

Subject: Media Release: Prize for Slime Mould Model of Mitochondrial Disease

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For immediate release

Prize for Slime Mould Model of Mitochondrial Disease

Professor Paul Fisher of La Trobe University has been awarded the 2007 *Australasian Science* Prize for discovering how an alarm protein that senses energy can cause cellular damage in mitochondrial diseases. Now in its eighth year, the *Australasian Science* Prize provides priceless recognition for scientific originality, breadth of impact and communication to both the scientific and broader communities in the preceding 12 months.

Mitochondria are the organelles that produce energy within cells. Mitochondrial diseases result from a reduced capacity of the mitochondria to generate energy for the cell in the form of adenosine triphosphate (ATP). Mitochondrial defects play a central role in major neurodegenerative diseases like Alzheimer's, Parkinson's and Huntington's.

Over 15 years Professor Fisher has studied the slime mould *Dictyostelium discoideum* (nicknamed "Dicty") as a genetic model for understanding how malfunctioning mitochondria lead to diseases. In a May 2007 paper in *Molecular Biology of the Cell*, he and postgraduate colleagues upturned a long-held belief that these diseases were the consequences of an insufficient supply of ATP that led to dysfunction and ultimately the death of cells. Instead, a protein called AMPK warns of an impending loss of energy and immediately takes remedial action by stimulating the production of more energy while shutting down energy-consuming processes such as the growth and division of cells.

Professor Fisher explains: "As in human cells, AMPK in Dicty stimulates the proliferation of mitochondria and the production of energy. However, the ongoing activity of AMPK in mitochondrially diseased Dicty cells permanently impairs growth and development." Similarities between these cellular processes and the genetic makeup of Dicty and humans led him to believe that the AMPK alarm behaves likewise in humans. He says: "This may provide a way to treat these currently incurable diseases".

The findings have attracted international attention. Prof Jeff Williams of the University of Dundee, Scotland, a leading researcher on a programmed cell death pathway in Dicty, says this paper is "a major breakthrough that has enormous scientific and medical potential... I cannot overstate the importance and originality of this contribution. Such ideas usually open up whole new research avenues that lead, eventually but inexorably, to important medical advances."

Professor David Vaux of La Trobe University, an expert on cell death, describes Professor Fisher's work as "exciting, basic biology which provides a totally fresh angle towards understanding a lot of diseases. It now needs to be tested for its applicability to humans."

Please credit AUSTRALASIAN SCIENCE MAGAZINE is as the source of this story.

CONTACTS:

Professor Paul Fisher on (03) 9479 2229 or (0437) 568 771.

Editor, **Guy Nolch**, on (03) 9500 0015

Photos of Professor Fisher and the intriguing slime moulds are available.

PRESENTATION AND PUBLIC LECTURE

The *Australasian Science* Prize will be presented to Professor Fisher who will deliver a public lecture hosted by La Trobe University and sponsored by *Australasian Science* magazine with ANZAAS:

*Animal, vegetable or miracle?
Lessons from a slime mould on mitochondrial disease*

6 pm, Thursday 15 November 2007

La Trobe R&D Park Conference Centre (via the Waterdale Road entry)

*Professor Fisher's presentation will be followed by a champagne toast and light refreshments.
Inquiries to [0439 639 187](tel:0439639187).*

PAST WINNERS OF THE PRIZE

2006: Assoc Prof Alex Hamilton and the Quantum Electronic Devices Group (University of NSW) for developing quantum semiconductor devices that use holes instead of electrons.

2005: Alexander Argyros, Dr Martijn van Eijkelenborg and Dr Maryanne Large (University of Sydney) for developing polymer optical fibres that perform competitively with silica fibres.

2004: Prof Levon Khachigian (University of NSW) for developing DNA drugs with potential in cancer treatment.

2003: Prof Mark Rowe (University of NSW) for determining how sensations are processed and transmitted in the brains of mammals.

2002: Dr Mark Hindell (University of Tasmania) for research on the behaviour of southern elephant seals and other marine predators.

2001: Prof Mandyam Srinivasan, Dr Shaowu Zhang & Dr Javaan Chahl (Australian National University) for extending knowledge of the behaviour and intelligence of bees to artificial intelligence.

2000: Dr Charlie Veron & Dr Mary Stafford-Smith (Australian Institute of Marine Science) for the discovery of 169 species of corals and documenting all known species in *Corals of the World*.

Guy Nolch
Editor, Australasian Science
Box 2155 Wattleree Rd PO
VIC 3145 Australia
Phone 61-3-9500 0015
Fax 61-3-9500 0255
Web australasianscience.com.au

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