## Milestones in biomedical research with pigs

For more than a century, pigs have provided us with answers to essential biological processes. In the timeline you can discover the key breakthroughs and achievements that have shaped biomedical research.

Click on the red spheres to find out more!

Alphonse Laveran examined blood and tissue samples from malaria patients in order to identify the true cause of the disease. Through comparative experiments on different animals - including pigs - he was able to prove that it is not bacterial but protozoan pathogens that cause the infections. His work led to the classification of numerous parasitic protozoa and marked a turning point in infection biology. In 1907 Laveran was awarded with the Nobel Prize for this groundbreaking discovery.

1907

Insulin: Breakthrough in diabetes therapy Systematicresearchofthepeptide hormones produced in the brain was carried out using a wide variety of animal models, including pigs, to investigate the influence of the hypothalamus on hormone regulation. Using radioimmunoassay methods, Rosalyn Yalow developed a procedure to detect measurable changes in even the smallest amounts of hormones. At the same time, Roger Guillemin and Andrew von Schally isolated releasing factors from the hypothalamus and characterized their biochemical structure. In 1977 all three researchers were honored for their Nobel Prize for their fundamental contributions to endocrinology.

1977

Revolution of diagnostics: Development of the CAT scan

To combat the devastating effects of parasitic diseases, new drugs have been developed which make life easier for millions of people. Satoshi Ōmura and William C. Campbell discovered and modified avermectins, whose efficacy was tested on various animal models, including pigs. At the same time Youyou Tu with the discovery of artemisinin revolutionized the treatment of malaria by scientifically validating a traditional treatment approach. In 2015, these groundbreaking therapies were honored with the Nobel Prize for their significant contributions to global health.

2015

Xenotransplantation of a pig heart into a living human



© Institut für Versuchstierkunde / RWTH Aachen

do in ar ex ve

Researchers Frederick Banting and John MacLeod initiated experiments to develop insulin as a treatment for diabetes. In the process animal models, such as dogs and pigs, proved decisive in demonstrating the blood sugar-lowering effect of pancreatic extracts. Using alcohol as a solvent, James Collip succeeded in isolating pure insulin from pig and cow pancreas, which paved the way for its safe use in humans. In 1923, this work, which revolutionized diabetes treatment with porcine insulin being used until the 1980s - was honoured with the Nobel Prize.

1923

Decoding of hypothalamic peptide hormones

puter tomograph fundamentally changed diagnostic imaging, as it enabled detailed, layer-by-layer imaging of internal organs. Allan Cormack developed models in mathematical experiments that were validated by tests on materials such as pig tissue. Independently, Godfrey Hounsfield optimized these approaches and took them into clinical applications, resulting in high-resolution 3D images. In 1979, Hounsfield and Cormack were honored with the Nobel Prize for this innova-

tion, which improved the under-

standing and diagnosis of nu-

merous diseases.

1979

The development of the com-

Xenotransplantation refers to the transfer of organs, tissues or cells between different species. On January 7, 2022, the University of Maryland Medical Center in Baltimore successfully transplanted a genetically modified pig heart into a living human for the first time. The 57-year-old patient David Bennett, who suffered from terminal heart failure and was not suitable for a conventional transplant, received the organ. Genetic modifications to the pig heart were intended to reduce rejection reactions. The heart started beating immediately and Bennett survived 60 days after the procedure. His family expressed gratitude for the bold move and said they had no regrets about the decision, as they saw the operation as an important contribution to medical research.

2022



Progress in the combating parasitic infections

