

## **Novel disease model animals produced by somatic cell gene targeting and cloning**

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The Agricultural Biotechnology Center at Godollo is the biggest research center under the auspices of the Hungarian Ministry for Agriculture and Rural Development. Basic and applied research in plant and animal biotechnology is organised around several key areas. At the Department of Animal Biology creation of novel transgenic (TG) animal models with basic, agricultural or medical importance resulted in the first embryonic stem (ES) cell derived TG mice and in the first TG rabbits in the country. Current research includes the generation of novel animal models, including the first targeted genetic modifications in rabbits by using somatic cell nuclear transfer (cloning) and studies on the mouse and rabbit ES cell isolation and differentiation. The rationale behind such research is, that complex modeling systems are essential to facilitate the post-genomic medical research. Genetic knock-out mice catalyzed the progress, but mouse anatomy and physiology is not fully adequate to study numerous human diseases. To bridge the gap between mouse models and treatment of human diseases, generation of TG laboratory animal models in rabbit and rat is needed. The lack of stable ES cell lines in most species prevented targeted genetic modifications, however, nuclear replacement and gene targeting in somatic cells as a technological platform offer a new opportunity for progressive disease research and pharmaceutical testing systems. The overall goal of the projects is to provide a new technology to produce better animal models for medical research. This research was supported by grants of OTKA T046171, Bilateral Scientific and Technological Collaborations (TET, No.A10/02, No. GB52/01) between Austria, UK and Hungary and the Hungarian National Office of Research and Technology (OM-KMUFA; Bio-00017/2002).