Genes, Germs and Good Health: The Pain Clinicians guide to Epigenetics

AACP Australian Chapter

4th International Symposium

March 13th and 14th 2015, Sydney Australia

The Australian Chapter of the AACP is very proud to present Professor Paul Durham and Professor Emma Whitelaw in Sydney March 13th and 14th 2015 on Genes, Germs and Good Health.

As pain clinicians we all realize that in order to improve the health of our patients we need to look beyond the mechanistic actions of the TMJ and treat the whole person. There are numerous environmental factors which affect the way that our patients feel and cope with pain, including past pain experience, diet, previous ill health, sleep and many other factors. We also realize that these factors may have more impact in certain patient groups.

Registration

Register Online

Main Auditorium, 2 Days

- Member Registration $1540 incl GST
- Non-member Early bird 1 $1630 incl GST, ends Dec 15th 2014
- Non-member Early bird 2 $1700 incl GST, Dec 16th to Feb 10th 2015
- Non-member Regular rate $1760 incl GST, Feb 11th 2015 onwards
- Physical Therapists, limited to 10 places: $990 incl GST

Full Registration Includes:

2 Days lectures with workbooks, includes conference cocktail party Friday evening 13th March.

For Continuing Professional Development the CPD points are:

- CPD for 2 days - anticipated 14 hours

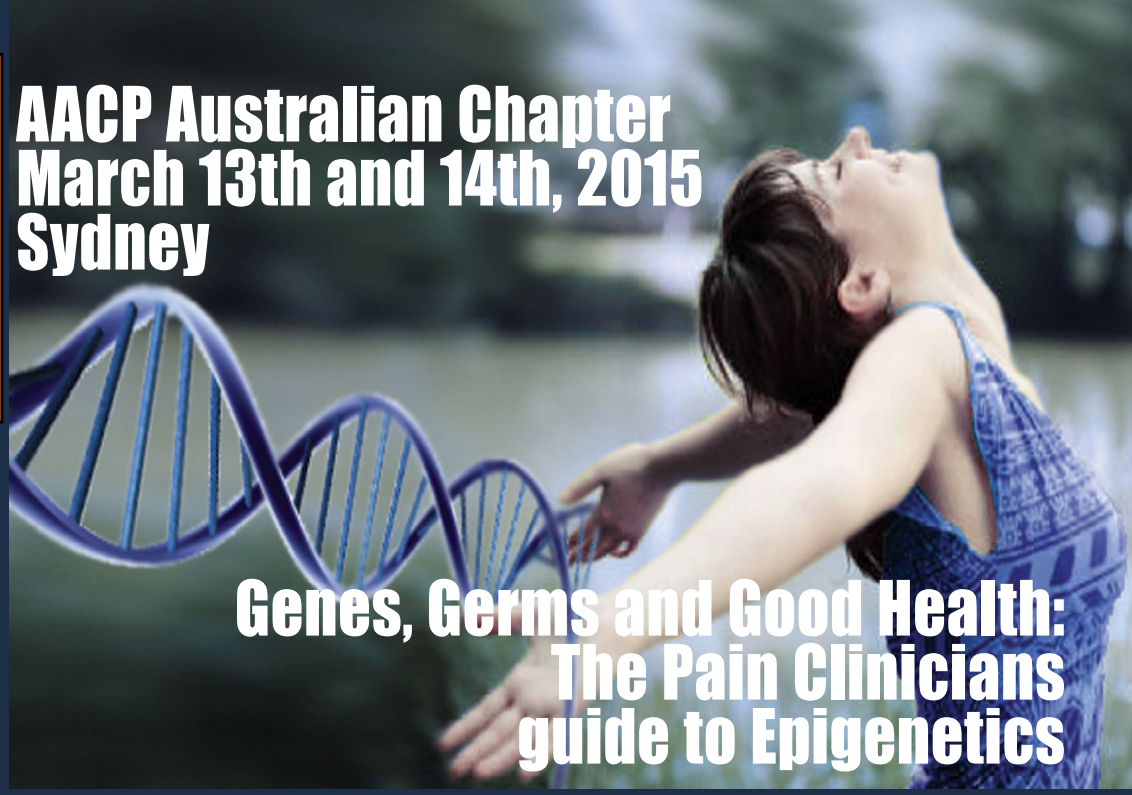
Contact us

web: www.aacfp.com.au
email: conference@aacfp.com.au
social: www.facebook.com/AACPAustralianChapter

The Venue

The Symposium will be held at The Sydney Harbour Marriott Hotel 30 Pitt St Sydney, NSW 2000. The Hotel is offering special accomodation rates to delegates. To secure these rates please visit our website www.aacfp.com.au and book using the customised hotel link on the Symposium page.

Cancelation Policy: AACP Australian Chapter reserves the right to cancel any portion of the conference if needed. Should you need to cancel the AACP must be notified by February 1st 2015. All cancellations must be received in writing. In this case $150 will be deducted from your refund. Cancellations after this date will be subject to a 50% fee per attendee.



Speakers

PROFESSOR PAUL DURHAM

PROFESSOR EMMA WHITELAW

Overview

Recent advances in the fields of genomics and bioinformatics are evidencing the fact that genetic sequence alone cannot explain how the genome regulates the development and function of complex multicellular organisms both in health and disease. The crucial role of additional layers of information piled over that of the DNA sequence has taken center stage in the last few years and thus, decades of intensive studies on genetics have led to the emergence of epigenetics. Epigenetics comprises a number of mechanisms, such as covalent histone modifications or DNA methylation, which induce long-lasting changes in gene expression that are not encoded in the DNA sequence itself.

Epigenetics then reflects the way in which the environment in the wide sense regulates gene expression. In fact, it is becoming increasingly clear that the well-known beneficial role of a healthy lifestyle over a number of pathologies or as a preemptive therapy is at least in part exerted through epigenetic mechanisms. Likewise, changes in chromatin structure may lie beneath some of the altered behavioral patterns usually associated with depression and addiction. The current research on epigenetics is thus providing us with a fresh outlook to interpret genetic information. Fascinating new data suggest that we are a product of our genes but we can also influence them through our choices and experiences.

The goal of this course is to provide a comprehensive view of how lifestyle affects chromatin and, as a result, gene function and ultimately organismal fitness. Lectures will touch on the main concepts and background regarding epigenetics, as well as describe the epigenetic impact of nutrition, stress, addiction, exposure to chemicals and pollutants and how some of these epigenetic marks regulate brain functions such as learning and memory.

We invite you to join us at the Sydney Harbour Marriott Hotel in March 2015 for 2 days on cutting edge research in the field of epigenetics for the pain clinician. Learn not only what is good for your patient's health but also what influences your personal health and wellbeing.

Spaces are limited so register early.

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Meet our Speakers

Professor Paul Durham

Professor Paul Durham is married to Debra, and they have 4 children, Joshua, Zachary, Tyler and Jessica.

Paul completed a BS degree in 1984 majoring in Biology and Philosophy, his MS in Plant Biochemistry in 1989, and his PhD in Anatomy and Cell Biology in 1994. He is currently the Professor in Cell Biology and the Director, Centre for Biomedical and Life Sciences Missouri State University.

He has been a reviewer for the NIF Grant Study Section several times since 2008,was the invited chair of a Shanghai International Conference on Traditional Chinese Medicine and Natural Medicine in Hangzhou China 2010,and chair of Fresh Insights into the Pathophysiology of Primary and Secondary Headache Disorders at the 14th Congress of International Headache society 2009, and co-chair of a teaching course of the same name at that meeting. He has been an invited speaker in many locations both internationally and across the United States. He is presently a reviewer for the peer reviewed magazines Cephalalgia, Complimentary and Alternative Medicine Special Interest Section of the American Headache Society, Neuroscience, the Journal of Pain, and many other equally prestigious publications.

Paul's research interests centre around the cellular and molecular mechanisms involved in mediating neuron-glia interactions in the trigeminal ganglion and the spinal trigeminal nucleus during central and peripheral sensitization. He is currently studying the regulation of CGRP as part of his focus on understanding the way that antimigraine drugs and inflammatory stimuli regulate CGRP release and activation from neuronal and glial cells. He is also studying plant compounds which may be used to block nerve activation , and may be used in the treatment of diseases involving the trigeminal nerve.

Paul has published many peer reviewed articles and one book chapter in the book to be publishes in 2013, edited by Renee se Leeuw entitled Orofacial Pain, Guidelines for Asssessment, Diagnosis, and Management 5th Edition.

Professor Emma Whitelaw

Professor Emma Whitelaw is a molecular biologist working at the La Trobe Institute of Molecular Sciences, Melbourne. After completing her undergraduate degree at the Australian National University, she obtained a D.Phil at the University of Oxford and remained working in London and Oxford for the next fifteen years. In 1991, she joined the University of Sydney and focused her research on transcription. Her most notable research achievements are in the area of epigenetics. More recently she has extended her studies to include the interaction between the environment and the epigenome. In 2008 she was awarded an Australia Fellowship, the most prestigious fellowship available from the NHMRC, and in 2011 she became a Fellow of the Australian Academy of Science.

Emma has had a distinguished research career, with highlights that include (but are not limited to)

- Demonstration of the heritability of epigenetic effects
- The effects of inherited epigenetically inherited traits on the skull, especially with reference to fetal alcohol syndrome
- The establishment of a mutagenesis screen in the mouse to identify novel genes involved in epigenetic processes
- Epigenetic differences in monozygotic twins discordant for disease.

Epigenetics is the study of changes in patterns of gene expression in the absence of changes in the DNA sequence. The notion that environmental influences on phenotype can be mediated by detectable/ measurable epigenetic marks continues to be of interest to the biologist, the clinician and the broader community. One reason for the interest is that these molecular marks might be valuable as biomarkers of future disease, i.e. preclinical diagnosis. Another reason is that there are small molecules available that can be used as drugs to change epigenetic state, providing a possible treatment option. However, the value of these approaches is dependent on the long term stability of these marks, which is in most cases unknown.

Nevertheless, in general, epigenetic reprogramming of the genome, which is a complex process of switching "on" and "off" different subsets of genes, is required for development and differentiation to proceed normally.

Indeed, studies in mice and humans have shown that deficiencies in the proteins that establish epigenetic marks results in a wide range of abnormal phenotypes. I will discuss some of these examples, focussing on craniofacial defects.

Topics Covered

Friday March 13th 2015

8 am – 8:15 Opening remarks/welcome

8.15-9.15. Introduction to Epigenetics I - Nature vs Nurture or Genetics vs Epigenetics
Guest lecture by Emma Whitelaw
This session will focus on a basic introduction of genomics (nature) and epigenetics (nurture). What are the mechanisms of epigenetic regulation and do we study the changes that affect our gene expression.

9.15-10.15 Introduction to Epigenetics II – Life Style Choices and Human Health
In this presentation, the impact of our external and internal environment and life style choices on our epigenome will be discussed. Evidence for the plasticity of our genetic information to change in a dynamic way will be presented. Emphasis on importance of epigenetics to overall health and disease progression with focus on global changes associated with cancer will be presented.

10.15-10.45 Question and answer with both speakers

10.45-11.15 Morning tea

11.15-12.15 Trigeminal System and Pain: Role of Neurons and Glia
This presentation will focus on the important role of trigeminal neurons and glial cells within the ganglia and spinal cord in the development of peripheral and central sensitization and chronification of pain. The function of key proteins will be discussed that are responsible for modulating inflammatory responses with peripheral tissues, the ganglion, and spinal cord.

12.15-12.30 Question and answer

12.30-1.30 Lunch

1.30-2.30 Epigenetics Role in Pain Chronification (includes a 10 min Q&A session)
Results from recent studies will be presented that highlight the emerging role of epigenetic changes that promote the acute to chronic pain transition. What can your patients do to prevent this transition?

2.30-3.30 Epigenetics of Stress (includes a 10 min Q&A session)
Stress is a major health concern and is often cited as a primary risk factor for many diseases. In this presentation, the mechanisms by which poorly managed stress promotes a disease state will be addressed.

3.30-4.00 Afternoon tea

4.00-5.00 Break-out discussion sessions
Discussions will focus on topics covered in afternoon session – Chronification of pain and stress.

5.15-7.30 Cocktail Party

Saturday March 14th 2015

8.00-9.00 Epigenetics and Neurological Disease I – Neuroinflammatory
The emerging role of epigenetics in diseases of the nervous system that involve neuroinflammation such as migraine, TMD, epilepsy, and others will be covered. Migraine, TMD; epilepsy

9.00-10.00 Epigenetics and Neurological Disease I – Neurodegenerative
The importance of epigenetic changes associated with the development of Alzheimer's Disease, Parkinson's Disease and autism will be addressed. Life style changes your patients can do to slow the progression of these diseases/disorders will be presented.

10.00-10.30 Break

10.30-11.30 Epigenetic Mechanisms in Drug Addiction and its Clinical Management
The epigenetic mechanisms involved in drug addiction will be addressed with particular emphasis on the impact of opioid overuse. How the same epigenetic mechanisms could be used to improve the clinical management of these disorders will be covered.

11.30-12.30 Breakout session II-Neurological disease and drug addiction

12.30-1.30 Lunch

1.30-2.30 Impact of Sleep and Exercise on Epigenome
The role of normal sleep and exercise in preventing epigenetic changes associated with disease progression will be covered. The negative consequences of poor sleep hygiene and lack of exercise will be addressed with an emphasis on their impact on the nervous system.

2.30-3.30 Role of Nutrition and Gut Microbiome in Human Disease
The importance of diet will be discussed in relation to maintaining a healthy environment for commensal bacteria that live in our digestive system. The effects of a poor diet on the development and progression of obesity and diabetes will be addressed.

3.30-4.00 Afternoon tea

4.00-5.00 Breakout session III – Sleep, Exercise, and Nutrition.

5.00-5.15 Closing remarks

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Invites you to be a part of our 4th Symposium
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