to ensure those in the developing world remain focused on the task at hand.

We were given very welcome encouragement and a boost to the Task Force by receiving generous sponsorship for additional paid memberships by the PVRI, supported by United Therapeutics. This is beginning to yield fruit albeit at a slow pace.

Most of the activities of the Task Force have been behind the scenes and include discussion and planning that will eventually result in tangible achievements.

The vast disparity in access to healthcare between medically insured patients and those without remains a major concern in South Africa. The Task Force has made significant strides in the further development of two Pulmonary Hypertension Referral Centres in Johannesburg and Cape Town. The latter providing care for State sector patients. These clinics both see approximately 50 incident patients a year and provide continued care for an expanding number of patients. As a result, post-fellowship graduates expressed enthusiasm by making this a specific area of focus and research.

The Task Force has identified the need for a PH Registry to collate high quality data from the region and, in the latter half of the year, we saw the implementation of such a Registry. We express specific gratitude to Prof David Badesch who provided invaluable input and, in collaboration with the members from the University of Cape Town, guided the implementation of this across South Africa with aim of expanding this to the whole Sub-continent. Data thus obtained will assist in driving further research as well as the allocation of National State resources, while assisting Medical Insurers in the funding of insured patients. Access to appropriate therapy has remained the ongoing focus of the Working Group for Pulmonary Hypertension in South Africa and, despite what seems agonisingly slow progress, 2017 saw the registration of an Endothelia Receptor Antagonist (ERA) with the Medicine Control Council of South Africa, removing an important obstacle to widespread access to their use. Whereas up until now access to ERA and prostanoids has been on a “named patient compassionate use” basis, the remaining obstruction to ERA use remains cost.

A significant behind the scenes progress has been made in cooperation with two active lay advocacy groups in moving forward with collaborative efforts to raise awareness of the general public and medical professionals about PH.

Although much has been achieved, it is clear that individual passion and good intentions are simply not enough to make an impact. We look to the PVRI to assist us in galvanising these disparate groups into a more cohesive force.

Our goals for 2018 are to move forward with assistance.
The following areas of need will serve as focus points:
- Developing closer collaboration with the PVRI leadership to garner input from experienced internationally recognised opinion leaders. The means of actioning this would be a regionally held PVRI meeting in collaboration with the Pulmonary Hypertension Working Group and representatives from Cardiology, Pulmonology and other specialities including those outside of South Africa in the region.
- Broadening contact with representatives from the rest of Sub-Saharan Africa and identifying common ground.
- Formalising practical adaptation of the ERS/ESC 2015 Guidelines which are de facto adopted by South African Thoracic Society and SA Heart, but need modification to local needs in order to be widely implemented.
- Identifying and promotion of unique research opportunities that present themselves from the region and development of interested individuals.

Our thanks once again to the PVRI for their ongoing support of this region.
The Malaysian Thoracic Society’s Annual Congress was held in Sunway Putra Hotel, Kuala Lumpur, Malaysia from 20 to 23 July 2017. In collaboration with the Pulmonary Vascular Research Institute (PVRI), a Congress workshop entitled: Acute Pulmonary Embolism to Chronic Thromboembolic Pulmonary Hypertension: State of The Art Management was held before the main event.

The workshop was well attended with 70 delegates signing up to learn more about acute and chronic vascular diseases. These delegates were from a mixed background, including both junior doctors and senior consultants from a range of specialities (respiratory medicine, cardiology, haematology, general medicine).

The workshop was divided into two sessions. The morning session covered acute pulmonary embolism with the afternoon session looking into chronic thromboembolic pulmonary hypertension.

The programme included:

- Pulmonary embolism: A background (Prof Dr Paul Corris, consultant respiratory physician)
- Case discussion 1: Risk stratification of pulmonary embolism (Prof Dr Roslina binti Abdul Manap, consultant respiratory physician)
- The role of imaging in pulmonary embolism (Josephine Subramaniam, consultant radiologist)
- Case discussion 2: To thrombolysing or not to thrombolysing (Dr Haizal Haron Kamar, consultant cardiologist)
- Case discussion 3: The argument for lifelong anticoagulation (Assoc Prof Dr Bee Ping Chong, consultant respiratory physician)
- Management of bleeding in anti-coagulated patients (Dr Jameela Sathar, consultant haematologist)
- Management of acute pulmonary embolism - The way forward (Prof Dr Paul Corris, consultant respiratory physician)
- Case discussion 4: CTEPH - An easily missed diagnosis (Assoc Prof Dr Pang Yong Kek, consultant respiratory physician)
- Investigating suspected CTEPH (Dr Sundari Ampikaipakan, consultant respiratory physician)
- Medical intervention for CTEPH - Do the drugs work? (Datuk Dr David Chew, consultant cardiologist)
- Balloon pulmonary angioplasty (Dr Lim Soo Teik, consultant cardiologist)
- The surgical approach to CTEPH (Mr David Jenkins, consultant cardiothoracic surgeon)

The workshop ended with a meeting of the PVRI Regional Task Force.
PVRI Exercise Report 2017
David Systrom & Aaron Waxman

Mission of Task Force
Develop guidelines for
- Definition of exercise pulmonary hypertension (ePH)
- Standardised cardiopulmonary exercise test administration, data collection and reporting
- Deep phenotyping of ePH

Number of Members
Total members: 13

What has been achieved over the years, in particular updates during 2017
In January 2017, at the PVRI Annual World Congress in Miami, the Task Force members agreed on a broad framework of a consensus statement on exercise pulmonary hypertension as a disease. The document outline is as follows:
- ePH is associated with exertional intolerance
- ePH substantively affects exercise tolerance through decreases in oxygen delivery and its peripheral utilisation
- Transpulmonary flux of biomarkers suggest ePH is associated with an early vasculopathy
- Event free survival is reduced in untreated ePH
- Treatment of ePH with pulmonary vasodilators improves symptoms, exercise capacity and long-term outcome

We have published
- A review on how invasive exercise testing complements and extends traditional non-invasive exercise testing1
- The first large study of the upper limits of normal for exercise pulmonary haemodynamics in a "true" normal population2
- A description of the prevalence of ePH out of (resting) borderline PH and its functional impact3
- An invasive CPET study of pulmonary vasodilator treatment in exercise pH4
- A study of event free survival of untreated ePH5

Goals/Aims for 2018
- Deep phenotyping of ePH, including imaging and transpulmonary flux of biomarkers (metabolomics, proteomics, transcriptomics and coagulomics)
- Publication of a high impact review of ePH

References
PVRI High Altitude Report 2017
Max Gassmann & Qadar Pasha

Scientific and Educational Events

The Atacama-Leh Conference
Max Gassmann, Norbert Weissmann, and other colleagues, have shouldered the organisation of this conference which will be held at San Pedro de Atacama, Chile, from 4 to 9 March 2018. The details of this event have been published on the PVRI website. A number of distinguished researchers will participate in this three-day event. It covers a wide range of topics involving high altitude (HA) physiology, pulmonary hypertension (PH) and other respiratory diseases.

Leh Symposium at Gangtok, Sikkim

There has been a persistent demand to organise a Leh Symposium in India so that local physicians have an opportunity to meet, interact and learn from national and international experts. This also serves the fundamental mandate of the PVRI in energising the development of scientific interest within the Himalayan regions. Also, these physicians seldom have the opportunity to attend any international conference outside India due to the paucity of funds. Hence, a suggestion was made to organise the symposium in India and to invite distinguished experts.

In view of persistent demands, the organisation of the next Leh symposium has been scheduled for October 2018 in Gangtok, Sikkim, India. More information will be published in due course. However, the World Congress of ISMM, scheduled for November 2018 at Kathmandu Nepal has suggested moving the symposium to early March/April 2019. Gangtok is situated at an altitude of approximately 7000ft in the Himalayas. One can enjoy the mighty Kanchenjunga, the second highest peak and several other high peaks in the vicinity. The Atacama and Leh symposium very well serve the regional groups.

ISAM 2018 Pattaya, Thailand. 18 to 21 July 2018 - PH & HA sessions:

The founding director and main organiser of 12th World Congress of ISAM (International Society for Adaptive Medicine), Prof Dr Pawan Singal, has invited Dr Qadar Pasha, India, to organise a session on either PH or HA disorders. Dr Pasha has invited 8-10 experts in this field to participate.

In addition, there was active participation in the 4th Congress of the Asian-Pacific Society for Mountain Medicine, Matsumoto, Japan, on 2-4 June, 2017. It was a pleasure to meet so many international colleagues and discuss the ongoing HA research. We also discussed the forthcoming World Congress of ISMM.

Research activities

Two young scholars visited SNM Hospital at Leh and worked for two months in consultation (close proximity) with Dr Tashi Thinlas and Dr Ghulam Mohammad, both senior physician consultants at SNM hospital Leh, to understand the intricacies of one of the HA disorders, namely High Altitude Pulmonary Edema (HAPE). They came across approximately 50 cases of HAPE. Dr Tashi Thinlas taught the basics of the disorder, including the overall care of the patients.

The research has also helped in the collection of precious blood samples from HAPE patients, healthy sojourners and the highland natives. It made available plasma, DNA and RNA samples that will be highly instrumental in ongoing research activities.

It would be pleasure to share these precious samples with members of our HA Task Force and even other colleagues. If they wish to share these samples for their research, they are most welcome to visit IGIB lab, avail the facilities and the samples to perform their research experiments.

Guiding international patients suffering with PH, who reach out to the PVRI for help

PVRI has gained global recognition and respect as many Asian patients reach out to them for guidance. The PVRI has been highly instrumental in coordinating such patients to one of the High Altitude and India Task Force leaders, who in turn guide these patients to the most appropriate clinicians in the country. This has been a remarkable task that PVRI has been performing; a great humanitarian help!

PVRI International Scientific projects evaluation

The HA Task Force members participated as project evaluation team members for PVRI’s two project grants namely, the BMPR2 research grant, and the Basic and Clinical Research Fellowship grant. It was such a pleasure going through the proposals. Each contestant’s concept was so great; it was a difficult task to select the best two.
The PVRI HIV-associated Pulmonary Hypertension Task Force has been an important Task Force of the PVRI since its creation in 2006/7.

The Task Force was represented at various PVRI conferences over the years, participating in posters presentations, lectures and webinars, thus increasing the awareness of infectious disease specialists dealing with HIV on this uncommon, but dramatic manifestation.

The main aim of the Task Force was to collaborate with some of the most important infectious disease societies, such as the ESCMID (European Society of Clinical Microbiology and Infectious Diseases), on joint issues. In 2010, during the ECCMID (European Congress of Clinical Microbiology and Infectious Diseases) Conference in Vienna, Austria, we organised a full PVRI-ECCMID joint session with PVRI and ECCMID speakers. A special issue on 'Pulmonary Hypertension and Infections of Clinical Microbiology' was later published, with all authors being PVRI members and the editor being the Task Force leader. Over the years, a lot of research on HIV-associated pulmonary hypertension was generated by the Task Force, which resulted in the publication of around 30 papers in various peer reviewed journals.

Since HIV infection is not decreasing in terms of new infections, our mission remains to increase the awareness of HIV-associated PH and to collaborate with HIV specialists, pulmonologists, cardiologists and basic scientists from all over the world to discuss current needs and future chemical and biomedical research directions. Moreover, over the next 10 years we would like to measure the impact of the most powerful antiretroviral therapies on the occurrence of PH, and to create and nurture international collaborations.

In order to identify specific gaps in knowledge and resources available to clinicians caring for HIV associated PH, we would like to conduct a survey with all PVRI members and the wider PVRI network, as well as to revamp the HIV-PH Task Force website to include information about registries of HIV-associated hypertension in countries where there is a PVRI presence. Furthermore, a vital effort will be the recruitment of new international members to the HIV Task Force in order to increase our reach and impact.
Achievements in 2017

• The PVRI Imaging Task Force consists of 30 members from across all continents. We are pleased to note the increasing number of younger members, as well as the growing membership from different communities including clinical, imaging, physics and modelling backgrounds.

• A comprehensive position statement is in advanced draft from with plans for submission in the first quarter of 2018.

• Pre-meeting Imaging Symposium for the Singapore PVRI meeting in January 2018 has been organised.

Strategy for 2018-20

Complete Phase 1. Start Phase 2.

Phase 1
To develop a comprehensive position statement for publication in Pulmonary Circulation. The production of this document brings together experts in the field of imaging and pulmonary hypertension and is expected to act as a springboard for further collaborations. The position statement includes a comprehensive document including:

• An overview of the current pulmonary hypertension landscape and the potential role for imaging.

• A review of established and emerging imaging modalities.

• Sections covering clinical challenges, radiology controversies, technical aspects, sharing and harmonisation of imaging protocols.

• Diagnostic and follow-up algorithms, (state of the art and approaches based on imaging availability).

Phase 2
Develop a web-based presence to signpost the reader to various imaging aspects in addition to developing a number of interactive illustrative imaging cases covering common scenarios and grey cases.

Phase 3
Roll out of centres of PH imaging excellence.

Goals for 2018-2019

January 2018

• PVRI Imaging Task Force Symposium on Sunday 21st January 2018 with international experts from clinical pulmonary hypertension, radiology and modelling presenting overview of important emerging imaging areas and summary of position statement.

• PVRI Task Force meeting on Sunday 21 January 2018, following the Imaging Symposium with leads of each workstream to present completed sections to the group for refinement prior to incorporation in the final draft for submission.

April 2018

• Plan to submit position statement to Pulmonary Circulation.

July 2018

• Develop structure for a web-based educational programme.

October 2018

• Collection of interactive imaging cases.

January 2019

• Consider further Imaging Symposium and plan for the development of PVRI PH imaging centres of excellence (Phase 3).
PVRI Paediatric & Congenital Heart Disease Report 2017
Maria Jesus del Cerro, Steven Abman & Shahin Moledina

Number of Members
Total members: 51

Mission
To improve knowledge, encourage research and optimise delivery of clinical care of neonates, children and adolescents with pulmonary vascular disease through:
1. Facilitating the growth of networks for research and clinical care between professionals from different medical specialties, institutions and countries, especially in less privileged communities.
2. Disseminating knowledge about the paediatric pulmonary vascular phenotype in clinics caring for adults with pulmonary vascular disease and facilitating smooth transition of childhood survivors of pulmonary vascular disease to adult clinics.
3. Promoting concepts about the foetal and developmental origins of pulmonary vascular disease, and the impact of early events on risk and severity of childhood and adult disease.

2017 Activities
- Paediatric & Congenital Heart Disease Task Force Meeting during the Annual World Congress on PVD in Miami 26-29 January 2017.
- 10th International Conference on Neonatal & Childhood Pulmonary Vascular Disease, 9th-11th March 2017, San Francisco, CA, USA, organised by Jeff Fineman and Ian Adatia.
- PPHNET Annual meeting, held in San Francisco, 9 March 2017, organised by Steven Abman.
- Second Latin Meeting on Paediatric Pulmonary Hypertension, held in Buenos Aires in 19-20 April 2017, organised by Dora Haag.
- 7th Meeting of the Rehoped registry, held in Madrid, 9 February 2017, organised by Maria Jesus del Cerro.
- 6th meeting of the UK National Paediatric Pulmonary Hypertension Network Meeting organised in London, by Shahin Moledina, 8 November 2017.

2017 Achievements
We welcomed new members to the Paediatric & Congenital Heart Disease Task Force:
- Claire O’Donnel, (US)
- George Hansmann (Germany)
- Juan Pablo Sandoval (Mexico)
- Rewa Nazzal-Alabbi (Germany)
- Silvia Colaco (India), Pei-ni Jane (USA)
- Ernesto Juaneda (Argentina)

2018 Goals
- Hold the Annual Paediatric & Congenital Heart Disease Task Force Meeting January, during the PVRI Annual World Congress on PVD in Singapore 2018.
- Publish the results of the survey ‘Acute vasoreactivity test and use of calcium channel blockers in idiopathic paediatric pulmonary hypertension’, conducted among the members of the PVRI Paediatric & Congenital Heart Disease Task Force and PPHNET members.
- Collaborate in the organisation of the Third Paediatric and Neonatal Pulmonary hypertension Update: 28-29 April 2018 in Mumbai, in association with IAP Mumbai and PVRI, organised by Prashant Bobhate.
- Hold the 11th International Conference Neonatal & Childhood Pulmonary Vascular Disease, 19-21 April 2018, San Francisco, CA, USA, organised by Ian Adatia and Jeff Fineman.
- Hold the 8th Annual Meeting of the Spanish Registry on Paediatric Pulmonary Hypertension, on 9 February 2018.
- Update the Panama Paediatric Classifications on Functional Class and Diagnostic Phenotypes.
The aim of PVRI Pharma Task Force is to investigate possible options and solutions to ensure the approaches used for small population clinical trials for developing orphan drugs in the field of rare diseases are effectively directed towards ultimately making safe and effective therapies available to these critically ill patients in a timely manner.

Key Milestones Chart 2017 - 2018 Road Map

A special focus of the PVRI Pharma Task Force is to apply these learnings first towards pulmonary arterial hypertension (PAH), a rare disease with a still significant unmet need.

In order to maximise the scarce resources available for recruiting subjects for clinical trials in this rare disease, there is a critical need to coordinate and harmonise innovative approaches through; clinical trial designs, endpoints, biomarkers, translational research, and enrichment strategies.

The PVRI Pharma Task Force’s mission is to create and to provide platforms for early and continuous dialogue on innovative clinical and regulatory development strategies, where there is free and open discussion and sharing of creative ideas between pharma, academics and regulators worldwide.

In order to further encourage and support this mission, a PVRI Pharma Steering Committee (SC) was formed in February 2017. Members of this SC include Peter Fernandes (Bellerophon as Lead), Sylvia Nikkho (Bayer as Co-Lead), Lawrence Zisman (Pulmokine), Andrew Nelsen (United Therapeutics) and Jonathan Langley (GSK). This SC will foster and facilitate the creation of platforms to gather the relevant information and organise workshops with pharma, academia and regulators to discuss and harmonise possible options and solutions in a non-competitive manner.

At the PVRI meeting in Berlin in July 2017, there were two Initiatives rolled out to the broader PVRI attendees, these included:

INITIATIVE 1
Harmonise innovative approaches through clinical trial designs, endpoints, biomarkers
Peter Fernandes, Sylvia Nikkho & Larry Zisman

Endpoint Think Tank
The kick-off meeting of the PVRI Pharma Task Force Meeting on clinical endpoints, organised and facilitated by Sylvia Nikkho, took place on 11 September 2017 on the margin of the ERS conference in Milan. The meeting was well attended with 16 international participants of patient organisations, academia and pharma industry. The group has monthly telephone conferences to discuss the way forward until the PVRI Annual World Congress, which will take place in Singapore in January 2018, and to define the steps beyond.

Objectives agreed upon
The work stream is a Think Tank on Endpoints where there is free and open discussion between representatives of patient organisations, academia, regulatory agencies and pharma worldwide.

Patient focused areas identified
- Established endpoints: Weigh limitations versus advantages
- Composite endpoints: Look at improvement rather than deterioration. Here the focus is on what is of interest to the patients, and which endpoints can shorten development timelines to bring novel treatments sooner to the patients.
- Patient reported outcome: Suitability as secondary and potentially primary endpoints
- Reimbursement: Take into consideration the view of agencies assessing the benefit to the patient
**Biomarkers**

**Overview:** There is substantial effort being undertaken by collaborating PAH centres in the US, UK, and Europe to generate high throughput genomic, proteomic, and metabolomic data sets from the PAH population. Sample collections for high throughput screening to identify biomarkers could be integrated with any new phase 2 trial in PAH. Other biomarkers based on PAH pathophysiology have been reviewed.

**Key questions include**

A **Circulating Biomarkers:** What are the acceptable criteria for a circulating PAH biomarker? What clinical endpoints should be used to determine if a biomarker is applicable? What incremental value is needed in addition to current biomarkers (incremental value over and above NT-pro-BNP for example)? How will high throughput analyses be incorporated in phase 2 and 3 clinical trials? What are the regulatory, logistic, and management issues? A goal of this initiative is to provide a summary of current ongoing PAH networks, and contact information.

B **Imaging:** Lung biopsy in the setting of pulmonary hypertension is contra-indicated. New approaches to tracking response to novel therapies in PAH are needed. Potential novel imaging modalities that could be included in phase 2 trials are high resolution CT vascular imaging and PET scanning.

C **Cardiopulmonary haemodynamics:** Should studies of PAH continue to include assessment of cardiopulmonary haemodynamics, including measurement of pulmonary artery pressure? Is there a role for continuous monitoring of PA pressure (i.e., CardioMEMSTM device) in future PAH trials? What are the technical, regulatory, safety and cost issues? Should pulmonary vascular resistance be considered a “biomarker” or an “endpoint”?

It is known that RV function has prognostic implications; should additional measures of RV function be included in phase 2 trials of new treatments for PAH, such as measurement of RV strain? The six-minute walk distance has been a mainstay of clinical trial performance in PAH. Should additional measures of cardiopulmonary exercise capacity be included in future phase 2 and 3 trials, such as measurement of VO2max?

**Clinical Trial Designs**

**Background:** Traditional drug development with large sample sizes clinical studies with clinical outcome driven endpoints (i.e M&M or TTCW or 6MWD) are no longer practical for rare diseases like PAH in adult and paediatric populations. Despite the availability of over 14 PAH treatment options available today, the characteristics of the disease and the key factors that manage or predict disease progression and survival is unclear. Clinical trial designs and endpoints are still not optimised and so provide very limited useful information. This translates into clinicians being left to make difficult treatment choices that are often unguided or based on clinical experience and/or relying on the limited clinical trial outcomes alone. The common goal as an outcome from the Think Tank for Endpoints and Biomarkers initiative that will feed into the Clinical Trial Designs initiative will be to:

- Learn from the experience and data generated from the 14 PAH treatment options.
- Identify a reliable and practical biomarker to discern efficacy in both adult and paediatric populations for PAH.
- Design suitable clinical trials for establishing efficacy in both adult and paediatric populations for PAH.

Based on initial interests and support from academics, pharma and regulators, the following sub-topics will be explored further as a lead up to the Annual Congress in Singapore:

- Phase II Design/Early Proof of Concept - focus on “Pharmacometrics (or Biosimulation for EU) Studies” and “Functional Respiratory Imaging (FRI) Studies”
- Innovative Phase 3 studies designs - focus on “Randomised Withdrawal and Early Escape Studies”

**INITIATIVE 2**

**Matching industry projects/interests with individual investigator interests and core strengths**

Andrew Nelsen & Jonathan Langley

The goal of this initiative is to initially provide a searchable database to match the research interests of both academia and industry.

At the Berlin meeting in July 2017, an overview and summary document articulating research interests amongst industry partners and academic members was presented. This document included a searchable database to match the research interests of both academia and industry.

Following the feedback, the current goal is to update the members section of the PVRI website to enable the profile pages to be updated with a searchable selection of areas of interest, as well as a freetext to add areas not covered. Individual and industry members will be able to update their profile page and use a search function to find those specific in areas. To enable this, the website will need to be developed. The PVRI team is assessing the requirements and timelines and these will be communicated in the future.

We can get more sophisticated as we develop this tool over time, potentially developing it to assist in the planning for clinical research in PVD. We look for your participation in the population of the member profiles moving forward and to take this to the next level.
The Pre-clinical & Molecular Science Task Force met for the second time at the PVRI 11th Annual World Congress in Miami in January 2017. They held a well-attended one-day workshop discussing issues of female sex in PAH and the effects of oestrogens. This was run in conjunction with the Women’s Health & Pregnancy Task Force led respectively by Mandy MacLean and Anna Hemnes.

At the 12th PVRI Annual World Congress in Singapore, the Task Force will run another one-day symposium on the topic:

- How to improve preclinical studies in PAH
  Focus on reproducibility and research translation.

This will be organised by Sebastien Bonnet, Soni Pullamsetti and Duncan Stewart.
Number of Members
Total members: 10

Looking back at the past year
Members of the Schistosomiasis Task Force had multiple activities and publications relevant to the mission of the Task Force, including (but not limited to):

New collaborations
A new collaboration was formed with Ghazwan Butrous and Alistair Mathie (University of Kent, UK), Brian Graham (University of Colorado, USA) and Ángel Luis Cogolludo Torralba (Universidad Complutense, Spain) to study the effect of dual infection with HIV and schistosomiasis, which is a common problem in Africa. The plan is to use a humanised HIV mouse sensitised and then challenged with S mansoni eggs followed by haemodynamic and immune assessments. As part of this new collaboration, Post-doctoral Fellow Daniel Morales, from Prof. Cogolludo’s lab, visited Colorado to learn about the schistosomiasis model.

Dr Amol Kulkarni, Department of Pharmaceutical Sciences at Howard University, Washington DC, USA, has started a new collaboration with Rahul Kumar (University of Colorado, USA) to test three new compounds which target TGF-ß activation in the S mansoni PH mouse model.

Work presented at conferences/symposium


Publications


PVRI Women’s Health & Pregnancy Report 2017
Anna Hennes & Barbara Cockrill

At the 2017 Miami PVRI meeting, the Women’s Health & Pregnancy Task Force had a very well attended session co-sponsored with the Pre-clinical & Molecular Science Task Force and discussed the role of sex hormones on clinical disease and animal models.

There were several posters presented that generated much discussion.

We continue to work on advocacy and a major focus has been writing an eBook that is spearheaded by Dr Tim Lahm. We are aiming to complete the eBook by the end of 2017.

We look forward to reconvene at the 2018 Annual World Congress!
It is with tremendous humility, trepidation, but a keen sense of responsibility mixed with passion that I take the baton from my predecessor and friend, President Paul Corris.

I was fortunate to witness the birth of the PVRI over a decade ago in Malta, a small Mediterranean island with less than half a million people, but so rich in history and epic battles. In the basement of a Maltese hotel room, the PVRI was then only an idea, an ambitious concept formulated by Stuart Rich, Ghazwan Butrous, Martin Wilkins and a few others.

Today, I am standing on the shoulders of Past Presidents Martin Wilkins, Sheila Glennis Haworth and Paul Corris. Together with key PVRI officers such as Chief Editors Jason Yuan and Nick Morrell, new Deputy Editors Kurt Stenmark and Irene Lang, our CEO Stephanie Barwick and her team, Aaron Shefras, Georgie Sutton, Margaret Carver, Andrea Rich, Mary Reynolds and Michael Brown, our founders have metamorphosed a concept into the actual multifaceted PVRI, which is now an international institution endowed with a growing number of members, enthusiastic caregivers and researchers, yearly international meetings, and our flagship, the Pulmonary Circulation journal, which has now secured a quite unique place in pulmonary vascular disease research.

When Glennis approached me about this role over three years ago, I thought she had the wrong Paul in mind, and she did! I am simply lucky to be following in the footsteps of my namesake Professor Corris considering the tremendous achievements he has made over the past two years. Just to cite a few, our journal having its first impact factor, inclusion of key research partners, the launching of a web-based educational programme and the creation of a Pharma Task Force.

So my task as President is daunting at this time. I am determined to continue Paul’s outstanding work, bring the PVRI activities to new heights, and extend our network to so far less targeted world areas such as the Middle East & North Africa (MENA) region, Eastern Europe and the Far East. The choice of Singapore for our 2018 international meeting, following a hugely successful scientific meeting in Miami last year, is a step in this direction. Reaching out to our colleagues in these areas is quite consistent with the original mission and spirit of the PVRI.

In closing, I am hugely indebted to Paul Corris for his amazing leadership. He is, however, not off the hook as I intend to use his wisdom and vision to ensure that the next two years will bring continuous success and new horizons to explore.

Welcome

It is with tremendous humility, trepidation, but a keen sense of responsibility mixed with passion that I take the baton from my predecessor and friend, President Paul Corris.
Today’s work, tomorrow’s possibility...