Pre-conference Symposium
METHODS FOR MANIPULATING THE EMBRYONIC GENOME IN VITRO

Saturday, January 12, 2002

7:30-8:00 Registration

8:00-8:10 Welcome and Introduction

Session I Nuclear Transfer Techniques
Session Chairs: George Seidel, USA and Heiner Neimann, Germany

8:10-9:10
1) Demonstration and Discussion of Nuclear Transfer Techniques
   - Keith Campbell (Nottingham) and Bill Ritchie
     Demonstration of:
     - Enucleation
     - Cell Injection
     - Fusion
     - Stages of embryo development (cattle, sheep, swine)

9:10-10:10
2) The Influence of Donor Nuclei on Cloning
   Björn Oback (AgResearch Ltd., New Zealand).
   Cloned animals are genetic copies of the donor cell genome used for
   nuclear transfer. Various donor cell types from embryonic through to adult
   sources have proven to be capable of generating cloned offspring.
   However, an ideal nuclear donor may not yet have been found. The
   optimal choice of nuclear donor status in terms of cell cycle stage,
   epigenetic stability and cell culture conditions is also still unclear. This
   lecture will summarize current theoretical and practical aspects of donor
   cell selection and preparation for successful mammalian cloning.

10:10-10:30 BREAK
Session II  Gene Transfer Techniques
Session Chairs:  Matthew Wheeler, USA and Jose-Luis Rodrigues, Brazil

10:30-11:30

3)  Pronuclear microinjection: A mature method for producing transgenic animals.
   -Bob Wall (USDA) and Bill Ritchie
   Last year marked the 20th anniversary of the invention of the term transgenic and the technique designed to transfer genetic information from nearly anything to mammals, pronuclear microinjection. Even after two decades of investigation pronuclear microinjection protocols have change little from the reliable, if not efficient, method described by Gordon and Ruddle in 1981. Experience has taught us once microinjection skills are perfected there are only a few parameters one needs to be concerned about to successfully produce transgenic animals. Demonstration and Discussion of microinjection.

11:30-13:30  LUNCH

Session III  New Developments in Gene Transfer
Session Chairs: Ian Wilmut, UK and Lawrence Smith, Canada

13:30-14:10

4)  Gene Targeting in Livestock
   -John Clark (Roslin)
   The talk will describe the use of nuclear transfer (NT) to generate gene deletions in livestock. Our work has focussed on the deletion of the a1-3 galactosyl transferase and PrP genes. The approach uses gene targeting by homologous recombination in primary somatic cells to generate cells specifically targeted at these loci; these are then use in NT experiments.

14:10-14:50

5)  The Use of Recombinase Proteins To Generate Transgenic Animals
   -Elizabeth Maga (UC Davis)
   The endogenous properties of recombinase proteins, such as RecA, allow for them to associate with and bind DNA. The properties of cellular recombination enzymes have been exploited in order to generate transgenic animals via pronuclear microinjection with the use of RecA protein-coated DNA constructs. Results and implications will be discussed.

14:50-15:10  BREAK
6) Mammalian Artificial Chromosomes As Vectors - Progress and Prospects
-Howard J Cooke (MRC Human Genetics Unit, Edinburgh)
Artificial chromosomes are widely considered to be the next generation of vectors for delivering DNA to a variety of mammalian cells. They hold out the prospect of an essentially infinite capacity for DNA, allowing genes encoding whole pathways to be introduced with their controlling elements. In addition they should not be subject to position effects and insertional mutagenesis. This is as yet a prospect and although progress has been made in gene expression further barriers to application need to be overcome.

7) Discussion and Wrap-up
-George Seidel (Colorado State)

Registration fees will be announced in the Registration booklet. Included in the registration fee is an issue (Pre-symposium will be at Cloning) with the articles of each speakers talk. Also included in registration are a coffee break mid morning, lunch at noon, and a coffee break after lunch. Registrations will be collected on the IETS Annual Conference registration form. If you would like further information regarding this symposium please contact:
Prof. Dr. José Luiz Rodrigues
Caixa Postal 15004
91501-970 Porto Alegre RS Brasil
Phone: + 55 51 33 16 61 26
Fax: + 55 51 33 16 73 05
Email: jlr@orion.ufrgs.br