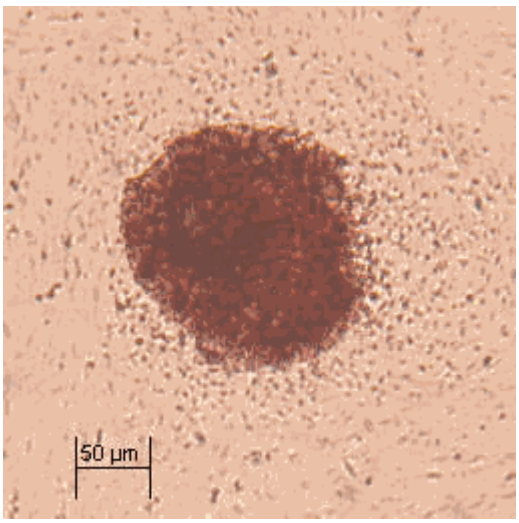


The NSW Stem Cell Network
presents

"From Embyro To Fetus"

5th Stem Cell Workshop

Wednesday 4th August, 2004
12:30 pm to 6:00 pm
Lecture Theatre & Functions Room
Edmund Blacket Building
Prince of Wales Hospital, Randwick

Welcome to the 5th Stem Cell Workshop in NSW
"From Embryo to Fetus"

When does an embryo become a fetus ? It is a simple question, with a complex answer, at least today when both embryonic stem cells and fetal tissue are being developed as potential therapeutic tools.

Prof Bernie Tuch, co-convenor of the NSW Stem Cell Network is involved in both stem cell and fetal tissue research and he will kick off the scientific focus for this 5th Workshop by clearly defining these controversial areas of research. As a distributor of first and second trimester fetal tissue to other NSW based researchers, Prof Tuch is in an excellent position to give the big picture for the use of fetal tissue in biomedical research in NSW. Next, Prof Tony Cunningham's student from the Millenium Institute, Westmead Ms Chantelle Hood will explore in more detail the use of fetal tissue in research, specifically for neurological disorders. This first session will be chaired by Assoc Prof Tailoi-Chang-ling, who is experienced in fetal tissue research.

What's special about this Workshop is its timeliness. Sydney IVF announced that they have created the first human embryonic stem cell line in Australia, from excess IVF embryos. This follows the recent provision of licenses from the National Health and Medical Research Council to a limited few IVF clinics and biotechnology companies in Australia. The NHMRC took over a year to develop these licensing guidelines.

We will hear from the Sydney IVF specialist in charge of managing these excess IVF embryos, and are also fortunate enough to have the parents who donated their embryos to make the first stem cell line in Australia. Elizabeth and Peter Schumaker will reveal how and why they become involved in such a controversial area.

Senator Natasha Stott Despoja's former scientific adviser, Alex Bradley, will explore the senate's debate on whether these new stem cell lines should be kept in a public stem cell bank, and accessible to all researchers or whether private companies should be able to keep a tight hold of their new stem cell lines, and provide on a pay by service. Mr Bradley, Executive Director, FASTS (Federation of Australian Scientific and Technological Societies), is well equipped to discuss these issues.

With new insights into the bioethics of stem cells, Sydney University's, Dr Rachel Ankeny, will reveal the impact that stem cell presentations and terminology can have on public perception of this new research tool. Chairing session II is Assoc Prof Ian Kerridge, Director, Centre for Ethics, Values and the Law in Medicine and a physician working in adult stem cell transplant with a keen interest in bioethics.

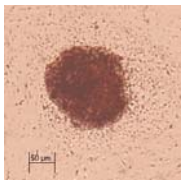
The National Stem Cell Centres, CEO Dr Hugh Niall is coming from Melbourne to announce the NSCC's plans to establish an Australian Stem Cell Network, with the NSW Network a major player in this initiative. Exactly what this new Australian Network will do, how it will be set up and who is involved, will be revealed.

As usual we are continuing to educate the public about stem cells and at this Workshop we have students from Sydney Girls and Sydney Boys High School. This type of community outreach program will be nurtured over the next year as will professional development programs such as post-graduate courses in Bioethics and Stem Cells.

Finally, we'd like to thank our sponsors for this Workshop, Sigma-Aldrich, Leica Microsystems, BioScientific, Invitrogen Life Technologies, Spruce and Ferguson Patent Attorney's, Stem Cell Technology & Chemicon. Thanks to the South Eastern Sydney Area Health Service and NSW Ministry for Science & Medical Research for their ongoing support.

Enjoy this Workshop and we look forward to maintaining contact with you through this growing Network.

Dr Daniella Goldberg *Prof Bernie Tuch*
Convenors of the NSW Stem Cell Network



"From Embryo to Fetus"

5th Stem Cell Workshop

presented by

THE NSW STEM CELL NETWORK

12.30 pm - 6pm, Wednesday 4th August 2004,
Edmund Blacket Theatre, Edmund Blacket Building,
Prince of Wales Hospital, Randwick

12:30 pm	**Registration**
1:00 pm	**Welcome** Prof Rory Hume, Former Vice Chancellor, University of New South Wales
Session 1: FROM EMBRYO TO FETUS Chair: by Associate Professor Tailoi Chan-ling, University of Sydney	
1:10 pm	**Use of fetal tissue in biomedical research** Prof. Bernie Tuch, University New South Wales
1:35 pm	**Understanding Herpes viruses using fetal tissue"** Ms Chantelle Hood, Millenium Institute, Westmead
2:00 pm	**From embryos to stem cells - some speed bumps along the way** Prof Chris O'Neill, University of Sydney
2:25 pm	**Donating your embryos, a personal perspective** Dr Michael Henman, SIVF Embryology Services Manager Mr Peter Schumaker, Embryo Donor
3:00 pm	AFTERNOON TEA BREAK
Session 2: THE LATEST ISSUES IN STEM CELLS Chair: Assoc Prof Ian Kerridge, Centre for Ethics, Values and the Law in Medicine	
3:30 pm	**What's happening with stem cell banks** Mr Bradley Smith, Executive Director, FASTS
3.55 pm	**Ethical issues in stem cells** Dr Rachel Ankeny, University of Sydney
4:20 pm	**Stem cell networking in Australia** Dr Hugh Niall, National Stem Cell Centre Dr Daniella Goldberg, NSW Stem Cell Network
4.50 pm	**NSW Stem Cell Network Announcements**
5.00 pm	**COCKTAILS**

USE OF FETAL TISSUE IN BIOMEDICAL RESEARCH

Human fetal tissue is a scarce resource that has been used in Australia for biomedical research since 1980. Over the past decade 19 separate biomedical researchers at 12 separate Australian institutions (4 Universities, 6 major teaching hospitals and 2 research institutes) have undertaken research projects with the tissue.

Over the past two decades, members of the Diabetes Transplant Unit have been collecting the tissue for their own research, and passing on tissue samples from the same fetus to other researchers.

The fetal tissue is obtained from therapeutic termination of pregnancies at 8-20 weeks gestation, but mostly during 14-18 weeks. The average number of fetuses obtained over the last 10 years was 108 per annum.

With the 265 samples distributed on average annually, researchers have conducted experiments in biomedical research with the approval of their Human Ethics Committees, and published 74 manuscripts in peer reviewed journals during this time.

The pathogenesis of human diseases, such as diabetes, multiple sclerosis, retinopathy of prematurity and osteoporosis has been advanced because of such experiments. Further, better drug treatment of disorders such as osteoarthritis, are made possible with the use of the tissue.

Greater recognition needs to be given to the benefits for which human fetal tissue can be utilized.

Bernard E Tuch

Diabetes Transplant Unit, Prince of Wales Hospital & University of New South Wales

Professor Bernie Tuch is an endocrinologist who is the Director of the Diabetes Transplant Unit at the Prince of Wales Hospital and University of New South Wales. His Unit is conducting cutting edge research into developing cell therapies as an alternative to insulin injections for people with insulin-dependent diabetes. One such source of cells is the fetal pancreas, and it was for this reason that Professor Tuch developed an interest in the use of human fetal tissue for biomedical research more than two decades ago. In the mid 80's he was responsible for setting up the first clinical trial in Australia, which resulted in the transplantation of 2nd trimester human fetal pancreatic tissue into 5 diabetic people. He is now interested in examining the potential usefulness of such tissue obtained in the 1st trimester.

Understanding herpes viruses using fetal tissue

Herpes viruses are a clever family of viruses that plague the human species with diseases including herpes simplex virus (HSV), which cause cold sores and genital herpes, and varicella zoster virus (VZV), which causes chickenpox in childhood and shingles later in life. Their ability to infect a person's nerve cells and than hide within them, without any symptoms (dormant) is what makes them so smart. The Centre for Virus Research at the Westmead Millennium Institute focuses a large number of studies on understanding exactly how these herpes viruses operate inside the human body and its cells.

In our studies, fetal tissue has been used as a model to better understand how herpes viruses are able to spread and survive forever inside the spinal cord dorsal root ganglia (nerve cells) of its victims. Neurons (nerve cells) were isolated from human fetal tissue and infected with HSV or VZV.

Interestingly, the HSV experiment results revealed how the virus travels along nerve pathways. This information can be used to develop therapies to prevent a life-long infection.

We also discovered that like other herpesviruses, VZV has evolved mechanisms that allows infected nerve cells to continue living for longer than other cells infected with the virus.

In other words, this viral infection of neurons prevents cell death, a process scientifically known as apoptosis, instead of causing cell death.

The next step in this study is to find the viral genes and subsequent proteins that are responsible for this unusual phenomenon, ultimately revealing a clearer picture of the intelligent way herpes viruses operate once inside the human body.

Chantelle Hood

Westmead Millennium Institute and University of Sydney

Chantelle Hood is a Phd student at the Centre for Virus Research, Westmead Millennium Institute. She completed a Bachelor of Advanced Science through Sydney University with first class honours and spent her honours year at the Centre for Virus Research. Her current PhD project focuses on the herpesvirus, varicella zoser virus, infecting human sensory neurons and investigating the apoptotic response.

From Embryos to Stem cells – and some speed-bumps along the way

The current source of human embryonic stem cells is IVF embryos that are excess to the requirements of parents. Embryos produced by IVF from all species studied to date, including humans, have a reduced viability compared to those conceived naturally. A consequence is that relatively few of the embryos conceived by IVF (< 20%) result in live born infants. Embryopathy after IVF commonly occurs in the period immediately before and after implantation of the embryo into the uterus. This also corresponds to the period of formation of embryonic stem cell lineages *in vitro*. Consequently, formation of ES lineages from IVF embryos is also inefficient.

This presentation will discuss our current understanding of the causes of IVF-induced embryopathy. It will consider the role of stem cell formation as a tool for investigating the nature of this embryopathy, and the potential genetic consequences for IVF progeny and ES cell lineages of such high embryopathy.

Chris O'Neill,

Human Reproduction Unit, Royal North Shore Hospital and Department of Physiology, University of Sydney.

Chris O'Neill is Associate Professor in the Department of Physiology, University of Sydney, and Head of the Human Reproduction Unit at Royal North Shore Hospital. After completing his PhD in experimental embryology at Newcastle University, he spent a year at the Vet School at Sydney University, prior to taking scientific leadership of the then fledgling IVF programme at RNSH in 1984. The RNSH programme was the first in NSW. Within clinical IVF, he pioneered developments in embryo media design, prenatal diagnosis (with Ron Trent) and sperm microinjection techniques. He was successively Clinical Lecture in Reproduction, Clinical Associate Professor in Department of Obstetrics and Gynaecology and Associate Professor Department of Physiology. He now Heads the research based Human Reproduction Unit with research interests that include the basic cellular physiology of the early embryo, the design and safety assessment of IVF media, the nature of the biochemical communication between embryo and mother in early pregnancy, and stem cell biology.

Donating Your Embryos

Since 2001, 470 couples at Sydney IVF have either discarded or donated their frozen embryos to research. The proportion of couples deciding to discard is 49% V 51% donating to research. The current legislation requires that embryos frozen after 5th April 2002 can only be used for non-destructive research e.g. culture media studies. Embryos frozen prior to this date are eligible for use in destructive research e.g. stem cells.

The majority of couples donating for research are doing so for altruistic purposes. There is no coercion or recruitment to encourage couples to donate their embryos. Couples opting to discard have either ethical or moral objections, sometimes based on religious beliefs that prevent them from donating. Sydney IVF does not facilitate the use of donated embryos for another couple. We can assist with the transport of embryos to other IVF clinics that offer this service.

In this presentation I will outline how IVF embryos are created initially and what happens in the period of time up to and including when they are declared excess to the couple needs.

Michael Henman
Embryology Services Manager, Sydney IVF

Michael has worked as a clinical embryologist since 1986. He has been the Laboratory Manager at both public hospital and private IVF units. At Sydney IVF, he helped established the clinic's state-of-the-art facility, allowing him to oversee a period of incredible change in the culturing of embryos.

Michael has a Masters degree in Reproductive Health and Human Genetics from the University of Sydney. His expertise has seen him work as a consultant and as a hands-on embryologist in many laboratories around the world including Thailand, Turkey, Czech Republic, Brunei, Saudi Arabia and India.

Peter Schumacher
Embryo Donor

Peter and Elizabeth Schumacher donated their embryos to research after the birth of their third child Olivia. Their first two babies, Megan and Sarah were born assisted by IVF technology whilst the third was conceived naturally. As a couple they provided formal consent to allow their embryos to be used for research by Sydney IVF. Last month, the first human embryonic stem cell line in Australia was derived from one of their donated embryos.

Peter will present his personal perspective on donating embryos for research, the pros and cons.

A National Stem Cell Bank: Necessity or Political sop?

In the debate of the *Prohibition of Human Cloning Bill (2002)* and the *Research Involving Human Embryos Bill (2002),* the Senate amended the Terms of Reference for the mandated review of the two Bills to include examination of the applicability of Australia establishing a National Stem Cell Bank (analogous to that operating in the UK).

This presentation gives an account of the political debate surrounding the amendment and the ethical, research and IP concerns that a Stem Cell Bank may be expected to address.

Bradley Smith

Executive Director, Federation of Australian Scientific & Technological Societies (FASTS), Canberra

Bradley Smith is the Executive Director of the Federation of Australian Scientific and Technological Societies (FASTS). Between 2000 and 2003 he was the science, R&D and higher education advisor for the Australian Democrats.

He was a key advisor during the Senate inquiry and Parliamentary debate supporting Senators in favour of the legislation including, notably, Senators Stott Despoja and Jan McLucas (ALP).

Ethical Issues in Representing Stem Cells

Although popular ethical arguments for and against research with stem cells are now familiar, less attention has been paid to how stem cells are represented among researchers, and particularly how these presentations have evolved during recent debates in the past few years. This talk will examine various representations of stem cells and their ethical implications for public understanding of stem cell research and arguments in support of it, in order to explore how the promise and limitations (both ethical and epistemological) are presented in the research and popular literature, and issues that researchers should consider in describing their stem cell research programs.

Rachel A. Ankeny

Senior Lecturer and Director, Unit for History and Philosophy of Science, Sydney University

Rachel Ankeny PhD, is Director and Senior Lecturer in the Unit for History and Philosophy of Science, Faculty of Science, University of Sydney. She teaches and does research in the philosophy of science, the history and philosophy of the biomedical sciences (especially genetics and neurobiology), and bioethics. She is a collaborator in an international network, The Model Systems Strategic Research Network, sponsored by the Stem Cell Network of Canada, which is examining epistemological and ethical issues associated with the choice and use of stem cells generally and various experimental organisms as model systems. She is active in many international organizations, including on the planning committee for the International World Congress of Bioethics, to be held in Sydney in November 2004.

Stem Cell Networking in Australia

Stem Cell Networks have been set up around the world: in Canada, Scotland, and Europe and very soon Australia will have its very own. The aim of the Australian Stem Cell Network will be to create a strong stem cell community that is internationally competitive and ready to respond to the challenges of a rapidly developing scientific, legal, ethical and social environment.

The establishment of an Australian Stem Cell Network is an initiative of the National Stem Cell Centre (NSCC) that will be implemented with assistance from the existing NSW Stem Cell Network over the period 2004-5. The NSW Stem Cell Network (NSCN) has been selected by the NSCC as a model for semi-autonomous Networks in other Australian states, especially Qld, Vic, SA and WA.

The NSW Stem Cell Network was established in Nov 2002 at a stem cell meeting organised by Professor Bernie Tuch and Dr Daniella Goldberg, from the Diabetes Transplant Unit, Prince of Wales Hospital/University of New South Wales. The Network has grown from 120 members at the start, to over 420 in May 2004. It incorporates a range of professional groups who play a major role in stem cell including scientists, clinicians, ethicists, lawyers, policy makers, educators, businessmen and venture capitalists. Through regular Workshops and seminars the Network provides a platform to communicate the latest information on the science, ethics, policy and commercialization of stem cells.

Dr Hugh D Niall, MB. BS. MD, FRACP
CEO, National Stem Cell Centre.

Dr Hugh Niall is the CEO of the National Stem Cell Centre Limited. His role is to oversee the operations of the Centre as it works towards uniting the country's leading scientists to bring Australia to the forefront in world-leading stem cell and related research. The NSCC is a dynamic research company committed to accelerating the delivery of human therapeutics using stem cells and related technologies. The NSCC is affiliated with leading Australian research institutes and organisations. Dr Niall is also a member of the Board.

Prior to his role at the NSCC, Dr Niall was the Chief Executive Officer of Biota Holdings Limited from 1995-2002. After completing his medical degree and obtaining post-graduate qualifications in medicine at the University of Melbourne, he worked overseas at the National Institutes of Health, Bethesda, Maryland, USA and at Harvard University's Department of Medicine. Dr Niall has also held senior appointments with the Howard Florey Institute of Experimental Physiology and with Genentech Inc, a major biotechnology company in South San Francisco. Dr Niall was a member of the Australian Federal Government Health and Medical Research Strategic Review Implementation Committee, 1999-2000.

Dr Daniella Goldberg PhD, BSc Hon, Dip Comm.
Co-convenor NSW Stem Cell Network

Dr Daniella Goldberg embarked on her career in medical research fifteen years ago with a PhD in medicine at the Garvan Institute of Medical Research. She moved into science communications in 1997 and since then has been published in magazines and newspapers, produced educational science programs for radio and TV and was most recently News Editor for Australian Biotechnology News.

In 2002, Daniella joined the Diabetes Transplant Unit as laboratory manager and earned her conjoint lectureship at UNSW. In Nov 2002, the NSW Stem Cell Network was established by Prof Bernie Tuch and herself. In 2004-5, the NSW Network will assist the NSCC in establishing an Australian Stem Cell Network.

For further information or comments contact:

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