

RESPIRATORY TECHNOLOGY TEAM ANNUAL REPORT 2015

Respitech@Woolcock

The Woolcock Institute is a multidisciplinary team dedicated to understanding and treating respiratory and sleep disorders. With over 200 research and clinical professionals we are a world leader in the area of research, clinical diagnosis and treatment. The Respiratory Technology group is a department within the Institute that bridges basic research with clinical operations



2015 | REPORT | RESPIRATORY TECHNOLOGY WOOLCOCK INSTITUTE OF MEDICAL RESEARCH

Annual Report of Operations and Activities



RespiTech Photo - late 2015

OVERVIEW

2015 has been a productive year for the Respiratory Technology (RespiTech) group at the Woolcock Institute of Medical Research. This report marks the 3rd anniversary of the groups official establishment in January 2013.

Over the past 12 months, the RespiTech group has been building capacity, establishing new collaborations, funding and areas of research within the pulmonary drug delivery field. This report highlights major 2015 milestones.

GROUP MEMBERS

The Respiratory Technology team had 28 members in 2015, with ~20 current members as of December.

- Paul Young
- Daniela Traini
- Hui Xin Ong
- Wing Hin Lee
- Judy Loo
- Maliheh Ghadiri
- Yang Chen
- Maree Svols
- Roberto Paleco
- Eric Zhu
- Alaa Tulbah
- Giulia Ballerin
- Lala Sarkissian
- Mariam Mamlouk
- Mariateresa Stigliani
- Stewart Yeung
- Sumit Arora
- Valentina Trotta
- Jesslynn Ooi
- Larissa Gomes Dos Reis
- Anita Vandyke
- Beatrice Zanelli,
- Fincar Cannery
- Isabella Martignoni
- Michael Lau
- Michele Pozzoli
- Sharon Davis
- Sjoerd Zonings

RespiTech Members through 2015

WEB PORTALS

The Respiratory Technology team has a number of web portals for information., news, events, media and social activities. Links to these resources are:

- www.RespiTech.org
- www.facebook.com/RespiTech
- www.twitter.com/RespiTech

FACILITIES

The RespiTech team has invested heavily in state-of-the-art facilities over the past 3 years. During 2015, further expansion and acquisition of infrastructure has continued. A list of some of the core facilities are outlined below:

- Multiple HPLCs
- HPLC-MS
- Modulated DSC
- TGA/DSC
- DVS & Karl Fisher
- Rheometer
- In-line laser diffraction (Spraytec)
- Laser diffraction (wet and dry)
- Malvern Mastersizer 3000
- Bench-top SEM
- Confocal & Raman Microscopy
- Atomic Force Microscopy
- Biobanking facilities
- Apparatus 4 automated dissolution testing
- Organic spray dryer
- Air-jet micronisation
- pMDI filling rig
- Mixers and blending facilities
- Multiple NGI, ACI, MSLI workstations
- Flow-volume simulation
- Integrated cell deposition apparatus
- Cell culture facilities
- 3D printing and CNC
- ECIS
- Homogeniser for nanoparticle production facilities

Overview of some of the RespiTech key facilities

VISITORS & EXCHANGE

A number of close collaborators and leading researchers have visited and spent time on sabbatical with the group in 2015. Of Note Dr David Lewis and Dr Alan Tweedie spent time at the Woolcock, establishing a number of new projects with Mic Lau and Stewart Yeung. Mic and Stewart's projects are in the area of dry powder formulation. Alan and Dave co-supervise their PhD from Chiesi in the UK. Also, Prof Rafael Villalobos García spent a 6 month sabbatical with the group. Rafael is a long-term collaborator from Facultad de Estudios Superiores in Mexico, working in the area of MonteCarlo simulation.

CONFERENCES & TRAVEL

The RespiTech team both attended a number of events throughout 2015 where a number of papers and posters were presented. Of note, were

- International Society for Aerosols in Medicines in Germany (Dany presented).
- Drug Delivery to the Lungs in Edinburgh (Sumit presented and won the Pat Burnell award).
- International Symposium on Phytochemicals in Medicine in Shanghai (Wing and Judy presented).
- Inhalation Asia in Shenyang (YY was the guest editor and Face of IA, Dany presented and Paul gave an inhalation 101 workshop).
- Drug Delivery Australia in Brisbane (Paul, Dany and Mariam presented).
- Invitations to the University of Ferrara in Italy (Wing, Judy presented)
- University of Perugia, Italy (Paul presented a number of seminars and Daniela took a postgraduate seminar series)
- Singapore Biofilm Conference and workshop (Giulia won a scholarship to attend)
- 3rd International Meeting on Inhaled Therapeutics for Tuberculosis and Infectious Diseases in Parma, Italy

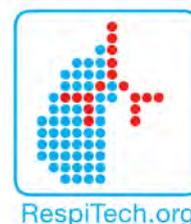
(Paul was Rapporteur and Daniela gave a podium presentation)

OUR BRAND

The RespiTech team have continued to developed their brand image during 2015 and have had a social media reach of over 71,000 during 2015 on Facebook alone. In addition to the usual members of the group, 2015 saw the introduction of our team of mini researchers, the RespiTech Lego Scientists. Our diligent team of Lego Scientists have



Lego Dany, Maree and Lyn conducting routine checks in the lab



been followed on social media was they attend a number of conferences and occasionally cause havoc in the lab.

AWARDS & APPOINTMENTS

Members of the group have received a number of awards and appointments during 2015. Highlights of some of these are outlined below:

- Yang Chen was awarded her PhD
- Sharon Davis was awarded her PhD
- Wing-Hin Lee was awarded his PhD
- Judy Loo Was awarded her PhD
- Anphy Nguyen was awarded he's Hons Degree
- Daniela Traini was appointed as Professor of Respiratory Science (School of Medicine, USyd).
- Hui Xin Ong (YY) won the 'Award for the Reduction in Use of Animals in Research' from the University of Sydney.
- Yang Chen was awarded a place on the NSW 2015 Medical Device Commercialisation Training Program.
- Judy Loo received a donation to undertake work in the area of upper respiratory tract infection.
- Sumit Arora won the Drug Delivery to the Lungs 2015 prestigious Pat Burnell Award in Edinburgh.
- Paul Young was appointed as Chair of the Australian Chapter of the Controlled Release Society.
- Daniela was appointed onto the board of International Society of Aerosols in Medicine.

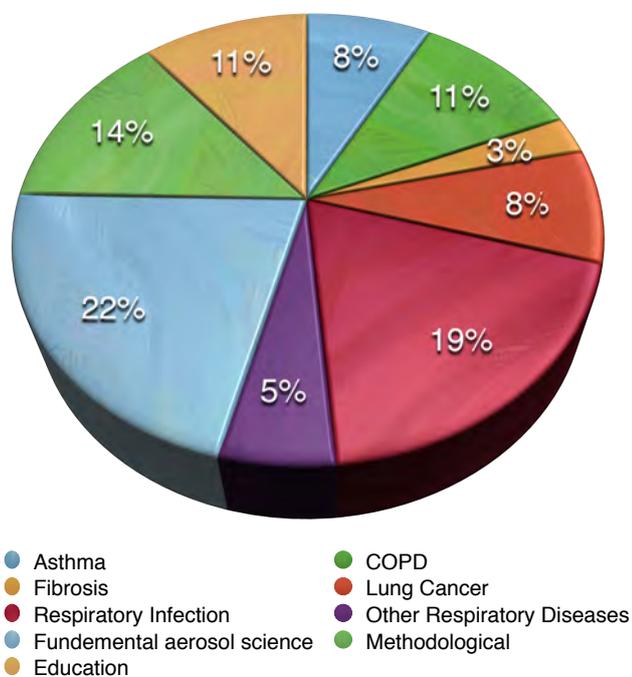
NEWS AND MEDIA

Members of the group have been involved in a number of media events during the year. Daniela was interviewed by the 'The Australian' and discussed the financial threat to the National Collaborative Research Infrastructure Scheme. The group and its global research collaborations was highlighted by Austrade. for their international partnerships. Sumit's research was mentioned by the Australian Department of Education and Training. Research by YY was highlighted in Sydney Research's newsletter. The Hon Minister announced support of the Woolcock Centre for Lung Cancer Research. Most importantly, the RespiTech group had celebrated the birth of the first RespiTech Baby. Emelie Brit Linnea Land (2014 grad student) gave birth to Alfie. Emelie is returning in 2016 to commence a PhD with the group

RESEARCH OUTPUT

The Team published 37 peer reviewed publications in 2015 listed on the respitech.org webpage ([direct link here](#)).

The publications are across a range of fields within the area of respiratory technology as outlined below.

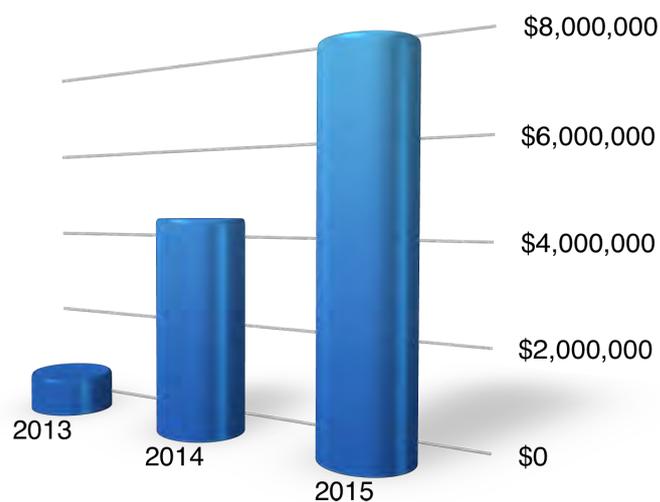


Distribution of research output by category

THE YEAR AHEAD

2016 will mark the 4th year of the RespiTech team since it was established at the Woolcock in 2013. 2016 looks to be an exciting year ahead with the arrival of new research personnel and the establishment of new exciting projects as well as continuation of existing programs. In 2015 the team committed to focus on translation into the clinic and establish a number of projects across disciplines throughout the Institute. This has already begun to occur and we now have a number of collaborative clinical projects with Lung Physiology and Imaging, Sleep and Circadian

GRANT FUNDING



Competitive grant Income generated by members of the RespiTech Team since its establishment in 2013

The group were successful in obtaining a number of grants in 2015. Past, current and new competitive grants are outlined on the respitech.org web page ([direct link here](#)). During 2015 members of the group secured a number of new grants totalling ~\$3,200,000. Since its establishment in 2013, the RespiTech group have sourced >\$7.5m from competitive and State funding to support numerous projects and initiative and additional funding from industrial partnerships.

Key 2015 grants include:

- 3,000,000M from the NSW State Health for the establishment of a Centre for Lung Cancer Research and Lung Cancer Research Network. The construction of which should be completed by the end of 2016.
- \$61,000 for an Electrical Impedance Cell monitoring system.
- \$45,000 in Kickstart support grants for hui Xin Ong (YY) and \$30,000 in support grants for enhancing grant success in the Woolcock
- >\$250,000 in industry partnership funding to support clinical studies in the areas of sleep and breathing.

- Science and the Children's Hospital at Westmead. With these and new collaborative programs coming on line we hope to be able to report on our findings soon. Also in 2016, we look forward to the commencement of building works for the new Lung Cancer Centre and a number of projects being developed across the network. Also the year ahead looks exciting with a number of other large initiatives (follow our social media for more news).

And finally, and most importantly, the 2016 year for RespiTech is going to be fun!