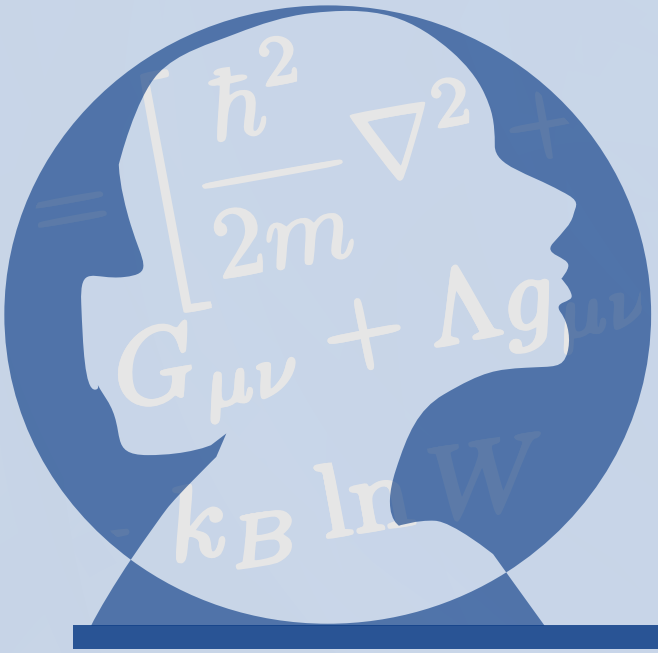


CUWiP UK

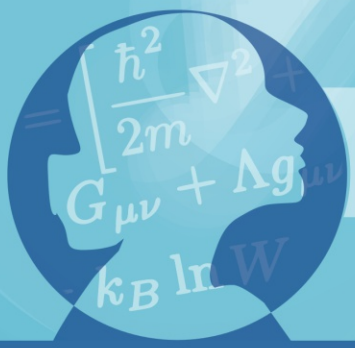
Conference for Undergraduate Women in Physics UK

Exploring your Future in Physics

19th - 22nd March 2015

Physics Department, University of Oxford

www.physics.ox.ac.uk/cuwip2015



CUWiP UK

Conference for Undergraduate Women in Physics UK
Oxford, 19-22 March 2015

Welcome to CUWiP UK!

Welcome to the inaugural UK Conference for Undergraduate Women in Physics! In this booklet, you will find information including details of the programme, biographies of the speakers and panellists, maps of Oxford and safety information.

We're thrilled to have so many talented women joining us in Oxford for this conference, and are proud to present some of the most successful academics and professionals in physics. We are sure you will enjoy learning from the work they have done and hearing their personal stories.

We look forward to meeting you all over the next couple of days, and hope that you appreciate this opportunity to be part of CUWiP!

The CUWiP UK committee

We are very grateful to our sponsors for their generous support of undergraduate women in physics. Without them we would not have been able to offer this conference.

Contents:

Page 2 Welcome
Page 3 Contents
Page 4 Timetable: Thursday, Friday
Page 5 Timetable: Saturday
Page 6 Timetable: Sunday
Page 7 Venues
Page 8 Speaker Profiles
Page 11 Careers Panel
Page 12 Academic Panel & Profiles
Page 14 Emergency Information
Page 16 List of participants
Page 18 Organising Committee
Page 19 Map of North Oxford

Name: .....

Mobile: .....

College accommodation: .....

RAL tour group: .....

Oxford lab tour: A / B / C

Workshop group: A / B

Timetable: Thursday & Friday

Thursday 19th March

18:00 - 20:00	Reception	Keble College bar

Friday 20th March

08:30 - 09:00	Registration	Martin Wood Foyer
09:00 - 09:20	Opening Remarks	Daniela Bortoletto Martin Wood Lecture Theatre
09:20 - 09:40	Load bus to RAL, partial solar eclipse viewing	
09:40 - 10:40	Travel to RAL	
10:45 - 11:00	Arrival at RAL, refreshments	
11:00 - 11:30	Science Talk	Ceri Brenner
11:30 - 12:30	Career Panel	
12:30 - 13:00	Lunch	
13:00 - 15:30	Visit Diamond, ISIS, Central Laser Facility	
15:30 - 15:45	Wrap up, refreshments	
15:50 - 17:20	Travel to Oxford	
17:30 - 19:00	Visit Oxford Physics Laboratories	A: Denys Wilkinson Building B, C: Clarendon Building
19:20 - 20:30	Dinner	Keble College Hall
20:30 - 22:00	Social: Scavenger Hunt	Keble College Bar

Timetable: Saturday

Saturday 21st March

09:00 - 09:45	Careering through Astrophysics	Jocelyn Bell Burnell Martin Wood Lecture Theatre
09:45 - 10:30	A non-linear life in laser fusion	Kate Lancaster Martin Wood Lecture Theatre
10:30 - 11:00	Coffee Break	Clarendon Common Room
11:00 - 12:45	Skills Workshops: A: effective marketing B: effective assertiveness	Group A: Martin Wood Theatre Group B: Clarendon Common Room
12:45 - 13:45	Lunch	Clarendon Common Room
13:45 - 14:00	Group Photograph	
14:00 - 14:45	What hinders clever people from flourishing in physics?	Katherine Blundell Martin Wood Lecture Theatre
14:45 - 16:15	Academic Panel	Martin Wood Lecture Theatre
16:15 - 16:45	Tea	Clarendon Common Room
16:45 - 17:30	Uncovering the Universe with the LHC	Tara Shears Martin Wood Lecture Theatre
17:30 - 18:15	Molecular Imaging of Cancer: Physics meets Biology	Sarah Bohndiek Martin Wood Lecture Theatre
19:20 - 20:30	Dinner	Keble College Hall
20:30 - 22:00	Social: Quiz or "Stargazing Oxford"	Quiz: Keble College Bar Stargazing Oxford: Denys Wilkinson Building

Timetable: Sunday

Sunday 22nd March

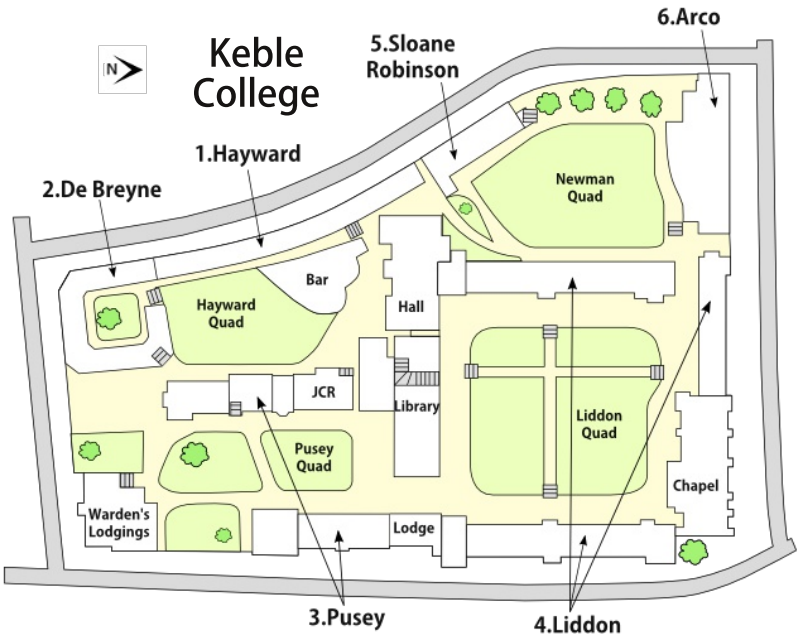
09:00 - 09:45	Our Dynamic Sun	Helen Mason Martin Wood Lecture Theatre
09:45 - 10:30	Me and medical physics: passion and perseverance, positrons and parenting	Heather Williams Martin Wood Lecture Theatre
10:30 - 11:00	Coffee break	Clarendon Common Room
11:00 - 12:45	Skills workshops: A: effective assertiveness B: effective marketing	Group A: Clarendon Common Room Group B: Martin Wood Lecture Theatre
12:45 - 13:30	Lunch	Clarendon Common Room
13:30 - 14:00	Fill out postconference surveys	Own laptop if possible. Otherwise Computer lab, Denys Wilkinson Building
14:00 - 14:45	The search for Gravitational Waves	Sheila Rowan Martin Wood Lecture Theatre
14:45 - 15:00	Closing remarks	Daniela Bortoletto Martin Wood Lecture Theatre

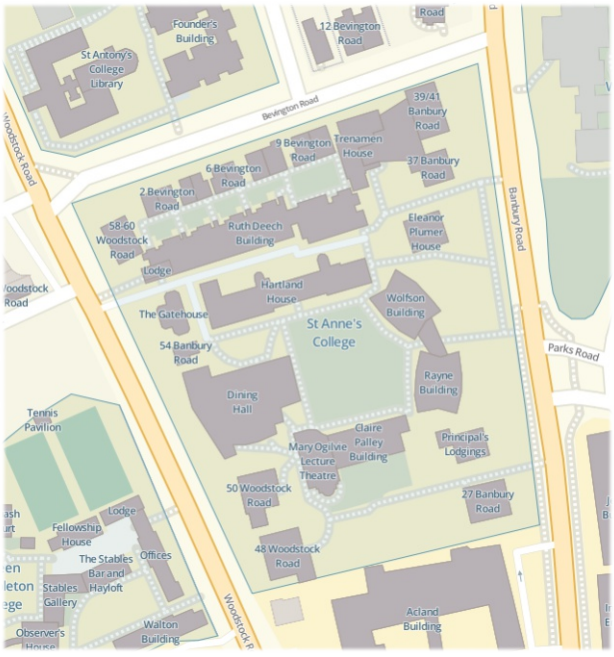
Venues

Most of the activities will be around North Oxford, which is where the Physics Department is based. Lectures will be held in the Martin Wood Lecture Theatre, which is in the Clarendon building - one of the two main buildings of the Physics Department. The other is the Denys Wilkinson Building, which you will visit when touring the labs.

While some teaching is done in the department, a lot is done in the colleges of the university. All students belong to a college, and this is often where they live. You will be staying at either Keble College or St Anne's College, both of which are nearby. Some social activities will also take place in Keble College.

Keble College's distinctive architecture is in a different style from most of Oxford. It hosts a vibrant community and is right beside the physics department so attracts a lot of applications to study physics!





Just north of the city centre, St Anne's also boasts a location close to the Physics department. It is a modern college with excellent facilities. As one of the largest colleges in the university, St Anne's is proud of its down-to-earth and independent-minded outlook.

Speaker profiles

Professor Dame Jocelyn Bell Burnell
University of Oxford

Professor Dame Jocelyn Bell Burnell is credited with one of the most significant scientific discoveries of the twentieth century for which her thesis advisor was awarded the Nobel Prize: that of the first radio pulsars. She went on to become the president of the Royal Astronomical Society in 2002, the first female president of the Institute of Physics in 2008 and in October 2014 she was appointed the first female president of the Royal Society of Edinburgh. For her numerous contributions to the astrophysical community, she was appointed Dame Commander of the Order of the British Empire in 2007 along with several other honours including (but not limited to) the Albert A. Michelson Medal, the J. Robert Oppenheimer Memorial Prize, and the Herschel Medal. In 2013, she was named one of the most powerful women in the UK by BBC radio 4. She is a strong supporter of women in physics, empowering women and serving as a remarkable role model.

Professor Katherine Blundell
University of Oxford

Professor Katherine Blundell is both an accomplished astrophysicist and a strong supporter of science education. Katherine is currently a Professor of Astrophysics at the University of Oxford and a Research Fellow of St John's College, Oxford. Prior to this, she was appointed as a University Research Fellow of the Royal Society and she has been awarded prizes including the prestigious Philip Leverhulme Prize, the Royal Society's Rosalind Franklin Prize, and the Institute of Physics's Bragg Medal. Her main research interests include the formation and lifecycles of active galaxies. She has co-authored the textbook "Concepts in Thermal Physics" and edited the book "Energy... beyond Oil." Through her innovative project, Global Jet Watch, Katherine provides young students at schools in South Africa, Chile, Australia and India with the opportunity to enjoy using telescopes and collecting data at her observatories.

Professor Sarah Bohndiek
University of Cambridge

Professor Sarah Bonhdiek leads a highly interactive and successful international research team at the University of Cambridge. She is passionate about using new technological innovations to improve the understanding of metabolic processes in disease. Her endeavours will help to improve cancer patient survival by finding new routes to overcome drug resistance and enable earlier cancer detection. For her novel efforts, she has been awarded numerous prizes including the Paterson Medal, the Marie Sklodowska-Curie Actions Prize for Nurturing Research Talent, and the WISE (Women into Science and Engineering) Research Award "for groundbreaking scientific research by a female-led team which has advanced knowledge and will make a difference to people's lives." Beyond her scientific achievements, she is active in promoting science as a career and is involved with the Stemettes as well as participating in the Cancer Research UK Women of Influence campaign.

Speaker profiles

Dr Kate Lancaster
University of York

Dr Kate Lancaster's enthusiasm for plasma physics is infectious. As a frequent BBC commentator and organiser of the British Science Festival's physics programme, her passion captivates audiences. She has worked alongside famous scientists including Brian Cox, Maggie Aderin-Pocock, and Paul Nurse. As a physicist at the University of York, she has made significant research contributions to inertial confinement fusion that is aimed at generating fusion energy for clean, public energy consumption. Furthermore, she now serves as the Plasma and Fusion Industrial Officer for the York Plasma Institute, which enables her to foster links with industry and commercialise fusion energy for public use. Outside of science, Kate balances her life with her love for dancing.

Dr Helen Mason
University of Cambridge

Named as one of the UK's most outstanding women by the UK Resource Centre for Women in SET, Dr Helen Mason is a high-profile solar physicist at the University of Cambridge specialising in the analysis of the ultraviolet and X-ray spectrum from the solar atmosphere. She is a co-investigator on the major ESA/NASA project—the Solar Heliospheric Observatory (SOHO) which involves the study of the solar interior, solar atmosphere and the solar wind. Her observations have given scientists great insight into the nature of the Sun and its interaction with the Earth. Additionally, she is a founding member of the highly successful international collaboration CHIANTI, which provides an atomic database for the analysis of astrophysical spectra. For her many contributions to science, she has been named one of the "Women of Outstanding Achievement of 2010" and appointed Officer of the Order of the British Empire in 2014. Helen currently leads the outreach project Sun | Trek, which investigates the Sun and its effects on the Earth.

Professor Sheila Rowan
University of Glasgow

Space-time expert Professor Sheila Rowan and her colleagues at the University of Glasgow are leading the hunt to prove the existence of the elusive and exciting theory of gravitational waves. First predicted by Einstein, gravitational waves are thought to be ripples in space-time caused by cosmic events such as the merging of two galaxies. Once these waves reach Earth, they could provide us with information about the beginnings, and future of, the Universe. In addition to publishing over 150 articles, Sheila was the recipient of the Leverhulme Prize, the Royal Society Wolfson Research Merit Award, and named a member of the Order of the British Empire. She currently serves as an experimental physicist and Director of the Institute for Gravitational Research in the School of Physics and Astronomy at the University of Glasgow.

Speaker profiles

Professor Tara Shears
University of Liverpool

As the first female Professor of Physics at the University of Liverpool, Professor Tara Shears is a leading voice in the world of science communication. After being awarded the Royal Society University Research Fellowship, she worked at the Collider Detector at the Fermilab facility near Chicago and then joined the LHCb experiment at CERN's Large Hadron Collider in 2004. Specifically, she is testing the Standard Model theory in the electroweak sector to understand why there is so little antimatter in the Universe. She believes that "great science like great art, enriches our lives and gives us a way to make sense of the world." Outside of research, Tara serves as a science communicator and has been interviewed by a variety of news agencies including the BBC and Discovery Channel.

Dr Heather Williams
Central Manchester University Hospitals

Dr Heather Williams is strongly committed to encouraging more women to pursue interests in science through her many outreach efforts. She is a Senior Medical Physicist for Nuclear Medicine at Central Manchester University Hospitals and Honorary Lecturer in the Centre for Imaging Sciences at Manchester University. Heather works on nuclear medicine imaging, a non-invasive and painless method of diagnosing diseases including cancer. Most notably, she is one of the founders and directors of ScienceGrrl, a grassroots network (with a large following including 19 local chapters) supporting and celebrating women in science, technology, engineering and maths. She actively enables young women to reach their full potential through her many efforts as a STEM Ambassador and as the Chair of the Women in Physics Group at the Institute of Physics, and serves as an inspiring role model to all.

Careers panel

Moderator:

Grace Thompson
Head of Talent and Skills at RAL.

Panelists:

Hilde Schroeven-Deceuninck
Robotic Exploration Development Engineer, ESA ESCAT
Ceri Brenner
Central Laser Facility, STFC
Emily Longhi
Senior Insertion Devices (ID) Physicist, Diamond Light Source
Dinah Parker
Oxford Instruments
Susan Hezlet, Publisher
London Mathematical Society
Frances Holmes
Operational Analyst, AWE Aldermaston

Topics:

What can you do with a physics degree?
Do you need a PhD to pursue certain careers?
What if your interests lay slightly outside physics?
Can you conduct new scientific research outside a university setting?
How can you find careers outside academia?

Academic panel

Chair:

John Wheater

Head of Oxford Physics.

Topics:

How to apply for graduate school
How to pick a field of research
Why pursue further education in physics?
What options are available outside the UK?
What can someone expect from a graduate programme?

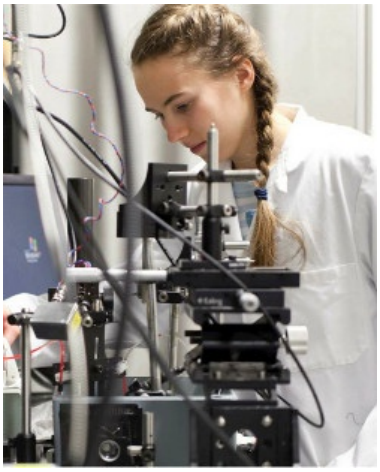
In addition to those detailed below, the panel will also include Todd Huffman (coordinator for graduate admissions) as an admissions expert.

Academic panellist profiles

Dr. Lily Asquith

Royal Society Dorothy Hodgkin Research Fellow, University of Sussex
Particle Physics

Dr Lily Asquith is an experimental particle physicist and has been a member of the ATLAS Collaboration for nine years, since the beginning of her PhD studies at University College London. She analyses data collected by the ATLAS experiment at the Large Hadron Collider, using it to search for new particles and to study the behaviour of the recently discovered Higgs boson, so as to better understand the nature of the universe. Lily's fascination with particle physics can be experienced in her articles on the guardian blog 'Life & Physics' and in a number of public lectures, including her 2014 Ted-X talk on making music from data, which is the aim of her particle physics sonification project LHCsound.



Dr. Joanna Brunker

Postdoctoral Research Fellow, University College London
Medical Physics and Biomedical Engineering

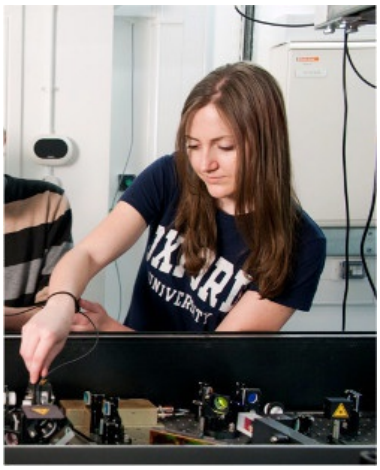
Joanna Brunker's passion lies in the application of physics and engineering techniques to help improve our understanding, diagnosis and treatment of diseases. The aim of her fellowship project is to develop a new blood flow method, founded on a photoacoustic technique established during her PhD, and apply it to tumour studies. In addition she collaborates with Dr. Sarah Bohndiek, working to use photoacoustic imaging to improve our understanding of the role of oxygen in cancer progression and treatment. Joanna has additional interests in communicating science via talks and demonstrations to school children and members of the public. She is also keen on physical challenges such as running, cycling and hiking, and enjoys practical creativity, including helping at a children's pottery club.

Academic panellist profiles

Francesca Day

DPhil graduate student, University of Oxford
Theoretical Physics

Francesca Day is studying for a DPhil in theoretical physics. Her research focuses on particle astrophysics, looking for hints of the "dark universe" - dark matter, dark energy and dark radiation. Fran is particularly interested in modelling how particles travel through the complex environments in galaxies. Francesca is an enthusiastic science communicator and regularly performs at science comedy nights. She is also working with a small charity, TASTE, to bring practical science lessons to students in rural Uganda. Fran is particularly keen to encourage more girls and young women to pursue careers in the physical sciences and has written on women in science for the Huffington Post.



Jena Meinecke

DPhil graduate student, University of Oxford
Atomic and Laser Physics

Jena Meinecke is leading an experimental effort to answer one of the biggest questions facing contemporary astronomers: how did magnetic fields come into existence in our universe? Using the largest lasers on Earth, she creates supernovae that could fit in the palm of your hand and are used to study magnetogenesis. As a graduate student, she discovered that primordial magnetic fields could be amplified by turbulence - a result that was named one of the Top 10 Breakthroughs of 2014. As she begins to transition into a postdoc position, she is focusing her efforts on measuring turbulent dynamo using the largest laser on Earth - the National Ignition Facility. Outside of research, Jena is a bit of an adrenaline junkie and enjoys extreme sports from rock climbing to skydiving.

Alba Pellaroque

DPhil graduate student, University of Oxford
Condensed Matter Physics

Alba Pellaroque is focused on developing new low cost photovoltaic technologies called organic-inorganic perovskite solar cells. Perovskites have received significant attention from the scientific community, and are now regarded as the most promising solar cell material. Alba conducted her undergraduate studies in Materials Engineering at the National Institute of Applied Sciences in France. Afterwards, she studied in Mexico for her first year Masters, followed by a final internship as an engineer in Australia working for Dyesol, a company developing dye-sensitized solar cells. Outside of research, she enjoys rowing. She started rowing for St Anne's College last year, and is now rowing for the Oxford University Women Lightweight Rowing Club hoping to defeat Cambridge at the Henley Boat Race!

Emergency Information

Emergency services:	999	CUWiP Committee contact:	07930 099199
Non-emergency Police:	111	Physics department reception:	01865 272200
Keble Lodge:	01865 272727	Taxi company: Royal Cars:	01865 777333
St Anne's Lodge:	01865 274800	A1 Taxis:	01865 248000

DEPARTMENT OF PHYSICS

UNIVERSITY OF OXFORD

Safety Information for Newcomers

Welcome to the Department of Physics at the University of Oxford.

The Department consists of six sub-departments located on two sites:

East Site:
Clarendon Laboratory
Parks Road
Oxford, OX1 3PU
Tel. 01865 272200

West Site:
Denys Wilkinson Building
Keble Road
Oxford, OX1 3RH
Tel. 01865 273333

Emergencies:
- Fire, Ambulance, Police: Tel. 999
- University Security Service: Tel. 89999

If you discover a fire, raise the alarm by breaking the glass in any of the red "FIRE" call points and leave the building. Go to the assembly point for your building.

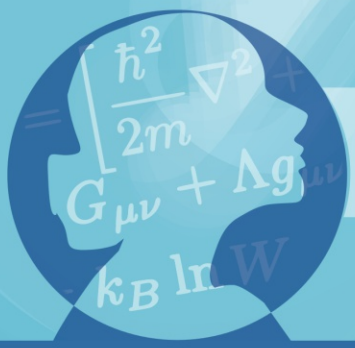
EMERGENCY EVACUATION WARNING
Alarm will sound continuously (fire) or intermittently (other emergencies).

EVACUATION PROCEDURE
- Leave the building and proceed to the assembly point.
- Do not stop to collect personal belongings.
- Close all doors behind you.
- Use the nearest available exit.
- Do not use lifts.
- Do not re-enter the building until authorised to do so.

FIRST AID
The department has a team of trained first aiders. If you feel unwell or are injured, please call a first aider for assistance (first aider lists may be found by first aid boxes or on safety noticeboards). First aid assistance out of hours is available from the University Security Service, Tel. 89999.

In order to make your time in the Department as safe as possible, please:
- Follow safety rules for areas you visit in the department.
- Note the location of your nearest: emergency exit, telephone, fire alarm call point, fire extinguisher, first aid box.
- Report all incidents and accidents
- Call the emergency services if needed
- Observe the No Smoking policy in and around our buildings
- Only eat and drink in designated areas
- Understand and obey all warning signs. Typical warning signs displayed in areas where special hazards exist include:

Do not:
- Touch or interfere with any equipment that you are not authorised to use.
- Bring alcohol or drugs (other than prescribed medications) on site.
- Enter any laboratory or other hazardous area you are not authorised to be in without permission.



CUWiP UK

Conference for Undergraduate Women in Physics UK
Oxford, 19-22 March 2015

List of Participants

List of Participants

CUWiP UK

Conference for Undergraduate Women in Physics UK
Oxford, 19-22 March 2015

Organising Committee

Prof. Daniela Bortoletto

Androula Alekou

Mehpare Atay

Ricarda Beckmann

Kathryn Boast

Mireia Crispin Ortuzar

Holly Elbert

Megan Engel

Sue Geddes

Ilaria Gianani

Catherine Hale

Judith Hillier

Jena Meinecke

Aprajita Verma

Sarah White

The committee is also grateful for help from:

Grzegorz Agacinski

Anabella Araudo

Tessa Baker

Talitha Bromwich

Josue Martinez Hardigree

Diana di Paolo

Merritt Moore

St Anne's

Denys
Wilkinson
Building

Clarendon
Laboratory

Keble