

*Celebrating 20 years*



# ANNUAL REPORT 2019

Bringing together world class researchers and dedicated clinicians to investigate, diagnose, treat and prevent respiratory conditions.



*institute for*  
**RESPIRATORY HEALTH**  
20th ANNIVERSARY 1999-2019

CELEBRATING  
**20**  
YEARS

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# ABOUT US

THE INSTITUTE FOR RESPIRATORY HEALTH IS A NON-GOVERNMENT, NOT FOR PROFIT ORGANIZATION FOUNDED BY PROFESSOR PHILIP THOMPSON, ONE OF AUSTRALIA'S LEADING RESPIRATORY CLINICIANS WHO IS WELL RECOGNISED FOR HIS ACHIEVEMENTS IN RESEARCH AND CLINICAL RESPIRATORY MEDICINE.

The Clinical Trials Unit and Research Units are based within the Harry Perkins Institute of Medical Research. The Institute is committed to strengthening partnerships and affiliations with other academic and respiratory organisations for the benefit of improving the respiratory health of the community.

The Institute is incorporated under the Associations Incorporation Act (WA), is a registered charity and has been endorsed by the Australian Taxation Office as a deductible gift recipient for donations.

## OUR VISION

To improve the life of everyone living with a respiratory condition.

## OUR MISSION

To bring together world-class researchers and dedicated clinicians to investigate, diagnose, treat and prevent respiratory conditions. Our work gives hope for a better future to those with respiratory diseases.

## OUR OBJECTIVES

**Research Excellence:** Conduct and foster innovative basic and clinical research to prevent and better understand respiratory conditions, and improve their diagnosis and management.

**Clinical Excellence:** Translate our research into improved treatments for people with respiratory conditions.

**Campaigning and Education:** Campaign in Western Australia for an increased awareness of, and investment in, respiratory education and research.



# CHAIR REPORT



CRAIG MCGOWN

The Institute celebrated 20 years of ground-breaking health and medical research associated with respiratory related diseases.

I am pleased to present the Chair Report for the Institute for Respiratory Health's twentieth year of operation, being 1 January to 31 December 2019. The Board of Directors met on 6 occasions during these 12 months.

## NEW BOARD MEMBER

The Institute welcomed a new member John Price to the Board in 2019. John brings a wealth of insight and experience to the Board based upon his experience of living with a rare lung condition. John has developed a keen interest in research and aims to support those who are striving to make a difference in health care. Given his business experience, John holds the position of Treasurer to the Board.

## 20TH ANNIVERSARY CELEBRATIONS

The Board was impressed with the quality and results of the many events held throughout the year, promoting lung health to the wider community and it is extremely grateful for the efforts of staff and supporters.

The Institute celebrated 20 years of ground-breaking health and medical research associated with respiratory related diseases by holding an Anniversary Symposium. The event was opened by the WA State Minister for Health and Deputy Premier, the Honorable Mr Roger Cook MLA, and was attended by over 150 researchers from various institutions from around Perth. The event was held in honour of the Institute's founder, Professor Philip Thompson who had the foresight and determination to establish one of the few adult respiratory health Institutes in Australia.

## AFFILIATIONS

The Institute continued to enjoy its affiliation with The University of Western Australia. This mutually beneficial relationship has proved to be extremely important to the viability of the Institute.



The success of this has prompted the Institute to seek an affiliation with Curtin University. Our affiliation with the National Asbestos Related Diseases Centre of Excellence under the Directorship of Professor Anna Nowak strengthens our combined efforts to make a difference for all patients experiencing the full spectrum of respiratory disease.

The Institute also benefits from its special relationship with the Conquer Cystic Fibrosis Committee. In this regard, Conquer Cystic Fibrosis Inc. has been instrumental in the development of the Sir Charles Gairdner Hospital Adult CF Clinical Research Group, with the aim of developing high calibre research programs.

We also acknowledge the support received from the Respiratory departments from Sir Charles Gairdner Hospital and the Fiona Stanley Hospital, our partnerships with other Perth-based universities including the University of Notre Dame and Edith Cowen University.

## FUTURE DIRECTIONS

The Institute is now assured of its long-term occupancy in the Harry Perkins North building and the relocation of our Clinical Trials Unit from the Outpatients Department of the Sir Charles Gairdner Hospital to the Harry Perkins North site. The consolidation of Institute research staff from the Royal Perth Hospital onto the Harry Perkins site has brought a new cohesiveness to the Institute that augers well for the future. Importantly, in 2019, the Institute reported a financial surplus which, on current figures, will increase in the coming years placing the Institute in a sound position to continue its important program of respiratory health research.

## CONCLUDING COMMENTS

Finally, I would like to thank each Board member for taking their time away from other commitments including family, to assist the Institute in achieving its objectives.

I would also like to thank all Institute staff as well as our associates for taking the Institute to the next level, and I look forward to further growth and development in 2020, and indeed, over the Institute's next 10 years of activity.



**Craig McGown**  
Chair

# DIRECTOR REPORT



EMERITUS PROFESSOR

GEOFF STEWART

The Institute was established some twenty years ago by Professor Philip Thompson, a consultant respiratory physician and respected academic researcher with the support of the University of Western Australia and Sir Charles Gairdner Hospital. From our small beginnings as an Institute, focused on asthma and allergy, we have grown substantially and now conduct research into a wide spectrum of chronic lung diseases. We support high quality research and our primary goal is to improve the lives of those living with respiratory disease. This is achieved not only through clinical and basic research but by acting as an advocate for members of the community. Finally, we play a significant translational role with regard to lung health by operating one of the largest, respiratory focused, clinical trials units in Australia. The Institute's membership includes both academic scientists and respiratory consultants. 2019 represents an important landmark in the history of the Institute as we celebrated 20 years of respiratory health research. It has been a busy year, marked by consolidation and hard work.

## CLINICAL TRIALS UNIT

After formal advice by the North Metropolitan Health Service that the space used by our Clinical Trials Unit in E Block at Sir Charles Gairdner Hospital was required to accommodate an expansion of its out-patient services, another home was sought for our operations. Several possibilities were explored but a decision was made to relocate to shared clinical space within the Harry Perkins Institute of Medical Research. This space was ideal since it represented 'state of the art' facilities and was situated immediately adjacent to our administrative unit. The official move occurred in September, a move that was efficiently expedited by Ms Meagan Shorten and her team. The relocation of the Unit has had a highly positive effect on morale and cohesiveness generally. In addition, the patients (and sponsoring companies) have also expressed satisfaction with the new facilities.

2019 represented an important landmark in the history of the Institute as we celebrated 20 years of respiratory health research.

The Clinical Trials team were very busy during 2019 with recruitment of patients for various trials, none of which would have been undertaken without the support of clinical colleagues associated with the Institute and general practitioners. We are very grateful for their contributions.

### STAFF MOVEMENTS

In late 2019, we lost one of our major research leaders, Associate Professor Cecilia Prêle, who was Head of the Tissue Repair Group. Cecilia accepted the position of Research Fellow in the Ear Science Institute. Cecilia had been with the Institute for 11 years and made an enormous contribution to the life of the Institute in both its scientific and social life. Fortunately, it was not a complete loss, as she has committed to working in the Institute part time so that she can continue with her current NHMRC grant and fulfil student supervision obligations. Cecilia's role as Head of Unit has now been taken over by Associate Professor Steve Mutsaers.

### IRH AND ITS 20TH ANNIVERSARY

2019 marked the 20th anniversary of the founding of the Institute for Respiratory Health. It was marked by a number of events, the primary one being the 20th Anniversary Symposium. This event dominated our thoughts and efforts during the year and a special organising committee (Associate Professor Cecilia Prêle (Chair), Sarah Cermak, Associate Professor Anthony Kicic, Dr Ingrid Laing, Dr Sally Lansley, Clinical Associate Professor Siobhain Mulrennan, Associate Professor Yuben Moodley and Associate Professor Steve Mutsaers) was set up to organise the program. Although the event showcased the work of our research staff, it was decided to use the event to showcase respiratory health research from across Perth. The Symposium, with Professor Thompson as Guest of Honour, was

opened by the Honourable Mr Roger Cook, Minister for Health. It brought together many respiratory health researchers from the major institutions in Perth. This represented the largest ever symposium for the Institute and, at its conclusion, participants made special mention of the high level of organisation, the quality of the scientific program and the pleasant ambiance surrounding the whole event. The second 'Philip Thompson Oration' was a particular highlight, with Professor Gary Anderson (Melbourne University) giving an extremely well-received talk. This event was also an opportunity to invite back our alumnus, Professor Darryl Knight, who flew in from Vancouver to deliver a number of talks including a joint presentation to PhD students at UWA with Professor Gary Anderson. They offered a 'Research Q and A' in support of early career researchers and PhD students. During this Q and A, they provided advice on a number of issues such as grant writing, scientific communication, academic/industry career choices and life as a researcher in general. The meeting was organised by Associate Professor Pixley in the School of Biomedical Sciences, UWA.





The Symposium was the culmination of the year's activities but it was prefaced by a series of successful events held throughout 2019.

These included:

- Updating the community on the recent advances in dealing with chronic respiratory health problems via a Community Forum and Q & A. Chaired by Board member Mr Johnson Kitto, the evening was well attended and featured a number of the Institute's clinicians as well as the Health Consumers Council of WA.
- To improve community awareness of respiratory health issues, we organised a 'Take Steps' fundraising hike on part of the Bibbulmun Track.
- Lung function testing in the Perth CBD to advocate on behalf of World Lung Day in September.
- Institute staff along with members from the L I F E Group attended the seniors 'Have a Go Day' by providing free lung testing opportunities for the community.

## OUR RESEARCH

As you will be aware, we comprise of a number of respiratory health research groups. Overall, each group, together with their external collaborators, were highly productive in 2019, as judged by the number of manuscripts published in high quality journals, research grant success, competitive fellowship awards and the training of future researchers at both the undergraduate level (Honours) and the postgraduate (PhD) level. For example, our researchers published a total of 47 manuscripts and book chapters in 2019. Professor Gary Lee, Head Pleural Diseases Research Group, was recognised as the Cancer Researcher of the Year by the Cancer Council of WA for his outstanding cancer-related research work. With regard to NHMRC success, Associate Professor Siobhain Mulrennan was part of a successful NHMRC grant application

entitled 'Unravelling a clinical paradox: why does bronchial thermoplasty work in asthma and how can we improve patient outcomes' beginning in 2020. This was one of only eight NHMRC Ideas Grants awarded to the University of Western Australia in 2019. In addition, Associate Professor Mulrennan and Dr Anna Tai continued to receive funding from the Conquer Cystic Fibrosis Committee for their allied health and molecular epidemiology studies of bacterial infection in patients with cystic fibrosis.

## FUND RAISING ACTIVITIES

The Institute requires a steady income from donations to support the infrastructure required to fund research activities across all our research units. Some of that income is often restricted to a particular unit depending on the wishes of the donor whereas other donations are not. All donations were gratefully accepted and it is appropriate, here, to thank our Board, members and those interested in supporting respiratory health research for their non-restricted donations in 2019, which were put to good use in ensuring the continuing function of the Institute. A highlight of our fundraising efforts was participation by staff in the HBF 'Run for a Reason' event which raised nearly \$15,000. We saw another successful year with funds raised from the Melbourne Cup Luncheon. These funds are used to support researchers studying various clinical and scientific aspects of cystic fibrosis and bronchiectasis and are dedicated to the memory of Glenn Brown, a schoolboy from Kalgoorlie, who tragically lost his life to CF when only 15 years of age.

## CONQUER CYSTIC FIBROSIS

The Institute continues to be the beneficiary of funds raised by Conquer Cystic Fibrosis.

One of the major goals of the partnership is to maximize the clinical care of adults with CF, and thus far, the funds donated have enabled two PhD students to continue their studies in 2019. The students involved are being supervised by Senior Physiotherapist, Dr Jamie Wood (Sir Charles Gairdner Hospital and Curtin University) and Associate Professor Kylie Hill (Curtin University), and are developing novel physiotherapy regimes for adult CF patients. In addition, the program is providing research funding to:

- Jordan Henderson, a Clinical Dietitian at Sir Charles Gairdner Hospital for work on measuring energy needs in cystic fibrosis.
- Dr Anna Tai, a respiratory consultant at Sir Charles Gairdner Hospital, for her work on *Pseudomonas aeruginosa* infection in CF.
- Associate Professor Siobhain Mulrennan, a respiratory consultant at Sir Charles Gairdner Hospital, for allied health approaches to CF treatment.

We are thankful to Conquer Cystic Fibrosis and for the support of its Director, Wendy Endebrock-Brown and Treasurer, Fiona Byrne.

## THANK YOU

We gratefully acknowledge our community who work tirelessly to raise funds to support research in the Institute.

We are also indebted to our community support arm, L I F E. It has continued to offer both fellowship and information to people living with chronic lung conditions. Specifically, we gratefully acknowledge Dr Jenni Ibrahim, the L I F E Coordinator and the leadership team of Sal Hyder, David Payne and Gaye Cruickshank for their hard work, enthusiasm and guidance in supporting fellow community members who are dealing with chronic respiratory disease.

Finally, I would like to thank our research and administrative staff, our collaborators, our community members and our donors for their continued support in helping us move towards achieving our goal - to improve the life of everyone living with a respiratory condition. We look forward to 2020 with enthusiasm.

I would also like to take a moment to acknowledge patients and their families, who have voluntarily given their time to help achieve this outcome.



**Emeritus Professor Geoff Stewart**  
**Director**

# BOARD OF DIRECTORS



**MR CRAIG MCGOWN**  
**CHAIR**

Mr McGown joined the Board in 2016 and became Chair in 2018. He is an investment banker with over 35 years of experience consulting to companies in Australia and internationally. Mr McGown is an executive director of the corporate advisory business New Holland Capital Pty Ltd and prior to that appointment was the chairman of DJ Carmichael Pty Limited.



**MR JOHN PRICE**  
**TREASURER**

Mr Price joined the Board in 2019 where he became the Treasurer of the Board. He has over 40 years' experience as a local business owner. He is an Emergency Services Volunteer and a Lung Champion for the Institute. Mr Price brings his insights and experience based upon his journey of living with a rare lung disease.



**MR JOHNSON KITTO**  
**SECRETARY**

Mr Kitto joined the Board in 2012 and became Secretary of the Board in 2017. He is the Managing Partner at Kitto & Kitto Barristers & Solicitors. Mr Kitto has practiced in Western Australian law courts and specialist tribunals for over 25 years. He also co-hosts a weekly ABC Radio legal advice segment which assists people with common legal queries.



**MS SUE MOREY**

Ms Morey joined the Board in 2007 and was Chair from 2012 – 2016. She is a Nurse Practitioner in respiratory medicine at Sir Charles Gairdner Hospital. Ms Morey has spent over 40 years in the field and in 2004 was awarded the Order of Australia Medal for her services to respiratory medicine nursing.



# BOARD OF DIRECTORS



PROFESSOR GARY LEE

Professor Lee joined the Board in 2018. He is a Respiratory Specialist at Sir Charles Gairdner Hospital and Head of Pleural Medicine Unit within the Institute for Respiratory Health. Professor Lee has over 15 years' experience in researching pleural diseases, especially pleural malignancies and infection. His work has been translated into clinical practice on many occasions.



MR ANTHONY FORTINA

Mr Fortina is the UWA representative on the Board upon joining the Board in 2018. He is the Deputy Director, Office of Research Enterprise at UWA and manages the Research Development and Innovation portfolio. Mr Fortina has worked in the Higher Education sector since 2003 in technology transfer, research and business development and in legal roles.



PROFESSOR GEOFF STEWART  
DIRECTOR

Emeritus Professor Stewart became Director of the Institute for Respiratory Health in 2017. Prior to that he joined the Board in 2011. Emeritus Professor Stewart was the Head of Microbiology and subsequently the Head of the School of Biomolecular, Biomedical and Chemical Sciences at UWA.

## Retired Board Members

Mr Peter Gunzburg (2015 - 19)

Associate Professor Cecilia Prêle (2017 - 19)

## Ex-officio Members

Mr Bi Lam, Finance Manager

Mrs Sarah Cermak, Business Services Manager

## Finance Subcommittee

Mr John Price (Chair), Mr Anthony Fortina, Emeritus Professor Geoff Stewart, Mr Bi Lam, Mrs Sarah Cermak

## Scientific Subcommittee

Emeritus Professor Geoff Stewart (Chair), Professor Gary Lee, Professor Grant Waterer\*, Professor Scott Bell\*, Professor Stephen Holgate\*

\*External to the Institute for Respiratory Health

# 2019 AT A GLANCE

**Celebrated 20  
years of respiratory  
research**

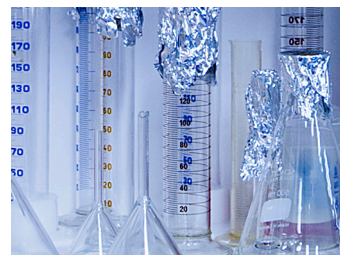


**Collaborated with 33  
like-minded institutes  
and organisations**

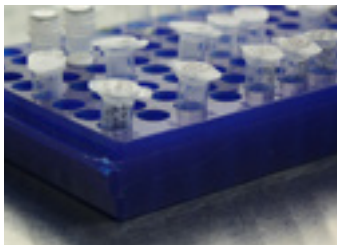


**7 new research grants**

**41 presentations to  
state, national and  
international forums**



**20 Students**



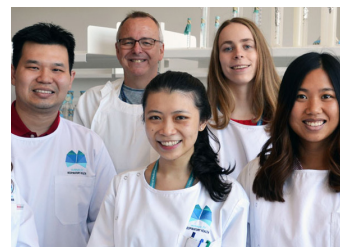
**16 active clinical  
trials**

**196 attended the  
20th Anniversary**

**47 research papers**

**105 attended the  
Community Forum**

**Fundraising activities  
raised over \$46K**

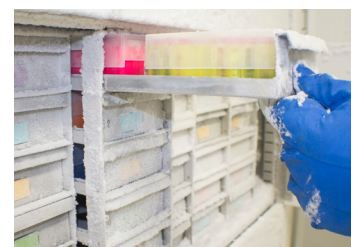


**The L I F E Group held  
10 meetings and 4  
social gatherings**

**36 volunteers helping  
with fundraising  
events and services**



**91 donations ranging  
from \$2 to \$200,000**



# RESEARCH HIGHLIGHTS

## AWARDS AND ACHIEVEMENTS



PROFESSOR  
GARY LEE  
AWARDED  
CANCER  
RESEARCHER OF  
THE YEAR



JESSE ARMITAGE, PHD CANDIDATE, AWARDED THE  
PRESTIGIOUS ANN WOOLCOCK NEW INVESTIGATOR AWARD

Prof Fraser Brims won the Thoracic Society of Australia and New Zealand Annual Scientific Meeting for 5 years of CT screening in an asbestos-exposed cohort



DR ANNA TAI AWARDED BEST ORAL  
PRESENTATION IN THE QUALITY  
IMPROVEMENT/CLINICAL TRIALS AT  
THE AUSTRALASIAN CYSTIC FIBROSIS  
CONFERENCE

Abbey Sawyer, PhD Candidate, awarded the Thoracic Society of Australia and New Zealand Annual Scientific Meeting Travel Award and the Curtin University Higher Degree by Research Mobility Award



DR BRITT CLYNICK  
AWARDED THE CRE-PF  
CREATE FELLOWSHIP  
TRAVEL SCHOLARSHIP AND  
THE THORACIC SOCIETY  
OF AUSTRALIA AND NEW  
ZEALAND TRAVEL AWARD



ASSOCIATE PROFESSOR  
SIOBHAIN MULRENNAN WAS  
PART OF A SUCCESSFUL NHMRC  
GRANT APPLICATION ENTITLED  
'UNRAVELLING A CLINICAL  
PARADOX: WHY DOES BRONCHIAL  
THERMOPLASTY WORK IN  
ASTHMA AND HOW CAN WE  
IMPROVE PATIENT OUTCOMES'

ASSOCIATE PROFESSOR  
CECELIA PRELE AWARDED  
THE BEST SCIENTIFIC  
PRESENTATION AT THE  
4TH BIENNIAL AUSTRALIAN  
RARE LUNG DISEASE  
SHORT COURSE



Jamie Wood won the Thoracic Society of Australia and New Zealand Annual Scientific Meeting Special Interest Group Prize for Best Presentation and finalist for the New Investigator Award



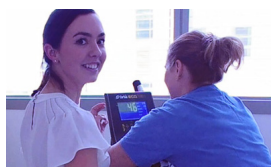
# OUR RESEARCH GROUPS

The Institute advocates and practices research into a broad spectrum of respiratory conditions which are either scientifically or clinically focused. These projects are funded through a number of grants, collaborations and donations. We conduct innovative scientific and clinical research into chronic disease and inflammation, respiratory cancers and infectious diseases.



## CELL BIOLOGY RESEARCH

Chronic Obstructive Pulmonary Disease  
Idiopathic Pulmonary Fibrosis



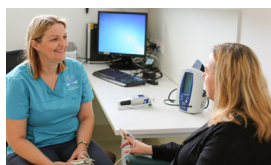
## CYSTIC FIBROSIS & BRONCHIECTASIS

Bronchiectasis  
Cystic Fibrosis



## MOLECULAR PATHOLOGY RESEARCH

Idiopathic Pulmonary Fibrosis  
Lung Regeneration  
Mesothelioma



## OCCUPATIONAL & RESPIRATORY

Asbestosis  
Lung Cancer  
Mesothelioma



## PLEURAL MEDICINE

Mesothelioma  
Pleural Effusion  
Pleural Infection



## CLINICAL TRIALS

Alpha 1 Antitrypsin  
Deficiency  
Asthma  
Bronchiectasis

Chronic Obstructive  
Pulmonary Disease  
Cystic Fibrosis  
Idiopathic Pulmonary  
Fibrosis

# CYSTIC FIBROSIS & BRONCHIECTASIS

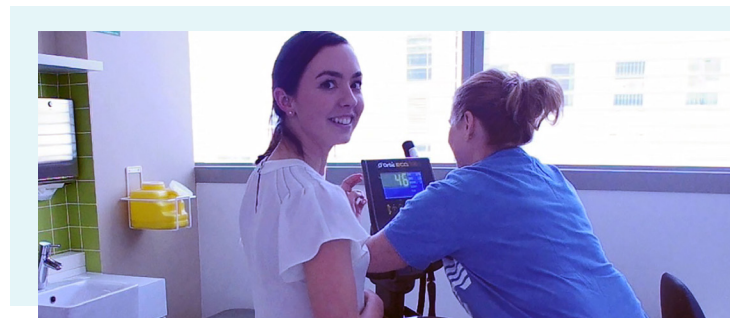
CYSTIC FIBROSIS IS A GENETIC DISORDER RESULTING IN DAMAGE TO THE LUNGS AND ELSEWHERE. THE RESULTING CHANGES ASSOCIATED WITH THIS DISEASE INCREASE THE RISK OF CHRONIC BACTERIAL INFECTION, LUNG FUNCTION DECLINE AND OVERALL ILL HEALTH, BOTH PHYSICAL AND MENTAL.

The Cystic Fibrosis and Bronchiectasis Research Group is investigating how patients may benefit from novel drug therapies, diagnostic imaging techniques, molecular epidemiology of infection and psychosocial interventions.

The group has an excellent track record in attracting competitive research grants, both from Australian and international sources. They are recognised as world leaders and have an extensive collaborative network with the leading researchers in cystic fibrosis throughout Australia and internationally. The Group are made up of a multi-disciplinary team of doctors, nurses, physiotherapists and allied health staff.

## RESEARCH PROJECTS FOR 2019

- Effects of high intensity interval training (HIIT) exercise on people with cystic fibrosis.
- The effect of the MetaNeb® System in the adults with cystic fibrosis when used in conjunction with usual airway clearance techniques (ACT) on lung clearance, lung mechanics and airflow limitation during periods of clinical stability and hospitalisation.
- Real-life study on bacterial air contamination in an adult cystic fibrosis clinic.
- Clostridium difficile infection in adult patients with cystic fibrosis in Western Australia: disease burden and clinical impact.
- Prevalence of multidrug resistant Pseudomonas aeruginosa in an adult cohort with cystic fibrosis.
- Real life Ivacaftor Efficacy in Australians with Cystic fibrosis.
- Case study of Mepolizumab use in cystic fibrosis associated allergic bronchopulmonary aspergillosis.
- Systematic screening for prevalence of depression and anxiety in a Western Australian adult cohort with Cystic Fibrosis.
- Living with Cystic Fibrosis During the COVID-19 Pandemic: A Social Connectedness Perspective.
- Demoralisation in adults with Cystic fibrosis.
- Measuring energy expenditure during pulmonary exacerbations of cystic fibrosis using indirect calorimetry.
- Examining the association between nutritional outcomes during a pulmonary exacerbation of cystic fibrosis with the interval to the next exacerbation.
- Audit of the prevalence, progression and risk factors of cystic fibrosis (CF) bone disease in the Western Australia (WA) adult population with CF.



# TISSUE REPAIR

PATHOLOGY IS CONCERNED WITH DETERMINING THE CAUSES OF DISEASE AND MAY BE STUDIED AT THE CELLULAR, SUB-CELLULAR OR MOLECULAR LEVELS.

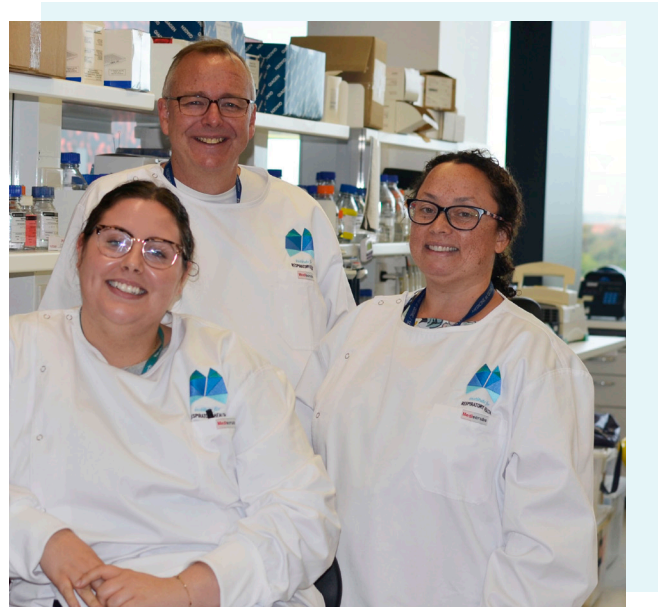
Tissue Repair Group is investigating some of the important molecular and cellular pathways involved causing chronic interstitial lung diseases and cancer, and how they might be manipulated to bring about a cure and/or healing.

Many forms of lung disease can be regarded as the interaction between tissue injury and subsequent attempts to heal the affected tissues.

The Group is committed to assessing the mechanisms regulating interactions between cells, the matrix surrounding cells and the different molecules released following injury. These interactions stimulate cells to respond in different ways, including by proliferation, migration, invasion, differentiation and collagen production. Diseases arising from abnormal tissue repair include asthma, pulmonary fibrosis, chronic obstructive lung disease (COPD), adhesions and cancer.

## RESEARCH PROJECTS FOR 2019

- STAT3 regulation of cell responses in Idiopathic Pulmonary Fibrosis.
- Epithelial-mesenchymal cell communication towards new therapeutic targets for fibrosis.
- Fibroblast Senescence as a driver of pulmonary fibrosis.
- The Immune regulation of Idiopathic Pulmonary Fibrosis.
- Investigating the role of specific B cell subsets in chronic lung disease.
- Investigating the role of checkpoint molecules in the development and progression of Idiopathic Pulmonary Fibrosis.
- miRNAs in mesothelioma.
- The hedgehog signalling pathway in mesothelioma.





# OCCUPATIONAL & RESPIRATORY HEALTH

OCCUPATIONAL LUNG DISEASES CAME INTO PROMINENCE WITH THE INDUSTRIAL REVOLUTION AND, DESPITE LEGISLATION AND A SIGNIFICANT REDUCTION, THEY CONTINUE TO BE PROBLEMATIC, WITH SOME 'OLD' DISEASES RE-EMERGING DUE TO THE INTRODUCTION OF NEW TECHNOLOGIES.

The Occupational and Respiratory Health Research Group is investigating sensitive screening methods to identify workers early enough to implement curative treatment, as well as investigating novel therapies for those with occupational lung disease as well as lung cancer generally.

The dedicated team is committed to assisting in the search for new and improved treatments and providing high-quality care for patients with lung cancer and occupational-related respiratory diseases, such as mesothelioma.

The group has an excellent track record in attracting competitive research grants, both from Australian and international sources. The team are recognised as world leaders and have an extensive collaborative network with the leading researchers in lung cancer screening throughout Australia and internationally.



## RESEARCH PROJECTS FOR 2019

- Asbestos Review Program.
- International lung screen trial (ILST).
- Lung Cancer Screening Program.
- A phase II feasibility study comparing primary care vs. hospital-based follow up after curative surgery for patients with non-small cell lung cancer.
- A study to beat cancer-related weight loss in patients with mesothelioma.

# PLEURAL MEDICINE

THE PLEURA ARE TWO THIN MEMBRANES WHICH COVER, RESPECTIVELY, THE CHEST CAVITY AND THE LUNGS THEMSELVES, WHICH ENABLE THE LUNGS TO EXPAND AND CONTRACT CORRECTLY DURING BREATHING. THERE IS LITTLE SPACE BETWEEN THEM BUT, IN SOME DISEASES, SUCH AS CANCER AND RESPIRATORY INFECTION, FLUID ACCUMULATES CAUSING MAJOR BREATHING DIFFICULTIES.

The Pleural Medicine Group is led by Professor Gary Lee, one of the top clinical academics in pleural research. The group is regarded as one of the most active pleural research groups in the world, combines both clinical and laboratory staff and is closely integrated with the most active tertiary pleural services in Australia.

The group focuses on translational research in common pleural diseases, especially cancer and infection, with a strong publication record on clinical (phase I to multicentre randomised trials) and bench research (molecular biology to animal models). As well as novel diagnostic and management strategies for pleural effusions.

Much of the research work has directly impacted clinical practice and helped reduce patient mortality and morbidity in malignant effusion. For example, setting up of the indwelling catheter services in Western Australia and pleural infection such as the introduction of the new intrapleural therapy. Pleural malignancies and infections are the commonest causes of exudative pleural effusions, and their incidence, mortality and healthcare costs continue to rise.

## RESEARCH PROJECTS FOR 2019

- The role of fibroblast growth factor 9 (FGF9).
- Targeting MCP-1 to control malignant effusion.
- Prevention of FGF9-induced immunosuppression.
- Harnessing the anti-tumour activity of bacteria.
- Diagnostic biomarkers in pleural infection.
- Novel pharmacological therapy for pleural infection.
- Bacterial growth in pleural fluid.
- Clinical studies of indwelling pleural catheters in malignant effusions.
- The Australasian Malignant Pleural Effusion Trial.
- Pleural Effusion and Symptom Evaluation Study.
- Steroid Therapy and Outcome of Parapneumonic Pleural Effusions.
- A randomised controlled trial of invasive versus conservative management of primary spontaneous pneumothorax.
- Exercise as a therapeutic tool in the management of mesothelioma.



# STEM CELL THERAPY

## THE CELL IS FUNDAMENTAL TO LIFE AND ANY ABNORMAL BEHAVIOUR MAY LEAD TO DISEASE.

The Stem Cell Therapy Group is investigating how deranged cellular activity contributes to the development of chronic lung diseases such as idiopathic pulmonary fibrosis and chronic obstructive pulmonary disease and whether it is possible to identify suitable therapeutic targets and those patients heading towards decline early enough to intervene.

The group is led by Dr Yuben Moodley, a Respiratory Specialist at Fiona Stanley Hospital and Associate Professor of Respiratory Medicine at the University of Western Australia. The team is a combination of both clinical and laboratory staff and collaborates with peers on a local, national and international level. Their research focus is centred around:

- Molecular mechanism of chronic inflammation.
- Identifying biomarkers for lung diseases.
- Cell therapies for lung disease.
- Inflammation in Chronic Obstructive Pulmonary Disease (COPD).
- Immunological and molecular mechanisms underlying chronic airway diseases.
- Host immune defences against bacterial and viral pathogens.

## RESEARCH PROJECTS FOR 2019

- Protective Anti-Bacterial Responses.
- T-Cell Co-Inhibitory Receptors (PD-1, CTLA-4).
- IPF Biobank.



# CLINICAL TRIALS

## BEFORE ANY DRUG IS MADE AVAILABLE TO THE PUBLIC, MANUFACTURERS ARE REQUIRED TO ENSURE THAT IT IS SAFE TO DO SO BY UNDERTAKING CLINICAL TRIALS.

Our clinical trials unit is one of the largest of its kind in Australia and is highly regarded, nationally and internationally, for its work in helping pharmaceutical companies test the safety and efficacy of drugs used to treat chronic lung disease.

The trials are sponsored by a range of Australian and international pharmaceutical and biotech companies as well as some grant funding.

In 2019, the Unit conducted 16 studies with approximately 210 patients across all studies. These included:

- Asthma
- Alpha 1-antitrypsin deficiency
- Bronchiectasis
- Chronic obstructive pulmonary disorder (COPD)
- Asthma
- Cystic fibrosis (CF)
- Idiopathic pulmonary fibrosis (IPF)
- RSV Vaccine
- Pulmonary Arterial Hypertension (PAH)

The Unit is made up of consultants, doctors, registered nurses and health science professionals. Patients are closely monitored, with regular health checks in the clinic.

The Unit has a collaborative relationship with:

- A/Prof Siobhain Mulrennan for CF and bronchiectasis trials.
- Dr Anna Tai for CF and COPD trials
- Prof Fiona Lake for IPF and alpha 1-antitrypsin deficiency trials
- A/Prof Yuben Moodley for asthma, COPD and RSV vaccine trials
- Dr Eli Gabbay for PAH trials





# L I F E GROUP



JENNI IBRAHIM

The L I F E group continue to respond to regular phone and email enquiries from people with lung conditions seeking information and fellowship.

The L I F E Group (Lung Information & Friendship for Everyone) have held 10 monthly meetings and four seasonal community activity days, including the annual Christmas party, held in the Perkins Building (north).

Informative and inspiring guest speakers have included:

- Options for flying with oxygen (Bernie Somers, from Respiratory Supplies)
- Immunotherapy (the Institute's Assoc Prof Steven Mutsaers)
- Using inhalers properly (respiratory nurse educator, SCGH, Sara Coleman)
- Celebrating the role of humour in keeping us mentally healthy (April Fools' Day 2020)

Focused group discussions have covered talking to people about lung conditions, getting the most out of doctor's visits, and fitting exercise into daily life.

The card club sends get well, condolences and birthday wishes to members.

The quarterly Breath of L I F E magazine is posted (60%) or emailed (40%) to community members. Additional copies are distributed to waiting areas, and it's also downloadable from the Institute's website. Thank you to the Department of Respiratory Medicine, Sir Charles Gairdner Hospital for supporting the printing of hard copies for members who do not use email and for waiting areas.

The L I F E group continue to respond to regular phone and email enquiries from people with lung conditions seeking information and fellowship. A small display advertisement in the Little Aussie Directory has resulted in many new members who have joined regular meetings and Christmas celebrations.

The advert was funded through a small grant from Connect Groups, the peak body for self help groups in Western

Australia. The Give it Forward Grant of nearly \$9,000 also covered brochures, fridge magnets, radio announcements and Facebook advertising and marketing, using video interviews with several members. These interviews are also available to view on L I F E's webpages on the Institute's website. These marketing activities were aimed at increasing awareness of the self help support group among people living with lung conditions.

A booth was held jointly with the Institute's Clinical Trials Unit at HaveAGo Day in November 2019, the major seniors expo in WA.

In 2019 our Coordinator Jenni Ibrahim became very ill and was hospitalised for almost a month. During this period other members took over the reins to lead the group until she was well, suggesting that the succession planning efforts are beginning to pay off.





# IN THE COMMUNITY

THE INSTITUTE EXTENDS ITS SINCERE THANKS TO ALL OF OUR DONORS, VOLUNTEERS AND MEMBERS WHO SUPPORTED US IN 2019. EVERY SINGLE CONTRIBUTION IS ENORMOUSLY APPRECIATED AND NEEDED.

## COMMUNITY FORUM

A very successful first Community Forum was held in October, in collaboration with The National Centre for Asbestos Related Diseases. A series of short talks were hosted from both our internationally renowned and emerging researchers on the latest discoveries and future directions in respiratory related diseases; COPD and IPF, cystic fibrosis, asthma, lung cancer and pneumonia.

The Forum was a great chance to share our science with our community – colleagues, patients, families, advocacy groups, and indeed anyone with a personal or professional interest.



## LUNG TESTING

World Lung Day in September was a day for lung health advocacy and action, an opportunity for us all to unite and promote better lung health globally. The Clinical Trials staff carried out lung testing in the city, which helped increase awareness of the Institute and encourage new members. Also lung testing was available at the Have A Go Day at Burswood, where Clinical Trials had a stand with the L I F E group.





## HBF RUN FOR A REASON

We would like to thank our dedicated fundraisers for all of their hard work and for helping us to improve the lives of everyone living with a respiratory condition.

One of the family's taking part has a Dad who grew up in Wittenoom, WA, before the town was closed due to contamination from asbestos mining. Hannah and Kat took part to raise money for the Institute to contribute to research and clinical trials relating to mesothelioma and other respiratory conditions. They ran in memory of those who have lost their lives to mesothelioma, including their Pop and Uncle.

A sincere thank you goes out to all who took part and raised nearly \$15,000.

## MELBOURNE CUP LUNCH

This year's Melbourne Cup Luncheon raised over \$28,000 for cystic fibrosis, despite guest numbers being down on previous years. While the emphasis of the day is frocking up for a glamorous lunch, fun and entertainment, we took the time to consider the purpose of the event. Guest speaker Prof Graham Hall, a respiratory physiologist from the Telethon Kids Institute, inspired guests as he spoke of his research into children living with CF. Also Willow, a 10 year old fighting with cystic fibrosis, gave a heart wrenching speech of what her life is like undergoing her battle with CF and how she overcomes it.

In 2019 the Melbourne Cup Luncheon celebrated its 17th year. The event is held at the State Reception Centre at Fraser's, King Park, with this year, nearly 200 guests in attendance. The event is run by a small group of passionate volunteers, and we are so grateful to the generous donors and guests that make the day possible. There were very generous sponsors

of the wine, beer and soft drinks, and Kailis Jewellery once again donated a beautiful piece of jewellery for one of the major raffle prizes. For the past eight years the luncheon has raised over \$400,000 with funds raised going into the Glenn Brown Memorial Grant.



## CONQUER CYSTIC FIBROSIS

Conquer Cystic Fibrosis ran numerous fundraising events throughout 2019, including the main event, the Conquer CF Ball with over 700 guests this year. Money raised goes towards the Conquer CF Research Program where the committee has pledged \$200,000 per year over five years.

Other events held are the Casino Royale. Dust off your best suit or get glamorous in your best cocktail dress, walk along the red carpet, indulge in delicious cocktail food and drinks and enjoy live music, while gambling for a good cause. Also there is an avid following of the Conquer Cystic Fibrosis bingo nights. The Christmas High Roller night is such a huge night pulled together by the tireless Bingo volunteers and supported by the generosity of WA businesses to ensure its success.

## SERENADE AT SUNSET

One of our Board members very generously shared his property in Yallingup with music lovers, and raised over \$4,000. Guests had a lovely evening with the sounds of Courtney Murphy. Later in the evening people and children got up and had a dance alongside Courtney, which really adds colour to the event.

## CRAFT STALL

Mrs Brown fundraised for COPD research by running a craft stall in March and October at Bassendean Shopping Centre and raised the amazing amount of \$2,690.

## DONORS

2019 saw members and supporters once again contribute towards the Institute's annual appeals. One of the very successful appeals saw a story from John who was diagnosed with idiopathic pulmonary fibrosis (IPF), a rare

lung disease that causes irreversible scarring of the lungs and has a very low survival rate. It is estimated that 7,000 people are currently living with this disease in Australia. A special thank you also goes to the families who have supported the Institute through the memory of a loved one.

## MEMBERSHIP

The Institute for Respiratory Health continues to enjoy the strong support of its members, who comprise of individuals from the medical scientific sector, as well as the broader community.

Members are kept up-to-date on respiratory research, collaborations and clinical trials news via e-newsletters, social media posts, event invitations, community forums and the Breath of L I F E magazine.

Membership is open to all, reflecting the Institute's desire to be a transparent and accountable organisation, serving the needs of those who support it and aiming to be of value to as broad a group of people as possible.

Staff at the Institute recognise the contribution members make to furthering respiratory research.

## VOLUNTEERING

The Institute is grateful to all the volunteers that so kindly committed their time during 2019. The main event was the Melbourne Cup Luncheon, and our passionate volunteers greatly assisted and enjoyed making the day such a success. Other volunteer tasks included an endless array of administrative duties.



## COMMUNITY FORUM



## TAKE STEPS FUNDRAISING HIKE



## COMMUNITY FUNDRAISING



## LUNG TESTING



# WALL OF GRATITUDE

## WE WOULD LIKE TO THANK THE FOLLOWING PEOPLE FOR THEIR SUPPORT DURING 2019

### Fundraisers

M Abbott  
F Austin  
S Bennett  
M Brown  
L Bultynck  
S Cermak  
Conquer Cystic  
Fibrosis Committee  
Criminal Law Division,  
Legal Aid WA  
E Drpich  
N Elliott  
V Fear  
A Harvie  
T Hayward  
A Jones  
T Lindsey  
A Main  
T Nicholson  
S Oerlemans  
C Prele  
K Purser  
V Scullion  
C South  
Prof G Stewart  
D West  
A Wheeler

### Donors

M Agnew  
M Andolfi  
T Ashby  
A Barnett  
J Barratt  
R Bickerton  
B Blaikie  
T Bott  
M Boulter  
G Bovell

M Bowyer  
R Brennan  
E Calder  
R Carlyon  
K Cheney  
R Chinnery  
C & P Choo  
B Clifton  
Cowaramup Lions  
Club  
G Cruickshank  
D Dawson  
P Day  
L De Sarigny  
C Dimasi  
R Dockery  
C Dransfield  
N Dunn  
M Dunn  
J Durbin  
G Farrell  
R Fitzgerald  
B Fitzgerald  
J Foster  
M Gatica-evans  
E Gordon  
S Heather  
H Heptinstall  
F Hills  
J Ibrahim  
J Keane  
V Kitt  
B Lam  
M Larsen  
S Leif Akslen  
J Little  
G Lloyd  
J Maiorana  
J Maloney  
P Martin

G Martinick  
C McGown  
E McGuinness  
G McLeod  
D Meaney  
S Mondello  
M Morris  
A Murray  
C Papanastasiou  
G Paust  
R Petersen  
J Price  
W Ridley  
W & R Robinson  
Mr Rossgold  
L Roxenwax  
M Ryan  
I Saunders  
T Smith  
E Stevens  
Prof G Stewart  
R Taylor  
H Trenos  
P Turner  
D Undy  
G Warner  
E West  
M Wood  
E Wright  
K Zongaro-Robich

A Gift in memory  
L & K Wrightson

### Volunteers

N Amic  
F Austin  
H Cheah  
D Chittleborough  
K Cook

K Coveney  
M Fasolo  
S Gan  
J Glynn  
C Glynn  
A Harvie  
M Hayward  
T Hayward  
L I F E Busy Bee  
Helpers  
K McGregor  
J Nathania  
S Neilson  
L Palmer  
A Pratt  
Dianne Richman  
V Robins  
R Taylor  
J Tombs  
R Wells  
D Youens



# RESEARCH EVENTS

## INSTITUTE FOR RESPIRATORY HEALTH: THE NEXT 20 YEARS SYMPOSIUM

Professor Philip Thompson, Institute for Respiratory Health and Sir Charles Gairdner Hospital. "The Institute for Respiratory Health – 20 years in the making".

Professor Darryl Knight, President, Providence Health Care Research Institute, VP, Research & Academic Affairs, Providence Health Care and Associate Dean – Research, Faculty of Medicine, University of British Columbia. "Journey to the centre of the lung: Barriers, dogma and the matrix".

Associate Professor Steven Mutsaers, Tissue Repair Unit, Institute for Respiratory Health "Mesothelioma: Dark side of the lung".

Dr Anna Tai, Sir Charles Gairdner Hospital and Adult Cystic Fibrosis Unit, Institute for Respiratory Health. "Update on research at the WA Adult Cystic Fibrosis Centre".

Dr Anthony Bosco, Telethon Kids Institute. "Decoding respiratory disease with systems biology".

Dr Melvin Chin, Sir Charles Gairdner Hospital and NCARD, University of Western Australia. "Dichotomising in high dimensions - using genomic data to explore phenotypes with bulk and single cell data."

"Metabolomics in pleural effusion: A novel tool to improve the diagnosis and treatment of mesothelioma". Dr Sally Lansley, Pleural Medicine Unit, Institute for Respiratory Health.

Dr Britt Clynick, Stem Cell Unit, Institute for Respiratory Health. "Molecular determinants of IPF progression".

Dr Patricia Agudelo-Romero, Telethon Kids Institute. "Using a multi-omic approach to assess primary airway epithelial responses to rhinovirus infection in children with and without cystic fibrosis".

Dr Ingrid Laing, Telethon Kids Institute. "Can we predict the development of asthma using metabolomic biomarkers? A pilot study".

Associate Professor Fiona Pixley, University of Western Australia. "Restraining tumour associated macrophages to treat invasive cancers".

Associate Professor Alex Larcombe, Telethon Kids Institute. "What's new in e-cigarette research".

Associate Professor Phil Burcham, School of Biomedical Sciences, University of Western Australia. "Chemico-pharmacological strategies for blocking the toxicity of the inhaled pollutant acrolein".

Professor Grant Waterer, Royal Perth Hospital. "Shifting the paradigm for non tuberculous mycobacterium disease".

Clinical Associate Professor Siobhain Mulrennan Sir Charles Gairdner Hospital and Adult Cystic Fibrosis Unit, Institute for Respiratory Health. "Clinical trials and the evolution of CFTR modulator therapy".

# RESEARCH EVENTS

## PHILIP THOMPSON ORATION

Professor Gary Anderson, Director of the Lung Health Research Centre, University of Melbourne. "Turning tears into medicines for serious lung diseases".

## VISITING SPEAKERS

Dr Bradley Chipps, Medical Director of Respiratory Therapy and the Cystic Fibrosis Centre, Sutter Medical Centre, Sacramento, California. "Allergic or atopic asthma? Biologics for the crossover patient".

Professor Mona Bafadhel, Respiratory Medicine University of Oxford, National Institute for Health Research, London, Medical Sciences Lincoln College, University of Oxford, Oxford Centre for Respiratory Medicine, Oxford. "COPD Exacerbations and response to treatment".

## ALAN JAMES LUNG CLUB

Professor Mark Nicol, Infection and Immunity, School of Biomedical Sciences, UWA  
"The role of the airway microbiota in the pathogenesis of respiratory infections in African children".

Kak Ming, PhD Candidate, UWA Medical School (Division of Paediatrics). "Transcriptomic response of cystic fibrosis airway epithelial cells to rhinovirus infection"

Dr Ben Stoecklin, PhD Candidate, UWA Centre for Neonatal Research and Education. "Shift of the arterial oxyhaemoglobin saturation/inspired oxygen pressure (SpO<sub>2</sub>/PIO<sub>2</sub>) curve in preterm infants".

Clinical Professor Alan James and Alvenia Cairncross, Pulmonary Physiology and Sleep Medicine, SCGH and School of Human Sciences, UWA. "Airway Smooth Muscle Remodeling in Asthma and in Those with Fixed Airflow Obstruction"

Dr Peter Noble, School of Human Sciences, UWA. "Unravelling a clinical paradox: why does bronchial thermoplasty work in asthma and how can we improve patient outcomes?"

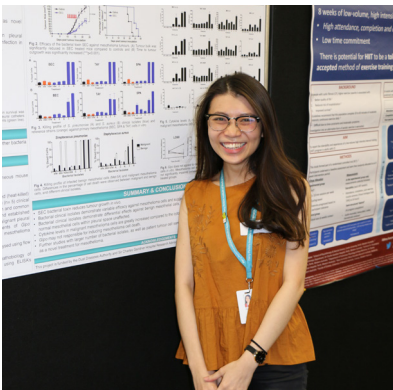
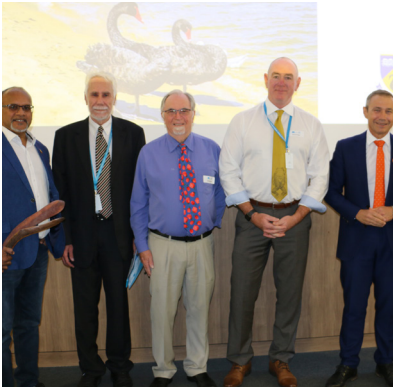
Prof Graham Hall, Children's Lung Health, Telethon Kids Institute. "The Global Lung Function Initiative – update, gaps and the future"

Veena Kurup, PhD Candidate, Centre for Neonatal Research and Education, UWA. "Long-term effects of low dose dexamethasone and ventilation on alveolar development in preterm lambs".

Jesse Armitage, PhD Candidate, Stem Cell Therapy Unit, Institute for Respiratory Health. "Systemic infusion of radio-labelled mesenchymal stromal cells induces transient anti-inflammatory changes in stable COPD patients: A phase I pilot study".

Lizeth Orozco MSc, PhD Student, NCARD, UWA  
"Use of a murine model to identify what drives mesothelioma invasion".

# 20TH ANNIVERSARY SYMPOSIUM & CELEBRATION





# PUBLICATIONS

## PUBLICATIONS BY RESEARCH GROUP

### CELL BIOLOGY RESEARCH

#### Invited reviews and editorials

Moodley Y. In search for a predictive marker of acute exacerbations of idiopathic pulmonary fibrosis *Respirology*. 2019 Aug 1. C4: Journal Article (Letter or Note)

Moodley Y. Considerations in the Diagnosis of Idiopathic Pulmonary Fibrosis. *Am J Respir Crit Care Med*. 2019 Mar 1;199(5):665-666.

Eapen MS, Sharma P, Moodley YP, Hansbro PM, Sohal SS. Dysfunctional Immunity and Microbial Adhesion Molecules in Smoking-induced Pneumonia. *Am J Respir Crit Care Med*. 2019 Jan 15;199(2):250-251.

#### Journal articles

Moodley YP, Corte TJ, Oliver BG, Glaspole IN, Livk A, Ito J, Peters K, Lipscombe R, Casey T, Tan DBA. Analysis by proteomics reveals unique circulatory proteins in idiopathic pulmonary fibrosis. *Respirology*. 2019 Aug 8. doi: 10.1111/resp.13668. (Impact Factor (IF) 4.76); Citations (Cit) 1)

Clynick B, Jo HE, Corte TJ, Glaspole IN, Grainge C, Hopkins PMA, Reynolds PN, Chapman S, Walters EH, Zappala C, Keir GJ, Cooper WA, Mahar AM, Ellis S, Goh N, Baltic S, Ryan M, Tan D, Moodley Y. Circulating RNA differences between patients with stable and progressive lung function in IPF. *Eur Respir J*. 2019 Jul 8. (IF 12.2)

Jo HE, Corte TJ, Glaspole I, Grainge C, Hopkins PMA, Moodley Y, Reynolds PN, Chapman S, Walters EH, Zappala C, Allan H, Keir GJ, Cooper WA, Mahar AM, Ellis S, Macansh S, Goh NS. Gastroesophageal reflux and antacid therapy in IPF: analysis from the Australia IPF Registry. *BMC Pulm Med*. 2019 May 3; 19(1):84 (IF 2.2:

Cit 2)

Moore et al, Moodley Y (multiple authors) Resequencing Study Confirms That Host Defense and Cell Senescence Gene Variants Contribute to the Risk of Idiopathic Pulmonary Fibrosis. *Am J Respir Crit Care Med*. 2019 Jul 15; 200(2):199-208. (IF 16.5: Cit 2)

Armitage JD, Tan DBA, Cha L, Clark M, Gray ES, Fuller KA, Moodley YP. A standardised protocol for the evaluation of small extracellular vesicles in plasma by imaging flow cytometry. *J Immunol Methods*. 2019 May; 468:61-66. (IF 1.12: Cit 1)

Burgess A, Goon K, Brannan JD, Attia J, Palazzi K, Oldmeadow C, Corte TJ, Glaspole I, Goh N, Keir G, Allan H, Chapman S, Cooper W, Ellis S, Hopkins P, Moodley Y, Reynolds P, Zappala C, Macansh S, Grainge C. Eligibility for anti-fibrotic treatment in idiopathic pulmonary fibrosis depends on the predictive equation used for pulmonary function testing. *Respirology*. 2019 Mar 28. (IF 4.76: Cit 1).

Jo HE, Glaspole I, Goh N, Hopkins PMA, Moodley Y, Reynolds PN, Chapman S, Walters EH, Zappala C, Allan H, Macansh S, Grainge C, Keir GJ, Hayen A, Henderson D, Klebe S, Heinze SB, Miller A, Rouse HC, Duhig E, Cooper WA, Mahar AM, Ellis S, McCormack SR, Ng B, Godbolt DB, Corte TJ. Implications of the diagnostic criteria of idiopathic pulmonary fibrosis in clinical practice: Analysis from the Australian Idiopathic Pulmonary Fibrosis Registry. *Respirology*. 2019 Apr; 24(4):361-368. (IF 4.76: Cit 4).



## CYSTIC FIBROSIS AND BRONCHIECTASIS RESEARCH

Yeap BB, Dedic D, Budgeon CA, Murray Senior K, Knuiman MW, Hunter M, Zhu K, Cooke BR, Lim EM, Mulrennan S, Walsh JP, Green DJ. U-shaped association of vigorous physical activity with risk of metabolic syndrome in men with low lean mass, and no interaction of physical activity and serum 25-hydroxyvitamin D with metabolic syndrome risk. *Intern Med* 2020 Apr;50(4):460-469. doi: 10.1111/imj.14379.

Bailey N, Krisnadi Z, Kaur R, Mulrennan S, Phillips M & Slavova-Azmanova N. (2019). A pragmatic application of endobronchial ultrasound-guided transbronchial needle aspiration: A single institution experience. *BMC Pulmonary Medicine*, 19(1), [155].

Harryanto, H., Ho, A., Solangaarachchi, M., Kuok, Y., Moodley, Y., & Mulrennan, S. (2019). Clinical features and long-term outcome of patients with saddle pulmonary embolism: Experience from two tertiary centres. *Respirology*, 24, 144-144.

Stevenson, B., Bundell, C., Mulrennan, S., McLean-Tookey, A., Murray, R., & Bruschi, A. (2019). The significance of anti-granulocyte-macrophage colony-stimulating factor antibodies in cryptococcal infection: case series and review of antibody testing. *Internal Medicine Journal*, 49(11), 1446-1450.

Vekaria, S., Popowicz, N., White, S. W., & Mulrennan, S. (2019). To be or not to be on CFTR modulators during pregnancy: Risks to be considered. *Journal of Cystic Fibrosis*.

Horgan, L., Mulrennan, S., D'Orsogna, L., & McLean-Tookey, A. (2019). Tracheobronchitis in ulcerative colitis: A case report of therapeutic response with infliximab and review of the literature. *BMC Gastroenterology*, 19(1), [171].

Vekaria S, Popowicz N, White SW, Mulrennan S. To be or not to be on CFTR modulators during pregnancy: Risks to be considered. *J Cyst Fibros*. 2019 Dec 24.

Sawyer A, Cavalheri V, Wood J, Hill K. Exercise testing and exercise training within cystic fibrosis centres across Australian and New

Zealand: what is considered important and what is current practice? *Internal Medicine Journal*. Accepted manuscript online August 2019. Doi: 10.1111/imj.14443.

Gaynor M, Sawyer A, Jenkins S, Wood J. Variable agreement between wearable heart rate monitors during exercise in cystic fibrosis. *ERJ Open Res*. 2019;5(4):00006-2019. Published 2019 Oct 30. doi:10.1183/23120541.00006-2019.

Sawyer A, Cavalheri V, Wood J, Hill K. Exercise testing and exercise training within cystic fibrosis centres across Australia and New Zealand: what is considered important and what is current practice? [published online ahead of print, 2019 Aug 6]. *Intern Med J*. 2019;10.1111/imj.14443. doi:10.1111/imj.14443.

Lian R, Cavalheri V, Wood J, Jenkins S, Straker LM, Hill K. Higher Levels of Education Are Associated With Full-Time Work in Adults With Cystic Fibrosis. *Respir Care*. 2019;64(9):1116-1122. doi:10.4187/respcare.06607

Sawyer A, Cavalheri Hill K. High-intensity interval-based training on exercise capacity in people with chronic respiratory conditions: where are we now and what's next? *BMC Sports Science & Rehabilitation* (invited paper). Accepted for publication February 2020.

Sawyer A, Cavalheri V, Wood J, Hill K. Exercise testing and exercise training within cystic fibrosis centres across Australian and New Zealand: what is considered important and what is current practice? *Internal Medicine Journal*. Accepted manuscript online August 2019. Doi: 10.1111/imj.14443.

Geyer MC, Sullivan T, Tai A, Morton JM, Edwards S, Martin AJ, et al. Exenatide corrects postprandial hyperglycaemia in young people with cystic fibrosis and impaired glucose tolerance: A randomized crossover trial. *Diabetes Obes Metab*. 2019;21(3):700-4.

Wood J, Jenkins S, Putrino D, Mulrennan S, Morey S, Cecins N, et al.

A smartphone application for reporting symptoms in adults with cystic fibrosis improves the detection of exacerbations: Results of a randomised controlled trial. *J Cyst Fibros.* 2019.

## MOLECULAR PATHOLOGY RESEARCH

### Invited reviews and editorials

Mutsaers SE, Pixley FJ, Prêle CM, Hoyne GF. Mesothelial cells regulate immune responses in health and disease: role for immunotherapy in malignant mesothelioma. *Curr. Opinion Immunol.* (in press).

Johnson BZ, Stevenson AW, Prêle CM, Fear MW, Wood FM. The Role of IL-6 in Skin Fibrosis and Cutaneous Wound Healing. *Biomedicines* 2020, 8(5), 101

### Journal articles

Abayasiriwardana KS, Wood MK, Prêle CM, Birnie KA, Robinson BW, Laurent GJ, McAnulty RJ, Mutsaers SE. inhibition of collagen production delays malignant mesothelioma tumor growth in a murine model. *Biochem Biophys Res Commun.* 2019 Mar 5;510(2):198-204. doi: 10.1016/j.bbrc.2019.01.057.

Birnie KA, Prêle CM, Musk AW, de Klerk N, Lee YC, Fitzgerald D, Allcock R, Thompson PJ, Creaney J, Badrian B, Mutsaers SE. MicroRNA Signatures in Malignant Pleural Mesothelioma Effusions. *Dis Markers.* 2019 Jul 31;2019:8628612. doi: 10.1155/2019/8628612.

Waters DW, Blokland KEC, Pathinayake PS, Schuliga M, Jaffar J, Westall GP, Hansbro P, Prêle CM, Mutsaers SE, Bartlett NW, Burgess JK, Grainge CL, Knight DA. STAT3 regulates the onset of oxidant-induced senescence in lung fibroblasts. *Am J Respir Cell Mol Biol.* 2019 Jul;61(1):61-73. doi: 10.1165/rcmb.2018-0328OC.

Wijeratne D, Rodger J, Stevenson A, Valvis S, Wallace H, Prêle CM, Wood F, Fear MW. Ephrin-A2 affects wound healing and scarring in a murine model of excisional injury. 2019 May;45(3):682-690

Camille Moore et al. (Global IPF Consortium). Resequencing Study Confirms Host Defense and Cell Senescence Gene Variants Contribute to

the Risk of Idiopathic Pulmonary Fibrosis. *Am J Respir Crit Care Med.* 2019 Am J Respir Crit Care Med. 2019 Jul 15;200(2):199-208.

Schuliga M, Read J, Blokland KEC, Waters DW, Burgess J, Prêle CM, Mutsaers SE, Jaffar J, Westall G, Reid A, James A, Grainge C, Knight DA. Self DNA perpetuates IPF lung fibroblast senescence in a cGAS-dependent manner. *Clin Sci.* 2020;134(7):889-905.

Blokland KEC, Waters DW, Schuliga M, Read J, Pouwels SD, Grainge CL, Jaffar J, Westall G, Mutsaers SE, Prêle CM, Burgess JK, Knight DA. Senescence of IPF Lung Fibroblasts Disrupt Alveolar Epithelial Cell Proliferation and Promote Migration in Wound Healing. *Pharmaceutics.* 2020 Apr 24;12(4). pii: E389. doi: 10.3390/pharmaceutics12040389.

## OCCUPATIONAL AND RESPIRATORY HEALTH RESEARCH

### Invited reviews and editorials

Brims, F. (2019). Identifying occupationally exposed populations for lung cancer screening: It is about time. *Occupational and Environmental Medicine*, 76(3), 135-136. doi:10.1136/oemed-2018-105464

### Journal articles

Brims FJ, Kong K, Harris EJ, et al. Pleural Plaques and the Risk of Lung Cancer in Asbestos-exposed Subjects. *Am J Respir Crit Care Med.* 2019, epub date 2019/08/23, DOI 10.1164/rccm.201901-0096OC.

C Sinclair, KA Auret, SF Evans, F Jane, S Dormer, Anne Wilkinson, Kim Greeve, MA Koay, Fraser Brims. Impact of a nurse-led advance care planning intervention on satisfaction, health related quality of life and health care utilization among patients with severe respiratory Disease. *Journal of Pain and Symptom Management.* Accepted for publication.

Arthur W Bill Musk, Alison Reid, Nola Olsen, Michael Hobbs, Bruce Armstrong, Peter Franklin, Jennie Hui, Lenore Layman, Enzo Merler, Fraser Brims, Helman Alfonso, Keith Shilkin, Nita Sodhi-Berry, Nicholas de Klerk.

The Wittenoom legacy. *International journal of epidemiology*. Accepted for publication.

H Kamiya, S Peters, N Sodhi-Berry, A Reid, L Gordon, N de Klerk, F Brims, AW Musk. Validation of an Asbestos Job-Exposure Matrix (AsbJEM) in Australia: Exposure–Response Relationships for Malignant Mesothelioma. *Annals of work exposures and health*. Accepted for publication.

C Sidhu, A Louw, F Brims, J Creaney, YCG Lee. Malignant Pleural Mesothelioma: an Update for Pulmonologists. *Current Pulmonology Reports* 8 (2), 40-49.

Harris, E. J. A., Musk, A. W., DeKlerk, N., & Brims, F. J. H. (2019). Comment on: “Low-dose computed tomography screening for lung cancer in people with workplace exposure to asbestos”.. *Lung Cancer*. doi:10.1016/j.lungcan.2019.04.019

Reid, A., Franklin, P., Berry, G., Peters, S., Sodhi-Berry, N., Brims, F., . . . De Klerk, N. H. (2019). Response to letter by Farioli et al. *Occupational and Environmental Medicine*, 76(5), 356. doi:10.1136/oemed-2019-105740

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## PLEURAL MEDICINE

### Book chapters

Lee YCG and Davies HE. Mediastinal Tumours and Cysts. In: *Oxford Textbook of Medicine*, 6th ed., 438-445. Oxford, U.K.: Oxford University Press, 2019.

Lee YCG. Pleural Tumours. In: *Oxford Textbook of Medicine*, 6th ed., pp. 431-438. Oxford, U.K.: Oxford University Press, 2019.

de Fonseka D, Lee YCG and Maskell NA. Pleural Diseases. In: *Oxford Textbook of Medicine*, 6th ed., 375-397. Oxford, U.K.: Oxford University Press, 2019.

### Invited reviews and editorials

Thomas R, Roy B, Maldonado F and Lee YCG. Management of malignant pleural effusions – What is new. *Semin Respir Crit Care Med* 2019; 40:323-339.

Louw A, Badiei A, Creaney J, Chai MS and Lee YCG. Advances in pathological diagnosis of mesothelioma: What pulmonologists should know. *Curr Opin Pulm Med*. 2019; 25:354-361.

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### Journal articles

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Lan NSH, Vekaria S, Sidhu C and Lee YCG. Very low dose intrapleural tPA for indwelling pleural catheter-associated symptomatic fluid loculation. *Respirol Case Rep* 2019; 7 (7):e00457.

Beckert L, Brockway B, Simpson G, Southcott AM, Lee YCG, Rahman N, Light RW, Shoemaker S, Gillies J, Komissarov AA, Florova G, Ochran T, Bradley W, Ndetan H, Singh K, Sarva K and Idell S. Phase 1 dose-escalation trial of intrapleural LTI-01 (single chain urokinase plasminogen activator/scuPA) in patients with complicated parapneumonic effusions or empyema. *JCI Insight* 2019; 5 pii:127470.

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Lépine P-A, Thomas R, Nguyen S, Lacasse Y, Cheah HM, Creaney J, Muruganandan S, Martel S, Lee YCG and Delage A. Simplified criteria using pleural fluid cholesterol and

lactate dehydrogenase to distinguish between exudative and transudative pleural effusions. *Respiration* 2019; 98:48-54.

Hart JA, Badiei A and Lee YCG. Successful management of pleural infection with very low dose intrapleural tissue plasminogen activator / deoxyribonuclease regime. *Respirol Case Rep* 2019; 7 (3):e00408.

Tan PSC, Badiei A, Kuok YJ and Lee YCG. Pleural empyema in a patient with a perinephric abscess and diaphragmatic defect. *Respirol Case Rep* 2019; 7 (3):e00400.

Fitzgerald DB, Leong SL, Budgeon CA, Murray K, Rosenstengel A, Smith NA, Bielsa S, Clive AO, Maskell NA, Porcel JM and Lee YCG. Relationship of pleural fluid pH and glucose: a multi-centre study of 2971 cases. *J Thorac Dis* 2019; 11:123-130.

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# GRANTS & AWARDS

## GRANTS

### CANCER COUNCIL OF WA

A study to beat Cancer-related weight loss in patients with Mesothelioma. Brims F.

Novel diagnostic and functional targets for Malignant Mesothelioma. Mutsaers, K Birnie, CM Prêle, N De Klerk, W Musk, SM Lansley.

### SIR CHARLES GAIRDNER RESEARCH ADVISORY COMMITTEE

Nutritional support and exercise training to improve muscle mass in those with advanced thoracic cancer. Lee YCG.

The role of soluble citrate in the pathobiology of malignant pleural mesothelioma. Thomas R.

The Second Steroid Therapy and Outcome of Parapneumonic Pleural Effusion ( STOPPE2). Creaney J.

Loss of BAP1 and CDKN2A/p 16 in Malignant pleural mesothelioma: effect on survival and response to Chemotherapy. Forrest N.

The use of novel magnetic resonance imaging techniques to investigate lung structure and ventilation during airway clearance techniques in adults CF. Tai A.

## AWARDS

WA Cancer Researcher of the Year for 2019. Lee YCG.

Higher Education Hot List Winners' List, The Educator. 2019. Lee YCG

5 years of CT screening in an asbestos-exposed cohort: Winner Occupational & Environmental Lung Disease SIG Prize. TSANZ Gold Coast 2019. Brims F.

Ann Woolcokc New Investigator Award for 2019. Armitage.

Pawsey's Nimbus Supercomputing Centre Service successful application Clynick B  
CRE-PF CREATE Fellowship Travel Scholarship. Clynick B

TSANZ ASM Travel Award –TSANZSRS 2019. Clynick B

Australasian Cystic Fibrosis Conference Best Oral presentation in the Quality Improvement/ Clinical Trials SIG. Tai A.

Thoracic Society of Australia and New Zealand Annual Scientific Meeting Special Interest Group Prize for Best Presentation and finalist for the New Investigator Award. Wood J.

Thoracic Society of Australia and New Zealand Annual Scientific Meeting Finalist for the New Investigator Award. Wood J.

Curtin University Higher Degree by Research Mobility Award. Sawyer A.

Thoracic Society of Australia and New Zealand Annual Scientific Meeting Travel Award. Sawyer A.

Best Scientific Presentation, 4th Biennial Australian Rare Lung Disease Short Course, Melbourne, Vic. Prele CM .

# FINANCE REPORT

## BOARD MEMBERS SUBMITTED THE FINANCIAL REPORT OF INSTITUTE FOR RESPIRATORY HEALTH (INC) FOR THE FINANCIAL YEAR ENDED 31 DECEMBER 2019.

### Board members

The names of board members throughout the year and at the date of this report are:

Peter Gunzburg	Sue Morey
Geoff Stewart	Craig McGown
Anthony Fortina	Gary Lee
Johnson Kitto	John Price
Cecilia Prêle	

### Principal activities

The principal activities of the institute during the financial year were to conduct research and conduct clinical trials in the area of respiratory health.

### Significant changes

No significant change in the nature of these activities occurred during the year.

### Operating result

The surplus for the 2019 year amounted to \$1,664,543.

Signed in accordance with a resolution of the members of the board.

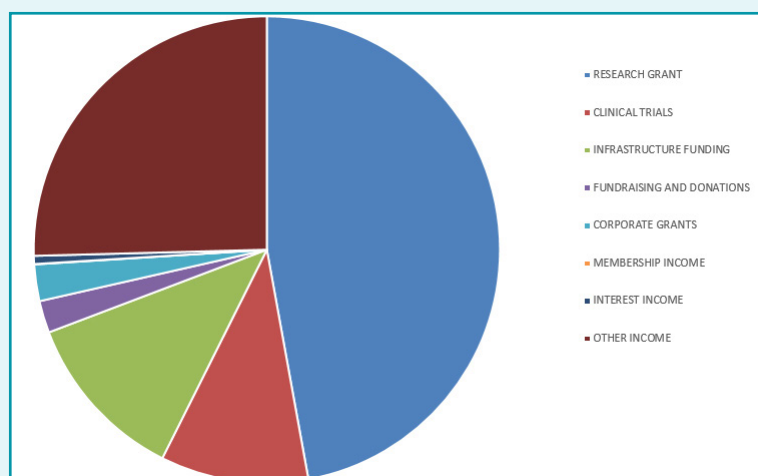
G.A. Stewart

Geoff Stewart  
Board Member  
12 March 2020

Sue Morey

Sue Morey  
Board Member  
12 March 2020

### INCOME BREAKDOWN FOR 2019





# AUDITOR'S DECLARATION

INSTITUTE FOR RESPIRATORY HEALTH (INC)  
A.B.N. 78 098 197 636

## BOARD REPORT

### AUDITOR'S INDEPENDENCE DECLARATION UNDER ACNC ACT SECTION 60-40 TO THE BOARD OF INSTITUTE OF RESPIRATORY HEALTH (INC)

In accordance with Subdivision 60-C of the *Australian Charities and Not-for-profits Commission Act 2012*, I am pleased to provide the following declaration of independence to the board of Institute of Respiratory Health (Inc). As the lead audit partner for the audit of the financial report Institute of Respiratory Health (Inc) for the year ended 30 June 2019, I declare that, to the best of my knowledge and belief, during the year ended 30 Jun e2019 there have been no contraventions of:

- i. The auditor independence requirements as set out in the *Australian Charities and Not for Profits Commission Act 2012* in relation to the audit; and
- ii. Any applicable code of professional conduct in relation to the audit.

**Owen & Plaistowe**  
Certified Practising Accountants



Hugh Martin Edward Plaistowe

Date: 12 March 2020

Perth, Western Australia

# INCOME STATEMENT

FOR THE YEAR ENDED 31 DECEMBER 2019

	2019 \$	2018 \$
<b>Revenue</b>		
Grant income	3,126,966	1,462,489
Research support	187,289	245,997
Clinical trials	807,107	776,117
Novartis	14,500	
Respirology	298,325	295,766
International research grant	382,497	99,632
Infrastructure funding	931,557	279,881
Fundraising income and donations	174,914	95,521
Corporate grants	200,000	-
Memberships income	2,073	3,145
Interest income	44,099	27,696
Other income	1,702,515	1,224,280
<b>Total revenue</b>	<u>7,871,842</u>	<u>4,510,524</u>
<b>Expenses</b>		
Operating expenses	(1,508,770)	(991,684)
Employee benefits expense	(4,251,560)	(2,941,568)
Depreciation expenses	(8,391)	(42,291)
Finance costs	(1,199)	(505)
Other expenses	(437,379)	(303,077)
<b>Total expenses</b>	<u>6,207,299</u>	<u>(4,279,125)</u>
<b>Net current surplus</b>	<u>1,664,543</u>	<u>231,399</u>
<b>Other comprehensive income</b>	-	-
<b>Total other comprehensive income</b>	<u>-</u>	<u>-</u>
<b>Total comprehensive income attributable to members of the Institute</b>	<u>1,664,543</u>	<u>231,399</u>
<b>Surplus/(deficit) allocated to</b>		
Restricted funds	133,253	(151,499)
Designated funds	1,160,444	143,071
Unrestricted funds	370,846	239,827
	<u>1,664,543</u>	<u>231,399</u>

# BALANCE SHEET

FOR THE YEAR ENDED 31 DECEMBER 2019

	2019 \$	2018 \$
<b>CURRENT ASSETS</b>		
Cash and cash equivalents	3,443,311	2,775,281
Trade and other receivables	2,296,530	1,256,724
<b>TOTAL CURRENT ASSETS</b>	<b>5,739,841</b>	<b>4,032,005</b>
<b>NON-CURRENT ASSETS</b>		
Property, plant and equipment	43,660	52,051
<b>TOTAL NON-CURRENT ASSETS</b>	<b>43,660</b>	<b>52,051</b>
<b>TOTAL ASSETS</b>	<b>5,783,501</b>	<b>4,084,056</b>
<b>CURRENT LIABILITIES</b>		
Trade and other payables	384,467	393,686
Employee provisions	339,961	316,431
<b>TOTAL CURRENT LIABILITIES</b>	<b>724,428</b>	<b>710,117</b>
<b>NON-CURRENT LIABILITIES</b>		
Employee provisions	73,657	53,066
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>73,657</b>	<b>53,066</b>
<b>TOTAL LIABILITIES</b>	<b>798,085</b>	<b>763,183</b>
<b>NET ASSETS</b>	<b>4,985,416</b>	<b>3,320,873</b>
<b>MEMBERS' FUNDS</b>		
Accumulated funds		
Restricted	481,259	348,006
Designated	3,663,346	2,502,902
Unrestricted	840,811	469,965
<b>TOTAL MEMBERS' FUNDS</b>	<b>4,985,416</b>	<b>3,320,873</b>





*institute for*  
**RESPIRATORY HEALTH**

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