



# PVRI 2025 Rio Annual Congress

29 January - 1 February 2025

## Embracing Heterogeneity

Windsor Convention & Expo Centre, R. Martinho de Mesquita, 129 - Barra da Tijuca Rio de Janeiro - RJ, 20031-204

# Programme overview

**Pre-congress satellite meetings**, Windsor Oceanico, 2nd Floor, Oceania

## Wednesday, 29 January

- 08:00-16:00 Innovative Drug Development Initiative (IDDI) Meeting, **Oceania IX**
- 08:00-16:00 Infection in Pulmonary Vascular Disease (iPVD) Consortium Meeting, **Oceania X**
- 08:00-12:00 Paediatric & Congenital Heart Disease Task Force Meeting, **Oceania II**
- 12:30-18:00 PAH-ICON: International Consortium for Genetic Studies in PAH Meeting, **Oceania II**
- 13:30-17:15 Imaging Task Force Meeting, **Oceania III**
- 16:00-18:00 High Altitude Task Force Meeting, **Oceania X**
- 16:00-18:00 PVRI Board Meeting, **Oceania VIII**

**Scientific programme**, Windsor Oceanico, 3rd Floor, Asia

## Thursday, 30 January: Heterogeneity in the presentation of PH

- 08:00-11:05 Session 1: Establishing the framework for the classification and diagnosis of PH worldwide
- 11:05-13:00 Buffet lunch **Windsor Barra, Ground Floor, Barra Restaurant**
- 11:05-13:00 Career Catalyst Luncheon (bookable), **Windsor Barra, 2nd Floor, Alhambra & El Pardo**
- 13:00-16:00 Session 2: Risk stratification and treatment in the new era of PH therapeutics
- 16:00-18:00 Poster presentations
- 18:00-20:00 Welcome Drinks Reception (open to all), **Windsor Barra, 2nd Floor, Alhambra & El Pardo**

## Friday, 31 January: Heterogeneity in the pathobiology of PH

- 08:00-11:10 Session 3: Vascular heterogeneity in chronic lung disease
- 11:10-13:00 Buffet lunch **Windsor Barra, Ground Floor, Barra Restaurant**
- 11:10-13:00 Women in PH Luncheon (bookable), **Windsor Barra, 2nd Floor, Alhambra & El Pardo**
- 13:00-16:30 Session 4: Heterogeneity in PH associated with heart disease
- 16:30-18:00 Poster presentations
- 19:00-23:59 Gala Dinner & Awards Presentation (bookable), **Windsor Barra, Ground Floor, Louvre**

## Saturday, 1 February: Learning from heterogeneity to improve outcomes in PH

- 08:00-11:00 Session 5: The individual exposome and its contribution to PH heterogeneity
- 11:00-12:45 Buffet lunch **Windsor Barra, Ground Floor, Barra Restaurant**
- 11:00-12:00 Hot topics from PVRI GoDeep (bookable), **TBC**
- 12:45-13:45 Session 6: Quantifying therapeutic responses
- 13:45-14:15 Refreshment break
- 14:15-16:15 Session 7: Leveraging disease heterogeneity in clinical trial design
- TBC Pulmonary Circulation Journal Meeting (closed meeting), **TBC**



## Infection in Pulmonary Vascular Disease (iPVD) Consortium Task Force

08:00-08:05 Welcome and opening remarks  
Navneet Dhillon

### Session 1: Current updates on infection associated PVDs Chairs: Navneet Dhillon, Suellen Oliveira

- 08:05-08:25 Pulmonary vascular complications of tuberculosis: PH and beyond  
Brian Allwood
- 08:25-08:45 Update on multiple co-morbidities and PVD  
Peter Nyasulu
- 08:45-09:05 Update on HIV and PVD  
Ana Olga Mocumbi
- 09:05-09:25 Mechanistic overlap between inflammatory pathways relevant to PH and COVID-19  
Stephen Chan
- 09:25-09:45 Pathobiology of inflammatory immune cells in schistosoma induced PH  
Rahul Kumar
- 09:45-10:05 Fungal infections induced PH  
Alexandre Fabro

10:05-10:30 Refreshment break

### Session 2: Schistosomiasis associated PVD in Latin America Chairs: Ghazwan Butrous, Brian Graham

- 10:30-10:50 Overview of Sch-PAH: case-based presentation of the disease spectrum  
Angela Bandeira
- 10:50-11:10 Clinical and epidemiological aspects of Sch-PAH in Bahia  
Camila Loureiro
- 11:10-11:30 Clinical and epidemiological aspects of Sch-PAH in Minas Gerais  
Ricardo Correa

11:30-11:50 Clinical presentation of hepatoesplenic schistosomiasis in Brazil  
Roberto José Carvalho

11:50-12:10 Advances in schistosomiasis basic research: insights from Brazil  
Katia Oliveira

12:10-12:30 Insights from NIH schistosomiasis PAH multicenter study  
Rudolf Oliveira

12:30-13:30 Lunch break

### Panel discussions on schistosomiasis Chairs: Navneet K Dhillon, Suellen Oliveira

13:30-14:00 Panel 1: Current challenges in diagnosing schistosomiasis, including biomarker availability and diagnostic tools  
Chair: Rogerio Souza  
Panel: Eliane Mancuzo, Camila Rezende, Camila Loureiro

14:00-14:30 Panel 2: Epidemiological and preventive aspects of schistosomiasis in Brazil, including current status, future perspectives, and impact on PH development  
Chair: Ricardo Correa  
Panel: Miriam Tendler, Roberto José Carvalho, Rudolf Oliveira, Angela Bandeira

14:30-15:00 Refreshment break

### Session 3: Second hit phenomenon in infection associated PVDs Chairs: Rudolf Oliviera, Vinicio de Jesus Perez

15:00-15:20 Air pollution, climate change, infection and PH  
Mona Lichtblau

15:20-15:40 Emerging insights into HIV- and methamphetamine-driven PAH: From mechanisms to management  
Prangthip Charoenpong

15:40-16:00 Microbiome and schistosomiasis  
Suellen Oliveira

Wednesday  
29 January

Windsor Oceanico,  
2nd Floor, Oceania X



## Paediatric & Congenital Heart Disease Task Force

Moderators: Maria Jesus del Cerro, Steve Abman, Shahin Moledina

### Opportunities for Paediatric Task Force involvement in PVRI activities

- 08:00-08:08 PVRI GoDeep  
TBC
- 08:08-08:15 PVRI Pulmonary Hypertension Global Patient Survey (PH GPS)  
Shahin Moledina
- 08:15-08:23 Innovative Drug Development Initiative  
Steven Abman
- 08:23-08:30 Discussion: Opportunities & proposal for Task Force lead initiatives  
All

### World Symposium recommendations & changes

- 08:30-08:40 Comments on the World Symposium – lights and shadows  
Maria Jesus del Cerro
- 08:40-09:00 Main changes & rationale  
TBC
- 09:00-09:30 Discussion  
All

### Collaboration between registries

- 09:30-10:00 Collaboration between registries: Let's make it real  
Maria Jesus del Cerro
- 09:30-10:00 Discussion  
All

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10:00-10:15 Refreshment break

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### Persistent pulmonary hypertension of the newborn

- 10:15-10:25 Let's talk about PPHN  
Steven Abman
- 10:25-11:00 Defining the disease, clinical phenotypes, global differences & next steps  
All

### Experiences & initiatives from the Task Force

- 11:00-11:30 I have a clinical case I want to discuss...  
All
- 11:30-12:00 I have a research project I want to share...  
All

Wednesday  
29 January

Windsor Oceanico,  
2nd Floor, Oceania II



## PAH-ICON: International Consortium for Genetic Studies in PAH

12:30-12:40 Welcome  
Micheala Aldred, Stefan Gräf

### Invited presentations & panel discussions

Each talk includes 10 minutes of discussion time

12:40-13:20 Keynote: Rare disease landscape in Brazil and Latin America  
Roberto Giugliani

13:20-14:00 Update from ClinGen PAH gene and variant expert panel  
Carrie Welch

14:00-14:40 Update from the TBX4Life initiative  
Eric Austin

14:40-14:50 Refreshment break

### Abstract presentations

14:50-15:10 Late onset pulmonary veno-occlusive disease associated with rare heterozygous variants of KDR and EIF2AK4  
Vasile Foris

15:10-15:30 Functional characterization of novel KV1.5 variants in PAH  
Andrea Olschewski

15:30-15:50 Spatial profiling identifies localised changes in gene expression in pulmonary vascular remodeling in the sugen hypoxia rat model  
James Klinger

15:50-16:10 Pathogenic PAH gene variants linked to pulmonary vascular pruning in non-hispanic white COPD gene participants  
Vasile Foris

16:10-16:30 Smaller right ventricular volumes correlate with elevated afterload in unaffected carriers of a pathogenic BMPR2 variant  
Eszter Tóth

16:30-16:45 Refreshment break

### Building future PH cohorts

16:45- 18:00

- > Examples and experiences from around the globe
- > PVRI GoDeep's future perspective
- > Core data set: Standardisation & harmonisation of phenotypes
- > Leveraging image data
- > Resources, federation & analysis strategies
- > Global ethics & governance

Wednesday  
29 January

Windsor Oceanico,  
2nd Floor, Oceania II

## High-Altitude Task Force

Wednesday  
29 January

Windsor Oceanico,  
2nd Floor, Oceania X

### Challenges to the pulmonary circulation & beyond at high altitude

Moderators: Aastha Mishra, Silvia Ulrich

Each talk includes 10 minutes of discussion time

16:00-16:30 Birth at high altitude – immediate challenges & life-long consequences  
Alexandra Heath

16:30-17:00 The role of the endothelium in acute & chronic pulmonary vascular adaptation to hypoxia  
Wolfgang Kübler

17:00-17:30 Patients diagnosed with pulmonary vascular disease (PAH/CTEPH) at high altitude  
Silvia Ulrich

17:30-18:00 Lowlanders with COPD going to altitude – implication for the right heart & the pulmonary vasculature  
Mona Lichtblau

18:00-18:30 High Altitude Task Force meeting



# Scientific programme speakers



**Steven Abman**  
University of Colorado



**Vineet Agrawal**  
Vanderbilt University  
Medical Center



**Rolf Berger**  
University Medical  
Center Groningen



**Ioana Preston**  
Lahey Clinic



**Sasha Prisco**  
University of Minnesota



**Farbod (Nick)  
Rahaghi**  
Brigham and Women's  
Hospital / Harvard  
Medical School



**Prashant Bobhate**  
Kokilaben Dhirubai  
Ambani Hospital



**Harm Jan Bogaard**  
Amsterdam University  
Medical Centers



**Evan Brittain**  
Vanderbilt University  
Medical Center



**Alex Rothman**  
University of Sheffield



**Soni Savai-  
Pullamsetti**  
Max Planck Institute



**Sandeep Sahay**  
Houston Methodist  
Hospital



**Stephen Chan**  
University of Pittsburgh  
School of Medicine



**Vinicio de Jesus  
Perez**  
Stanford University



**Kara Goss**  
UT Southwestern  
Medical Center



**Catherine Simpson**  
Johns Hopkins  
University



**Natascha Sommer**  
University of Giessen &  
Marburg Lung Center



**Rogério Souza**  
University of Sao Paulo  
Medical School



**Anna Hemnes**  
Vanderbilt University  
Medical Center



**Rachel Hopper**  
Lucile Packard  
Children's Hospital/  
Stanford University  
School of Medicine



**Dunbar Ivy**  
Children's Hospital  
Colorado/University  
of Colorado School of  
Medicine



**Edda  
Spiekerkoetter**  
Stanford University



**Charlotte  
Summers**  
University of  
Cambridge



**Andrew Swift**  
University of Sheffield



**Maria Jesus del  
Cerro Marin**  
Hospital Universitario  
Ramón y Cajal



**David Kiely**  
University of Sheffield



**Gabor Kovacs**  
Medical University of  
Graz



**Caio Tavares**  
Imperial College  
London



**Khodr Tello**  
University Hospital  
Giessen



**Mark Toshner**  
University of  
Cambridge



**Wolfgang Kübler**  
Charité -  
Universitätsmedizin  
Berlin



**Grazyna  
Kwapiszewska**  
Medical University  
Graz & Institute of Lung  
Health



**Tim Lahm**  
National Jewish Health



**Karin Tran-  
Lundmark**  
Skane University  
Hospital & Lund  
University



**Rubin Tuder**  
University of Colorado  
Anschutz Medical  
Campus



**Silvia Ulrich**  
University Hospital  
Zurich



**Charly Lai**  
Indiana University  
School of Medicine



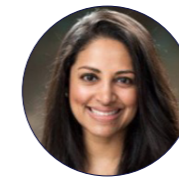
**Allan Lawrie**  
Imperial College  
London



**Susan Majka**  
National Jewish  
Health - University Of  
Colorado



**Rebecca  
Vanderpool**  
The Ohio State  
University



**Nidhy Varghese**  
Texas Children's  
Hospital



**Frances Varian**  
University of Sheffield



**Bradley Maron**  
University of Maryland



**Hiromi Matsubara**  
Okayama Medical  
Center



**Valentina Mercurio**  
Federico II University



**Corey Ventetuolo**  
Brown University



**Sofia Villar**  
University of  
Cambridge



**Jason Weatherald**  
University of Alberta



**Shahin Moledina**  
Great Ormond Street  
Hospital



**Steven Niederer**  
Imperial College  
London



**Rudolf Oliveira**  
Federal University of  
Sao Paulo



**Martin Wilkins**  
Imperial College  
London



**Roham Zamanian**  
Stanford University



**Nayeli Zayas**  
Instituto Nacional de  
Cardiología Ignacio  
Chavez

## SESSION 1: Establishing the framework for the classification & diagnosis of PH worldwide

*Moderators: Katarina Zeder, Lindsay Forbes, Sonja Bartolome*

- 08:00-08:05 PVRI President's welcome  
Anna Hemnes
- 08:05-08:20 PH care in Brazil  
Rogerio Souza
- 08:20-08:35 Classification & diagnosis of PH: Updates from the 7th WSPH  
Gabor Kovacs
- 08:35-08:50 Omics-based & data-driven approaches to early disease diagnosis  
Catherine Simpson
- 08:50-08:57 **The prevalence of PH in sickle cell disease in sub-Saharan Africa: A systematic review & meta-analysis**  
Armella Santi
- 08:57-09:12 CIPHER & CIPHER-MRI studies for early diagnosis of PH  
Ioana Preston
- 09:12-09:27 Advanced medical imaging & AI in PH diagnosis & classification  
Andy Swift

09:27-09:57 **Refreshment break**

*Moderators: Tatiana Kudryashova, Tim Lahm, Gabor Kovacs*

- 09:57-10:12 Cardiopulmonary exercise testing in the diagnosis & phenotyping of PH patients  
Khodr Tello
- 10:12-10:27 Classification & diagnosis of paediatric PH: Updates from the 7th WSPH  
Dunbar Ivy
- 10:27-10:35 **Global treatment disparities within high- and middle-high income PH centers: A cluster analysis by the PVRI IDDI Access to Care Workstream**  
Franz Rischard
- 10:35-10:50 CTEPH & CTED approach to early diagnosis & treatment  
Mark Toshner
- 10:50-11:05 How pre-clinical models can be used to improve clinical phenotyping & early diagnosis  
Vineet Agrawal

11:05-13:00 **Lunch break, Windsor Barra, Ground Floor, Barra Restaurant**

11:05-13:00 **Career Catalyst Luncheon, Windsor Barra, 2nd Floor, Alhambra & El Pardo**  
Hosts: Jason Weatherald, Laura Opegard, Katarina Zeder and Navneet Singh

## SESSION 2: Risk stratification & treatment in the new era of PH therapeutics

*Moderators: Pilar Escribano Subias, Sue Gue, Sandeep Sahay*

- 13:00-13:15 Developments in risk stratification scores in PH  
Valentina Mercurio
- 13:15-13:30 RV phenotyping in PH risk stratification & treatment  
Tim Lahm
- 13:30-13:37 A monoclonal antibody targeting the ZIP12 transporter attenuates severe experimental PAH  
Stephanie Hopley
- 13:37-13:52 The impact of novel therapeutics on the treatment algorithm of PH  
Sandeep Sahay
- 13:52-14:07 Surgical Interventions, mechanical support, & transplant in end-stage PH  
Nayeli Zayas

14:07-14:37 **Refreshment break**

*Moderators: Corey Ventetuolo, Athiththan Yogeswaran, Horst Olschewski*

- 14:37-14:52 Approach to the treatment of Group 1 PH patients with co-morbidities  
Anna Hemnes
- 14:52-15:07 Risk stratification & treatment of paediatric PH  
Rolf Berger
- 15:07-15:15 Preclinical models support the synergistic potential of seralutinib & sotatercept in treating PAH  
Daniel Bachteler
- 15:15-15:30 Medical & surgical management of CTED & CTEPH  
Hiromi Matsubara
- 15:30-16:00 Panel discussion: Realities & challenges of applying PH guidelines for diagnosis & treatment in LMIC  
*Facilitators: Vinicio de Jesus Perez, Werner Seeger, Ana Mocumbi, Gerald Maarman, Mauricio Orozco Levi*

16:00-18:00 **Poster presentations**

18:00-19:30 **Drinks Reception, Windsor Barra, 2nd Floor, Alhambra & El Pardo**

**Thursday  
30 January**

Windsor Oceanico,  
3rd Floor, Asia



**SESSION 3: Vascular heterogeneity in chronic lung disease**

Moderators: *Grazyna Kwapiszewska, Shelsey Johnson, Susan Majka*

- 08:00-08:05 Introduction  
Grazyna Kwapiszewska
- 08:05-08:20 Clinical aspects of PH heterogeneity in chronic lung disease: Same as PAH or different?  
Corey Ventetuolo
- 08:20-08:35 Translational investigations of PH in fibrotic lung disease models  
Susan Majka
- 08:35-08:50 Translational investigations of PH in COPD disease models  
Natascha Sommer

08:50-08:57 **RUPERT SWIFT AWARD LECTURE:** Cluster analysis identifies computed tomography imaging-based phenotypes of PH associated with COPD-PH  
Shelsey Johnson

08:57-09:05 Endotyping PH in COPD: possible role of systemic & lung iron status  
Horst Olschewski

09:05-09:20 Panel discussion: Comparison of vascular changes in CLD & PAH

09:20-09:50 Refreshment break

Moderators: *David Kiely, Mona Lichtblau, Sarah MacLissac*

- 09:50-09:55 Introduction  
David Kiely
- 09:55-10:10 Vasculature in CLD: Imaging insights  
Farbod (Nick) Rahaghi
- 10:10-10:25 Pulmonary vascular heterogeneity: Insights from contemporary pathological approaches  
Rubin Tudor
- 10:25-10:40 Vascular changes in paediatric chronic lung disease  
Steven Abman

10:40-10:47 **BUTROUS FOUNDATION YOUNG INVESTIGATOR AWARD LECTURE:** Impact of IRG1/Itaconate axis on cardiopulmonary phenotype: linking bone marrow dynamics to inter-organ communication  
Golnaz Hesami

10:47-10:55 Elevated vascular hyaluronan as a therapeutic target in PH associated with lung fibrosis  
Harry Karmouty Quintana

10:55-11:10 Panel discussion: Should we target vascular changes in chronic lung disease?

11:10-13:00 Lunch break, Windsor Barra, Ground Floor, Barra Restaurant

11:10-13:00 **Women in PH Luncheon**, Windsor Barra, 2nd Floor, Alhambra & El Pardo  
Host: Anna Hemnes Speakers: Jill Maron, Karin Tran-Lundmark, Ana Olga Mocumbi

**SESSION 4: Heterogeneity in PH associated with heart disease**

Moderators: *Nidhy Varghese, Baktybek Kojonazarov, Rebecca Vanderpool*

- 13:00-13:05 Introduction  
Nidhy Varghese
- 13:05-13:20 How do HFrEF & HFpEF affect the pulmonary vasculature & how can we model it?  
Charly Lai
- 13:20-13:35 Congenital heart disease & the pulmonary vasculature  
Shahin Moledina
- 13:35-13:42 PH is highly prevalent in rheumatic heart disease in sub-Saharan Africa: a systematic review & meta-analysis  
Katarina Zeder
- 13:42-13:50 17 $\beta$ -Estradiol enhances right ventricle angiogenesis & endothelial cell fatty acid oxidation in PAH in a carnitine palmitoyltransferase 1-dependent manner  
Simon Bousseau
- 13:50-14:05 Animal models of heart disease PH  
Wolfgang Kübler
- 14:05-14:20 Effect of pre and post-tricuspid shunts on the pulmonary vasculature  
Rachel Hopper

14:20-14:50 Refreshment break

Moderators: *Harm Jan Bogaard, Evan Brittain, Philipp Douschan*

- 14:50-14:55 Introduction  
Harm Jan Bogaard
- 14:55-15:10 How can we study the right ventricle to develop novel therapies?  
Edda Spiekerkoetter
- 15:10-15:25 Advances in imaging RV function in humans & animal models with PH  
Rebecca Vanderpool
- 15:25-15:32 The role of SMYD2/RUNX2 axis in right ventricular hypertrophy & failure  
Vandna Sapehia
- 15:32-15:40 Patients with group-2 PH in a low-resources setting: current status  
Jane Kabwe
- 15:40-15:55 Cellular heterogeneity in RV dysfunction  
Soni Savai-Pullamsetti
- 15:55-16:10 Managing RV dysfunction in resource-limited settings  
Prashant Bobhate
- 16:10-16:30 Panel discussion

16:30-18:00 Poster presentations

19:00-23:59 Gala Dinner & Award Presentations, Windsor Barra, Ground Floor, Louvre

**Friday  
31 January**  
Windsor Oceanico,  
3rd Floor, Asia





**SESSION 5: The individual exposome & its contribution to PH heterogeneity**

*Moderators: Lan Zhao, Navneet Dhillon, Harry Karmouty Quintana*

- 08:00-08:15 Drug exposures and PH  
Vinicio de Jesus Perez
- 08:15-08:30 Infectious exposures & pulmonary vascular disease  
Rudolf Oliveira
- 08:30-08:45 High altitude exposure and PH  
Silvia Ulrich
- 08:45-09:00 Early life exposures and pulmonary vascular disease  
Kara Goss
- 09:00-09:15 The Microbiome in PH  
Sasha Prisco

09:15-09:45 Refreshment break

*Moderators: Flavia Navarro, Luke Howard, Rudolf Oliveira*

- 09:45-10:00 Less considered exposures that contribute to PH  
Stephen Chan
- 10:00-10:15 Real world activity and exercise perception in PH patients - MyHeart Counts  
Allan Lawrie
- 10:15-10:30 Insights from All of Us/EHR  
Evan Brittain
- 10:30-10:37 **Novel potential connection between lung microbiome dysbiosis & P2X7R/c-IAP2-regulated endothelial survival in schistosomiasis-associated PH**  
Suellen Darc Oliveira
- 10:37-10:45 **Early recruitment & alternative activation of macrophages initiate pathophysiological changes in pulmonary vasculature upon smoke exposure**  
Vinita Sharma
- 10:45-11:00 Exposome as a modifiable factor for PH management  
Bradley Maron

11:00-12:45 Lunch break, Windsor Barra, Ground Floor, Barra Restaurant

**Hot topics from PVRI GoDeep**

*Chairs: Martin Wilkins, Paul Hassoun, Werner Seeger*

- Overview of the GoDeep meta-registry Werner Seeger
- Risk scores beyond group 1 PH – baseline and follow-up Athiththan Yogeswaran
- Survival outcomes and Impact of targeted PAH therapy in PoPH Arun Jose
- PAH-targeted therapies in group 3 PH – PDE5 inhibitor therapy associated with improved survival Khodr Tello
- Male survival disadvantage in PH: independent of etiology, age, disease severity, comorbidities and treatment, but race-dependent Evan Brittain

**SESSION 6: Quantifying therapeutic responses**

*Moderators: Patricia Thistlethwaite, Andy Sweatt, Steeve Provencher*

- 12:45-13:00 How should we define disease modification?  
Roham Zamanian
- 13:00-13:15 Developing imaging surrogates of vascular histology to quantify reverse remodeling  
Karin Tran-Lundmark
- 13:15-13:23 CT-based discrimination of CTEPH using deep learning clot vessel radiomics & machine learning  
Pietro Nardelli
- 13:23-13:30 Novel insights from functional respiratory imaging (FRI) analysis in phase 2 INS1009-211 study: Treprostinil palmitil inhalation powder (TPIP) impact on pulmonary vasculature in patients with PH-ILD  
Colin Church

13:30-13:45 **A joint talk with PVRI and PHA USA**  
Patient reported outcomes  
Frances Varian



13:45-14:15 Refreshment break

**SESSION 7: Leveraging disease heterogeneity in clinical trial design**

*Moderators: Jane Leopold, Navneet Singh, Roham Zamanian*

- 14:15-14:30 What is a platform trial?  
Charlotte Summers
- 14:30-14:45 Global perspective & digital trials  
Caio Tavares
- 14:45-15:00 Update in paediatric clinical trials  
Maria Jesus del Cerro

**Dragon's Den / Shark Tank**

*Dragons/Sharks: Sonja Bartolome, Ardeshir Ghofrani, Charlotte Summers, Paul Corris*

- 15:00-15:05 Dragon Den introduction Martin Wilkins
- 15:05-15:20 PHoenix trial (rationalising current treatments using implanted devices) Alex Rothman
- 15:20-15:35 Stratosphere Bayesian trial for BMPR2 mutation carriers Sofia Villar
- 15:35-15:50 CRAVE: Canadian Right ventricular AdaptiVE platform trial Jason Weatherald
- 15:50-16:00 Summary Martin Wilkins

16:00-16:15 Building and testing a personal digital twin for PH  
Steve Niederer

