

# ANNUAL REPORT 2010/11

Cooperative Research Centre for Asthma and Airways



## MISSION STATEMENT

The Cooperative Research Centre for Asthma and Airways aims to integrate the world class research and commercial skills of its partners to discover and develop novel therapeutic and diagnostic products for the benefit of all asthmatics and the Australian economy.

## OBJECTIVES

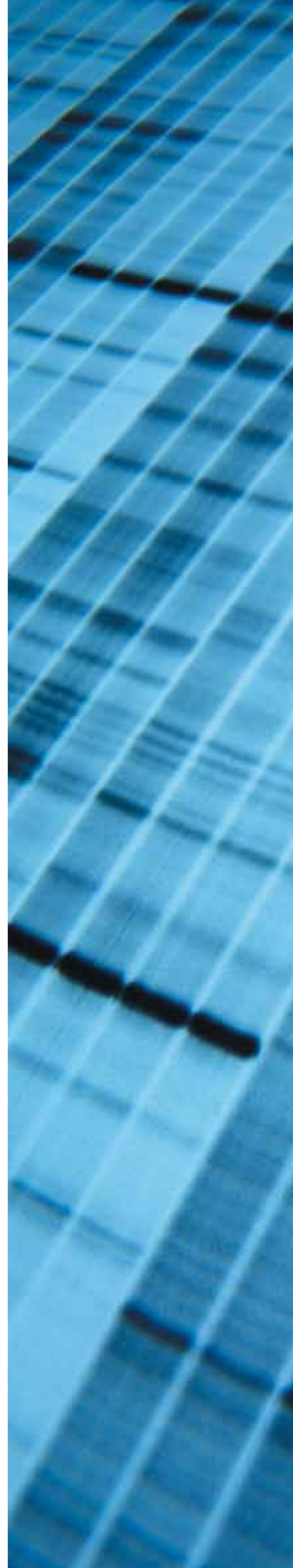
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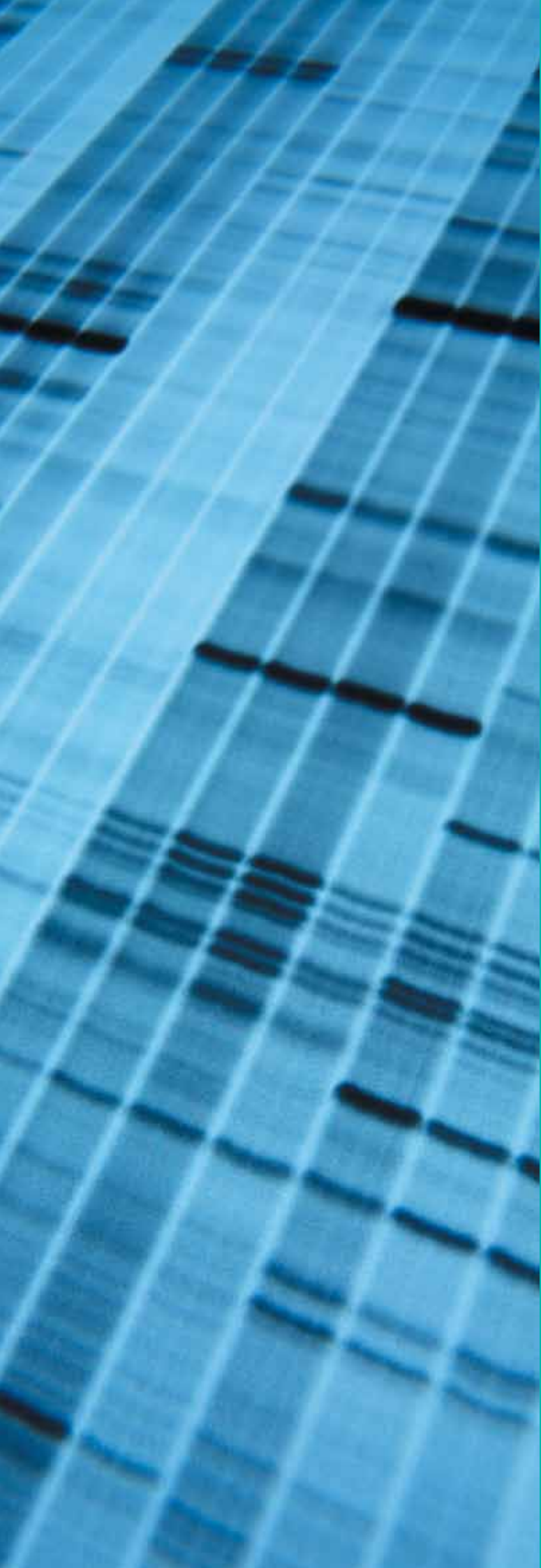
- Combine world-class science with leading pharmaceutical companies to address a major health priority.
- Discover and develop novel therapeutic and diagnostic products for the benefit of all asthmatics and the Australian economy.
- Improve indoor, urban and regional air quality standards to reduce the risk of exposure to the triggers of chronic airway conditions.
- Generate significant revenues and establish robust biotechnology companies.
- Provide significant economic returns to Australia.

## PARTNERS

Monash University  
University of Newcastle  
University of Sydney  
University of WA

Garvan Institute  
Woolcock Institute  
GlaxoSmithKline  
Pharmaxis





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# EXECUTIVE SUMMARY

## Chairman's Report

It gives me great pleasure to present the annual report of the CRC for Asthma and Airways (CRCAA) for the 2010/2011 financial year. During its sixth year of operation the CRCAA has made notable progress on a number of fronts.

The tempo of the research program has been maintained. It is pleasing to note that all major targets have been met by the research groups in Sydney, Melbourne, Newcastle and Perth. The education program is also progressing well and the CRCAA is now providing support to a number of exceptional postgraduate students.

The therapeutics program continues to produce asthma drug targets with the latest being a unique antisense oligonucleotide. The diagnostics program has developed and patented a novel suite of biomarkers for the diagnosis of asthma and COPD. A number of important contributions have been made by the air pollution programs and the output of this research has been provided to the relevant state government departments.

The CRCAA continued to receive strong support from all the research, industry and state government partners. This support, together with the high levels of collaboration that are evident in the research and education programs, has underpinned the achievements of the past year.

Government funding for the CRCAA will cease at the end of June 2012 as scheduled. Research and education activities will be completed in the coming months and all major milestones will have been met by the end of the grant period.

Dr Arthur Emmett resigned as chairman in late 2010 but I am pleased to report that he has agreed to remain on the board. I would like to thank my fellow directors for their enthusiastic support during the past year. I would also like to express my appreciation to the staff of the secretariat and to the CEO Mr Philip Bert who continues to provide strong leadership to the CRCAA.



Mr Mervyn Michell

**Chairman**



## Chief Executive Officer's Report

The CRCAA has made significant progress on a number of fronts during its sixth year of operation. The research program has moved ahead strongly with all programs reporting positive outcomes. All major research targets have been achieved and the outcomes of this research have been published in a range of high impact journals.

The drug development program has generated a number of attractive drug targets one of which has generated commercial interest. Significant achievements over the past year include:

- The anti-GMCSF oligonucleotides project has been completed and a provisional patent application has been filed to protect the intellectual property generated. Further studies (including animal modelling) are now underway to consolidate the patent claims.
- The small molecule screen program for the GPR43 target has commenced.
- Over the past year progress has been made in investigating the effect of tumstatin in a sheep model of asthma. This work will provide valuable proof of concept support for the commercialisation of the tumstatin drug target.
- Researchers on the miRNA project have demonstrated an important role for miRNA145 in regulating inflammation. This work has been published in the Journal of Allergy and Clinical Immunology.

Good progress has been made by the diagnostic program and the outcomes of this research will provide enhanced diagnostic tools that will result in improved treatment of people suffering from asthma and COPD. The major achievements of the past year include:

- The study on the use of frequency oscillation technology in the treatment of asthma has been completed.

- Research on biomarkers for asthma diagnosis has been completed and the results have been validated in a clinically relevant cohort of patients. The results of this work have been published in the prestigious American Journal of Respiratory and Critical Care Medicine and have been protected by patent applications. This work received wide coverage in international and local media

The air pollution program has provided direct input into the WA and NSW state government departments. This includes valuable information on the effect of indoor air pollution, road traffic and road tunnel pollution as well as mining related pollution. Highlights of the past year were:

- The completion of the data analysis of the Lane Cove Tunnel Project. The results have been written up and submitted to relevant scientific journals. Formal reports will be provided to the NSW Department of Health by the end of 2011.
- The final study on West Australian traffic related air pollution has been completed and published in the Medical Journal of Australia. The result of this received wide local media coverage.

The Education Program developed and validated the Patient Asthma Concerns Tool. This tool has been designed to be self-administered by older people with airways disease to enable their doctors to provide enhanced levels of treatment.

The CRCAA operates in the biotechnology and pharmaceutical sectors, both of which have been seriously affected by the current financial and economic crisis. Companies have cut their investments in new product development and have little discretionary funds available to support outside research and development activities. To date this has not affected the levels of support being provided by our commercial partners. It has however made it extremely difficult to raise funds for commercialisation initiatives. In face of

this situation the CRCAA has been taking steps to enhance the value of its patent portfolio with the intention of commercialising this intellectual property as the financial climate improves in the years ahead.

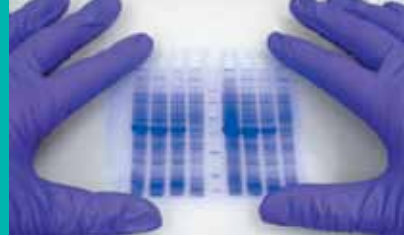
The research and education activities of the CRCAA will cease at the end of the grant period in June 2012. It is forecast that all research and education targets will have been achieved by this time. All the intellectual property generated is owned by the CRCAA and strategies are being put into place to ensure that commercialisation activities proceed in the years ahead.

The dedication and hard work of the senior researchers and their teams have been crucial to the continuing success of the CRCAA. I would like to thank Dr Arthur Emmett and Mr Mervyn Michell for their ongoing guidance and advice and the Directors for their support over the past year.



Mr Philip Bert

**Chief Executive Officer**



The CRCAA contributes directly to two of the National Research Priorities. Firstly, the CRCAA contributes to all four goals of the Priority 'Promoting and Maintaining Good Health'. Asthma affects a large number (14-16%) of Australian children and the CRCAA's initiatives help support 'A healthy start to life' through better treatments, diagnostics and improved clinical practice. In addition, by supporting better policies to identify and reduce the triggers of asthma, we will help slow the rapid growth in prevalence of asthma in our children. The CRCAA also supports 'Ageing well, ageing productively' by reducing morbidity and mortality and increasing productivity in all age groups including the elderly, which is a special focus of one of the education programs. Much of the CRCAA's work focuses on decreasing the incidence and severity of asthma attacks (Preventive healthcare) because asthma and chronic airways diseases can be better controlled with appropriate care in a way that minimizes the more severe impacts of these diseases. The CRCAA is also 'Strengthening Australia's social and economic fabric' by reducing the costs of lost productivity, which include the costs of absenteeism, reduced effectiveness whilst at work and the cost of time taken attending medical appointments, which are estimated to be \$260m - \$390m per year due to asthma alone.

Secondly, the CRCAA contributes to 'Frontier Technologies for Building and Transforming Australian Industries' in a number of ways. The CRCAA is at the forefront in how it applies genomics and genetics (Frontier technologies) to identify novel asthma disease targets, and to tailor clinical treatments based on genetic differences between individuals. The CRCAA is also achieving 'Breakthrough science' through its work elucidating fundamental pathological mechanisms for airways, and its development of novel animal models for chronic airways diseases. The CRCAA is also strongly supporting 'Promoting an innovation culture and economy' through creating a collaborative culture involving public and private sector organisations. This engagement is providing significant support to Pharmaxis, an SME that is active in the asthma and respiratory disease fields.

# GOVERNANCE AND MANAGEMENT

The CRCAA was established in October 1999 as a company limited by guarantee. In August 2005 the company entered into an agreement with Commonwealth of Australia and a number of other parties. This agreement provides funding for the operation of the company for the seven year period ending 30 June 2012. The CRCAA is a collaborative venture between two medical research institutes, four universities and two pharmaceutical companies. It brings together some of Australia's leading asthma research groups in Sydney, Newcastle, Melbourne and Perth.

## Board of Directors

The Board is responsible for setting strategic goals and monitoring the performance and management of the CRCAA. The Board met four times during the year. Rotation of Board members occurs every two years at the AGM.

Dr Arthur Emmett resigned as Chairman 30/11/2010 and was replaced by Mr Mervyn Michell. Dr Ashley Bates resigned from the board on 6/7/2011.

Mr Mervyn Michell	Chair
Mr Philip Bert	Chief Executive Officer
Prof Mike Calford	University of Newcastle
(Alternate Prof Carol Armour)	University of Sydney
Prof Gail Risbridger	Monash University
(Alternate Prof Lou Landau)	University of WA
Dr George Moore	Independent
Prof Ashley Dunn	Independent
Dr Ashley Bates	GlaxoSmithKline (Australia)
Dr Arthur Emmett	Independent
Ms Julie Phillips	Independent

## Scientific Review Committee

This committee is responsible for overseeing the research programs and plays a key role in setting research priorities and allocating resources. The committee reviews the overall research performance, considers individual project research plans and also reviews project budgets. The outcomes of these reviews are subsequently recommended to the Board. The committee meets annually and is chaired by Professor Ashley Dunn.

Prof Ashley Dunn	Chair
Mr Philip Bert	Chief Executive Officer
Prof Shyamali Dharmage	University of Melbourne
Prof Graham Le Gros	Malaghan Institute of Medical Research
Prof Paul Reynolds	Royal Adelaide Hospital

## Commercialisation Committee

This committee is responsible for providing strategic commercial advice and overseeing the negotiation of licences and other commercialisation arrangements. The committee meets twice a year.

Dr Arthur Emmett	Chair
Mr Philip Bert	Chief Executive Officer
Dr George Moore	Independent
Ms Julie Phillips	Independent

## Audit Committee

The Audit Committee is responsible for probity, compliance and risk management within the finance area. This committee meets twice a year.

Ms Julie Phillips	Chair
Dr Arthur Emmett	Independent
Mr Mervyn Michell	Independent
Mr George Shalala	Advisor



## Executive Committee

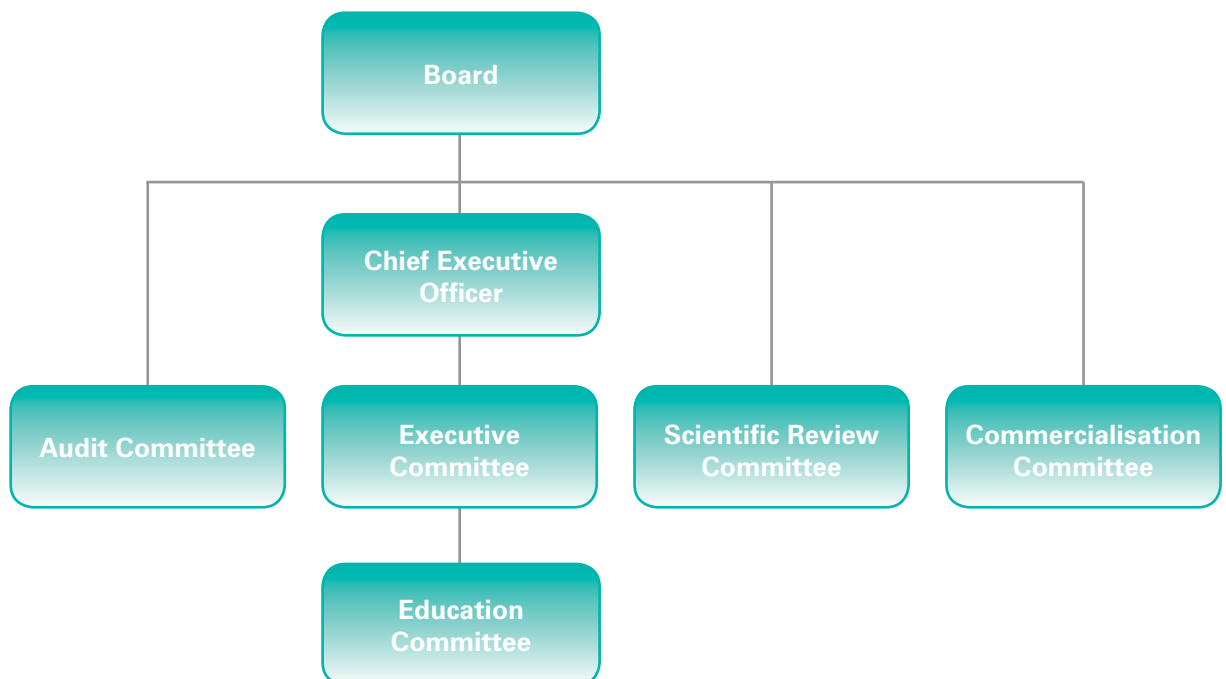
The role of the Executive Committee is to coordinate the research and education programs of the CRCAA. The committee meets via teleconference every 2 months, includes senior research leaders and is chaired by the Chief Executive Officer.

Mr Philip Bert	Chief Executive Officer (Chair)
Prof Norbert Berend	Woolcock Institute
Prof Judy Black	University of Sydney
Prof Paul Foster	University of Newcastle
Prof Peter Gibson	University of Newcastle
Prof D'Arcy Holman	University of Western Australia
Prof Christine Jenkins	Woolcock Institute
Prof Charles Mackay	Garvan Institute
Prof Robyn O'Hehir	Monash University
Prof Philip Thompson	University of Western Australia

## Education Committee

The Education Committee is chaired by Professor Christine Jenkins of the Woolcock Institute. This committee sets policy for the education program and prioritises the implementation of projects. The committee also oversees the CRCAA scholarship program. The committee meets twice a year.

Prof Christine Jenkins	Woolcock Institute (Chair)
Mr Philip Bert	Chief Executive Officer
A/Prof Jo Douglass	Monash University
A/Prof Philip Hansbro	University of Newcastle
Dr Svetlana Baltic	University of Western Australia





## RESEARCH PROGRAMS

### Research Activities

Asthma and airways diseases are complex and inter-related disorders. The CRCAA's outputs will generate both health and economic outcomes and will include the development of superior treatments, advanced diagnostic tools and enhanced air quality standards. Achieving these goals requires a multifaceted approach integrating a range of diverse fields. The CRCAA has assembled a team of world class researchers with expertise in genetics, cell biology, immunology, physiology, pharmacology and epidemiology to achieve these outcomes. This team has access to state of the art research infrastructure at a number of leading Australian academic and research institutions.

The CRCAA's research program has 3 components:

- **New and Superior Treatments.** This is the largest program and focuses on the identification and validation of targets for new therapeutics, and the development of immunotherapies for asthma and allergic disease.
- **Advanced Diagnosis and Monitoring.** This program develops diagnostic products and devices based on novel biochemical and physiological measures.
- **Consequences of Adverse Air Quality.** This program studies the adverse health consequences of poor air quality and provides the scientific basis for the development of validated air quality standards.

## **Program 1 New and Superior Treatments**

This is the largest program and comprises five integrated sub-programs.

### **1.1 Novel Asthma Drug Targets (Garvan Institute)**

*Project Leader: Professor Charles Mackay*

*Deputy Leader: Dr David Zahra*

Asthma is an immunological disorder, and the research of this program aims to understand the molecular basis of asthma and to develop better therapies. The strengths of this research group revolve around its gene array capabilities that are used in the identification of new molecules for inflammatory diseases based on comprehensive tissue and cell RNA profiling. The general scheme is to identify cell surface or secreted molecules, choose interesting molecules based on homology or other relevant information and then create knock out and knock in mice for in vitro and in vivo validation. The group has proven expertise in the development of monoclonal antibodies aimed at difficult targets and the ability to bring these antibodies forward to clinical trials.

A major achievement in the previous years was the completion of the molecular biological work on the G-protein coupled receptor GPR43. This work demonstrated for the first time a molecular link between diet, gut bacteria and the immune system. A two pronged strategy is being implemented to capitalise on this breakthrough. The first approach is to develop antibodies that bind to human GPR43. This work has proven to be technically challenging and the research team expects produce these antibodies in early next year. The second approach involves using high throughput screening to identify small molecule drug candidates. This project is making steady progress and the initial and secondary screens will be completed in the first half of 2012. Work on the optimisation of the humanised antibody to GMCSF has been finalised and the properties of the latest clones make these antibodies highly attractive commercial targets.

### **1.2 Mouse & Cellular Models of Asthma & COPD (University of Newcastle)**

*Project Leader: Professor Paul Foster*

*Deputy Leader: A/Prof Philip Hansbro*

The central aim of this research program is to understand at a fundamental level the immunological and cellular processes that are implicated in the induction and persistence of asthma and other respiratory disorders. The goal is to identify potential new modalities to treat and to diagnose these disorders by characterising mouse models of asthma and COPD at a molecular and cellular level. These models also serve as the benchmark for the validation of new target molecules and therapeutic agents designed elsewhere in the CRCAA.

The importance of micro RNA (miRNA) in health and disease has been highlighted by the identification of specific miRNA signatures in cancer and disorders of the immune system. Using mouse models of house dust mite induced asthma it has been possible for the first time to characterise miRNA responses in the early periods after antigen exposure and during the development of disease. Good progress has been made on the miRNA145 project and the research team has demonstrated an important role for miRNA145 in regulating inflammation. This work has been published in the Journal of Allergy and Clinical Immunology.

The work on determining the role of miR-126 in the regulation of allergic inflammation has been finalised. Studies are now underway to complete the characterisation of miRNA expression profiles in patient samples supplied by clinical investigators (biopsy samples, sputum samples, smooth muscle samples and cell culture of primary cells). This work was initiated through national and international collaborations and will continue until March 2012 with the aim of obtaining as much clinical information as possible to support our patent position.

### 1.3 Genetics of Asthma (University of WA)

*Project Leader: Professor Phil Thompson*

Better understanding of the genetic determinants of disease and drug action will allow improved screening for risk, better understanding of disease pathways and drug targeting and better prescribing of medications to patients. The focus of our research is the development, design and synthesis of antisense oligonucleotides for the regulation of expression of asthma candidate genes. This project sets out to develop short chain oligonucleotides that would bind to DNA to specifically influence exonic splicing and thereby change the downstream production of mRNA and protein. The research is essentially committed to two areas. These are developing antisense therapeutics for blocking GMCSF and antisense therapy to block Leukotriene B4 receptors.

Good progress has been made on the anti GMCSF oligonucleotides. The laboratory study has been completed and the best oligonucleotides have been identified. A provisional patent application has been filed to protect these findings. Further studies are now underway to consolidate the patent claims. These studies include animal modelling and an application has been submitted to the Animal Ethics Committee.

Work has also proceeded apace on developing oligonucleotides that inhibit the Leukotriene B4 receptor. Primers have been designed and techniques for detecting human and mouse receptors have been optimised. Antisense oligonucleotides have been designed and kinetic studies have been completed. This work will be completed in early 2012.

### 1.4 Mechanisms of Airway Remodelling (University of Sydney)

*Project Leader: Professor Judy Black*

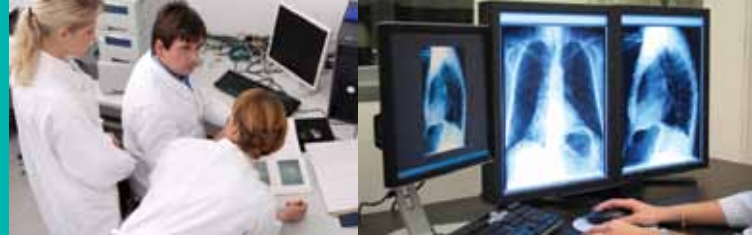
*Deputy Leader: Dr Brian Oliver*

One of the prominent features of persistent asthma is airway remodelling. This is

characterized by structural changes in the airway wall which include an increase in the bulk of the airway smooth muscle due mostly to hyperplasia, thickening of the subreticular basement membrane, new blood vessel formation (angiogenesis) and deposition of increased amounts of extracellular matrix proteins such as fibronectin and collagen. These structural changes are responsible for a progressive decline in lung function despite symptomatic and anti-inflammatory treatment and highlight the need for new therapeutic approaches. Although inflammation has been considered the aetiological factor of greatest importance in asthma, abnormalities in the airway smooth muscle have the potential to underlie all the pathophysiological events in asthma. Considerable progress has been made in identifying genes which are differentially regulated in the asthmatic airway in order to establish new therapeutic targets for the treatment of asthma. Three separate lines of investigation have been followed in this subprogram. All the identified molecules of interest have been protected by patent applications.

Previously it was demonstrated that tumstatin is not present in the airways of asthmatics but is present in the airways of non-asthmatic individuals. The researchers also found that tumstatin is able to inhibit angiogenesis in the airway as well as attenuate the development of airway resistance. Murine models were used to further demonstrate the functional effect of tumstatin. Over the past year significant progress has been made in investigating the effect of tumstatin in a sheep model of asthma. This work will provide valuable proof of concept support for the commercialisation of the tumstatin drug target.

In the course of the studies on tumstatin in asthma, it was noted that tumstatin was also absent from the airways of patients with lymphangiomyomatosis (LAM). Furthermore, it was noticed the absence of a previously uncharacterised protein which we have named lamstatin. An extensive research program has



been undertaken to characterise the biological role of lamstatin in order to assess its potential as a novel therapeutic. Since it was shown that lamstatin has antilymphangiogenic properties both in vivo and in vitro, the absence of lamstatin is likely to be the cause of the excessive lymphangiogenesis which accompanies this disease. There are implications for the mechanism and treatment of not only LAM but also of malignant disease which metastasises via the lymph such as breast and prostate cancer. Over the past year research has been undertaken to identify the signalling pathways through which lamstatin and a seventeen amino acid peptide exert their effects to facilitate the development of therapeutics which can mimic their action.

It has also been demonstrated that fibulin-1 levels are increased in asthma derived airway smooth muscle cells compared with non-asthma cells. This contributes to cell hyperproliferation and increased wound repair. By suppressing fibulin-1 in the asthma derived cells we reversed the enhanced proliferation and wound repair normally observed in these cells. We further demonstrated that airway hyperresponsiveness induced by TGF $\beta$  in a mouse model of TGF $\beta$  induced airway hyperresponsiveness was abolished when fibulin-1 was downregulated. The fact that fibulin-1 is upregulated in asthma derived samples and contributes to both cell proliferation and wound repair, indicates that this is a potential drug target. Over the past year studies have been undertaken to establish the cellular receptor of fibulin-1, to investigate which fibrotic lung diseases are associated with a dysregulation of fibulin-1 and to investigate whether soluble fibulin-1 is elevated in the serum of people with non-asthma fibrotic lung diseases.

### 1.5 Immunomodulation (Monash University)

*Project Leader: Professor Robyn O'Hehir*  
*Deputy Leader: Professor Jennifer Rolland*

Bahia grass, *Paspalum notatum*, is a subtropical grass but now grown widely for domestic use and reported to trigger allergic rhinitis late in

the pollen season in temperate regions. 78% of grass pollen-allergic patients referred to our tertiary hospital allergy clinic have serum IgE to Bahia grass pollen extract, but there is limited information on the immunoreactive components of this pollen. Given the phylogenetic distinction of Bahia grass from temperate grass species, including the clinically important Timothy and ryegrass, current immunotherapy cocktails that lack Bahia grass pollen extract may fail to effectively desensitize patients with Bahia grass pollen allergy. As a first step towards the development of a suitable immunotherapy preparation for treatment of Bahia grass pollen allergy, the major group 1 allergen of this pollen (Pas n 1) was identified, cloned and sequenced. Using the Pas n 1 sequence and purified natural Pas n 1, T cell reactive sites of Pas n 1 were determined from peripheral blood mononuclear cells obtained from Bahia grass pollen-allergic donors. Three dominant T cell-reactive Pas n 1 peptides were identified and 83% of patients reacted to at least one of these peptides. Two of these peptides showed cross-reactivity to corresponding peptides from rye grass and /or couch grass but one had limited cross-reactivity. This work has now been completed.

In pilot studies to investigate the use of nanoparticles to more effectively deliver allergen to the airways using a murine model, it was found that inert ultrafine nanoparticles themselves when instilled into the airways prevented allergic airway inflammation. Size-dependent mechanisms of particle uptake were investigated using mouse bone marrow-derived DC in vitro and additional nanoparticles (including two biodegradable formulations) were formulated and screened in in vitro toxicity cell assays. Additionally the potential pro-inflammatory effects of nanoparticles were studied by performing detailed time-course studies in naïve healthy mice. The finding that nanoparticles inhibit asthma also raised the possibility that a generalised nanoparticle-induced 'lung homeostatic state' may impair resolution of other lung inflammatory disease, such as those where a robust immune response

is required to eradicate infection. This possibility was investigated by examining the effect of non-toxic nanoparticles in the lung on influenza virus infection. Over the past twelve months murine studies have been undertaken to define parameters for particle-induced prevention of allergic airway inflammation in terms of optimal particle composition, chemistry and dose. Additional studies have been undertaken to investigate the longevity of the particle induced prevention of airway inflammation (also using murine models) and to investigate mechanisms for nanoparticle-induced lung resistance to airway inflammation.

## **Program 2 Advanced Diagnostics and Monitoring**

This program will develop diagnostic products and devices based on novel biochemical and physiological measures. It is made up of two sub-programs.

### **2.1 Functional Measurements (Woolcock Institute)**

*Project Leader: Professor Norbert Berend  
Deputy Leaders: A/Prof Greg King & Dr  
Cheryl Salome*

Airways disease is one of the most common diseases managed by general practitioners. Medical management decisions are often made on the basis of symptoms which are an unreliable guide to diagnosis and treatment. Existing objective tools such as spirometry are not user friendly, may give unreliable information about airway calibre, cannot be used in young children and are under-utilised. There are currently no tools available for the assessment of airway inflammation suitable for use in general practice. Consequently, management is suboptimal, misdiagnosis may occur and inaccurate assessment of treatment response can result in over- and under-treatment. The current research programs are exploring both clinical and technological applications of the

Frequency Oscillation (FOT) and Multiple Breath Nitrogen Washout (MBNW) techniques.

Two major clinical studies are underway to evaluate the clinical utility of FOT tests in predicting response to changes in treatment in asthma and the clinical utility of FOT in COPD for monitoring response to treatment and the early detection of exacerbations. Data collection for the asthma studies has been completed and the results are being written up. A paper on the predictors of asthma control has been accepted by the journal *Chest*. An abstract on the association between peripheral airway disease and asthma control has been submitted to the European Respiratory Society international conference.

The COPD studies are making steady progress. Recruitment for the Response to Combination Therapy Project will be completed by the end of 2011 and the analysis and write up will be completed by mid 2012. The Recovery from Exacerbations of COPD Project has been completed and the results have been presented at the annual scientific meeting of the Thoracic Society of Australia and New Zealand in Perth. They show that an index of expiratory flow limitation, measured by FOT, is a very sensitive marker of improvement during recovery from an exacerbation of COPD.

The study of the feasibility of using home FOT monitoring for early detection of exacerbations of COPD in high risk patients has made excellent progress. A simplified, robust device has been developed and bench tested and performs to standard. This has now been combined with new software which provides a user interface intended for patient home use. This system has been trialed under supervision in four elderly COPD patients and four age-matched controls. With minor modifications to the software, the subjects were able to use the device successfully. Studies to determine the feasibility of using this device for home monitoring, and to obtain repeatability data will now be undertaken. In these studies the FOT device will be set up in the homes of COPD patients for daily recordings of airway mechanics.



Substantial work has been undertaken on the design and implementation of novel quality control procedures for the FOT and MBNW tests as well as the automated quality control algorithm. The final stage of this project will entail the validation of the algorithm and the incorporation of this algorithm into the FOT software.

## **2.2 Markers of Airways Disease (University of Newcastle)**

*Project Leader: Professor Peter Gibson*

Advances in the understanding of asthma have emphasised the importance of airway inflammation in asthma and other airway diseases. There is now a need to bring tests of inflammation to the clinic to improve diagnosis, monitoring and management of these conditions. This project will enable improved therapy in airway disease as new markers are developed to better describe the nature of airway inflammation. New ways of diagnosing asthma are being developed as both point-of-care and laboratory based tests. New markers that may be developed into asthma diagnostics have been identified using a broad-based screening approach involving known pathways, immune transcriptome analysis and proteomics. This is a powerful approach made available by recent technological advances, and represents a highly novel application of these technologies. The targets discovered will be paired with appropriate test platforms to create novel asthma diagnostics which will be validated by direct study in the relevant patient populations.

Significant progress has been made in the discovery of new diagnostic biomarkers for asthma diagnosis and the development of a novel methodology to evaluate a diagnostic biomarker suite. The first major aim of this project was to identify a sub-set of proteins whose expression profiles can distinguish between healthy controls, asthmatics and COPD patients. The pilot studies on this diagnostic suite have been completed and the results have been validated in a clinically relevant cohort of

patients. The results of this work have been published in the prestigious American Journal of Respiratory and Critical Care Medicine and have been protected by patent applications.

The cross-sectional trial to validate the inflammatory biomarkers has made good progress in identifying the clinical value of biomarkers for identifying inflammatory phenotype. This has resulted in two different biomarker algorithms that could be used to assess inflammatory phenotype. A second validation study will be undertaken to confirm the usefulness of the marker set.

Biomarkers also have the potential to improve clinical outcomes by providing a more precise estimate of the degree of asthma control and predicting likely treatment response. The cross-sectional validation study of biomarkers for asthma control has successfully identified clinically valuable biomarkers. A second cross-sectional study is underway to further validate the markers in a different clinical population in order to confirm the diagnostic value of the biomarkers in the assessment of asthma activity. A longitudinal study of asthma control biomarkers has also commenced. Asthmatic patients have been recruited from shared patient recruitment sources in John Hunter Hospital.

## Program 3 Air Quality

The CRCAA's Air Quality program aims to assess the health consequences of adverse air quality. This program will develop and validate methodologies for quantifying exposure-response relationships and contribute to Australian health policy relevant to prevention of asthma and airways diseases.

### 3.1 Consequences of Adverse Air Quality (University of WA)

*Project Leader: Professor D'Arcy Holman*

*Deputy Leader: Dr Angus Cook*

Australians consistently rank air pollution as a major environmental concern. This program has been developed to generate a decrease in the rates of asthma and other airways disease which contribute significantly to Australia's illness and mortality burden. The program objectives provide a mutually reinforcing perspective of airway disease aetiology that ranges from small scale (i.e. household level) to large-scale (regional and national level). To address these knowledge gaps this program addresses three primary themes: Indoor Air Quality, Urban Emissions, and Regional Drivers of Airway Disease. These themes encompass the continuum of risk factors that must be conceptually integrated to identify causative pathways and hence appropriate interventions for asthma and other forms of airway disease. Inclusion of multiple and often interacting drivers of airway disease provide a necessary platform upon which environmental, health and infrastructure policy recommendations may be based.

The experimental work on the 'Indoor/outdoor study of air pollutants in Perth' has been completed. Air monitoring systems have been validated and refined. These include optimising the collection time and collection material for volatile organic compounds, and validating the real-time monitors for NO<sub>2</sub> and ozone (using Dept of Environment and Conservation

monitoring stations). Homes have been recruited for the winter and summer monitoring programs. The data generated by the study are being analysed and will be published in early 2012.

The final study on traffic related air pollution has been completed and published in the Medical Journal of Australia. Although the relationship between traffic related ambient air pollution and asthma has been established, the magnitude of the effect was yet to be adequately determined. This study found that the youngest age group, 0-4 years, is most susceptible to the effects of traffic-related ambient air pollution. Moreover the study indicated that the exposure that resulted in the emergency department presentation for asthma was most likely to occur one day prior to presentation. The effect sizes observed in this study were significantly higher than those of past studies.

The regional studies are also close to completion. The hospitalisation studies found that there is a large difference between the regions, with the more remote and arid areas in the north having higher asthma hospitalisation rates and Perth having the lowest. The study on mining activities in Western Australia found a relationship between residential proximity to mining activities and admissions for asthma in regional areas. However, the elevated rates associated with mining were only found in adults, suggesting that the observed spatial variability in asthma events in regional areas may be linked to occupational factors as opposed to more generalised environmental exposures. The final study on the health effects of mining related dust is progressing well and will be completed in early 2012.

### 3.2 Lane Cove Tunnel Health Impact Assessment (Woolcock Institute)

*Project Leader: Professor Guy Marks*

*Deputy Leader: Ms Christine Cowie*

In March 2007 a road tunnel linking the Gore Hill Freeway and Epping Road with the M2 Motorway was opened in Sydney. The tunnel



removed some traffic from surface roads that it bypassed. However, there were concerns among residents about potential adverse health effects due to changes in air quality attributable to the tunnel. Particular concern was focused on the ventilation stacks. A series of studies have been undertaken to establish whether various changes in air quality occurring between the year before the tunnel opened and after the tunnel opened have an influence on community health. In addition, a study was undertaken to establish whether any changes in respiratory health were attributable to the tunnel ventilation stacks after short-term exposure.

All field work for the study has been completed. The land use regression model which assigns NO<sub>2</sub> exposure to all study participants has been finalised as has the main study analysis of the Questionnaire and Diary study. The analysis of the Picnic Study (looking at acute exposures from the tunnel ventilation stacks) has also been completed. A series of manuscripts have been written and submitted to relevant journals for peer review. On completion of the peer review process these result will be presented to the NSW Department of Health and communicated to the community.

## Research Collaborations

The various research groups in the CRCAA have complementary skill sets and facilities in the areas of microarray technology, mouse modelling and access to rare human tissues and well defined patient populations. These capabilities are being combined with the commercially focused resources of the industry partners and the resources of state government departments to deliver user focused research outcomes.

The use of mouse models of the various manifestations of disease is a very important tool in airways research. The Newcastle group, recognised as one of the leaders in this area, has developed unique murine models of asthma and COPD. These models are being used by the University of Sydney team to confirm the outcomes of their in vitro studies. Collaboration is also being maintained with the immunologists working at the Monash node.

The diagnostic groups at the Woolcock Institute, the University of Newcastle and Monash University are collaborating closely on a range of projects. The Newcastle team has provided ongoing advice on a number of projects while the Woolcock and Monash teams are working closely on the FOT technology.

Pharmaxis has played an active role in the activities of the CRCAA and the company has developed close links with the diagnostic research groups in Sydney and Newcastle. This relationship is exemplified by the additional support that Pharmaxis has provided to the CRCAA. These funds have been targeted at two projects. The first project studied the use of the frequency oscillation technique in conjunction with mannitol bronchial challenges. The second project examined the utility of the challenges in differentiating asthma phenotypes. The results of these studies have provided Pharmaxis with additional information to support the development of the mannitol challenge market. Pharmaxis have also increased their level of funding to support additional diagnostic projects at the Woolcock node.

The Lane Cove Tunnel Project is a very close collaboration between researchers at the Woolcock Institute, the University of Sydney and the public health officers of the NSW Department of Health. This is a high profile activity with inflexible deadlines and the teams are working closely to deliver high quality outcomes on time. The UWA based air pollution researchers are also working closely with the West Australian Departments of Health and Environment on a range of urban and regional air pollution projects.

Strong collaborative links have developed between the Woolcock and Monash research teams working on the lung health of elderly. The research teams are currently working on two projects. The first project is a study on the effectiveness of the Asthma Needs Questionnaire that had previously been developed by the CRCAA. The second project is an epidemiological study to define normal respiratory function in Australians aged over 65.



## COMMERCIALISATION AND UTILISATION

### Strategies and Activities

The research program of the CRCAA covers a wide range of disciplines from immunology, genetics, pharmacology, physiology and epidemiology. All these programs are geared towards producing distinct commercial outcomes and, in the case of the epidemiological programs; the outputs will provide evidence for enhanced air pollution standards. The CRCAA has developed a robust commercialisation and utilisation strategy to ensure that the research outputs are adopted in the most effective fashion to maximise the industrial, commercial and economic contribution by the CRCAA. The CRCAA has pursued the following four-pronged strategy to optimise the adoption of its research outputs:

- Licensing IP to GlaxoSmithKline, which is a major multinational pharmaceutical company with a dominant position in the respiratory market
- Collaborating with and licensing IP to two Australian SME end users, Pharmaxis (an Australian biotech SME, developing respiratory diagnostics and therapeutics) and Bird Healthcare (an Australian respiratory device SME)
- Collaborating with and supporting key policy initiatives of the NSW and WA State Departments of Health and Environment
- Making the IP available to other commercial parties external to the CRCAA, if any of the current end-user partners do not exercise their option to licence the IP.

## Air Pollution

The NSW and WA government departments have been actively involved in the various air pollution studies and they have been provided with ongoing feedback as the projects have progressed. These studies are close to finalisation and they will provide valuable empirical data that will feed in to the development of new policies.

Over the past year the Perth based researchers have provided reports to the WA Department of Environment on the outcomes of the indoor air pollution and traffic pollution projects. The results of the mining dust projects will be provided to the department in early 2012.

The NSW Department of Health has been closely involved in the Lane Cove Tunnel project and they will be provided detailed reports by the end of 2011.

## Clinical

The clinical outputs of the diagnostics programs and studies on the asthma in the elderly have been published and presented at national and regional thoracic society meetings. These outputs will improve clinical practice and enhance the standard of care of patients with asthma.

## Drug Targets

The therapeutics research program has met all major targets and produced a number of unique drug targets. GSK has not been in a position to take up a licence for any of the targets. This is a disappointing outcome and can be attributed to changes in strategic direction and market developments. The CRCAA is still able to offer these targets to other companies. The IP portfolio has been carefully maintained and the value of individual patents has been enhanced by undertaking additional proof of concept studies. The option of setting up a spin out company to take these targets forward is also under active consideration.

## Respiratory Biomarkers

The asthma diagnostic biomarker group at Newcastle has identified and validated a set of proteomic biomarkers that provide excellent diagnostic power to differentiate between airways diseases. These findings were discussed with scientists at Pharmaxis who advised that additional validation studies would enhance the commercial attractiveness of this diagnostic test. These additional studies have been completed and the IP is now being offered for commercialisation.

## Intellectual Property Management

All intellectual property arising out of the research programs is owned by the CRCAA. Researchers and support staff that have access to CRCAA research are bound by confidentiality agreements that stipulate that all IP will vest in the name of the CRCAA. In addition there is a prohibition on the publishing of outcomes without the formal approval of the CEO.

All research projects are reviewed regularly by the CEO and program leaders to ensure that discoveries of commercial value are identified at an early stage. When these discoveries are identified prior art searches of the patent literature are undertaken to establish the patentability of the material. An assessment of the market potential is made and an appropriate patenting strategy is then put in place. The CRCAA also has a documented researcher reward policy to reward and encourage researchers for their participation in the commercialisation process. The Commercialisation Committee oversees the patenting strategies employed by the CRCAA and monitors all licensing activities.



Over the past year the CRCAA has continued to maintain and develop its patent portfolio. The tumstatin, miRNA, GM-CSF antibody, activin diagnostic, fibulin, nanoparticles and bahia grass patents are now moving through their national phases. The lamstatin and biomarker patents have moved into the PCT stage and a new provisional patent application has been filed to protect the GMCSF oligonucleotide IP.

The CRCAA maintains the following patent families:

### **Tumstatin**

Australian Patent No. 2007211846  
European Application No. 7710533.6  
USA Application No. 12/278266

### **miRNA Therapeutic Target**

Australian Patent No. 2008232316  
European Application No. 8714472.1  
USA Application No. 12/593066

### **GM-CSF**

Australian Patent No. 2008253608  
Australian Patent No. 2008323608  
USA Application No. 12/593066  
USA Application No. 12/472467  
European Application No. 8747994.5  
European Application No. 8850072.3  
Canadian Application No. 2687791  
Japanese Application No. 2010-5086671

### **Nanoparticles**

Australian Patent No. 2008314500  
USA Application No. 12/682548  
European Application No. 8800161.5

### **Bahia Allergen**

Australian Patent No. 2008316301  
USA Application No. 12/738618

### **Activin**

Australian Patent No. 2008209319  
USA Application No. 12/523506  
European Application No. 8700384.4

### **Fibulin**

Australian Patent No. 2008318288  
USA Application No. 12/740805  
European Application No. 8845278.4  
Japanese Application No. 2010-531377

### **Biomarkers**

PCT No. AU2011/000164

### **Lamstatin**

PCT Application No. AU2010/000710

### **GMCSF Oligonucleotide**

Aus Prov No. 2011900015

## Communication Strategy

Australian consumers and asthma patients are effectively served by the Asthma Foundations of Australia, the National Asthma Council and the Australian Lung Foundation and the CRCAA's communication strategy is designed not to duplicate the services provided by these organisations. The CRCAA works alongside these organisations by providing support at a research level. The CRCAA's communication strategy is therefore aimed at disseminating the findings and outcomes of its research programs to these organisations as well as other established professional networks in Australia.

In keeping with this policy, the CRCAA actively supports its researchers and students in presenting the outcomes of their research work at national and local professional meetings and conferences. During the last financial year over 50 presentations were delivered and abstracts presented. Highlights include the Thoracic Society of Australia and New Zealand Annual Scientific Meeting held in Perth in April 2011 which was attended by over 500 medical and scientific leaders, and the Australian Society of Immunology held in Perth in December 2010 which attracted over 400 delegates.

The CRCAA also made significant contributions in the international sphere. In the last financial year CRCAA researchers delivered over 30 presentations at major international conferences. These include the American Thoracic Society held in Denver in May 2011, European Respiratory Society held in Barcelona in September 2010 and the Asian Pacific Society of Respiriology held in Manila, Philippines in November 2010.

Highlights of the year included the publication of Prof Peter Gibson's respiratory biomarker work in the American Journal of Respiratory and Critical Care Medicine. This ground breaking work on the use of blood based biomarkers to diagnose asthma and COPD received wide coverage in both the national and international press. Another highlight was the publication of the results of the Perth road traffic air pollution studies. Amongst other issues these results indicated the negative effect of traffic air pollution on the lung health of children. This finding received wide coverage in the press and provided valuable input into the development of planning policies regarding the positioning of homes and schools near major roads.

## Awards

Professor Charles Mackay has been awarded the 30th annual GlaxoSmithKline Australia Award for Research Excellence for research which found a possible link between diet and inflammatory diseases such as asthma. The award is one of Australia's most prestigious and longest-running medical research awards celebrating the best scientists and their work in Australia with potential to improving human health.



## EDUCATION AND TRAINING

### **Asthma in the Older Person**

*Project Leaders: Professor Christine Jenkins  
A/Prof Jo Douglass  
Professor Michael Abramson*

Ageing well and ageing productively is a National Research Priority. Respiratory disease is the third most common reason for a general practice consultation in people over 65 years. In Australia, despite substantial public investment and improvement in overall mortality, people older than 65 constitute 64% of those dying of asthma. Over half a million Australians suffer from Chronic Obstructive Pulmonary Disease (COPD), and this burden will increase with our ageing population. Respiratory function in older age groups is very poorly understood with resulting poor precision of the diagnosis of respiratory disease in older age-groups. The aims of this program are to develop and disseminate new community education programs tailored

to the specific requirements of older people with asthma and to develop clinical tools for assessing and enhancing patient adherence to recommended treatments.

A qualitative study was conducted on older people previously diagnosed with asthma. The major finding of this work was that older people with a long personal history of asthma adhered to management practices learned during the time of their illness onset. Thus they were often reluctant to take medication and relied on self-control and commonsense asthma management strategies to manage their symptoms. In addition, many patients were strongly concerned and affected by medication side effects, directly affecting medication adherence. The results of this work were used to devise Patient Asthma Concerns Tool (PACT) to be self-administered by older people with airways disease. The clinical utility of PACT is currently being validated in a randomised control trial that has been carried

out by researchers at Monash University and the Woolcock Institute. The clinical aspects of this work have been completed and the results will be available by the end of 2011.

The CRCAA has commissioned an additional epidemiological study to define normal respiratory function in Australians aged over 65. The study will provide normal values for use in calculation of spirometry, gas transfer and static lung volume measurements and determine the prevalence of respiratory symptoms and abnormal lung function in this age group. Overall, this study will provide an internationally robust framework to assess lung health and disease in older Australians. The findings will inform health policy and the planning of health care services. The study will also demonstrate the utility of the forced oscillation technique in this age group and obtain normative data for future clinical applications. The first phase has been completed and the data has been presented to the Thoracic Society of Australia and New Zealand in April 2011. The second phase of the study will be completed in 2012.

## Postgraduate Students

Postgraduate scholars are involved with the CRCAA through direct participation in CRCAA research projects, or through a CRCAA PhD scholarship. The CRCAA offers supplementary scholarships to suitably qualified candidates as assessed by a selection committee nominated by the Education Committee. CRCAA scholars receive travel assistance to attend national and international conferences for presentation of their work. They are also encouraged to visit research laboratories where they can further develop their technical skills.

The scholarship scheme is highly competitive with a very high standard of excellent applications received each year. There are currently sixteen postgraduate students being supported by substantial scholarships from the CRCAA, with an additional two students supported via research project funding.

As it will not be possible for the CRCAA to award additional PhD scholarships before ceasing operations in July 2012, a number of Asthma CRC Travelling Scholarships will be awarded in the 2011/2012 financial year. These scholarships will assist CRC PhD students and junior scientists to participate in international conferences and/or visit major research laboratories. Up to eight \$4,000 scholarships will be awarded with one being allocated to each research node. To be eligible recipients must be current CRCAA scholarship holders or in the case of junior researchers, be working on CRCAA projects.

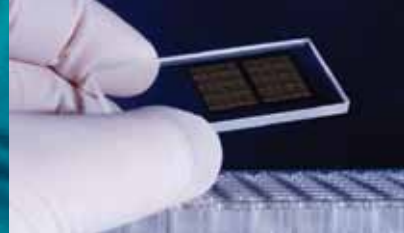


Student	Research Topic	Institute enrolled	Supervisors (& organisation)	Date Commenced	Source of Funding
Ms Kendle Maslowski	The role of novel GPCRs in the innate immune system	Garvan	Prof Charles Mackay (Garvan)	Feb 2008	CRCAA NHMRC
Mr Gavin Pereira	Illness profiles in children exposed to vehicle emissions	UWA	Dr Angus Cook (UWA)	Feb 2008	APA CRCAA
Mr Maximilian Plank	miRNA profiling of lung tissue, macrophages and Tcells during primary and secondary infection with viruses or bacteria	Newcastle	Prof Paul Foster (Newcastle) A/Prof Phil Hansbro (Newcastle)	Feb 2008	CRCAA
Ms Jeanne LeMasurier	Characterisation of ultra-fine nanoparticles which inhibit experimental asthma	Monash	Prof Robyn O'Hehir (Monash) Prof Magdalena Plebanski (Monash) A/Prof Jennifer Rolland (Monash) Dr Charles Hardy (Monash)	Mar 2008	CRCAA
Mr Malcolm Starkey	Early life chlamydial infections and asthma	Newcastle	A/Prof Phil Hansbro (Newcastle) Prof Paul Foster (Newcastle)	July 2008	CRCAA APA
Ms Li Ping Chung	Pharmacogenetics of severe asthma	UWA	Prof Phil Thompson (UWA)	July 2008	CRCAA UWA
Ms Jessica Kermodé	The effect of airway wall properties on airway hyper-responsiveness in respiratory disease	Woolcock	Dr Cheryl Salome (Woolcock) Dr Greg King (Woolcock) Prof Norbert Berend (Woolcock)	Feb 2008	CRCAA UPA
Ms Doris Shim	Suppressor of cytokine signalling and their role in allergic airway inflammation	Garvan	Prof Charles Mackay (Garvan) A/Prof William Sewell (Garvan)	Feb 2008	CRCAA APA
Mr Louis Tsai	Novel mechanisms for the control of B cell differentiation and function	Garvan	Prof Charles Mackay (Garvan)	Feb 2008	CRCAA
Dr Claude Farah	Predicting the response to changes in combination therapy in asthmatics	Woolcock	Dr Cheryl Salome (Woolcock) Prof Norbert Berend (Woolcock)	Feb 2009	CRCAA APA
Mr Patrick Ng	Molecular Pathogenesis of Chronic Respiratory Diseases	USYD	Prof Judy Black (USYD) Dr Lyn Moir (USYD) Dr Markus Weckman (USYD)	July 2009	CRCAA LARA
Ms Rohimah Mohamud	The effect of particles on regulatory T cells in lungs: implication for asthma development and immunotherapy	Monash	Prof Magda Plebanski (Monash) Dr Charles Hardy (Monash) Prof Robyn O'Hehir (Monash) Prof Jenny Rolland (Monash)	Feb 2009	CRCAA MOHE USM
Dr Sophie Timmins	Assessment of the clinical utility of the Forced Oscillation Technique in COPD	Woolcock	A/Prof Greg King (Woolcock)	Mar 2009	CRCAA ALF

Student	Research Topic	Institute enrolled	Supervisors (& organisation)	Date Commenced	Source of Funding
Mr Hock Luck Tay	Characterising the role of miRNAs during bacteria infection in lung	Newcastle	Prof Paul Foster (Newcastle)	Feb 2009	CRCAA UNRS UNIPRS
Ms Jingjing Li	Respiratory innate immune factors regulate steroid-resistant airway hyperreactivity and asthma	Newcastle	Dr Ming Yang (Newcastle) Prof Paul Foster (Newcastle)	Feb 2010	CRCAA UNIPRS UNRS
Mr Luke Hatchwell	Role of microRNAs in response to Rhinovirus infection in allergic airways disease	Newcastle	A/Prof Joerg Mattes (Newcastle) Prof Paul Foster (Newcastle)	Mar 2010	CRCAA APA

## Abbreviations

ALF	Australian Lung Foundation	UNIPRS	University of Newcastle International Postgraduate Research Scholarship
APA	Australian Postgraduate Award	UNRS	University of Newcastle Research Scholarship
CRCAA	CRC for Asthma and Airways	USYD	University of Sydney
MOHE	Ministry of Higher Education (Malaysia)	UWA	University of Western Australia
NHMRC	National Health & Medical Research Council	Woolcock	Woolcock Institute of Medical Research



In the 2010/2011 financial year, 43 papers relating to the Centre's activities were published in refereed journals. CRCOA staff were also invited to contribute review articles in a number of relevant journals. In addition, numerous articles were published as proceedings from International and National conferences.

## Refereed Journal Articles

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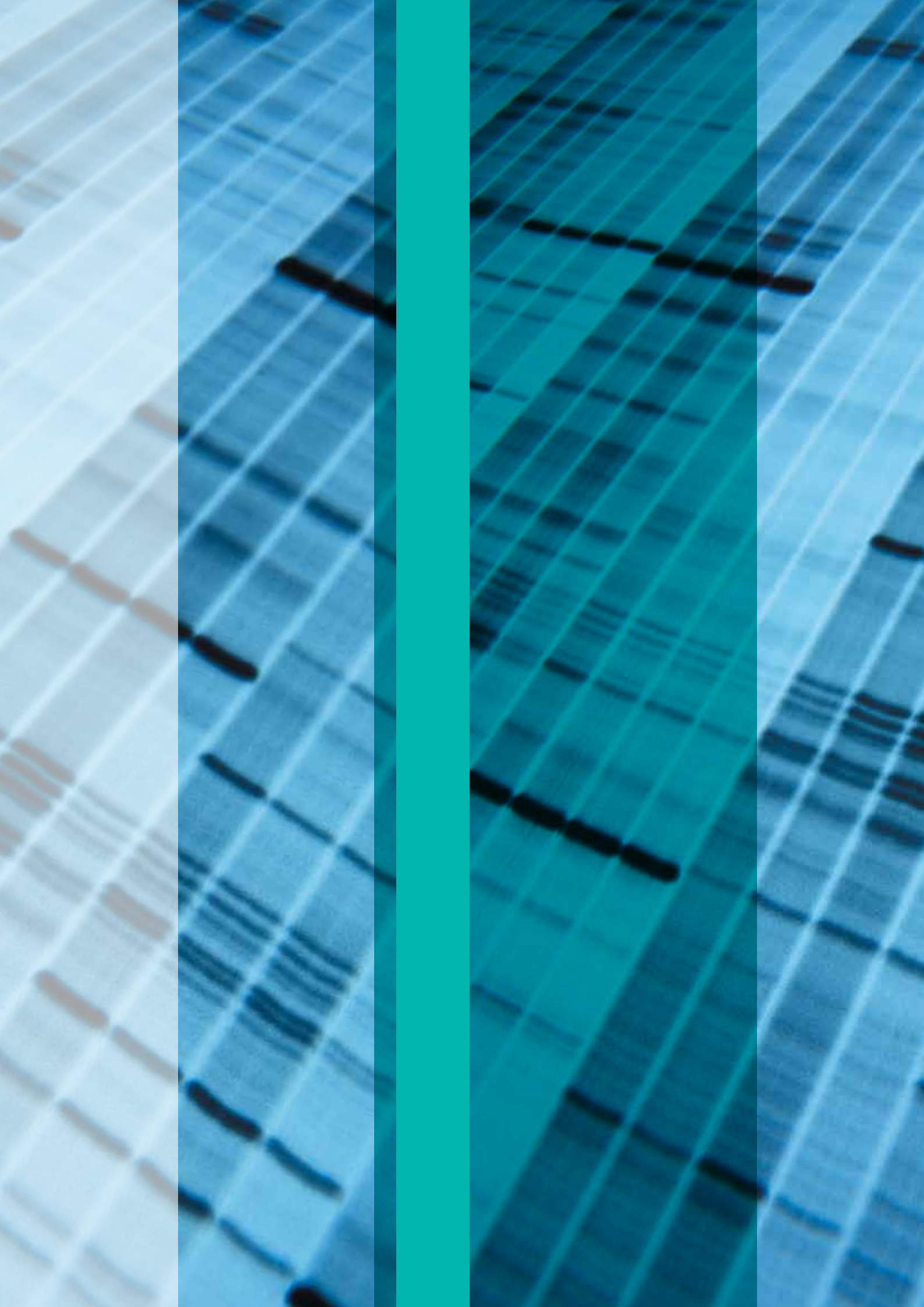
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## FINANCIAL STATEMENTS

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# DIRECTORS' REPORT

for the financial year ended 30 June 2011

The directors of CRC for Asthma and Airways Limited submit herewith the annual financial report of the company for the financial year ended 30 June 2011. In order to comply with the provisions of the Corporations Act 2001, the directors report as follows:

## Information about the directors and senior management

The names and particulars of the directors of the company during or since the end of the financial year are:

### **Dr Arthur Emmett, MB, BS**

**(Resigned as Chairman 30th November, 2010)**

Dr Emmett, the Chairman of the Board to the 30th November, 2010, has over thirty years of experience in the pharmaceutical industry. For seven years from 1971 he was Medical Director of the Australian affiliates of G.D. Searle, Parke Davis and W.S. Merrell. Dr Emmett spent the next 20 years with Ciba Geigy Pharmaceuticals where he held a variety of senior roles responsible for business strategy and development. In 1989 he was appointed Senior Vice-President, Medical and Public Affairs based in the US and, in 1994, he was appointed President and Vice-Chairman of the Board of Beijing Ciba Geigy Pharma Ltd. Dr Emmett is a member of the Remuneration Committee and the Audit Committee of the CRC for Asthma and Airways.

### **Mr Mervyn Michell**

**(Appointed Chairman 1st December 2010)**

Mr Michell has a long career within the Australian pharmaceutical industry during which he was Deputy Managing Director and Director of the Pharmaceutical Division of Astra Australia, Chairman of the Board of the peak industry body, APMA, (now Medicines Australia) from 1995 to 1997 and Chairman of the Board of SBPA Pharmaceuticals. He was also a Board member of Bayer Australia Ltd and General Manager of the pharmaceutical and diagnostic businesses of Bayer Australasia. He was responsible for the strategic management and direction of the Bayer Healthcare businesses within Australia and New Zealand from 1994 to 2001. Mr Michell is now retired but continues to undertake consulting tasks within the industry. Mr Michell is a member of the Remuneration Committee and the Audit Committee of the CRC for Asthma and Airways.

### **Professor Carol Armour, B. Pharm (Hons), PhD**

Professor Armour has worked in the area of asthma research at a basic scientific and clinical level. Her investigations span the breadth of asthma research from the cellular mechanisms to the translation of new ways to treat asthma within the health system. She chairs the National Asthma Monitoring Advisory Committee, is on the Australian Respiratory Council and the National Asthma Council, and has worked on the National Therapeutic Guidelines and the Australian Medicines Handbook. From 2003 - 2006 she was a member of the NH MRC Research Committee and was the Chair of the Training Awards Committee. She was Pro-Vice Chancellor, Research, at the University of Sydney, from 2006-2009. In 2005 she was made a Fellow of the Pharmaceutical Society for her services to the profession, and she was awarded the Australasian Pharmaceutical Science Association (APSA) medal for research in 2007. She is currently an Associate Dean in the Faculty of Medicine and a Professor of Pharmacology.

### **Mr Philip Bert, BSc (Hons), MBA**

Mr Bert, the Chief Executive Officer, has over twenty five years experience in the medical devices and pharmaceutical industry. Before taking up his present position he was the Managing Director of Australian Hearing for six years. Prior to this he held a number of senior management positions at Kendall Australasia and Baxter Healthcare both in Australia and overseas.

## **Professor Michael Calford, BSc (Hons), PhD**

Professor Mike Calford is the Deputy Vice-Chancellor (Research) of the University of Newcastle, with responsibility for the management of the University's research and intellectual property, research training and strategic research planning. He is a member of the University's Executive Committee, chairs the Singapore Advisory Committee and is also Professor of Human Physiology. Professor Calford is an internationally recognised Neuroscientist who heads a group funded by an NHMRC Program Grant to examine pre-clinical models of ischemic stroke therapy. Professor Calford came to the University of Newcastle in 2000, and was the Pro Vice-Chancellor of the Faculty of Health from 2006 until 2009. Prior to moving to the University of Newcastle, he held research academic appointments at the University of Melbourne, City University of New York, Oxford, the University of Queensland, the University of California at Irvine, and the Australian National University.

## **Professor Ashley R Dunn, PhD, MPhil, FAA**

Professor Dunn did his PhD at the University of Birmingham in the UK before undertaking post-doctoral studies at Cold Spring Harbor Laboratory in New York and the European Molecular Biology Lab in Heidelberg, Germany. Professor Dunn came to Australia in 1982 as Head of Molecular Biology at the Ludwig Institute for Cancer Research in Melbourne and was appointed Associate Director in 1987. In 1996 he was elected as a Fellow of the Australian Academy of Science. For the last 4 years, Professor Dunn has served as a scientific advisor for a number of biotechnology companies in Australia, New Zealand and New York. Professor Dunn is the Chairman of the Scientific Committee of the CRC for Asthma and Airways.

## **Dr Ashley Bates, B.Sc (Hons) Ph.D. MRACI C Chem**

**(Resigned 6th July 2011)**

Dr Bates has been working in the pharmaceutical industry for approximately 20 years. During this time he has held positions in the UK, USA and Australia. He joined Glaxo Wellcome Australia in 1998 and has held several positions including Head of Pharmaceutical Development and, most recently, Head of R&D Alliances. In his current role he is responsible for the ongoing management and future development of GlaxoSmithKline's collaborative research efforts in Australia, which include over 20 projects with research institutions and biotechnology companies across the country.

## **Professor Lou Landau, AO, MD, FRACP**

Professor Landau is a Paediatric Respiratory Physician and has worked at the Royal Children's Hospital in Melbourne and the UWA Department of Paediatrics at Princess Margaret Hospital for Children in Perth where he is Emeritus Professor of Paediatrics. He was Director of the Clinical Research Division from 2004 to 2009. He was Executive Dean of the Faculty of Medicine and Dentistry from 1996 to 2004. He is currently the Principal Medical Advisor, Medical Workforce, WA Department of Health and Chair of the Postgraduate Medical Council, WA Department of Health. He has been Chairman of the Telethon Institute for Child Health Research and the WA Institute for Medical Research. He has served on committees of the NHMRC and the Australian Medical Council. He was awarded the Order of Australia for his contribution to paediatrics and respiratory medicine in 1996.

## **Dr George Moore, PhD, MSc, BSc (Hons)**

Dr Moore has recently retired after an industry career of over 28 years in Astra and AstraZeneca. His roles included Director of a joint Global Development and Marketing Group for metoprolol in Sweden, Deputy Vice-President Corporate Strategy in London and Executive Director Development and Medical Affairs in Japan. Dr Moore is currently a member of the Business Development Advisory Council, Garvan Institute of Medical Research and the Scientific Advisory Board, Eskitis Institute for Cell and Molecular Therapies, Griffith University. He is a member of the Commercialisation Committee of the CRC for Asthma and Airways.

## **Ms Julie Phillips, BPharm, MSc, MBA**

Ms Phillips has experience as CEO and director of start-up Australian biotechnology companies operating in the life science sector. At CEO level she has been responsible for a range of corporate activities. Her technical background in clinical trials, regulatory affairs and pharmacoeconomic assessment/pricing of therapeutics was gained in multinational pharmaceutical companies. She is currently CEO and director of BioDiem Ltd, and serves as a director of some other Australian early stage technology companies. Ms Phillips is the Chairman of the Audit Committee of the CRC for Asthma and Airways Limited.

## **Prof Gail Risbridger, PhD, MSc, BSc (Hons)**

Professor Gail Risbridger is an NH&MRC Fellow at Monash University, Head of the Prostate & Breast Cancer Research Program and Deputy Dean – Special Projects, Faculty Medicine, Nursing and Health Science. She is one of Australia's leading prostate cancer researchers and has over 20 years experience in academic research in endocrinology and andrology. She is a member of the Executive Committee of Management of Andrology Australia and Co-Chair of Freemasons Foundation Centre for Men's Health and serves on numerous national and international advisory and editorial boards of Government and professional organisations. Professor Risbridger is a Fulbright Senior Scholar.

## **Company Secretary**

### **Mr Paul Breeze, BEc, MBA, FCPA, FCIS, FAICD**

Mr Breeze is the Business Manager and Company Secretary of the CRC for Asthma and Airways Limited and he is also the Company Secretary of the Woolcock Institute of Medical Research.

The above named officers held office during and since the year end of the financial year except where indicated.

## **Principal activities**

The company is a company limited by guarantee which commenced operations on 1 October, 1999 with the principal objective of operating as a non-profit scientific institution to create a centre of excellence in the areas of asthma research, education and training. On 3 August 2005 the company entered into an agreement with the Commonwealth of Australia and a number of other parties. This agreement provides funding for the operation of the company for the seven year period ending 30 June 2012.

## **Review of operations**

The activities of the company for the year ended 30 June 2011 were in establishing and promoting cooperative research and educational programmes focusing on asthma prevention, treatment and diagnosis, in order to reduce the burden of asthma on the Australian community. The deficit from operations for the financial year amounted to \$231,681 (2010: deficit of \$205,645).

## Changes in state of affairs

There was no significant change in the state of affairs of the entity during the financial year.

## Subsequent events

A new application was lodged for the continuation of the CRC beyond June 2012. However, this application was not successful and therefore funding will cease after this date. The directors believe the company will be able to pay its debts as and when they fall due at least until the end of October 2012.

Other than the above, there has not been any matter or circumstance occurring subsequent to the end of the financial year that has significantly affected, or may significantly affect, the operations of the entity, the results of those operations, or the state of affairs of the entity in future financial years.

## Future developments

Disclosure of information regarding likely developments in the operations of the entity in future financial years and the expected results of those operations is likely to result in unreasonable prejudice to the entity. Accordingly, this information has not been disclosed in this report.

## Dividends

Under the terms of the company's constitution it is not entitled to pay dividends.

## Indemnification of officers and auditors

During the financial year, the company paid a premium in respect of a contract insuring the directors of the company (as named above), the company secretary, Paul Breeze, and all executive officers of the company and of any related body corporate against a liability incurred as such a director, secretary or executive officer to the extent permitted by the Corporations Act 2001. The contract of insurance prohibits disclosure of the nature of the liability and the amount of the premium.

The company has not otherwise, during or since the end of the financial year, except to the extent permitted by law, indemnified or agreed to indemnify an officer or auditor of the company or of any related body corporate against a liability incurred as such an officer or auditor.

## Directors' meetings

The following table sets out the number of directors' meetings (including meetings of committees of directors) held during the financial year and the number of meetings attended by each director (while they were a director or committee member). During the financial year, 4 board meetings, 1 remuneration committee meeting and 1 audit committee meetings were held.

Directors	Board of directors		Remuneration committee		Audit committee	
	Eligible to Attend	Attended	Eligible to Attend	Attended	Eligible to Attend	Attended
Dr Arthur Emmett	4	4	1	1	1	1
Mr Philip Bert	4	4	-	-	-	-
Professor Michael Calford (Alt to 31st December, 2010)	2	2	-	-	-	-
Professor Carol Armour (Alt from 1st January, 2011)	2	2	-	-	-	-
Professor Ashley Dunn	4	4	-	-	-	-
Dr Ashley Bates	4	2	-	-	-	-
Professor Lou Landau (Alt from 1st January, 2011)	3	2	-	-	-	-
Professor Gail Risbridger (Alt to 31st December, 2010)	3	1	-	-	-	-
Dr George Moore	4	4	-	-	-	-
Mr Mervyn Mitchell	4	4	1	1	1	1
Ms Julie Phillips	4	4	-	-	1	1

## Auditor's independence declaration

The auditor's independence declaration is included on page 35 of the annual report.

This directors' report is signed in accordance with a resolution of directors made pursuant to s.298 (2) of the Corporations Act 2001.

On behalf of the Directors



Mr Philip Bert

Sydney, 17th October 2011.

# Deloitte

Deloitte Touche Tohmatsu  
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The Board of Directors  
CRC for Asthma and Airways Ltd  
Level 3,  
431 Glebe Point Road,  
Glebe, NSW 2037.

**2011**

Dear Board Members

**CRC for Asthma and Airways Limited**

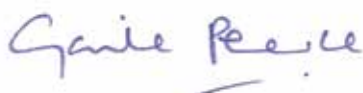
In accordance with section 307C of the Corporations Act 2001, I am pleased to provide the following declaration of independence to the directors of CRC for Asthma and Airways Limited.

As lead audit partner for the audit of the financial statements of CRC for Asthma and Airways Limited for the financial year ended 30 June 2011 I declare that to the best of my knowledge and belief, there have been no contraventions of:

- (i) the auditor independence requirements of the Corporations Act 2001 in relation to the audit; and
- (ii) any applicable code of professional conduct in relation to the audit.



DELOITTE TOUCHE TOHMATSU



Gaile Pearce  
Partner  
Chartered Accountants

Sydney, 17th October 2011.

# INDEPENDENT AUDITOR'S REPORT

to the members of CRC for Asthma and Airways Limited

# Deloitte

Deloitte Touche Tohmatsu  
ABN 74 490 121 060

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We have audited the accompanying financial report of CRC for Asthma and Airways Limited, which comprises the statement of financial position as at 30 June 2011, and the statement of comprehensive income, statement of cash flows and statement of changes in equity for the year ended on that date, notes comprising a summary of significant accounting policies and other explanatory information, and the directors' declaration as set out on pages 38 to 53.

## **Directors' Responsibility for the Financial Report**

The directors of the company are responsible for the preparation and fair presentation of the financial report in accordance with Australian Accounting Standards (including the Australian Accounting Interpretations) and the *Corporations Act 2001* and for such internal control as the directors determine is necessary to enable the preparation of the financial report that is free from material misstatement, whether due to fraud or error.

## **Auditor's Responsibility**

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. Those standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of the financial report that gives a true and fair view, in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the directors, as well as evaluating the overall presentation of the financial report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

to the members of CRC for Asthma and Airways Limited

## Auditor's Independence Declaration

In conducting our audit, we have complied with the independence requirements of the *Corporations Act 2001*. We confirm that the independence declaration required by the *Corporations Act 2001*, which has been given to the directors of CRC for Asthma and Airways Limited, would be in the same terms if given to the directors as at the time of the auditor's report.

## Auditor's Opinion

In our opinion, the financial report of CRC for Asthma and Airways Limited is in accordance with the *Corporations Act 2001*, including:

- (i) giving a true and fair view of the company's financial position as at 30 June 2011 and of its performance for the year ended on that date; and
- (ii) complying with Australian Accounting Standards (including the Australian Accounting Interpretations) and the *Corporations Regulations 2001*.



DELOITTE TOUCHE TOHMATSU



Gaile Pearce  
Partner  
Chartered Accountants

Sydney, 17th October 2011.

# DIRECTORS' DECLARATION

The directors declare that:

- (a) in the directors' opinion, there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable;
- (b) in the directors' opinion, the attached financial statements and notes thereto are in accordance with the *Corporations Act 2001*, including compliance with accounting standards and giving a true and fair view of the financial position and performance of the company.

Signed in accordance with a resolution of the directors made pursuant to s.295(5) of the *Corporations Act 2001*.

On behalf of the Directors

A handwritten signature in black ink, appearing to read 'P. Bert', with a long, sweeping underline that extends to the right.

Mr Philip Bert

Sydney, 17th October 2011.

# STATEMENT OF COMPREHENSIVE INCOME

for the financial year ended 30 June 2011

	Note	2011 \$	2010 \$
Revenue	4	7,503,077	8,517,737
Research expense		(6,018,963)	(6,900,995)
Administration expense		(868,312)	(708,747)
Commercialisation expense		(337,115)	(535,738)
Education expenses		(510,368)	(577,902)
Deficit before income tax expense	4	(231,681)	(205,645)
Income tax expense		-	-
<b>Deficit for the year</b>		(231,681)	(205,645)
<b>Other comprehensive income</b>		-	-
<b>Total comprehensive income for the year</b>		(231,681)	(205,645)

# STATEMENT OF FINANCIAL POSITION

as at 30 June 2011

	Note	2011 \$	2010 \$
<b>Current assets</b>			
Cash and cash equivalents	12(a)	3,008,092	3,034,928
Trade and other receivables	5	16,500	-
Other assets	7	18,227	8,253
<b>Total current assets</b>		3,042,819	3,043,181
<b>Non-current assets</b>			
Property, plant and equipment	6	-	-
<b>Total non-current assets</b>		-	-
<b>Total assets</b>		3,042,819	3,043,181
<b>Current liabilities</b>			
Trade and other payables	8	1,809,891	1,597,328
Provisions	9	85,369	70,078
<b>Total current liabilities</b>		1,895,260	1,667,406
<b>Non-current liabilities</b>			
Provisions	9	82,507	79,042
<b>Total non-current liabilities</b>		82,507	79,042
<b>Total liabilities</b>		1,977,767	1,746,448
<b>Net assets</b>		1,065,052	1,296,733
<b>Equity</b>			
Retained surplus	11	1,065,052	1,296,733
<b>Total equity</b>		1,065,052	1,296,733

# STATEMENT OF CHANGES IN EQUITY

for the financial year ended 30 June 2011

	Note	Retained surplus \$	Total \$
Balance at 1 July 2009		1,502,378	1,502,378
Deficit for the year	11	(205,645)	(205,645)
<b>Balance at 30 June 2010</b>		1,296,733	1,296,733
Balance at 1 July 2010		1,296,733	1,296,733
Deficit for the year	11	(231,681)	(231,681)
<b>Balance at 30 June 2011</b>		1,065,052	1,065,052

# STATEMENT OF CASH FLOWS

for the financial year ended 30 June 2011

	Note	2011 \$	2010 \$
<b>Cash flows from operating activities</b>			
Receipts from customers		5,318,500	6,181,569
Payments to suppliers and employees		(5,481,079)	(6,449,556)
Interest income received		135,743	117,116
Net cash used in operating activities	12(b)	(26,836)	(150,871)
<b>Net decrease in cash and cash equivalents</b>		(26,836)	(150,871)
<b>Cash and cash equivalents at the beginning of the financial year</b>		3,034,928	3,185,799
<b>Cash and cash equivalents at the end of the financial year</b>	12(a)	3,008,092	3,034,928

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 1. General information

CRC for Asthma and Airways Limited (the company) is a public company limited by guarantee, incorporated and operating in Australia.

CRC for Asthma and Airways Limited's registered office and its principal place of business are as follows:

### Registered office and principal place of business

Level 3,  
431 Glebe Point Road,  
Glebe, NSW 2037

The entity's principal activity is to operate as a non-profit scientific institution to create a centre of excellence in the areas of asthma research, education and training.

## 2. Significant accounting policies

### Statement of compliance

These financial statements are general purpose financial statements which has been prepared in accordance with the Corporations Act 2001, Accounting Standards and Interpretations, and complies with other requirements of the law.

Accounting Standards include Australian equivalents to International Financial Reporting Standards ('A-IFRS'). A statement of compliance with IFRS cannot be made due to the application of not for profit sector specific requirements contained in A-IFRS.

The financial statements were authorised for issue by the directors on 17th October 2011.

### Basis of preparation

The financial report has been prepared on the basis of historical cost, except for certain non-current assets and financial instruments that are measured at revalued amounts or fair values, as explained in the accounting policies below. Historical cost is generally based on the fair values of the consideration given in exchange for assets. All amounts are presented in Australian dollars, unless otherwise noted.

### Critical accounting judgements and key sources of estimation uncertainty

In the application of the company's accounting policies, management is required to make judgements, estimates and assumptions about carrying values of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised if the revision affects only that period, or in the period of the revision and future periods if the revision affects both current and future periods.

### Adoption of new and revised Accounting Standards

In the current year, the company has adopted all of the new and revised Standards and Interpretations issued by the Australian Accounting Standards Board (the AASB) that are relevant to its operations and effective for the current annual reporting period.

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 2. Significant accounting policies (continued)

### Significant accounting policies

The following significant accounting policies have been adopted in the preparation and presentation of the financial report:

#### (a) Goods and services tax (GST)

Revenues, expenses and assets are recognised net of the amount of goods and services tax (GST), except:

- i. where the amount of GST incurred is not recoverable from the taxation authority, it is recognised as part of the cost of acquisition of an asset or as part of an item of expense; or
- ii. for receivables and payables which are recognised inclusive of GST.

The net amount of GST recoverable from, or payable to, the taxation authority is included as part of receivables or payables.

Cash flows are included in the statement of cash flows on a gross basis. The GST component of cash flows arising from investing and financing activities which is recoverable from, or payable to, the taxation authority is classified within operating cash flows.

#### (b) Revenue

Revenue is measured at the fair value of the consideration received or receivable.

##### Cash contributions

Cash contributions from the Commonwealth Government and Partners of the company during the financial year represent the cash component of annual contributions in accordance with the Commonwealth Agreement.

##### In-kind contributions

In-kind contributions from Partners are brought to account as revenue received and expenditure incurred in accordance with AASB 1004. In-kind contributions have been valued on the basis of pre-agreed formulae as defined in the Commonwealth Agreement.

##### Interest income

Interest revenue is accrued on a time basis, by reference to the principal outstanding and at the effective interest rate applicable, which is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset to that asset's net carrying amount.

#### (c) Income tax

The company is exempt from income tax under Item 50-B of the Income Tax Act 1997, as a non-profit institution.

#### (d) Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, cash in banks and investments in money market instruments, net of outstanding bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities in the statement of financial position.

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 2. Significant accounting policies (continued)

### (e) Financial assets

Other financial assets are classified as loans and receivables. The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition.

#### Effective interest method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis for debt instruments.

#### Loans and receivables

Trade receivables, loans, and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortised cost using the effective interest method less impairment.

Interest income is recognised by applying the effective interest rate.

#### Impairment of financial assets

Financial assets are assessed for indicators of impairment at each statement of financial position date. Financial assets are impaired where there is objective evidence that as a result of one or more events that occurred after the initial recognition of the financial asset the estimated future cash flows of the investment have been impacted.

For financial assets carried at amortised cost, the amount of the impairment is the difference between the asset's carrying amount and the present value of estimated future cash flows, discounted at the original effective interest rate.

The carrying amount of the financial asset is reduced by the impairment loss directly for all financial assets with the exception of trade receivables where the carrying amount is reduced through the use of an allowance account. When a trade receivable is uncollectible, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited against the allowance account. Changes in the carrying amount of the allowance account are recognised in profit or loss.

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, the previously recognised impairment loss is reversed through profit or loss to the extent the carrying amount of the investment at the date the impairment is reversed does not exceed what the amortised cost would have been had the impairment not been recognised.

### (f) Property, plant and equipment

Depreciation is provided on property, plant and equipment. Depreciation is calculated on a straight-line basis so as to write off the net cost or other revalued amount of each asset over its expected useful life.

The following useful lives are used in the calculation of depreciation:

Computer equipment	2 years
Laboratory equipment	5 years
Furniture and fittings	7 years

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 2. Significant accounting policies (continued)

### (g) Impairment of long-lived assets excluding goodwill

At each reporting date, the company reviews the carrying amounts of its assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where the asset does not generate cash flows that are independent from other assets, the company estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised immediately in profit or loss, unless the relevant asset is carried at revalued amount, in which case the impairment loss is treated as a revaluation decrease.

Where an impairment loss subsequently reverses, the carrying amount of the asset (cash-generating unit) is increased to the revised estimate of its recoverable amount, but only to the extent that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset (cash-generating unit) in prior years. A reversal of an impairment loss is recognised immediately in profit or loss, unless the relevant asset is carried at fair value, in which case the reversal of the impairment loss is treated as a revaluation increase.

### (h) Employee benefits

A liability is recognised for benefits accruing to employees in respect of wages and salaries, annual leave, long service leave, and sick leave when it is probable that settlement will be required and they are capable of being measured reliably.

Liabilities recognised in respect of employee benefits expected to be settled within 12 months, are measured at their nominal values using the remuneration rate expected to apply at the time of settlement.

Liabilities recognised in respect of employee benefits which are not expected to be settled within 12 months are measured as the present value of the estimated future cash outflows to be made by the Company in respect of services provided by employees up to reporting date.

#### **Defined contribution plans**

Contributions to defined contribution superannuation plans are expensed when incurred.

### (i) Financial instruments issued by the company

Financial liabilities are classified as other financial liabilities.

#### **Other financial liabilities**

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs.

Other financial liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 2. Significant accounting policies (continued)

### (i) Financial instruments issued by the company (continued)

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

### (j) Intellectual property

The company expenses all costs associated with intellectual property in the year incurred. No intellectual property is capitalised in the statement of financial position.

### (k) Standards and Interpretations issued not yet effective

At the date of authorisation of the financial report, the Standards and Interpretations listed below were in issue but not yet effective.

Initial application of the following Standard will not affect any of the amounts recognised in the financial report, but will change the disclosures presently made in relation to the company's financial report:

Standard/Interpretation	Effective for annual reporting periods beginning on or after	Expected to be initially applied in the financial year ending
• AASB 124 'Related Party Disclosures (revised December 2009)', AASB 2009-12 'Amendments to Australian Accounting Standards'	1 January 2011	30 June 2012
• AASB 9 'Financial Instruments', AASB 2009-11 'Amendments to Australian Accounting Standards arising from AASB 9' and AASB 2010-7 'Amendments to Australian Accounting Standards arising from AASB 9 (December 2010)'	1 January 2013	30 June 2014
• AASB 2009-14 'Amendments to Australian Interpretation – Prepayments of a Minimum Funding Requirement'	1 January 2011	30 June 2012
• AASB 2010-5 'Amendments to Australian Accounting Standards'	1 January 2011	30 June 2012
• AASB 2010-6 'Amendments to Australian Accounting Standards – Disclosures on Transfers of Financial Assets'	1 July 2011	30 June 2012
• AASB 1054 'Australian Additional Disclosures'	1 July 2011	30 June 2012
• AASB 2011-5 'Amendments to Australian Accounting Standards – Extending Relief from Consolidation, the Equity Method and Proportionate Consolidation'	1 July 2011	30 June 2012
• AASB 10 'Consolidated Financial Statements'	1 January 2013	30 June 2014
• AASB 11 'Joint Arrangements'	1 January 2013	30 June 2014
• AASB 12 'Disclosure of Involvement with Other Entities'	1 January 2013	30 June 2014
• AASB 119 'Employee Benefits'	1 January 2013	30 June 2014
• AASB 127 'Separate Financial Statements (2011)'	1 January 2013	30 June 2014
• AASB 128 'Investments in Associates and Joint Ventures'	1 January 2013	30 June 2014
• AASB 2011-8 'Amendments to Australian Accounting Standards arising from AASB 13'	1 January 2013	30 June 2014
• AASB 2011-9 'Amendments to Australian Accounting Standards – Presentation of Items of Other Comprehensive Income'	1 July 2012	30 June 2013

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 3. Segment information

The activities of the company for the year ended 30 June 2011 were in establishing and promoting cooperative research and educational programs focusing on asthma prevention, treatment and diagnosis, in order to reduce the burden of asthma on the Australian community. The directors consider this to be one business segment and all activity takes place within Australia.

## 4. Deficit from operations

Deficit before income tax has been arrived at after crediting/(charging) the following items of income and expense:

	2011 \$	2010 \$
<b>Income</b>		
Contribution income:		
Contributions from government and partners, cash	4,850,000	5,344,000
Contributions from partners, in-kind	2,517,334	2,753,452
Other revenue – feasibility study	-	303,169
	7,367,334	8,400,621
Interest revenue – bank deposits	135,743	117,116
	7,503,077	8,517,737
<b>Expenses</b>		
Employee benefit expense:		
Post employment benefits -		
Defined contribution plans	40,607	40,294
Other employee benefits	590,349	578,053
	630,956	618,347
Operating expenses:		
Cash expenditure		
Research	3,946,682	4,558,049
Administration	635,469	529,120
Commercialisation	269,146	470,573
Education	366,127	412,188
In-Kind Expenditure:		
Research	2,072,281	2,342,946
Administration	232,843	179,627
Commercialisation	67,969	65,165
Education	144,241	165,714
	7,734,758	8,723,382

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 5. Trade and other receivables

	2011 \$	2010 \$
Trade Receivables	16,500	-

## 6. Property, plant and equipment

	Plant and equipment \$	Total \$
<b>Gross carrying amount at cost</b>		
Balance at 30 June 2010	177,529	177,529
Additions	-	-
Balance at 30 June 2011	177,529	177,529
<b>Accumulated depreciation</b>		
Balance at 30 June 2010	(177,529)	(177,529)
Depreciation	-	-
Balance at 30 June 2011	(177,529)	(177,529)
<b>Net book value</b>		
Balance at 30 June 2010	-	-
Balance at 30 June 2011	-	-

## 7. Other assets

	2011 \$	2010 \$
Prepayments	18,227	8,253

## 8. Trade and other payables

	2011 \$	2010 \$
Trade payables – other entities (i)	182,373	163,910
Accrued expenses (i)	1,627,518	1,433,418
	1,809,891	1,597,328

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 8. Trade and other payables (continued)

- (i) The average credit period on payables and accruals is 1 month. No interest is charged on payables and accruals. Ultimate responsibility for liquidity risk management rests with the board of directors, who have an appropriate liquidity risk management framework. The entity manages liquidity risk by maintaining adequate reserves and monitoring actual cash flows. Payables and accruals are non interest bearing, undiscounted with contractual maturities of 1 month.

## 9. Provisions

	2011 \$	2010 \$
<b>Current</b>		
Employee benefits	85,369	70,078
<b>Non-current</b>		
Employee benefits	82,507	79,042

## 10. Members' guarantee

### Contributed Equity

The company is a company limited by guarantee. If the company is wound up, the Corporations Act 2001 and the Constitution state that each of the eight members severally guarantees the liability of the company up to \$100 per member.

## 11. Retained surplus

	2011 \$	2010 \$
Balance at beginning of financial year	1,296,733	1,502,378
Net deficit attributable to members	(231,681)	(205,645)
Balance at end of financial year	1,065,052	1,296,733

## 12. Notes to the statement of cash flows

### (a) Reconciliation of cash and cash equivalents

For the purposes of the statement of cash flows, cash and cash equivalents includes cash on hand and in banks and investments in money market instruments, net of outstanding bank overdrafts. Cash and cash equivalents at the end of the financial year as shown in the statement of cash flows are reconciled to the related items in the statement of financial position as follows:

	2011 \$	2010 \$
Cash and cash equivalents	3,008,092	3,034,928

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 12. Notes to the statement of cash flows (continued)

### (b) Reconciliation of deficit for the year to net cash flows from operating activities

	2011 \$	2010 \$
Deficit for the year	(231,681)	(205,645)
<i>Changes in net assets and liabilities:</i>		
(Increase)/decrease in assets:		
Trade and other receivables	(26,474)	50,846
Increase/(decrease) in liabilities:		
Current liabilities	227,854	(13,294)
Other non-current liabilities	3,465	17,222
Net cash used in operating activities	(26,836)	(150,871)

## 13. Financial instruments

### (a) Significant accounting policies

Details of the significant accounting policies and methods adopted, including the criteria for recognition, the basis of measurement and the basis on which revenues and expenses are recognised, in respect of each class of financial asset, financial liability and equity instrument are disclosed in note 2 to the financial statements.

### (b) Interest rate risk management

The only interest bearing financial assets are cash and term deposits at an average interest rate of 4.7% (2010: 4.5%). All other financial assets and liabilities are non-interest bearing.

At the reporting date, if interest rates had been 50 basis points higher or lower and all other variables were held constant, the net deficit would increase or decrease by \$22,920 (2010: \$15,175).

### (c) Credit risk management

Credit risk refers to the risk that counterparty will default on its contractual obligations resulting in financial loss to the Company. The company has adopted the policy of only dealing with creditworthy counterparties and obtaining sufficient collateral or other security where appropriate, as a means of mitigating the risk of financial loss from defaults. The company measures credit risk on a fair value basis.

The Company does not have any significant credit risk exposure to any single counterparty or any company of counterparties having similar characteristics.

### (d) Fair value of financial instruments

The fair values of financial assets and financial liabilities (excluding derivative instruments) are determined in accordance with generally accepted pricing models based on discounted cash flow analysis.

The directors consider that the carrying amounts of financial assets and financial liabilities recorded at amortised cost in the financial statements approximate their fair values.

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 14. Key management personnel compensation

The key management personnel of CRC for Asthma and Airways Limited during the year were:

Dr Arthur Emmett	(Non-Executive Chairman to 30th November, 2010)
Mr Mervyn Michell	(Non-Executive Chairman from 1st December, 2010)
Mr Philip Bert	(Chief Executive Officer)
Professor Carol Armour	(Non-Executive Director)
Professor Michael Calford	(Non-Executive Director)
Professor Ashley Dunn	(Non-Executive Director)
Dr Ashley Bates	(Non-Executive Director)
Professor Louis Landau	(Non-Executive Director)
Professor Gail Risbridger	(Non-Executive Director)
Dr George Moore	(Non-Executive Director)
Ms Julie Phillips	(Non-Executive Director)

The aggregate compensation made to directors and other members of key management personnel of the company is set out below:

	2011	2010
	\$	\$
Short-term employee benefits	417,071	407,198
Post-employment benefits	32,924	32,599
Other long-term benefits	6,382	6,613
	456,377	446,410

## 15. Related party transactions

### (a) Key management personnel compensation

Details of key management personnel compensation are disclosed in note 14 to the financial statements.

### (b) Transactions with other related parties

On 3 August 2005 the company entered into an agreement with the Commonwealth of Australia and a number of other parties. This agreement provides funding for the operation of the company for the seven year period ending 30 June 2012. The CRC for Asthma and Airways Limited (CRC) is supported under the Cooperative Research Centres Programme which is a Federal Government initiative administered by the Department of Education, Science and Training.

The parties to this agreement are the Commonwealth of Australia, University of Sydney, Monash University, University of Western Australia, University of Newcastle, Woolcock Institute of Medical Research, Garvan Institute of Medical Research, GlaxoSmithKline Australia Pty Ltd and Pharmaxis Ltd. These parties have committed to financially support the CRC, and the CRC's research programme is conducted by some of these organisations. The determination of what research is to be conducted and by what organisations is the responsibility of the Governing Board of the CRC at its absolute discretion and all research projects are conducted on an "arms length" basis and on standard commercial terms. As such the CRC is economically dependent on the parties to the agreement.

The CRC is a not for profit charity and does not distribute dividends to any members at any time and, on the winding up of the organisation, any remaining assets are required to be transferred to a similar not for profit entity.

# NOTES TO THE FINANCIAL STATEMENTS

for the financial year ended 30 June 2011

## 16. Remuneration of auditors

	2011 \$	2010 \$
Audit or review of the financial report	19,425	19,425

The auditor of CRC for Asthma and Airways Limited is Deloitte Touche Tohmatsu.



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