



WEST AUSTRALIAN SLEEP DISORDERS RESEARCH INSTITUTE (INC.)

SUMMARY OF RESEARCH ACTIVITY

July 1 2003 – June 30 2004

Level 5, G Block
Sir Charles Gairdner Hospital
Hospital Avenue
Nedlands
Western Australia 6009
Australia

Table of Contents

DR BHAJAN SINGH	DIAPHRAGM CONTROL OF BREATHING	3
DR BILL FINUCANE		3
Fields of Work.....		3
Grants 2003-2004.....		3
Research Personnel.....		3
Collaborations		3
Techniques		3
Presentations and Invited Lectures.....		3
Publications		4
DR DAVID HILLMAN	UPPER AIRWAY RESPIRATORY MUSCLES	4
DR PETER EASTWOOD.....		4
Fields of Work.....		4
Grants 2003-2004.....		4
Research Personnel.....		5
Collaborations		5
Techniques		6
Presentations and Invited Lectures.....		6
Publications		7
A/PR ALAN JAMES	AIRWAY REMODELING AND INFLAMMATION	8
DR NEIL CARROLL.....		8
Fields of Work.....		8
Grants 2003-2004.....		8
Research Personnel.....		9
Collaborations		9
Techniques		10
Presentations and Invited Lectures.....		10
Publications		11
DR SCOTT CLAXTON	MOTOR NEURON DISEASE.....	11
Fields of Work.....		11
Research Personnel.....		11
Presentations and Invited Lectures.....		11
DR STEWART CULLEN	SLEEP APNOEA.....	12
Fields of Work.....		12
Collaborations		12
Techniques		12
Presentations and Invited Lectures.....		12
DR NIGEL MCARDLE	SLEEP APNOEA.....	12
Fields of Work.....		12
Research Personnel.....		12
Presentations and Invited Lectures.....		12
Publications		13
DR SUTAPA MUKHERJEE	EPIDEMIOLOGY.....	13
Fields of Work.....		13
Grants 2000-2004.....		13
Collaborations		13
Presentations and Invited Lectures.....		13
Publications		13

Fields of Work

1. Neuro-mechanical efficiency of the diaphragm;
2. Respiratory failure and the chemical control of breathing in chronic obstructive lung disease.

Grants 2003-2004

2004	B Singh KE Finucane	<i>Sir Charles Gairdner Hospital Research Foundation</i> Lung Volume Reduction with tiotropium in Chronic Obstructive Pulmonary Disease (COPD): Functional Mechanisms and Clinical Implications	\$10,000
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Research Personnel

Ms Karen Wills Research Assistant
Ms Peta Maxwell Research Officer

Collaborations

Dr R Chandrasckhar, Department of Mathematics and Statistics, Curtin University

Techniques

1. Measurement of diaphragm displacement by radiography, fluoroscopy and ultrasound;
2. Measurement of diaphragm electromyography.

Presentations and Invited Lectures

Local

1. Singh B. Management dilemmas. Clinical Meeting Department of Respiratory Medicine, Nov 2003.
2. Singh B. Arterial blood gases. SCGH Non-invasive ventilation course, Nov 2003.
3. Singh B. Pulse transit time. Clinical meeting WASDRI, Feb 2004.
4. Singh B. Non-invasive ventilation and tracheostomy care. Medical tutorial, Department of Respiratory Medicine, Feb 2004.
5. Singh B. Carbon monoxide diffusing capacity. Respiratory technologists' meeting, Department of Pulmonary Physiology, Mar 2004.
6. Singh B. Cardiovascular complications of obstructive sleep apnoea. Clinical Meeting Department of Cardiology, Apr 2004.
7. Singh B. Obstructive sleep apnoea syndrome and hypertension. WASDRI Clinical meeting and UDM meeting, Jun 2004.

National

1. Finucane KE. Invited Lecturer. The act of breathing. Thoracic Society of Australian and New Zealand (Queensland branch) Winter Meeting.
2. Finucane KE. Invited Lecturer. The cardiovascular and respiratory responses to exercise. Thoracic Society of Australian and New Zealand (Queensland branch) Winter Meeting.
3. Finucane KE. Invited Lecturer. Workshop: The mechanics of breathing. Thoracic Society of Australian and New Zealand (Queensland branch) Winter Meeting.
 - Elastic and flow resistive properties of the respiratory system;

- The diaphragm in health and disease; and
 - Respiratory muscle weakness and fatigue.
4. Finucane KE. Invited Lecturer. Workshop: Chest wall function. Thoracic Society of Australian and New Zealand Annual Scientific Meeting Sydney NSW, March 2004.
 5. Singh B, Panizza JA, Finucane KE. Variability in diaphragm electromyogram root mean square response to hypercapnoea. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A64.

International

1. Singh B, Panizza JA, Finucane KE. Variability in diaphragm electromyogram root mean square response to hypercapnoea. American Thoracic Society Annual Scientific Meeting, Orlando, California USA. *Am J Respir Crit Care Med* 2004; 169(7):A436.

Publications

1. Singh B, Panizza J.A, Finucane K.E. Diaphragm electromyogram root mean square response to hypercapnoea and its inter-subject and day-to-day variation. *J Appl Physiol*, 2004 (*epub*).

**DR DAVID HILLMAN
DR PETER EASTWOOD**

UPPER AIRWAY RESPIRATORY MUSCLES

Fields of Work

1. Assessment of upper airway dimensions using optical interferometry;
2. Effect of lung volume on upper airway collapsibility;
3. Respiratory muscle training in patients with chronic lung disease;
4. Aerophagia and gastro-oesophageal reflux in non-invasive positive pressure ventilation.

Grants 2003-2004

2003	SJ Jenkins C Camarri J Francis N Cecins PR Eastwood	<i>Sir Charles Gairdner Hospital Research Foundation</i> Development of a reference equation for the 6 minute walk test in healthy subjects aged 55-75 years.	\$10,000
2003	PR Eastwood	<i>Medical and Health Research Infrastructure Fund (WA)</i> Department of Health, Government of Western Australia Infrastructure Grant - Round 6	\$16,958
2002-04	PR Eastwood DR Hillman SC Jenkins N Cecins D Green M Phillips	<i>NHMRC (212016)</i> Improving functional capacity in patients with chronic lung disease with high intensity respiratory muscle training.	\$340,000
2004	PR Eastwood DD Sampson DR Hillman	<i>National Health and Medical Research Council - Industry Development Grant</i> Dynamic in vivo size and shape measurement of the human upper airway using long-range optical coherence tomography	\$184,250

2004	D Green T Ackland PR Eastwood D Lloyd P Fournier B Blanksby BWaddell	<i>UWA NHMRC Equipment Grant</i> Dual energy X-ray absorptiometry (DEXA) machine	\$70,000
2004	PR Eastwood	<i>Medical and Health Research Infrastructure Fund (WA)</i> Department of Health, Government of Western Australia Infrastructure Grant - Round 7	\$18,800
2004	PR Eastwood DR Hillman	<i>Sir Charles Gairdner Hospital Research Foundation</i> Imaging of the upper airway using catheter-based optical coherence tomography	\$10,000
2004	S Jenkins PR Eastwood	<i>Asthma Foundation – Telethon Research Programme</i> Improving quality of life and functional capacity in middle-aged and older adults with moderate to severe asthma and associated disability	\$46,422
2004	PR Eastwood B Dawson G Stewart	<i>Australian Football League Research Fund</i> Sleep quality and athletic performance: the effect of interstate air travel	\$19,949
2004-2006	PR Eastwood DR Hillman	<i>NHMRC (303218)</i> Factors determining collapsibility of the human upper airway during sleep and general anaesthesia	\$259,625
2004-2008	Eastwood, PR	<i>NHMRC (294404) R Douglas Wright Biomedical Career Development Award</i>	\$417,500

Research Personnel

Mrs Cathryn Jensen	Research Assistant
Ms Kathleen Maddison	Research Assistant
Ms Danielle Philippe	Research Assistant
Ms Kylie Hill	PhD candidate
Ms Kelly Shepherd	PhD candidate
Ms Sian Turner	PhD candidate
Ms Cara Weisbrod	PhD candidate
Mr Michael Hibbard	PhD candidate
Louise Richmond	Masters candidate
Mr Abdul Halim Bin Mohamed Anwar	Honours candidate
Ms Melissa Giumelli	Honours candidate

Collaborations

Local

A/Prof S Jenkins, Department of Physiotherapy, Sir Charles Gairdner Hospital; School of Physiotherapy, Curtin University;

Dr P Platt, Department of Anaesthetics, SCGH;

Professor D Sampson, Department of Electronic and Electrical Engineering, University of Western Australia;

Professor P Thompson, Asthma and Allergy Research Institute, Sir Charles Gairdner Hospital;

A/Prof J Pan, Department of Mechanical Engineering, University of Western Australia; and

A/Prof G Allison, Centre for Musculoskeletal Studies, University of Western Australia.

National

Prof R Holloway, Department of Gastroenterology Hepatology, Royal Adelaide Hospital, SA;

Dr D McEvoy, Department of Respiratory Medicine, Repatriation Hospital, SA;

Dr R Grunstein, Sleep Disorders Centre, Royal Prince Alfred Hospital, NSW;
Dr E Ellis,
A/Prof J Wheatley, Department of Respiratory Medicine, Westmead Hospital, Sydney, NSW;
Dr T Amis, Department of Respiratory Medicine, Westmead Hospital, Sydney, NSW.

International

A/Prof A Schwartz, Johns Hopkins Medical School, Asthma and Allergy Centre, Baltimore, Maryland, USA;
Mr R Brandmeier, MAP Medizin-Technologie GmbH, Martinsreid, Germany;
Mr J Kirkness, Johns Hopkins Medical School, Asthma and Allergy Centre, Baltimore, Maryland, USA.

Techniques

1. Oesophageal impedance
2. Oesophageal manometry
3. Administration of non-invasive ventilation
4. Polysomnography
5. Respiratory muscle training
6. Oesophageal pH monitoring
7. Cycle ergometry

Presentations and Invited Lectures

Local

1. Eastwood PR. Invited lecture. Upper airway reflexes - physiological and pathophysiological implications. Asthma and Allergy Research Institute Research Seminar Series, July 2003.
2. Eastwood PR. Invited lecture. Sleep disorders: causes and cures. Water Corporation of Western Australia, July 2003.
3. Eastwood PR. Invited lecture. Symposium on Pulmonary Rehabilitation. Future directions of Pulmonary Rehabilitation. Thoracic Society of Australia and New Zealand (WA Branch), August 2003.
4. Novel methods to assess the upper airway". Princess Margaret Hospital for Children. University Department of Paediatrics, April 2004.
5. Eastwood PR. Invited lecturer. Quantitative assessment of upper airway function during wakefulness and sleep. Australia and New Zealand Society of Respiratory Scientists (WA Branch), May 2004.

National

1. Hillman DR. Co-chair/Invited speaker. Sleep, Anaesthesia and the Upper Airway. Australian and New Zealand College of Anaesthetists, Annual Scientific Meeting Perth 2004.
2. Eastwood PR. Session Chair. Mini-symposium Respiratory function testing: current state-of-the-art. Thoracic Society of Australia and New Zealand Annual Scientific Meeting Sydney, March 2004.
3. Eastwood PR. Session Chair. Advanced Course in Respiratory Research: Biomedical research as a career. Thoracic Society of Australia and New Zealand Annual Scientific Meeting Sydney, March 2004.

International

1. Hillman DR. Co-chair/Invited speaker. Laboratory Polysomnography vs Home Sleep Studies. Australasian Sleep Association, Annual Scientific Meeting Auckland, 2003.

2. Eastwood PR. Invited lecture. In vivo size and shape measurement of the human upper airway using endoscopic long-range optical coherence tomography. World Congress on Medical Physics and Biomedical Engineering Sydney, August 2003.
3. Eastwood PR. Invited lecture. Sleep physiology and instrumentation. World Congress on Medical Physics and Biomedical Engineering Sydney, August 2003.

Publications

1. Armstrong JJ, Leigh MS, Walton ID, Zvyagin AV, Alexandrov SA, Schwer S, Sampson DD, Hillman DR, Eastwood PR. In vivo size and shape measurement of the human upper airway using endoscopic long-range optical coherence tomography. *Optics Express* 2003, 11: 1817-1826.
2. Eastwood PR, Allison, GT, Szollosi I, Shepherd KL, Hillman DR. Heterogeneous activity of the human genioglossus muscle assessed by multiple bipolar fine-wire electrodes. *J Appl Physiol* 2003, 94: 1849-1858.
3. Sturdy G, Hillman D, Green D, Jenkins S, Cecins N, Eastwood P. Feasibility of high-intensity interval-based respiratory muscle training in COPD. *Chest* 2003, 123: 142-150.
4. Kirkness JP, Eastwood PR, Szollosi I, Platt PR, Wheatley JR, Amis TC, Hillman DR. Exogenous surfactant decreases the surface tension of the upper airway liquid lining in anaesthetized humans. *J Appl Physiol* 2003, 95: 357-363.
5. Lee YCG, Singh B, Pang SC, De Klerk NH, Hillman DR, Musk AW. Radiographic (ILO) readings predict arterial oxygen desaturation during exercise in subjects with asbestosis. *Occup Environ Med* 2003, 60(3): 201-206.
6. Kirkness JP, Eastwood PR, Szollosi I, Platt PR, Wheatley JR, Amis TC, Hillman DR. Effect of surface tension of mucosal lining liquid on upper airway mechanics in anesthetized humans. *J Appl Physiol* 2003, 95: 357-363.
7. Hillman DR, Platt PR, Eastwood PR. The upper airway during anaesthesia. *Br J Anaesthesia* 2003, 91(1): 31-39.
8. Armstrong JJ, Leigh MS, Walton ID, Zvyagin AV, Alexandrov SA, Schwer S, Sampson DD, Hillman DR, Eastwood PR. Long-range optical coherence tomography for in vivo profiling of large hollow organs. *Optics letters* 2003, 11: 1817-1826.
9. Richmond L, Dawson B, Hillman DR, Eastwood PR. The Effect of Interstate Travel on Sleep Patterns of Elite Australian Rules Footballers. *J Sci Med Sport* 2004; Jun7(2): 186-96.
10. Eastwood PR, Szollosi, I, Platt PR, Hillman DR. Comparison of upper airway collapse during general anaesthesia and sleep. In: Yearbook of Anesthesiology and Pain Management (editor, D.H. Chestnut), Mosby Inc, Philadelphia, PA, 2003, p.216-218 (*ibid. The Lancet* 2002, 359: 1207-1209).
11. Turner S, Eastwood PR, Cecins, NM, Hillman DR, Jenkins SC. Physiological responses to incremental and self-paced exercise in patients with COPD – a comparison of three different exercise tests. *Chest* 2004, 126: 766-773.
** Editorialisated: Johnson JE. Which test should be used for patients with symptomatic COPD? *Chest* 2004, 126: 668-670.
12. Sturdy GA, Hillman DR, Green DG, Jenkins SC, Cecins NM, Eastwood PR. The effect of learning on ventilatory responses to inspiratory threshold loading in COPD. *Resp Med* 2004, 98: 1-8.
13. Richmond L, Dawson B, Hillman DR, Eastwood PR. The Effect of Interstate Travel on Sleep Patterns of Elite Australian Rules Footballers. *J Sci Med Sports* 2004, 7: 186-196.

14. Sturdy GA, Hillman DR, Green DG, Jenkins SC, Cecins NM, Eastwood PR. Mechanisms underlying responses to repeated tests of inspiratory muscle function in patients with chronic obstructive disease. *Resp Med* 2004, 98: 1-8.
15. Weisbrod CJ, Eastwood PR, O'Driscoll G, Walsh JH, Best M, Halliwill JR, Green, DG. Vasomotor responses to hypoxia in type-2 diabetes. *Diabetes* 2004, 53: 2073-2078.
16. Hill K, Jenkins SC, Hillman DR, Eastwood PR. Dyspnoea in COPD – can inspiratory muscle training help? *Aust J Physiother* 2004; 50(3): 169-80.
17. Weisbrod CJ, Eastwood PR, O'Driscoll G, Green, DG. Abnormal ventilatory responses to hypoxia in type-2 diabetes. *Diabetic Med (in press, accepted June 2004)*.
18. Hillman DR, Loadsman JA, Platt PR, Eastwood PR. Obstructive sleep apnoea and anaesthesia. *Sleep Med Rev (accepted June 2004)*.

**A/PR ALAN JAMES
DR NEIL CARROLL**

AIRWAY REMODELING AND INFLAMMATION

Fields of Work

1. Mechanisms of persistent airway inflammation in asthma and COPD
 - Lymphoid aggregates
 - Proliferation, apoptosis and activation of inflammatory cells
 - Dendritic cells
2. Airway remodeling and airway mechanics
 - Airway dimensions
 - Airway smooth muscle and fibroblasts
 - Extracellular matrix
 - Stereology of lung
 - Forced oscillation technique in normal subjects
3. Epidemiology of respiratory disease
 - Aboriginal population studies
 - Busselton population studies
4. Genetic influences on airway disease and allergy
 - Single nucleotide polymorphisms
 - Genome screen
 - HLA-DR
5. SIDS
 - Influence of parental smoking on airway structure and inflammation

Grants 2003-2004

2003-05	AL James NG Carroll	<i>Western Australian Institute for Medical Research</i> Mechanisms of persistent airway inflammation and airway remodeling	\$63,000
2003-05	AW Musk AL James PN le Souëf WOC Cookson G Waterer M Knuiman NG de Klerk J Beilby	<i>Western Australian Institute for Medical Research</i> Epidemiological and genetic studies of asthma and chronic airflow limitation: The Busselton Health Study	\$73,000 p.a.

2004	James, AL Maxwell, PS	<i>Hollywood Private Hospital Research Foundation</i> Characteristics of lymphoid aggregates in smokers with and without airflow obstruction	\$10,000
2004	Lamb, J James, AL	<i>Asthma Foundation WA</i> Fibroblasts and myofibroblasts in airway remodeling in asthma and COPD	\$30,294
2004-2006	Upham, J James, AL	<i>NHMRC (303161)</i> Effects of allergens on dendritic cell function in allergic asthma	\$83,500 p.a.

Research Personnel

Dr Neil Carroll	Research Officer
Mr John Elliot	Research Officer
Ms Jasmine Lamb	Research Officer
Ms P Maxwell	Research Officer
Mr Mark Carroll	Research Assistant
Ms Charlotte Chapman	Research Assistant
Mrs Cathryn Jensen	Research Assistant

Collaborations

Local

Clin Prof AW Musk, Department of Respiratory Medicine, SCGH;
 Prof N de Klerk, Department of Biostatistics, Institute for Child Health Research;
 Dr K Finucane, Department of Pulmonary Physiology, SCGH;
 Dr D Hillman, Department of Pulmonary Physiology, SCGH;
 Dr J Hansen, Department of Respiratory Medicine, Institute for Child Health Research;
 Prof P le Souëf, Department of Paediatrics, Princess Margaret Hospital;
 A/Prof H Mitchell, Department of Physiology, UWA;
 Clinical Prof AW Musk, Department of Respiratory Medicine, SCGH;
 Prof P Sly, Institute for Child Health Research;
 Assoc Prof Steve Stick, Institute for Child Health Research;
 Dr D Turner, Institute for Child Health Research;
 Prof P Thompson, University Department of Medicine, UWA.

National

A/Prof R Kumar, School of Pathology, University of New South Wales;
 Dr K MacKay, Department of Respiratory Medicine, Children's Chest Research Centre,
 Children's Hospital at Westmead, NSW;
 A/Prof M Abramson, Department of Epidemiology and Preventive Medicine, Monash Medical
 School, Alfred Hospital, Victoria;
 Prof H Walters, Department of Epidemiology and Preventive Medicine, Monash Medical School,
 Alfred Hospital, Victoria;
 A/Prof P Robinson, Department of Thoracic Medicine, Royal Children's Hospital, Victoria;
 A/Prof J Wilson, Department of Respiratory Medicine, Alfred Hospital, Victoria.

International

Prof T Bai, MacDonald Research Laboratory, St Paul's Hospital, Vancouver, Canada;
 Dr F Green, Faculty of Medicine, University of Calgary, Canada;
 Prof J Hogg, MacDonald Research Laboratory, St Paul's Hospital, Vancouver, Canada;
 Dr D Knight, MacDonald Research Laboratory, St Paul's Hospital, Vancouver, Canada;
 Dr T Mauad, Department of Pathology, Sao Paulo University Medical School, Brazil
 Prof P Pare, MacDonald Research Laboratory, St Paul's Hospital, Vancouver, Canada;
 Prof WOCM Cookson, Henry Wellcome Building for Human Genetics, Oxford University,
 England;

Prof P Jeffrey, Royal Brompton National Heart and Lung Institute, London, England;
Prof M Vignola, Istituto di Fisopatologia, Palermo, Italy;
Prof E Spindel, Oregon Regional Primate Research Centre, Oregon, USA.

Techniques

1. Morphometry and stereology
2. Immunohistochemistry
3. Airway responsiveness
4. Lung physiology
5. Atopy testing
6. Induced sputum.

Presentations and Invited Lectures

Local

1. James A. Invited lecture. Natural History of Asthma. Respiratory Updates. Hollywood Private Hospital August 2003
2. James A. Invited lecture. Pathophysiology of Asthma II. Respiratory Updates. Hollywood Private Hospital, September 2003.
3. James A. Invited lecture. Lymphoid aggregates and persistent airway inflammation. Margaret River Scientific Meeting Western Australia, November 2003.
4. James A. Invited lecture. Respiratory and Non Invasive ventilation Course: Respiratory Anatomy & Physiology/Respiratory Assessment. Sir Charles Gairdner Hospital, April 2004.

National

1. James A. Invited lecture. COPD: A multi-component disease. GlaxoSmithKline Landmark 2003 Symposium Canberra, August 2003.
2. James A. Invited lecture. Why Monitor? – Pathology. Asthma Think Tank, Woolcock Institute, August 2003.
3. Palmer L, James A, Kicic E, Maxwell P, Lagan S, Ryan G, Musk, AW. Decline in lung function in the Busselton Health Study: The additive effects of asthma and cigarette smoking. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A30.
4. James A, Elliot J, Kovar J, Walker A, Sly P. Mean distance between airway alveolar attachments is related to total alveolar number in the rabbit lung. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A31.
5. Elliot J, James A, Walters H, Carroll N, Abramson M. Time to death, airway inflammation, smooth muscle shortening and luminal mucus in fatal asthma. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A27.
6. Jensen C, Elliot J, Carroll N, James A. Airway B-lymphocyte distribution in normal, smoking and asthmatic subjects. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A25.
7. Jensen C, Turner DJ, Elliot J, Carroll N, Kumar RK, James A. Development and persistence of lymphoid aggregates during and after challenge exposure in a mouse model of airway inflammation. Thoracic Society of Australian and New Zealand Annual Scientific Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A25.
8. Ford D, Fitzgerald K, James A, Elliot J, Beard J, O'Neill C, Giljohann A, Bateman V,

Mulvey N. Researchers partnering with a bereaved parent's organization to develop sensitive research processes about tissue retained at autopsy. Perinatal Society of Australia and New Zealand, Annual Scientific Meeting, Sydney NSW 2004.

International

1. James A, Elliot J, Walters H, Carroll N, Abramson M. Time to death, airway inflammation, smooth muscle shortening and luminal mucus in fatal asthma. American Thoracic Society Annual Scientific Meeting, Orlando, California USA. *Am J Respir Crit Care Med* 2004; 169(7):A296.
2. James A, Palmer L, Kicic E, Maxwell P, Lagan S, Ryan G, Musk, AW. Decline in lung function in the Busselton Health Study: The additive effects of asthma and cigarette smoking. American Thoracic Society Annual Scientific Meeting, Orlando, California USA. *Am J Respir Crit Care Med* 2004; 169(7):A358.
3. Hui J, Musk AW, James A, Beilby J. MHC Class I Association with asthma in the Busselton Population. American Thoracic Society Annual Scientific Meeting, Orlando, California USA. *Am J Respir Crit Care Med* 2004; 169(7):A585.
4. James A, Elliot J, Kovar J, Walker A, Sly P. Mean distance between airway alveolar attachments is related to total alveolar number in the rabbit lung. American Thoracic Society Annual Scientific Meeting, Orlando, California USA. *Am J Respir Crit Care Med* 2004; 169(7):A662.

Publications

1. Elliot J, Carroll N, James A, Robinson P. Airway alveolar attachment points and exposure to cigarette smoke in utero. *Am J Respir Crit Care Med* 2003; 167: 45-49.
2. Moffatt MF, Faux JA, Lester S, Paré P, McCuskey JC, Spargo S, James A, Musk AW, Cookson WOCM. Atopy, respiratory function and HLA-DR genes in Aboriginal Australians. *Hum Mol Gen* 2003; 12: 625-630.
3. Elliot J, Jensen C, Mutavdzic S, Lamb J, Carroll N, James A. Aggregations of lymphoid cells in the airways of non-smokers, smokers and asthmatics. *Am J Respir Crit Care Med* 2004; 169(6): 712-718.
4. James A, King G. The computed tomographic scan: A new tool to monitor asthma treatment? Editorial. *Am J Med* 2004; 116(11): 775-777.
5. James A, Maxwell P, Elliot J. Comparison of sputum induction using inhaled methacholine or hypertonic saline. *Respirology* 2004 (in press).

DR SCOTT CLAXTON

MOTOR NEURON DISEASE

Fields of Work

1. Predictors of sleep disordered breathing in motor neuron disease

Research Personnel

Melissa Thomas

Presentations and Invited Lectures

National

1. Claxton S, Hillman, D. Daytime lung function predicts nocturnal respiratory failure in motor neuron disease. Thoracic Society of Australian and New Zealand Annual Scientific

Meeting, Sydney NSW. *Respirology* 2004; 9(Suppl):A17.

DR STEWART CULLEN

SLEEP APNOEA

Fields of Work

1. Predictors of sleep apnoea using questionnaires and laser measurements of oral dimensions
2. Treatment of sleep apnoea:
 - Mandibular advancement splints: new models
 - Positional therapy: new appliances
3. Heart rate monitoring to detect psychiatric conditions and sleep apnoea

Collaborations

A/Prof Hans Stampfer, Department of Psychiatry, UWA;
Mr W Noffsinger, Department of Pulmonary Physiology, West Australian Sleep Disorders Research Institute.

Techniques

1. Lasers
2. Heart rate monitors

Presentations and Invited Lectures

Local

1. Invited lecture. Sleep Medicine Update. St John of God Hospital, August 2003.
2. Heart rate monitoring, psychiatric conditions and sleep apnoea. Clinical meeting WASDRI, May 2004.
3. Upper airway dimensions in Sleep Apnoea. Clinical meeting WASDRI, Oct 2004.
4. Invited lecture. Perth Psychiatry Meeting. Psychiatry and sleep apnoea, June 2004.

DR NIGEL MCARDLE

SLEEP APNOEA

Fields of Work

1. Treatment of the sleep apnoea/hypopnoea syndrome
2. Vascular disease in the sleep apnoea/hypopnoea syndrome
3. Non-invasive ventilation

Research Personnel

Vicki Stenning sleep technologist
Jenny Roy sleep technologist

Presentations and Invited Lectures

International

1. McArdle N, Hillman D. Auto-triggering due to cardiac contraction can cause inadequate non-invasive positive pressure ventilation. Australasian Sleep Association Annual Scientific Meeting Auckland New Zealand, Oct 2003.

2. McArdle N, Beilin L, Watts G. Obstructive sleep apnoea is not associated with endothelial dysfunction in a sleep clinic population. European Respiratory Symposium Vienna Austria, Oct 2004.

Publications

1. Massie CA, McArdle N, Hart RW, Schmidt-Nowara WW, Lankford A, Hudgel DW, Gordon N, Douglas NJ. Comparison between automatic and fixed positive airway pressure therapy in the home. *Am J Respir Crit Care Med* 2003; 167: 20-23.
2. McArdle N, Riha RL, Vennelle M, Coleman EL, Dennis MS, Warlow CP, Douglas NJ. Sleep-disordered breathing as a risk factor for cerebrovascular disease: a case-control study in patients with transient ischemic attacks. *Stroke* 2003; 34: 2916-2921.

DR SUTAPA MUKHERJEE

EPIDEMIOLOGY

Fields of Work

1. Establishment of the WA Sleep Disorders Cohort, a population-based resource to investigate the epidemiology of obstructive sleep apnoea in WA.
2. Occupational exposures and health effects- with particular interest in asbestos and diesel exposure.

Grants 2000-2004

2001-04	D Christiani S Mukherjee	<i>National Institutes of Health (USA) / National Cancer Institute</i> Biomarkers of carcinogen exposure and oxidative injury	\$160,000 total
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Collaborations

Local

Clinical Prof AW Musk, Department of Respiratory Medicine, Sir Charles Gairdner Hospital; and Prof Nick de Klerk, Department of Biostatistics, Telethon Institute for Child Health Research.

International

Prof. David Christiani, Harvard School of Public Health, USA.

Presentations and Invited Lectures

Local

1. Occupational exposures and oxidative injury in boiler-makers and diesel mechanics. Lung Research Group Perth, June 2004.

National

1. Invited Lecture. The effects of diesel on the lungs- the good, the bad and the ugly. Thoracic Society of Australia and New Zealand Annual Scientific Meeting Sydney, March 2004.

Publications

1. Mukherjee S, Palmer LJ, Kim JY, Aeschliman DB, Houk RS, Woodin MA, Christiani DC. Smoking status and occupational exposure affects oxidative DNA injury in boilermakers exposed to metal fume and residual oil fly ash. *Cancer Epidemiology, Biomarkers and Prevention* 2004; 13(3): 454-60.

2. Kim JY, Mukherjee S, Ngo L, Christiani DC. Urinary 8-Hydroxy-2'-deoxyguanosine as a biomarker of oxidative DNA damage in workers exposed to fine particulates". Environ Health Persp 2004 *in press*.