New production facilities

September 3rd 1993 is the great day when our new facilities for the production of microbiologically defined Göttingen mini-pigs will be finished. This means the end of a long process of discussion, investment, planning and building, but it also means the beginning of a new era of the laboratory pig. The days when pigs for experimental purposes were only available in slaughterhouse qualities has come to an end. However, before our high quality pigs enter their new home, there will be a reception on September 3rd from 12th to 16th.

**PROGRAMME**
1. Lunch
2. Introduction
3. Poster display
4. Video session
5. Tour of the premises
   (Danish, English, German, French)
Arrival

Welcome and reception lunch

Introduction by professor dr. P. Glodek, Göttingen, and Lars Ellegaard

Tour in groups (Danish, English, German, and French) of the new production facilities

Poster displays by Scantox A/S, Odense University, FDA (USA) and others.

Presentation of a photostat series illustrating the history of the Göttingen Mini-pig

Video session presenting:
- the construction of our special air-conditioning system
- germ-free caesarian section, methods of handling and surgical procedures

Whether permitting, there will be an opportunity to take a short walk (400m) to have a look from the outside at our temporary barrier facilities, where the new breeding animals have been raised.
THE GÖTTINGEN MINI-PIG IN TOXICOLOGY

By Peter Brinck, DVM and Ove Svendsen, DVM, PhD, DSc
Scantox A/S, Ll. Skensved, Denmark

In the following a description is given of the usage of the mini-pig in toxicity testing at the laboratories of Scantox A/S, which is a contract research laboratory specialized in toxicology, pharmacology and bioassays. Within the last ten years, Scantox has used the mini-pig extensively as a model in toxicology and pharmacokinetics. Thus the mini-pig has become part of the profile of Scantox.

As a laboratory animal, the mini-pig offers many advantages compared to other non-rodent species. Superficially, the baboon and other non-human primates may be the best candidates among non-rodents in use in toxicology. The Beagle dog is a well established choice among non-rodent species, and it does indeed offer important characteristics as a laboratory animal. However, the present world-wide recognition of the dog as the first choice is highly influenced by tradition and conservatism among managers in industry and regulatory authorities.

Today, the mini-pig i an alternative animal model. The gastrointestinal tract of the mini-pig has important characteristics similar to those of man. Some cardiovascular and urogenital system characteristics are also shared by man. This is also the fact for the cutaneous system which, however unrecognized, is the largest organ of the body and most easily exposed. Besides, it is advantageous with an alternative species as toxicity studies ideally should be performed in a species with drug metabolism similar to man.

Over the years we have performed a wide variety of toxicity studies with study periods up to more than 12 months. Administration of the test articles (chemicals/pharmaceuticals) has been given orally, by subcutaneous or intramuscular injection, by dermal application, by daily long-term intravenous infusion, (1), intranasally etc. Presently we are in the process of validation of long-term continuous intravenous infusion.

The various techniques required (blood and excreta sampling, including urine sampling from metabolism cages etc) have become routine work. Computerized historical data banks of haematological, blood chemical and organ weight data are available. Experience with non-specific histopathology has also been gained from more than 400 animals.

The mini-pig has obvious advantages as an experimental animal in teratology. It is a non-rodent, has a large litter size, has many anatomical and physiological similarities to man and known sensitivity to human teratogens. Scantox is the first laboratory which has developed a know-how within the field of toxicology in the Göttingen mini-pig and a historical data bank for mini-pig teratology is in progress.

Also within the field of immunotoxicity the mini-pig has been reported to be a good model (2).

In addition, the mini-pig develops parkinsonism after treatment with MPTP (3), diabetes after treatment with streptozotocin and hypercholesterolaemia, and atherosclerosis after treatment with cholesteric diets.

Although not specifically mentioned in guidelines, FDA representatives always respond positively when confronted with the question whether the mini-pig is an accepted non-rodent model in safety testing of pharmaceuticals. The mini-pig is specifically mentioned as an example of the non-rodent species in Canadian and Japanese guidelines.

We have never encountered any problems with the regulatory authorities with regard to acceptance of the mini-pig as the model in toxicity testing.

In conclusion it depends upon the circumstances whether the mini-pig or another species should be preferred in toxicity tests. Dose route, possible target organs, metabolic pathways and other similarities with humans are factors that should be given attention. In our opinion these considerations often lead to the choice of the mini-pig as the model in toxicity tests.

References
The latest references on the use of minipigs in biomedical research

Ellegaard Göttingen Minipigs has access to a great number of references from major databases. Below you will find the most recent publications of interest for the users of minipigs. If you have any specific wishes of abstracts of these references or certain literature for your project, we shall be happy to help you.

ANATOMY, PHYSIOLOGY AND BIOCHEMISTRY

1. Alexander, B.; Mathieu, R.T. Diminished hyperemic response of the hepatic-artery to portal venous occlusion (the buffer response) in asian hybrid minipigs - a comparison of the response to that observed in dogs. Journal of Comparative Physiology B-Biochemical Systemic and Environmental Physio-logy, 1993, V163, N1, P5-10; 1993


CARDIOLOGY


ENDOCRINOLOGY


IMMUNOLOGY

1. Appleyard, GD; Mallard, BA; Kennedy, BW; Wilkie, BN. Antibody avidity in swine lymphocyte antigen-defined miniature pigs. Can J Vet Res; 56 (4) p303-7; 1992


4. Lumns, JS; Kennedy, BW; Mallard, BA; Wilkie, BN. The influence of the swine major histocompatibility genes on antibody and cell-mediated immune responses to immunization with an aromatic-dependent mutant of Salmonella typhimurium. Can J Vet Res; 57 (1) p14-8; 1993


MICROBIOLOGY


2. Gutierrez, C. B.; Rodríguez, Barbosa, J. I.; Tascón, R.I.; Rodríguez, Ferti, E. F.; Domínguez, Juncal. Quantifying by monoclonal antibodies of specific IgG, IgM and IgA in the serum of minipigs experimentally infected with Actinobacillus pleuroneumoniae. Research in Veterinary Science; 53; 1992


PHARMACOLOGY & TOXICOLOGY

1. Marin, GP; Loeveday, BE; Marriott, C. Bromhexine plus oxytetracycline: the effect of combined administration upon the rheologic properties of mucus from the mini-pig. J Pharm Pharmacol 45 (2) p126-30; 1993
