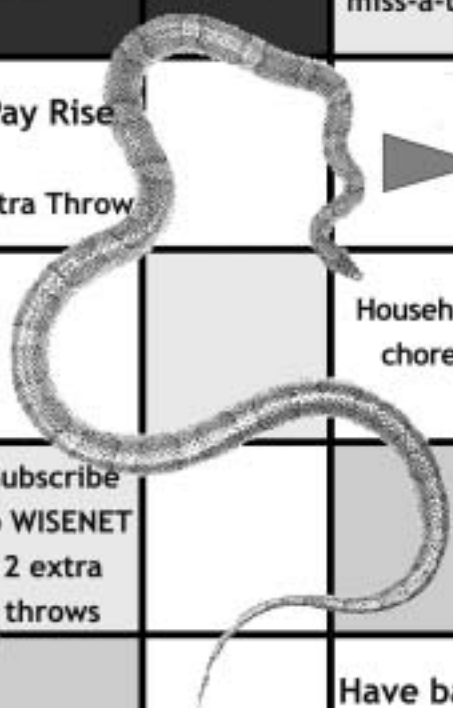
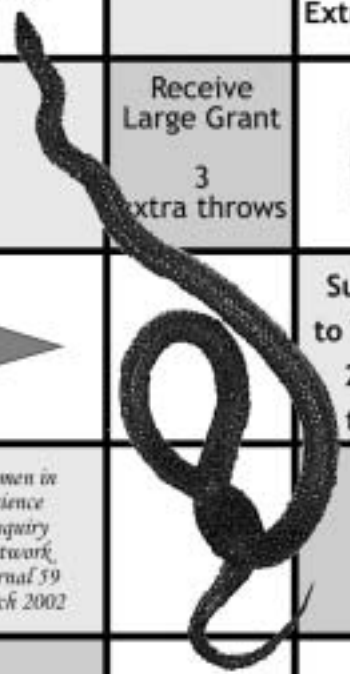
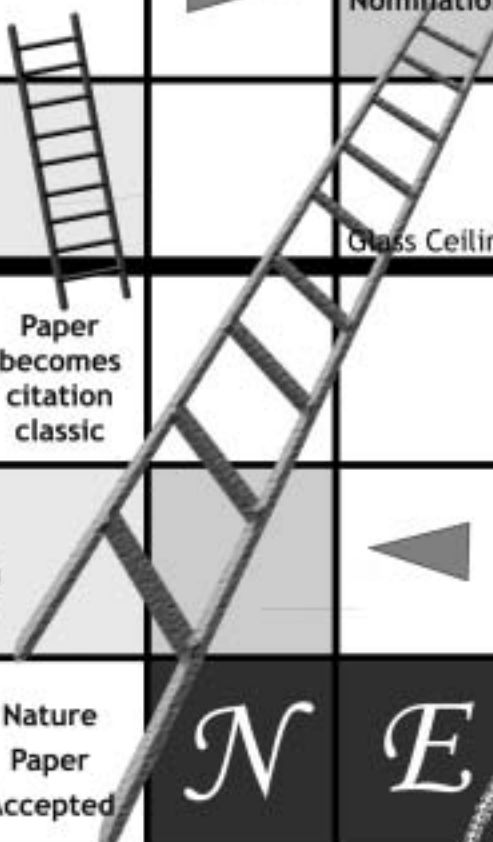


	Discover meaning of life - no-one believes you				Nobel Prize Nomination	FINISH	
▲					Glass Ceiling		▲
	Pay Rise Extra Throw		Paper becomes citation classic			Passed over for promotion	
	W				▲		
Partner transferred overseas Begin Again	I	Self doubt miss a turn	Nature Paper Accepted	N	E	T	Family believe in you
▲	Promotion on Merit	S	E	Daycare closed miss-a-turn			Funding runs out
Male chauvinist boss		Pay Rise Extra Throw		▲			
	Receive Large Grant 3 extra throws			Household chores	Voted supervisor of the year		
▲		Subscribe to WISENET 2 extra throws					Pay Rise Extra Throw
<i>Women in Science Enquiry Network Journal 59 March 2002</i>				Have baby lose 5 throws			
START	▲	Self doubt miss a turn		Young Scientist of the Year 2 extra throws		Supportive work colleagues	▲



# WOMEN IN SCIENCE ENQUIRY NETWORK

## OBJECTIVES

- to increase women's participation at all levels in the sciences where they are now under-represented;
- to examine the education and employment structures which currently restrict women's opportunities in the sciences;
- to gather and disseminate data on women in science, the sciences here including the physical, social and life sciences, mathematics, computing, medicine, engineering and associated technologies;
- to explore linkages between the different disciplines and promote communication between scientists and the community on social and environmental issues;
- to examine the relationship between scientific research and technology and promote research and technologies more appropriate for world needs;
- to explore programs for change in the sciences and support more democratic and participatory systems as an alternative to the male-dominated tradition;
- to build an active network of people interested in these issues and to liaise with other interested groups;
- to support appropriate action to achieve these objectives.

Women in Science Enquiry Network (WISENET) Inc was established to increase women's participation in the sciences and to link people in different branches of science and those who are working towards a more participatory and socially useful science.

WISENET was formed through the establishment of a series of state branches. Regional groups, such as those based in Wollongong and Lismore in NSW have also been formed. Interest groups, such as that responsible for the historical exhibition on Australian women in science, have also been active. State and regional branches act autonomously, focusing activities primarily at a local level but also joining with other groups for more general issues.

WISENET is open to women and men who are involved or interested in the sciences and are interested in working for change in line with the objectives. New members are welcome. If you would like to join please complete and return the application form on the inside back page of this issue.



P O Box 647, Glebe, NSW 2037

WISENET Web Site: <http://www.usyd.edu.au/wisenet/>

# EDITORIAL

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Avoid sexist or other discriminatory language. WISENET reserves the right to make editorial changes. Each article is the opinion of the author and not necessarily that of WISENET

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It concerns WISENET that our membership, although Australia-wide, is few. Through legislative and attitudinal changes, workplaces have improved for women, but while women comprise less than a 'critical mass' (30%?) in science and technology (SET) there remains a need for a network like WISENET.

Of particular concern is the small proportion of those very successful women who have reached the top in SET who have joined WISENET. The Athena Project in Britain (see p. 14), which aims to push for the advancement of more women in SET, is successful, we are told, because the big guns like Professor Julia Higgins are behind it. This has not happened in Australia. The WISENET membership does include some professors and heads of research divisions and institutions, but many such women have sidestepped invitations to join.

One distinguished woman has publicly denied the need for special consideration, arguing that if she could make it to the top on merit alone, why cannot other women? Perhaps she has been atypically fortunate. Even for very able women career paths are seldom straightforward. Biological and social responsibilities for family and future generations and some male attitudes often handicap women's careers. Patches of discrimination, sometimes covert, remain in SET as in other workplaces, and we hear sad individual tales.

This issue contains a short contribution from Professor Emeritus Mary O'Kane, a high achiever in technology and administration, who last year resigned as vice-chancellor of the University of Adelaide. Few of us women in science and technology reach these top levels, many do not aspire to, but successful women owe it to all women, including those less successful, to join WISENET and push for an end to the glass ceiling.

Diana Temple

**Many thanks to the WISENET members who contributed to the Journal Fund - over \$1500 has been raised!**

**Thanks also to those who volunteered to help and we especially welcome Margaret Wyrill to the Editorial Team.**

# WOMEN ACHIEVING IN SCIENCE

*compiled by  
Diana  
Temple*

**Professor Fiona Stanley** and **Professor Nancy Millis** are among five eminent scientists whose faces are to appear on Australian stamps in 2002, Australia Post announces. The men are Nobel Laureate Peter Doherty, Professor Sir Gustav Nossal and Professor Don Metcalf. What a fine innovation after years of sporting stars! Fiona Stanley, Professor of Pediatrics at the University of WA, is famed for her work in epidemiology, particularly in children and Aboriginal people. Nancy Millis, Emeritus Professor in Microbiology at Melbourne University, and expert in recombinant DNA, is Chancellor of La Trobe University.

**Dale Spender**, Queensland feminist writer and academic, is famed for promoting the IT revolution in society, in universities and in schools. The author of 30 books, she was profiled recently (the Weekend Australian 5 December 2001) where she is described as an E-prophet and the "woman in purple".

**Jean Weber**, who is WISENET's Honorary Website Editor and former editor of this Journal, has been achieving in her fashion by touring the far north in a desert-equipped solar motorhome, taking hundreds of photographs and displaying them online to inspire others to travel to those parts. But the host company for Jean's digital photo-show has gone missing and all links to it are dead; Jean is "a bit shocked"!  
*Source: Sydney Morning Herald 21 Jan 2002*

**Galina Kaseko** is a graduate of the Moscow Medical Academy, described as one of the top six medical schools in Europe. She came to Australia to UNSW and is now Research & Development Manager, Biomedical, of FuCell, a company formed to commercialise UNSW's production of human-based antibodies. Dr Kaseko speaks of the tragedy of young researchers having to leave Russia for economic reasons.

**Sheila Messer** is also part of a reverse brain drain into Australia. An electrical engineering graduate from California, she came back to Adelaide with a Rotary Ambassadorial (post-graduate) scholarship, having earlier been an exchange student in Adelaide. She is working on the Heard Heart Sound Biomonitor Project at Adelaide University's Centre for Biomedical Engineering. Electronic stethoscopes record phonocardiograms

which are used as a diagnostic tool for heart problems; the project's aim is to improve these records by reducing extraneous sounds.  
*Source of above two items: Australasian Science 22, March 2001*

Two women scientists in Sydney are researching from quite different angles potential treatments for Mesothelioma, a rare but very serious form of lung cancer caused by asbestos dust. **Professor Judith Black** and her group, at Sydney University, are studying matrix metalloproteinase enzymes in lung, which may affect the migration of the cancer cells in lung. **Dr Helen Wheeler** at Royal North Shore Hospital heads a group which is studying the use of thalidomide in the lung; thalidomide has the potential to block blood vessel growth within tumours.  
*Source: Today's Life Science 13, July/Aug 2001*

**Dr Sandra Webb** has been appointed Managing Director of the Melbourne firm AMRAD, which focuses on biotechnology research and development. Melbourne born and educated, Sandy's career has been as a clinical trials and drug development executive with international experience; her previous post was Executive Vice-President with Cromedica Global Inc, based in Canada.  
*Source: AMRAD Website*

**Dr Judith Slocombe** of Melbourne has won the Australian Business Woman of the Year award, from more than 1000 entries Australia wide. Dr Slocombe established in 1989 a company called Veterinary Pathology Services; she sold out to the Gribbles Group and stayed on as managing director of what is now the National Testing Authority of Australia. It trains veterinary diagnosticians and serves clients like the Melbourne Zoo and Healesville Sanctuary. Dr Slocombe also has nine children aged from 21 to 4.  
*Source: Sun-Herald, Oct 7 2001*



# TILTING AT WINDMILLS, SLIDING DOWN SNAKES AND GENERALLY HAVING A GREAT TIME



Mary O'Kane

The editors of this journal have asked me to write about what it was like to be in a senior academic position and then to leave it suddenly. Mmm, well...

I have a passionate belief about Australian higher education and research institutions. I believe Australia should make the very best out of its investment in these organisations. I believe that a knowledge-rich society is essential for the social and economic well-being of our country. Like many others, I would like to see more public investment in higher education but it is hard to see what areas of public spending could be cut to provide it. And there seems to be little enthusiasm for raising taxes.

So if our universities are going to maintain excellent standards and improve still further, given that current levels of public expenditure on higher education are unlikely to increase, then universities have to face up to significant internal reform at the system-wide level and at an institution level. As Vice-Chancellor of one of Australia's research-intensive universities, I worked very hard to achieve and enable such reform. As did several other vice-chancellors.

But many others who work in the high Australian higher education believe, just as passionately, that with the current levels of public investment and with the trend in working conditions perceived as getting ever worse, the situation is so hopeless that moves towards voluntary reform on behalf on the part of the universities are only staving off the inevitable collapse. This group, and they probably represent the vast majority of Australian academics, believe that too much is asked of them already and that it is better to let the system go downhill until the government has no choice but to intervene.

I knew that I had been working against a majority view but pushed on with reforms for several years. There were good times but, bluntly, it was exhausting and dispiriting. It was becoming increasingly clear to me that I was working against an increasing wall of resistance. Eventually (the details are confidential and to a large extent irrelevant), I decided that tilting at this particular windmill wasn't going to work, and resigned. Some other reformist vice-chancellors also left the system last year. I

chose to go more quickly and publicly than most thus gaining a chance to talk about the system and its woes.

So what does this mean for women in senior academic jobs? Or, for that matter, anyone in a senior academic job? Probably the most obvious issue is that reform is a risky and dangerous business unless there is a strong willingness on part of the community to engage in such reform. And, yes, possibly the form of opposition to what I was trying to do had a nasty edge because I was a woman and a relatively young woman for the role.

But hey that's life. And I've had a fortunate and very exciting life. Maybe what happened at Adelaide University was best captured symbolically by Anna Platten, a very talented South Australian artist, who painted the official portrait of me as Vice-Chancellor. She depicted me standing in my office – with the University snake (a beautiful water python or rainbow serpent) gliding over the floor at my feet. Life can be a bit like the game of Snakes and Ladders. Sometimes we find ourselves at the foot of a magnificent ladder. But we must be ready to slide down a snake.

*Professor Emeritus Mary O'Kane was Vice-Chancellor of Adelaide University from 1996 until August, 2001.*

*A researcher and inventor in the field of automatic speech recognition, she was awarded the Australian Telecommunications and Electronics Research Board (ATERB) Medal in 1990 for her work in this field and the Queensland Science Tall Poppy Award in 2001.*

*Professor O'Kane is a member of the Board of the CSIRO and CEO of a business advising governments and the private sector on innovation, research and education. She is a Fellow of the Academy of Technological Sciences and Engineering and a Fellow of the Institution of Engineers, Australia.*

# SEX, GENES AND CHROMOSOMES : A FEMINIST VIEW

*Jennifer A.  
Marshall  
Graves*

Of all the differences that distinguish people, the most obvious is whether they are male or female. It is surprising to find that all the items on the long list of differences in anatomy, physiology and behaviour between men and women are a direct or indirect result of just one gene. In this talk, I will describe this gene and the peculiarities of the Y chromosome on which it lies, talk about its evolutionary rise and predict its ultimate demise.

The decision of what sex a baby will develop as is made fairly late in development, when the undifferentiated gonad gets the message to form either a testis or an ovary. Testis is triggered by a gene called the testis determining factor (TDF) that we have always supposed activates a battery of other genes that differentiate a testis. If no testis determining signal is received, the gonad develops as an ovary. Sex determination really amounts to testis determination because everything else flows from this by a cascade of hormones unleashed by the differentiated gonad.

In man and other mammals, sex is decided by the chromosomes the embryo received from its parents. Females have two copies of a medium-sized chromosome called the X, while males have only a single X plus a smaller chromosome called the Y. We know that the Y chromosome bears a male-dominant sex determiner because if you have a Y you are male whatever your number of Xs.

A race to isolate TDF began with its localization on the Y, using DNA from people with only half a Y chromosome, or only a small bit of it to zero in on TDF. A candidate gene ZFY was claimed to fill the bill, but ultimately failed the test. The SRY gene was isolated a year later and shown to be the real TDF because it was mutated in females with a Y, and it produced males when injected into XX mouse embryos. Australia had a big part in this story, since the first inkling that ZFY was the wrong gene was our discovery that it was not on the Y in Australian mammals (marsupials and monotremes), and subsequently SRY was discovered and proved to be the right gene by two young Australians working in London.

The SRY gene, and indeed the entire Y chromosome, is very unusual. The Y is a small chromosome with hardly any genes on it. It is a real genetic wasteland, stuffed with dead virus genomes and repetitive sequences that do not make proteins. Whereas the X has about 1400 genes with all sorts of roles in metabolism and specialist functions having little to do with sex, the human Y has only 26 genes, and most of these are

concerned with sex determination and differentiation, especially making sperm. This is even more peculiar when you understand that the Y arose as a degraded copy of the X, and many or most genes on the Y have copies on the X.

Why has the Y degraded to this sorry state? Acquiring a sex determining gene was the kiss of death for the Y. After this happened, other genes with an advantage in males began to accumulate around TDF, and it became an advantage for the region to become isolated from the constant genetic shuffling that keeps chromosomes in a pristine state. Without the possibility of repair, genes were mutated, inactivated and ultimately deleted, and the Y was invaded by dead virus genomes.

Since the Y chromosome evolved by degradation of the X, the genes on the Y must have evolved from genes on the X. Of special interest is the gene, SOX3, from which the sex determining SRY evolved. SOX3 is active in the brain with a minor role in the developing testis. How did a respectable brain-determining gene become a testis-determining gene? The peculiar structure of the SRY gene and its lack of conservation makes it look as though the ancestral gene was chopped off, leaving only the part that binds to DNA. It may work, not as we had thought by turning on testis-differentiating genes, but by turning an inhibitor off - essentially by getting in its way.

We have always believed that the way that humans determine sex is shared at least with all vertebrates. This is wrong. Although the genetic pathway for making males seems to be much the same in humans, birds and even fish, the triggers that control the process seem to be extremely changeable. Studies with other mammals, as well as birds and reptiles, show that SRY is a real Johnny-come-lately, and the Y chromosome may have got its start from another ancient sex determining gene.

Even worse, the Y chromosome, and the sex determining gene it bears, has its use-by date. There are two rare eastern European rodents with no Y chromosome and no SRY gene. This shows what will happen ultimately to the human Y when it degrades completely and a new sex determining system takes over.

*Abstract of a lecture given to the Royal Society of Victoria, 14 June 2001 and published with their permission.  
Professor Jennifer A. Marshall Graves, PhD, FAA  
Comparative Genomics Research Group  
Research School of Biological Sciences  
The Australian National University  
Canberra, ACT 2601, Australia*

**W W W.**  
*sciencevictoria.  
org.au*

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**Why has the Y degraded to this sorry state? Acquiring a sex determining gene was the kiss of death for the Y.**

”

# 2002 AUSTRALIAN MUSEUM EUREKA PRIZES

**A woman can't win a Eureka Prize if she is not nominated. Someone has to do that nomination.**

The 2002 Australian Museum Eureka Prizes consist of an unprecedented 18 prizes worth almost \$180,000. Five are being offered for the first time.

Entries close 15 May. Self entries and nominations are encouraged.

New prizes for 2002 are for lateral thinking by secondary students; research in ethics; information and communications technology innovation; engineering journalism; and health and medical research journalism. These join established prizes for environmental and science journalism; environmental education programs; industry commitment to science; critical thinking; promotion of science; secondary school biological and earth sciences; engineering innovation; biodiversity, environmental and

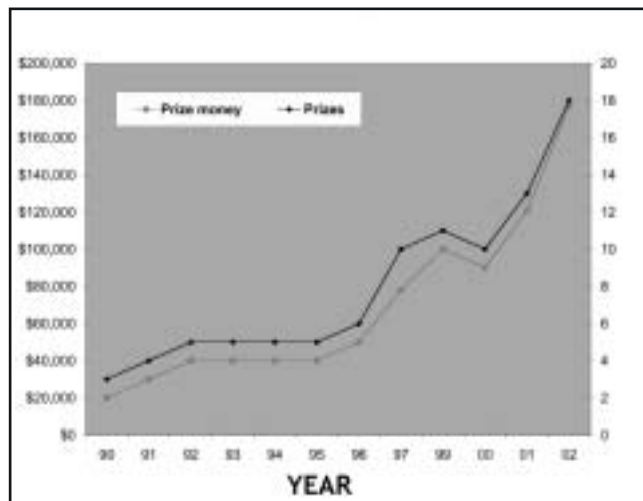
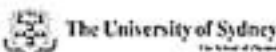
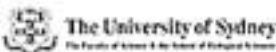
scientific research; and science book authorship.

Since their establishment, there has been a remarkable growth in the number, scope and value of the Eureka Prizes. (see graph)

Each Eureka Prize (other than the Australian Museum Prize for Industry) carries with it a cash prize of \$10 000.

Please consider nominating either yourself or someone you know for a Eureka Prize.

**For full details and entry forms:**  
[www.amonline.net.au/eureka](http://www.amonline.net.au/eureka).



Graph courtesy of Peter Firminger

**W W W . [amonline.net.au/eureka](http://amonline.net.au/eureka)**

# FEEDING THE WORLD IN THE TWENTY FIRST CENTURY

*Acram Taji*

The invention of agriculture 10,000 years ago heralded the dawn of civilisation. It began with rain-fed, hand-hoe agriculture which evolved into animal-powered, scratch-tools agriculture, and finally into an irrigated agriculture along the Euphrates and Tigris rivers. For the first time this allowed humans to produce food surplus and permitted the establishment of permanent settlements and urban societies which, in turn, engendered culture, science and technology. The rise and fall of ancient civilisation in the Middle East and Meso-America were directly tied to agricultural success and failure.

During the past 50 years progress has been made in increasing the yield and production of various crops especially the cereal crops in many countries. Clearly, the research that underpinned this progress has produced huge returns. Yet, despite more than tripling the world food supply during the past 30 years, the 'green revolution' of the 1960s and 1970s has not solved the problem of chronic under-nutrition for millions of poverty stricken people around the world. Due to unemployment or under-employment, most of these people are unable to purchase the food they need, despite its abundance in world markets.

In 1999 global food production of all types stood at 4.74 billion metric tons of gross tonnage and 2.45 billion tons of edible dry matter. Of this total, 99% was produced on the land - only about 1% came from the ocean, lakes and rivers, even though 70% of the earth's surface is covered with water. Plant products constituted 93% of the human diet, with about 15 crop species providing most of the world's calories and protein with the following 7-9 crops [namely wheat, rice, maize, potato, sweet potato (or yam), sugar cane (or sugar beet) and soybean] accounting for 65% of the world food supply. Animal products, constituting 7% of the world's diet, also came indirectly from plants. Had the world's food supply been distributed evenly the present food production would have provided adequate diets for 6.8 billion people. However, if the people of the Third World countries attempted to obtain 30% of their calories from animal products (as we do here in Australia, NZ, USA, Canada or EEC countries) a world population of only 2.6 billion people could have been sustained with

the present world's food supply, i.e. about half the present population on earth. Therefore, there seem to be two key problems of feeding the world's population.

The first problem is the task of producing sufficient quantities of the desired foods to satisfy needs of the population, and more importantly to do this in environmentally and economically sustainable manners. The second problem is to distribute food equitably. Poverty is the main impediment to equitable food distribution, which is made more severe by rapid population growth as well as political unrest in areas where some of this population growth is occurring.

The population increase has been exponential in the past century or so (1 billion in 1830, 2 billion in 1930, 3 billion in 1960, 5.4 billion in 1990). From the present population of around 6.5 billion it is projected that the world population will reach 8.3 billion by 2020, before stabilising at around 11 billion towards the end of this century.

This increase in population, coupled with the reduction in agriculturally useable land per capita (0.3 ha per head in 1980 to 0.22 ha per head in 2000) will put further pressures on the available land. Requirements of the continually growing population for food and fibre must thus be satisfied by an increase in yield. To meet the projected food demand for this increasing population, the average yield of all cereals need to be increased by 80% between now and 2020.

Bearing in mind that there are natural limits to increased productivity and limits to how much environmental manipulations can improve productivity; one way to improve productivity is through the so-called area of 'gene technology' (biotechnology). Indeed, one major aim of biotechnology is to increase yield (biomass), whilst maintaining stable human ecosystems.

In modern biotechnology we aim to make a living cell perform a task in a predictable and controllable manner. This can be achieved through gene manipulation. Of course we have been involved in choosing desirable genes for centuries. We have done this by 'selective breeding' which has resulted in the Merino sheep breed, rust-resistant wheat, and bacteria

and fungi which produce high levels of antibiotics. What began as a modern biotechnology bandwagon, some 15 or so years ago, has developed some invaluable new scientific methodologies and products.

So far the greatest impact of this technology has been in medicine and public health. However, there are a number of developments that are either approaching commercial applications in agriculture or have already been commercialised. In animal agriculture, we have bovine somatotrophic (BST) now widely used to increase milk production.

Transgenic varieties and hybrids of cotton, maize and potatoes containing genes from *Bacillus thuringiensis* (Bt), which effectively control a number of serious insect pests, are now being successfully used commercially. The use of such varieties will greatly reduce the need for insecticides. Progress has also been made in the development of cotton, maize, canola, soybean, sugar beet and wheat, with tolerance to a number of herbicides. This can lead to a reduction in herbicide use by much more specific dosages and interventions.

Since most of the research in the area of biotechnology is being conducted by the private sector (e.g. Monsanto, Florigene, Calgene, ForBio etc.) which patents its inventions, those concerned with agricultural policy must face up to a potentially serious problem since most of the population increase is occurring in poor rural areas of the developing world which are dependent on agriculture. The questions are: 'How would these people afford the products of biotechnology research? What will be the attitude of these multinational agribusiness companies towards this large section of humanity that still lives largely outside the commercial market economy?' These issues go far beyond economics; it is also a matter of deep ethical consideration.

Basically, the issue is whether small-scale farmers of the Third World also have a right to share the benefits of biotechnology. If the answer is yes, then what is the role of international and national governments to ensure that this right is met?

The other part of the problem is that science and technology are under growing attack in the affluent nations where environmentalists claim that the consumer is being poisoned out of existence by the current agricultural practices. Of course their views are not unfounded. We know

that in late 19th and early 20th century we were poisoning ourselves through wasteful industrial production systems.

Over the past 20-30 years in the industrialised nations pressures by the environmental movement has led to legislation to improve air and water quality, protect wildlife, control the disposal of toxic waste, protect the soils, and reduce the loss of biodiversity. Certainly, we must be environmentally responsible in our efforts to produce even greater quantities of food to feed our ever increasing population and the only way forward is through responsible use of the new technology. We cannot turn back the clock and use technologies that were adequate for a much smaller world population. But we must ensure that the products of this technology will reach the poor nations and will not remain a luxury affordable only by affluent societies. If the dissemination of the fruit of this technology is not widespread humanity in this century will face more mass starvations and deaths than were experienced in previous centuries.

*An abstract of an address to the UNE Academic Women's Association in 2001*

*Acram Taji is a Professor and Vice-Dean in the School of Rural Science and Agriculture at the University of New England.*

#### **Further reading:**

*Norman Borlaug*  
*Feeding a world of 10 billion people: the miracle ahead*  
*Plant Tissue Culture and Biotechnology*  
1997, 3: 119-127

*Jim Peacock*  
*Gene technology and our future life style.*  
*Chemistry in Australia: August 1999, pp. 17-22.*

*David Suzuki*  
*The sacred balance*  
*Published by Allen and Unwin 1997*

*Acram Taji*  
*Agriculture in an era of biotechnology*  
*Australian Rural Science 1998/1999 pp 20-23*

*Acram Taji*  
*Genetic Engineering in Plants- State of the Art*  
*Australian Rural Science - pp 48-51, 1996/1997.*

# INTERNATIONAL SCIENTIFIC CONTROVERSY: THE TAXONOMY OF THE PLATYPUS

*Ann Moyal* **The curious creature that baffled the world.**

From the moment the first preserved specimen of a platypus reached England in 1799 it was a nine-day wonder. Was this a colonial hoax? A creature with webbed feet and the bill of a duck attached to the body of a quadruped? Astonished naturalists pondered an animal that confounded all their views of taxonomic classification. Warm-blooded, furred, but with bird-like and reptilian features and structures, it was clearly unique. The single chamber for its reproductive and excretory function (dubbed a 'one-holer' Down Under) challenged all established taxonomic boundaries.

Early expeditions of scientific survey and discovery to Australia in the first three years of the new century – the French under Baudin and the British under Matthew Flinders – brought back elegant and delicately accurate depictions of the platypus drawn by Charles Lesueur and Ferdinand Bauer, although these were not sighted by scientists or the public for more than 150 years. Dried specimens arriving in England were dissected and analysed. Joseph Banks, with his large networks, got into the act. Dissent broke out between leading zoologists and comparative anatomists in Britain and Europe. Ever since the ingenious Aristotle made the first scientific classification of animals in 334 BC, their reproductive organs were regarded by systematists as increasingly important in arranging animals into related groups, classes and genera. Mammals in general gave birth to live young, and were viviparous; reptiles and sharks hatched their young from eggs inside their body and were ovoviviparous; while creatures that laid eggs, like birds, were oviparous. Where, with its bizarre configuration, did this extraordinary new arrival from the Antipodes fit?

From 1800 until the mid-1830s, scientists wrangled across the Channel. Was the platypus a mammal? Did it suckle its young? Where were its mammary glands? What implications did it have for their ideas of a Universe of Design and the Chain of Being? Nationally competitive, the great biologists tried to shoehorn the little creature into their

differing systems of classification and scientific and theological belief. In 1836 Charles Darwin, visiting Australia aboard the *Beagle*, became the first key British scientist to sight the live platypus in the Cox's River near Bathurst. 'A Disbeliever in everything beyond his reason might exclaim,' he noted in his Diary, 'surely two Creators must have been at work'. But shaping his theory of evolution and natural selection later, that 'wonderful creature', as he called it, seen in an Australian river on a summer's evening, drifted in his consciousness and became a persistent player in his maturing ideas on biogeography and the survival of special species in isolation.

The platypus question was not a question in isolation. As exploration ranged out and returned a vast weight of new specimens from remote regions of the world, the 19th century became the great century of classification involving such key scientific figures as Lamarck, Cuvier and Geoffroy St Hilaire in France, leading German zoologists, and Sir Everard Home and Sir Richard Owen at the Royal College of Surgeons in Britain. The extreme oddity of the animal and of other Australian fauna fuelled the general British perception that Australia with its convicts was also a 'zoological penal colony' – a faunal Gulag where everything was 'queer and opposite'. These patronising attitudes were to delay the solving of the problem.

In Australia, Sydney naturalist and physician Dr George Bennett spent 50 years pursuing the platypus puzzle, hunting it in the field and in its labyrinthine underground burrows and wreaking considerable carnage. But the influence and conviction of his colleague and monotreme authority, the great Sir Richard Owen, that the platypus produced its young from eggs hatched inside the body, confused and skewed the investigation. Significantly, the Aborigines and their long knowledge of the platypus form an important part of the story. But, in the climate of the period, their evidence was dismissed or ignored.

In the event, the mystery was solved not by the long-involved major protagonists but by a visiting Scottish postgraduate student, William Caldwell, who camped on the

Burnet River in northern Queensland in 1884, rounded up a horde of platypuses with the help of Aborigines and discovered a female who had just laid one egg and had a second egg dilated in her uterus. Staggering to a small telegraph station nearby, he communicated the news to the scientific world. 'Without the services of these people,' Caldwell acknowledged later, 'I should have had little chance of success'.

The 20th century offered further fascinating strands. From its beginning, platypus research and knowledge shifted to Australia among scientists like J. T. Wilson and his

riverbed by a process of electrolocation. From this striking evidence researchers concluded that the platypus left the main-stream and evolved a completely new and distinct sensory system that differed from any other animal. Hence, far from being a primitive animal, as 19th century scientists believed and insisted, the platypus has emerged as the most highly evolved animal in the animal kingdom. Monotreme expert Mervyn Griffith calls it 'the animal of all time'.

Secretive, highly elusive, drifting down the rivers of eastern Australia, it remains a magical creature and a great story.

“

**The extreme oddity of the animal and of other Australian fauna fuelled the general British perception that Australia with its convicts was also a 'zoological penal colony' – a faunal Gulag where everything was 'queer and opposite'. These patronising attitudes were to delay the solving of the problem.**

”

team at Sydney University, and to practical men like the knowledgeable Henry Burrell and the remarkable David Fleay, who bred the first platypus in captivity at Healesville in 1944. Winston Churchill got into the act. And in the late 1980s the opalised jaw of a Cretaceous fossil platypus ancestor from some 100 million years ago was found in the dry opal fields of Lightning Ridge. Darwin was right: here was a great survivor.

Most importantly, in the 1990s researchers at Monash University and the Australian National University discovered that the platypus has an 'electric' beak, a dense set of nerve endings across the shield on its bill that enables it to find its food. Platypuses shut their ears and eyes when diving for food and from considerable distances retrieve their meal of shrimps and insects from the

*Ann Moyal is the author of A Bright & Savage Land, Scientists in Colonial*

*Australia and Clear Across Australia, a history of telecommunications.*

*Platypus is published by Allen & Unwin (RRP \$29.95). An American edition is to be published by The Smithsonian Institute in 2002.*

*Reproduced with permission from Australasian Science .*



# FRIENDS IN TURKEY

*Heather Rossiter* **To all Wisenet Readers,**

With the world apparently dividing between Islamic and non-Islamic countries, some bridge-building might be our contribution to world peace. Our professional sisters in the Middle East may have a marginally different slant on the profession of science, their experience being centred in societies different from ours, and contact between us could be valuable.

Last year I was tempted to try to make contact with some women in Iran to talk about their science, but was glad afterwards that I had not pressed the issue. On the day before I left Tehran several journals and one



*An Iranian woman at Bishapur, Iran*

newspaper were shut down, their editors arrested, and six academics were expelled from Tehran university for 'pro-American activities', the standard euphemism for not adhering to the fundamentalist line on any topic. Other academics bravely protested, making the point that such official actions (this being only the latest in a persistent program) were having a negative impact on the intellectual life of Iran and causing a brain-drain much to the country's detriment. In that atmosphere, talking to me might have been compromising.

Against this, wherever I went in Iran outside of Tehran, I was overwhelmed by schoolgirls and sometimes schoolboys wanting to talk to me, if only to practice their English, but they were also curious about Australia.

In May 2002 I will be in Turkey, visiting Ankara and with perhaps a little free time in Istanbul.

If any Wisenet members/readers have a professional contact in Turkey who might be willing to talk to me (as a representative of the WISENET Journal) I would be happy to try to arrange a meeting.

As you know, Turkey has a freer, more secular society, and so direct contact with a western scientist should not be endangering.

Please let me know as soon as possible if you have any suggestions.

**[hrossiter@optusnet.com.au](mailto:hrossiter@optusnet.com.au)**

# THE AUSTRALIAN VISIT OF JULIA HIGGINS

*Diana Temple in  
Sydney  
Pauline Gallagher  
in Melbourne*

In November 2001, an eminent English woman scientist visited Australia as the inaugural Solomon Lecturer, sponsored by the Royal Australian Chemical Institute and the Australian Academy of Technological Sciences and Engineering.

Dame Julia Higgins is Professor of Polymer Science at Imperial College, London, a famous British scientific establishment. She has many awards, is a Fellow and Foreign Secretary of the Royal Society London, a member of the Council for Science and Technology, a top advisory body to the UK government, and has recently been honoured by the Queen as a Dame of the British Empire. She chairs the Steering Committee of the Athena Project, which is funded by the British government to investigate reasons for the scarcity of senior women in science and technology in British universities.

Most of us women scientists, battling with our professional lives and personal responsibilities which often include households with husbands or partners, children, or parents, must be

somewhat in awe of the achievements of a woman like Julia Higgins. When you meet her, she is easy, friendly, relaxed, and happy to talk of problems common to all scientific women.

**WISENET in Sydney** was fortunate to be involved in a Forum on Women in Science and Engineering, initially proposed by the Deans of Engineering and Science at Sydney University, both of whom are women. WISENET was included as co-host. The discussion was chaired by Karina Kelly, presenter of the ABC TV science programme, and the panel comprised Emeritus Professor Ann Sefton for WISENET, the two Deans Professor Judy Raper (Engineering) and Professor Beryl Hesketh (Science), and Professor Helen Garnett who is executive director of the Australian Nuclear Science and Technology Organisation. A large lecture theatre was filled with science academics, senior research students, some women from industry, plus groups of senior girl students from a number of secondary schools. The University also provided a buffet lunch.



*L-R: Karina Kelly, Diana Temple and Julia Higgins at the Sydney Meeting*

Professor Higgins addressed the assembly, saying that it is vital for society that women, as well as men, are educated about scientific issues on which they may have to make decisions, for example cloning and genetically modified foods. She said young women wanting science careers need curiosity, communication ability, capacity for collaborative team-work, the determination to succeed and confidence. She emphasised the importance of good teachers at school, able to enthuse young people. In answers to questions from the audience, Julia summarised her own background which led to her distinguished career. At school, she had inspiring teachers in maths and physics, and less inspiring chemistry teachers, so that her first degree, at Oxford, was in pure physics, and her DPhil in neutron diffraction. This led to post-doctoral projects in which she used neutron diffraction to study polymers, from which her expertise in polymer science derived.

Her words were well received, as indicated by the following comment in a letter to the organisers from a Sydney University student: "Very motivational, not only to me because I am female, but because I'm lacking motivation, but I learnt that you can be what you want to be, you just have to work to your full potential"

The social and practical reasons for encouraging more women into science higher education and to aspire to promotion in their fields were the bases for the establishment of the Athena Project, which Julia described. The report which follows of her meeting with the Melbourne WISENET group contains information on this admirable initiative. If only the Australian government had the same interest in women scientists!

**In Melbourne** nine of us sat down to lunch with Professor Dame Julia Higgins at the University of Melbourne on 22 November 2001. We were lucky to catch her for one final meeting in Australia before she left the country. Her visit had been assisted by two deans of faculties in the University of Melbourne, so it was an appropriate as well as pleasant place to catch up with her.

Julia started off by talking about the Athena Project and how it came about. Athena, of course, was the Greek goddess of hunting, war and handicrafts - a skillful fighter and worthy emblem for women in the sciences.

Her involvement in women in science started when, following "Rising Tide", a seminal report on women in sciences in the early '90s, Imperial

College set up a group to explore the issue of women in the science areas within the college. This group conducted a survey as its first initiative and found that maternity/maternity leave was the big issue for women trying to build careers in the science areas. From the work of this group, Imperial College established a one-year fellowship for women returning from maternity leave. The fellowship was for research only, as that part of the work was what suffered most from lengthy absences, and loss of expertise was the main impediment to taking time off or returning to academia.

Julia followed this project through to deliver a report to the UK Funding Council. She was surprised at how quickly the idea of the Athena Project was taken up. She attributed this response, and the much greater amount of funding than expected that it was awarded, to the links and contacts she made in important places. Having high-level support for the Project she believes was the key to it getting off the ground so easily.

Originally funded for 4 years, the Athena Project supports initiatives to assist women in science, not research. It initially called for Universities to put up projects that were about best practice, had support at the highest level of the university (Vice Chancellor level) and were active initiatives. The Project is now into its third round of grants. In the first round, Julia said that most of the 20 or so applications it received were essentially about mentoring. The second round included some work on why women are not applying for the academic posts that are available. The third round is going for best practice awards.

Even though the Project has reached the end of its proposed life through the Funding Council, Julia was optimistic that the Project will continue with the support of The Royal Society.

**Contact:** [athena@ic.ac.uk](mailto:athena@ic.ac.uk)

We had time for some questions and discussion round the table before Julia had to leave for the airport. We covered:

- ◆ the need for leadership at the top to better support women in science,
- ◆ the impact of performance contracts and subjective judgements about performance at senior levels
- ◆ the "superwoman phenomenon" and standards men tend to accept as norms for



L-R: Professors Ann Sefton, Helen Garnett, Julia Higgins, Ms Karina Kelly, Professors Beryl Hesketh, Judy Raper

women in science when women simply want reasonable career prospects,

- ◆ how can you say 'No' to unreasonable work demands (Julia was strong in her opinion that women with tenure CAN rock the boat),
- ◆ whether women should be treated separately from other areas of diversity in science. Julia was clear about this: women are not a minority group in the population,
- ◆ uptake of family friendly provisions
- ◆ blocking at middle management,
- ◆ the potential for international activity or an international body for women in science.

Julia made particular mention of the Daphne Jackson Fellowships which were operated from Surrey University. They were aimed at bringing back into science women who had been out of academia for a time. Again, as getting back up to speed with research was seen to be the primary hurdle for women, the fellowships funded 50% research only for two years.

Special thanks to Jo O'Neil who seized a very small window of opportunity to organise what turned out to be a stimulating and timely lunch for the Victorian Network.

## WORLD TECHNOLOGY AWARD WIN

University of Wollongong academic **Associate Professor Sharon Beder** was surprised but delighted when named winner of the 2001 World Technology Award for Ethics.

The award, for her work in engineering ethics and the ethics of legal corporations, honours a field considered likely to be of long-term significance for business and society.

Sharon Beder, Head of the University of Wollongong's Science, Technology and Society program, is the author of the controversial book *Global Spin: The Corporate Assault on Environmentalism*. Her latest book, *Selling the Work Ethic*, deals with consumption, the work ethic and employers. *Global Spin* made Professor Beder an international figure in environmental politics and earned the admiration of British playwright Harold Pinter and Australian investigative journalist John Pilger.



During the World Technology Summit and World Technology Awards, held in association with Nasdaq, GlaxoSmithKline, Enrol, Business Week, CNBC and Nature, she was presented with a trophy designed by internationally acclaimed architect Richard Meier. The ceremony was held in London's National Museum of Science and Industry. Ethics is one of the 24 categories in which awards are given.

World Technology Network chairman James Clack said Professor Beder won the award over 'an absolutely legendary group of people'. UOW vice-chancellor Professor Gerard Sutton said nomination for such an award would have been a remarkable achievement in itself. However, for Professor Beder to have won, clearly indicates her international standing in the technology world.

*Edited with permission from UOW News.*

# THE 2002 NATIONAL YOUTH SCIENCE FORUM

*Anna Robinson  
and Sally J.  
Stowe*

The National Youth Science Forum (NYSF), an annual event, was again held in Canberra in January 2002. Co-ordinated by a National Science Summer School Council, with representatives from Rotary, Universities, CSIRO, the Australian Academy of Science, Australian Academy of Technological Sciences and Engineering, industry partners and former students. Its past President is ACT WISENET member, Professor Sue Serjeantson.

**The NYSF aims to introduce Year 12 students to scientific research in academic and industry environments.**

It comprises 2 sessions of two weeks each; approximately 150 students attend each session. Students stay at the University of Canberra in student accommodation. They visit a number of laboratories where they have the opportunity to interact with scientists. They also have extra-curricular activities, including seminars, discussion

groups and debates on controversial issues such as using animals in research, and genetically modified foods. Excursions, social and leisure activities are organised. Every student seemed to enjoy the experience enormously.

**For additional information and photographs see [www.nysf.edu.au](http://www.nysf.edu.au)**

NYSF places equal emphasis on pure research, applied research and engineering in both the physical and biological sciences. Biomedical research and biotechnology are emphasised rather than medicine, dentistry, veterinary science, pharmacy, physiotherapy or similar professions.

**Anna Robinson reports:** At the John Curtin School of Medical Research, we hosted two groups of 16 students from each session. I talked to 50 or so students when they visited our school; the majority was female. They wanted to know about career paths, salaries,

preparation, satisfaction, difficulties, balancing children and career options, highs and lows of doing research. The males in the group were particularly interested in the time it took to become a research scientist and the income structure. I could see quite a lot losing interest as we did the sums:

If you were to start at 18, after 11 years you would be 30-ish with precious little in the bank account. AND a HECS account of approximately \$10,000!

Despite the balance sheet, they all showed great interest in my research as I explained

4-year undergraduate study term		\$ 0
4-6 year doctoral studies with a maximum payment of 3.5 years scholarship money at ~\$15,000 a year (Industry scholarships for some, say,		\$52,000 \$70,000)
Post-doctoral Research Fellowship:	academic (industry)	\$46,000 \$48,000)
Total earnings over an 11-year period		\$98,000 - (\$118,000)
Which equates to (approximately) per year		\$9k - \$10,700

my study in Glutathione S-Transferase enzymes and their important role in our body's detoxication mechanisms. They were also intrigued to hear about the human genome project; how genes encoding the GST enzymes could now be readily mapped to chromosomes; and the beginnings of correlation of discoveries at genetic and protein level with diseases and pathologies.

I found the whole experience extremely enjoyable and recommend it to any WISENET members who are invited to participate.

**Sally Stowe reports:** The ANU's Electron Microscopy Unit in RSBS always hosts two groups of 16 students (8 each half day) as part of their visit to the Research School of Biological Sciences. We give them a quick run-down of the principles of electron

**W W W.**  
[nysf.edu.au](http://nysf.edu.au)

microscopy, then encourage them to take turns driving the instruments while we talk about some of the research projects in the area. The questions are always 'how much do they cost?' and sometimes 'what do you have to study to get into this field?' Its easy to be encouraging for the last, since microscopy is a very broad church and accepts people with backgrounds, from maths and theoretical physics to paleontology with most of biology in between. I tell them that a good microscopist can walk into a very well paid job in the USA or Europe, but is lucky to find employment in Australia, but I mostly don't!

We are always impressed by how quickly the students pick up the basics of operating half a million dollars worth of electron microscope, how fascinated they are to discover that cellular organelles can look quite different from those in the textbooks, and how well they relate what they see to what they know.

I have also been struck by the high proportion of girls in the groups we see, and I think this is tending to increase.

We both decided that Australia's future is in very good hands and we wish that the financial benefit of the huge amount of study, self-discipline and personal sacrifice involved in becoming a scientific researcher were more realistic, even competitive with law, accountancy and politics. Perhaps as this generation comes to power, they will remember their experiences at NYSF and redress the imbalance to everyone's advantage.



## FROM CEMETERY TO CELEBRITY ; OUR SEVEN MOTHERS

*reviewed by  
Heather  
Rossiter*

**THE SEVEN DAUGHTERS OF EVE:  
THE ASTONISHING STORY THAT  
REVEALS HOW EACH OF US CAN  
TRACE OUR GENETIC ANCESTORS**

**By Bryan Sykes  
Bantam Press, 306 pp, \$34**

To make a book on cutting-edge molecular technology both rivetting and accessible demands an author with special qualities. Bryan Sykes has wit, and his experience as a television news reporter taught him how to grab attention and to express the complex with beautiful simplicity.

His claim that almost everyone of European descent can trace an unbroken genetic link to one of only seven women, the 'Seven Daughters of Eve', who lived tens of thousands of years ago, has startled the anthropologists. His evidence shocked the genetic

establishment. On his way to fame he tangled with the Iceman.

Sykes, Professor of Human Genetics at the University of Oxford, England, deviated from his research into inherited bone disease in 1988 when he stepped into a medieval cemetery in Abingdon one 'brilliantly sunny day and dozens of field assistants, stripped down to the bare essentials, were ... scraping with trowels ... rummaging in deep pits ... Several skeletons lay half exposed'. His new research field was to be the DNA in ancient bones, its relationship to modern DNA, and how it records the ancestry of modern humans. His scientific adventures during the next decade reveal not only the excitement and frustration of front-line research, but also the malice and envy often lurking in the background.

Sykes' research tool was mitochondrial DNA. Seldom does a week go by without

some mention of it in the media. Sykes presents the concept to the non-scientist with great clarity. Mutations occur at a greater rate in mitochondrial DNA than in chromosomal DNA, and an even greater rate in a particular area called the control region. The number of differences in this area between one individual and another is used as an index of the time since they shared a common ancestor - in the female line.

In a lively chapter titled *The Tsar and I*, Sykes recounts his part in confirming that only three of the Romanov children were buried with their murdered parents in 1918, and in disproving Anna Anderson's claim to be grand duchess Anastasia. Comparison of the dead Tsar's DNA with the author's showed they shared a grandmother 10 000 years ago. 'Not,' he concludes, 'enough for me to make a realistic claim to the Romanov fortunes, I think.'

Thor Heyerdahl convinced a generation that the Polynesians had an American origin. Sykes, with a flick of his DNA amplifier, roots them firmly in Asia and follows their genetic trail into the scattered islands of the vast Pacific.

The Tsar and the Polynesians are the entree. The main course is the evolution of *Homo sapiens*. What is our relationship, he asked, to Neanderthals and to *Homo erectus*? Sykes began with an analysis of Welsh school-children, expanded into Europe, and correlated his Asian and Pacific data. The Neanderthals, he concludes, left no genetic fingerprint in modern DNA. They were not our ancestors. More, he completely exonerates *Homo sapiens*, us, from multiple origins. We evolved, all of us, from one single line of *Homo erectus*.

The DNA sequences of the whole European population resolved into seven clusters. Looking at the time needed for these clusters to evolve, Sykes and his colleagues quickly disposed of the accepted idea of resident European hunter/gatherer societies being replaced by an incoming tide of Neolithic farmers from the Middle East. The skill of agriculture spread, not its practitioners. Getting rather cocky with the celebrity that followed publication of his data and conclusions, at a conference in Barcelona Sykes was suddenly blown out of the water by senior geneticists. A whispering campaign denigrating mitochondrial DNA began. The fierce competition that followed is recounted

in a fascinating chapter, but eventually mitochondrial DNA, and Sykes, won the day, although not without a dash of sperm and evidence carried in the Y chromosome.

“

**The Tsar and the Polynesians are the entree. The main course is the evolution of *Homo sapiens*.**

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If the book so far is engrossing and stimulating, the concluding chapters make me uneasy. Professor Sykes sets the 'Seven Daughters of Eve' in their respective geographic and social environments - Tara in Tuscany during the last Ice Age, Jasmine on the River Euphrates somewhat later, etc. Because he is a civilised man (although his own story of his public humiliation of a dissenting female colleague suggests he can be ruthless), do his Rousseau-spectacles present a too gentle vision? In his primitive communities he sees no rape, neither desperation nor woman-bashing, no polygamy or interclan warfare. Perhaps the known attributes of these societies would have been better presented scientifically, leaving the reader to weave the fantasy and people the habitats.

Sykes deals the death blow to 'man' as synonym for 'humans'. Descent from the Seven Daughters is strictly via the female line. Mitochondrial DNA proves it!

*Heather Rossiter is the author of Lady Spy, Gentleman Explorer, The Life of Herbert Dyce Murphy, Random House, 2001*

*This review first published in the Sydney Morning Herald, 2001*



# SUBJECT ;

## THE MAKING OF WOMEN

*Anon* Acram Taji shares this poem with the women in WISENET.

By the time the Lord made woman, He was into His Sixth day of working overtime. An Angel appeared and said, Why are You spending so much time on this one? And the Lord answered and said, "Have you seen the spec sheet on her? She has to be completely washable, but not plastic, have 200 movable parts, all replaceable, run on black coffee and leftovers, have a lap that can hold two children at one time and that disappears when she stands up, have a kiss that can cure anything from a scraped knee to a broken heart, and have six pairs of hands."

The Angel was astounded at the requirements. "Six pairs of hands! No Way!" said the Angel. The Lord replied, "Oh, it's not the hands that are the problem. It's the three pairs of eyes that mothers must have!" "And that's just on the standard model?" The Angel asked. The Lord nodded in agreement. "Yep, one pair of eyes is to see through the closed door as she asks her children what they are doing even though she already knows. Another pair in the back of her head is to see what she needs to know even though no one thinks she can. And the third pair is here in the front of her head. They are for looking at an errant child and saying that she understands and loves him or her without even saying a single word.

The Angel tried to stop the Lord. "This is too much work for one day. Wait until tomorrow to finish." "But I can't! The Lord protested, I am so close to finishing this creation that is so close to my own heart. She already heals herself when she is sick AND can feed a family on a pound of hamburger and can get a nine year old to stand in the shower!"

The Angel moved closer and touched the woman, "But you have made her so soft Lord." "She is soft," Lord agreed, "but I have also made her tough. You have no idea what she can endure or accomplish." "Will she be able to think?" asked the Angel. The Lord replied, "Not only will she be able to think, she will be able to reason, and nego-

ti-ate."

The Angel then noticed something and reached out and touched the woman's cheek. "Oops, it looks like You have a leak with this model. I told You that You were trying to put too much into this one. "

"That's not a leak." The Lord objected. "That's a tear!"

"What's the tear for?" the Angel asked.

The Lord said, "The tear is her way of expressing her joy, her sorrow, her pain, her disappointment, her loneliness, her grief, and her pride."

The Angel was impressed. "You are a genius, Lord. You thought of everything, for women are truly amazing.

Women have strengths that amaze men. They carry children, they carry hardships, they carry burdens but they hold happiness, love and joy.

They smile when they want to scream.

They sing when they want to cry.

They cry when they are happy and laugh when they are nervous.

They fight for what they believe in.

They stand up for injustice.

They don't take no for an answer when they believe there is a better solution.

They go without new shoes so their children can have them.

They go to the doctor with a frightened friend.

They love unconditionally.

They cry when their children excel and cheer when their friends get awards.

Their hearts break when a friend dies.

They have sorrow at the loss of a family member, yet they are strong when they think there is no strength left.

They know that a hug and a kiss can heal a broken heart.

Women come in all sizes, in all colours and shapes.

They'll drive, fly, walk, run or e-mail you to show how much they care about you.

The heart of a woman is what makes the world spin!

Women do more than give birth.

They bring joy and hope.

They give compassion and ideals.

Women have a lot to say and a lot to give.

*Pass it along to your women friends to remind them how amazing they are.*

# FASTS ANNUAL COUNCIL MEETING

reported  
by Anna  
Robinson

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## ■ CANBERRA , NOVEMBER 19, 2001

FASTS, the Federation of Australian Scientific and Technological Associations, represents 59 societies and 60,000 Australian scientists. WISENET is affiliated.

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## ■ FUTURE STRATEGY

A discussion of Future Strategy was led by Don Scott-Kemmis, Director of the Innovation Management and Policy program of the National Graduate School of Management ANU and Anne Campbell, Manager of the CRC Association Inc. major points made were:

- ◆ being represented in the 'inner circle' of government decision-making bodies, and having the support of influential people, for example Robin Batterham, leads to results
- ◆ despite a plethora of reviews, reports and studies, there is still a problem with communicating the relevance of science (as compared to innovation) and its translation to electoral political clout
- ◆ research is still attracting the 'so what' response from government agencies and is believed not to be delivering adequately; the knives appear to be sharpening for more cuts!

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## ■ FELL PERSPECTIVE

The Fell perspective on the science scene The new President of FASTS, Professor Chris Fell, former Deputy Vice-Chancellor at the University of New South Wales and founding Chair of the Cooperative Research Centre for Waste Management and Pollution Control, addressed the Council.

Briefly, he discussed:

*Where we are:* As a result of work over the past two years, Science is on the National political agenda and has gained some Government funding, but (a) the Commonwealth Government is likely to feel that it has done its bit for innovation and

might now wait and see, and (b) may think it has little to spend in view of recent world events.

*The Losers in the scientific/ government dialogue:* (a) Universities, who have not received any increase in per capita student funding; (b) industry, as the tax incentive for industry R&D has remained substantially at 50%; (c) students studying science or training to be science teachers, who still accrue high HECS debts. (*WISENET note: this one definitely deserves a cost/ benefit analysis*)

*The future of FASTS:* should we link to the private sector, to State governments? Do we need better communication pathways? FASTS needs to take a deeper look at what its member societies want and examine models from elsewhere. The aim must be to make Science matter in the national debate even in adverse economic times. In later discussion there were many suggestions of ways to improve things.

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## ■ TOP TEN ISSUES

The Top Ten Issues for 2002, as released on January 14, 2002, is displayed on the website

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## ■ EMERGING ISSUES

Emerging issues were discussed by a round-table of member societies.

On behalf of WISENET I suggested that:

- ◆ FASTS remain a co-ordinating body of influence
- ◆ FASTS be maintained as a centre from which information is disseminated
- ◆ we all work to improve the status and image of scientists

Other suggestions included:

- ◆ use students to market science
- ◆ get rid of old economies
- ◆ forge industry links
- ◆ index operating grants

W W W.  
fasts.org

- ◆ investigate relationships with social sciences to improve communication with the community develop media skills, get onto TV to raise the science profile

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### **POLICY DOCUMENT**

In a discussion of the next Policy Document and Committee, I asked whether FASTS policy could include consideration of gender inequity. While there is gender equity in numbers of students and post-docs, there remains a HUGE gender discrepancy in upper echelons. Past President Peter Cullen suggested we need an analysis to determine statistics from which policy could be developed. WISENET?

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### **WORKSHOPS FOR SOCIETIES**

FASTS Executive Director Toss Gascoigne outlined a proposal that FASTS run workshops on topics to assist member societies. The following issues were identified as priority items:

- ◆ delivering benefits to members
- ◆ finding, motivating and coordinating a volunteer workforce

- ◆ finding and working with professional help and the role of the executive officer communicating with members
- ◆ influencing policy and raising the profile effective use of databases and accounting packages

FASTS is seeking seed funding from DETYA to develop this program nationally.

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### **OTHER ISSUES**

Science Meets Parliament 2002 : development of a Communication Plan, devising an opportunity for Occasional Papers.

WAIS 2002 Conference will be advertised by FASTS circular.

The Minchin/Evans pre-election debate in Adelaide was discussed and it was suggested that FASTS encourage and organise more such debates in the future.

**In summary, the message of the meeting was: be involved. FASTS gives us the opportunity to have a voice and to determine our own future. It is up to us to start discussions, develop policies and be there.**

## **Members of WISENET:**

The editors of Journal 60 are in need of contributions.

Consider whether you can recycle something already written or given as an address. What about something original? Members would like to hear about your work, your achievements, even your problems (we probably share them).

Please send us an article.

## **Reminder:**

2002 Subscriptions are now overdue. If you have not done so, please send in your renewal form which was enclosed with the November Journal.

# GENDER, SCIENCE AND TECHNOLOGY WEB RING

## GenSciTech is a new web ring hosted at the Gender Science and Technology Gateway

It is open to sites which address any topic in gender science and technology with a sustainable development dimension, such as:

- women in international science
- gender and appropriate technology
- food security
- environmental management
- gender dimensions of S&T policy (and advocacy)
- networking
- S&T education, etc.

Web rings are a virtual community network for sites with similar interests and can direct more traffic and new visitors to member sites.

To find out more about the GenSciTech ring, and to add your site, visit the web ring page at the GST Gateway:

<http://GSTGateway.wigsat.org/ring.html>

The GenSciTech web ring and the GSTGateway are managed by Women in Global Science and technology on behalf of the gender Advisory Board, UN Commission on Science and Technology for Development (UNCSTD).

**Jocelyn O'Neil**

*The membership form can also be printed from the WISENET Web Site at: <http://www.usyd.edu.au/wisenet/>*

### APPLICATION FOR WISENET MEMBERSHIP

Send to: WISENET Inc. P O Box 647 Glebe, NSW 2037

ABN 56 210 013 744

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Home Ph: ( ) \_\_\_\_\_ Work Ph: ( ) \_\_\_\_\_

Fax number: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

Occupation/ Workplace: \_\_\_\_\_

Education/Science background: \_\_\_\_\_

Activities /Research /Interests: (Attach additional details if you wish) \_\_\_\_\_

I agree to support the stated objectives of WISENET. (see inside front cover) Signature: \_\_\_\_\_

Annual membership fee (includes Journal) - effective 1st January 2001

Individual: \$35,

Institution: \$40,

Student/Unwaged: \$15,

Overseas: \$40

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# **WISENET ANNUAL GENERAL MEETING**

The AGM will be held on:

**Thursday 3 May 2002 at 6 pm**

**At the Search and Discover Room  
The Australian Museum  
College Street, Sydney  
(enter through William Street entrance)**

Bring your friends, Drinks and nibbles provided, Street parking , or nearby carpark in Riley Street.

Venue courtesy of Anne Skates  
Manager Search and Discover

It's on again - bigger and bolder:

## **WOMEN ACHIEVING IN SCIENCE 2 (WAIS2)**

The second national conference on women in science, technology and engineering.

**UTS Sydney 18 -19 July 2002**

New speakers, new topics and new workshop formats spread over two days. Registration and program details will be posted soon on the conference.

**Website: [www.cpsu.org/csiro](http://www.cpsu.org/csiro)**

We will send out a broadcast email to let you know when registration opens. In the meantime, keep your diaries free for these important two days in July.