Global expectations on the Microminipig for the safety evaluation of pharmaceuticals

Peter HEINING
Department of Preclinical Safety, Novartis Pharmaceuticals, Switzerland

The pig has been introduced more than 20 years ago in drug development following attempts of finding a species which shares better homology with human than the dog based on bio-physiological parameters. However, miniaturization, standardized breeding and health status control were required before the pig could find a broader than niche application in pharmaceutical industry. During the years of experience with minipigs in pharmaceutical research and the science evolving rapidly, the selection of a non-rat animal species for preclinical safety testing became primarily driven by pharmacological (target expression homologous function), pharmacokinetic and bio-physiological considerations. This offered a broad field of application for the minipig, besides the well-established use in dermal projects in all areas of drug development but also in novel approaches including genetically modified animals. In this symposium we look at recent approaches and requirements in the optimal selection of a non-rat model in pharmaceutical development and critically ask how good of a choice the minipig offers for the scientist, how did the testing environment evolve and what are the key requirements for a broader use of the minipig compared to the other well established non-rat species like dog or monkey. In the end, recent advances like the Microminipig and genetically-engineered pigs using CRISPR/Cas appear to offer future potential in the field of translational research and drug development.