

# ELLEGAARD • •

GÖTTINGEN MINIPIGS

Clean pigs  
for clear results





## By Lars Friis Mikkelsen, CEO

Ellegaard Göttingen Minipigs A/S was founded on the idea that biomedical research scientists needed a better research model to support them in their quest for clear results! The Göttingen Minipig comes close to this vision, as there are many similarities between minipigs and humans, and because minipigs are small, easy to handle, have a well-defined genetic and microbiological background.

Our core values - animal welfare, respect, collaboration and quality - are integral to our corporate culture and fundamental for our day-to-day business. We value our customers as close collaborators, and we focus on supporting our customers as much as we can. In addition, we want to share all our knowledge and experience of Göttingen Minipigs with everyone in the industry.

Our corporate strategy is to ensure that the Göttingen Minipig remains the best characterised and validated minipig and the preferred minipig for the development of disease models and transgenic minipigs, and that Göttingen Minipigs are commercially available in every major R&D market worldwide. All of the above is aimed at satisfying your need for a reliable animal model to achieve reliable scientific results, combined with reliable delivery, service and support.

We believe in science, knowledge and knowhow and in sharing our expertise. As CEO of Ellegaard Göttingen Minipigs, it is my personal goal to ensure that you experience how we at Ellegaard Göttingen Minipigs work hard to make a positive difference for you.

*Sincerely,  
Lars Friis Mikkelsen, DVM, MLAS, EMBA*



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You can follow Ellegaard Göttingen Minipigs on LinkedIn! Our company page on LinkedIn will keep you updated with useful and interesting information regarding our company and the Göttingen Minipigs.

# Clean pigs for clear results

The Göttingen Minipig is a well-established non-rodent model that is used extensively for biomedical research and it should be considered along with dogs and non-human primates when choosing the most suitable non-rodent species for drug development and regulatory studies.

Available in large, uniform groups with a well-defined genetic background and a unique health status, the Göttingen Minipig is a reliable model for pharmacology, pharmacodynamics, pharmacokinetics, toxicology, experimental surgery and fundamental science.

Genetic management is performed in collaboration with the University of Göttingen to ensure that the Göttingen Minipig is as outbred as possible while improving important characteristics such as small size and good temperament.

Barrier-bred Göttingen Minipigs have a unique health status and are tested semi-annually for a wide range of pathogens based on FELASA recommendations. The well-defined health status makes interpretation of pathological findings in toxicity studies easier as confounding factors caused by past disease are limited.

## Accreditation

Studies performed on Göttingen Minipigs are fully recognized by regulatory authorities worldwide and have supported non-clinical development of marketed drug products covering many treatment areas including: psoriasis, diabetes, osteoporosis, ophthalmology, arthritis, hypertension, heart failure, arrhythmia, imaging agents, Alzheimer's Disease, Parkinson's Disease, actinic keratosis, antibiotics, stem cell therapy, and oncology products.

Regulatory acceptability was also confirmed in the RETHINK report (J. of Pharmacological & Toxicological Methods 62 (2010) p. 184-195). The objective of the RETHINK report was to evaluate the minipig as an alternative species in regulatory toxicity testing and the report confirms that the minipig is suitable as a non-rodent model.



## Moving to an intelligent strategy of non-rodent species selection, the following should be taken into consideration:

*Is the non-rodent species a responder?*

*Is the pattern of metabolites in the non-rodent species similar to the pattern of metabolites in humans?*

*Can the non-rodent species be exposed correctly? This is a matter of tolerance, emesis, bioavailability etc.*

# Small size and early sexual maturity

## Small size

Sexual maturity males: 3-4 months of age (7-9 kg)

Sexual maturity females: 4-5 months of age (9-11 kg)

Closure of growth lines: 18+ months of age

Fully grown: 24 months of age (~35 kg)

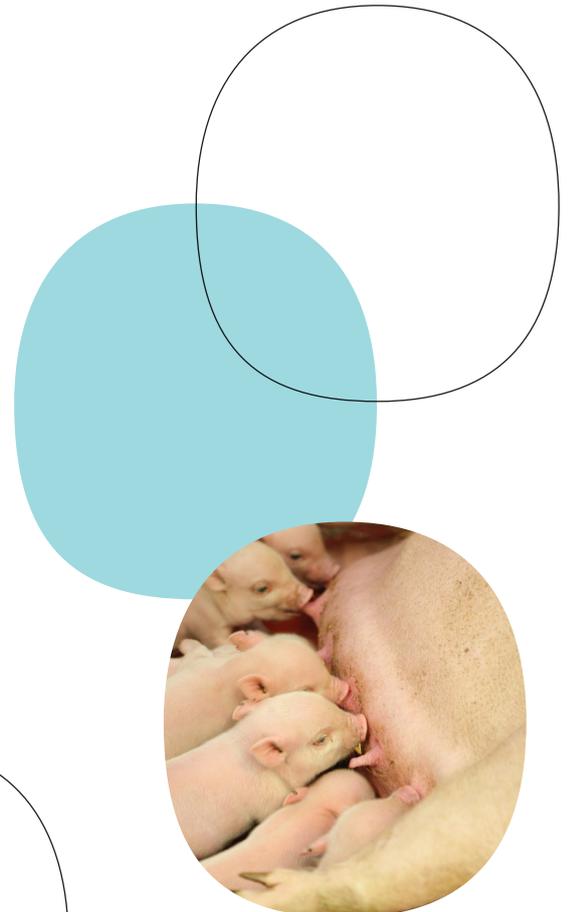
The Göttingen Minipig is the smallest purpose-bred minipig available for research. Göttingen Minipigs reach sexual maturity at 3 to 4 months of age for males weighing 7 to 9 kg and at 4 to 5 months of age for females weighing 9 to 11 kg. The small size makes them ideal models if only limited test article is available. The housing and handling procedures used for minipigs are more similar to those used for dogs than for larger swine breeds. In fact, many of our customers only need to make minor modifications to existing dog pens to house Göttingen Minipigs.

## Genetic background

The Göttingen Minipig was bred at the University of Göttingen in the 1960s. It originates from crossing the Minnesota Minipig with the Vietnamese Potbelly Pig and the German Landrace. This cross-breeding combined the Minnesota Minipig's small size with the fertility of the Vietnamese Potbelly Pigs and the white phenotype of the German Landrace. The goal was to develop a genetically outbred minipig with a low adult weight and white skin with sparse hair. The University of Göttingen is still responsible for the overall genetic management of all Göttingen Minipig breeding colonies.



Daily socialisation between staff and animals.



# Health and animal welfare at its best



## Health status

In early 1990, it was recognized that Göttingen Minipigs had to be microbiologically defined in order to follow modern developments in laboratory animal science.

Microbiological standardization is necessary because of the possible interference of pathogens with experimental results. The known effects of microorganisms on animal experiments are pathological changes, immunomodulation, physiological changes, interference with reproduction, competition of pathogens with the animal, oncogenesis and contamination of biological products.

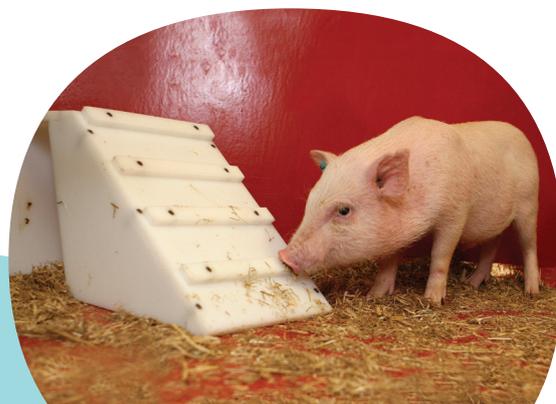
Using microbiologically defined animals for experiments reduces the influence of these factors. Barrier-bred Göttingen Minipigs are produced in independent, full-barrier, SPF facilities to ensure microbiological quality. The colonies are health monitored twice a year, based on FELASA recommendations.



## Animal welfare

Animal welfare is our top priority and it is incorporated into every procedure and daily routine performed at Ellegaard Göttingen Minipigs. Our facility has been fully accredited by AAALAC International since 1998.

All procedures in the full-barrier breeding facility are described and carried out as standard operating procedures (SOPs). These procedures include a comprehensive socialization programme where the minipigs have daily, positive contact with staff members. Group housing in compatible groups and pen design, including toys that maintain interest in playing, are other major factors that ensure a high level of animal welfare and accommodate the needs of the minipigs.



# Our products

## Göttingen Minipigs

From our facility in Denmark, our experienced and dedicated staff supply pharmaceutical companies, CROs and universities with high-quality Göttingen Minipigs for biomedical research.

The capacity in our two barrier units enables us to supply customers with large, uniform groups of Göttingen Minipigs with a unique health status.

Please provide us with as many details about your requirements as possible and we will select the best possible group of minipigs for your study.

We can deliver minipigs from 4 weeks of age, and pregnant minipigs are also available upon request.

## Research Barrier

In June 2016, we had the grand opening of our new Research Barrier, which allows access to a state-of-the-art Minipig housing facility and a surgical suite, that will enable the development, characterization and validation of new Göttingen Minipig disease models, animal model preparation and expand our business offerings into new areas.

## Transgenic animal models

To ensure that the Göttingen Minipig will be the preferred Minipig for the creation of transgenic animal models, we have recently signed an agreement with the University of Göttingen enabling us to start developing and commercializing transgenic Göttingen Minipigs and to offer these rights to third parties. Furthermore, in the future we can offer to breed transgenic animals in our Research Barrier depending on customer interest and request.

## Pre-catheterized Göttingen Minipigs

With the Research Barrier now in operation, we are further able to supply Göttingen Minipigs with pre-implanted permanent catheters and VAP ports for easy vascular access. Please contact us to discuss further, as several options are available depending on your requirements.

## Biological products

Ellegaard Göttingen Minipigs A/S provides a wide range of biological products and specimens, as well as customer specific biological samples from Göttingen Minipigs, to support your research. Blood, serum, plasma, skin, organs and other tissues from Göttingen Minipigs can be delivered according to your specifications.

## Auxiliary equipment

A range of auxiliary equipment is offered for the handling of Göttingen Minipigs, such as different sizes of slings, bite bars, restraint chairs for gavaging, hammocks, restraint benches for blood sampling etc. Please ask for our complete assortment and price list.



# ... and services

## Courses in handling, dosing and surgery

In order to maintain the Minipig's willingness to cooperate, it is of great importance that the staff handling the Minipigs in a study, is well acquainted with the correct handling of the pigs in different procedures. We arrange courses in e.g. Minipig handling, dosing, surgery and training.

Please contact us if you would like us to arrange a course for you or your staff.

## Support beyond the standards you expect

We welcome questions of any kind regarding Göttingen Minipigs and our professional staff are ready to assist you. Our veterinary and scientific experts are available for assistance before, during and after your studies involving Göttingen Minipigs. Furthermore we would also like to provide you with the information you need for designing and preparing minipig facilities.



An extensive amount of background data is available in our literature database, and we provide scientific advice and assistance, if so required. In many cases, we can provide contact to colleagues in your own field for the exchange of non-proprietary scientific and technical knowledge.

## Delivery

Göttingen Minipigs are transported to your facility in our own vehicles for deliveries all over Europe. The vehicles are HEPA-filtered and air-conditioned and driven by our own well-trained staff.

The minipigs are transported in VariKennel transport boxes with bedding and are watered and fed regularly during transport. If preferred, we include enough feed with the delivery for the adaptation period, and refer to the feed producer for larger quantities.



# Our history

Ellegaard Göttingen Minipigs A/S was founded on the idea that scientists in biomedical research were in need of a better non-rodent research model. Such a model should have many similarities to humans, be small and easy to handle and have a clean and known health status. The first colony of barrier-bred, microbiologically defined Göttingen Minipigs was derived in Denmark in 1992. The minipigs were obtained through Caesarean section to establish the high quality of health standard.

Introducing a new animal model to the scientific community was not easy, even though we always met openness, empathy and understanding of the obvious potential of the Göttingen Minipig. But there were also numerous challenges due to the scientific need for validation of this "new" model. We recognised this and took on the collecting of minipig research data through interesting collaborative efforts across the academic world and the biomedical industry. Since validation and documentation reached a critical mass, the demand for the Göttingen Minipig has been increasing rapidly all over the world. We envision that the Göttingen Minipig should always be an option on equal terms with other non-rodent species in the selection of the most appropriate species for a study.

Our history has led us to where we are today: an international company which, by virtue of its high standards of health, quality, knowledge and service, is a global leader within the development, production and sale of Göttingen Minipigs for biomedical research focusing on the advancement of quality of life and health. We wish to support our customers to achieve the clearest scientific results possible.

This is our mission. And when working towards this goal, we lean on our values: animal welfare, quality, respect and collaboration.

We breed Göttingen Minipigs in independent and separated barrier units at our facilities in Denmark. The facilities are based on our respect for the animals and their welfare, on our respect for the environment and on our respect for our dedicated employees. We deliver our Göttingen Minipigs to most of the world and have dedicated partners who supply the markets in North America, Japan and Korea. We received our first full AAALAC accreditation in 1998 and have maintained it ever since. We offer free training and advice on handling, research procedures and pen design as our way of supporting our customers in complying with the same high standard of animal welfare. We take pride in our high level of customer service and support. Göttingen Minipigs are used in GLP and non-GLP studies alike and are recognised as research models by all regulatory authorities worldwide.

As we still believe in the value of scientific validity, research, data and collaboration, we invest an increasing share of our resources in the development and accumulation of new knowledge about the Göttingen Minipig and in networking amongst those who know!

We believe that all of the above will lead to new achievements by our customers and our company in the future.



[www.minipigs.dk](http://www.minipigs.dk)

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