Abstract

The thesis deals with methods used for preparation of transgenic mice and with comparison of them in terms of efficiency and suitability of applications for research purposes. Technologies for the transfer of gene constructs involve microinjection of DNA into the pronukleus of fertilized oocyte, which seems to be the most reliable one. Another possibility is associated with the use of sperm, which carry the incorporated gene construct into the oocyte during *in vitro* fertilization, or with the use of retroviral vectors by which the oocytes are transfected. Somatic cell nuclear transfer into enucleated oocyte, the use of embryonic stem cells which are incorporated into strange embryo or transgenesis by liposomes are techniques far less explored and not so often used.

The next section of this thesis introduces to the reader individual steps which are necessery for successful transgenesis. It is focused on ovarian stimulation which is necessery to obtain sufficient amount of oocytes, as well as on stimulation of recipient mother in embryo transfer as well as on capacitation of sperm required for *in vitro* fertilization. The thesis also deals with backward analysis confirming positivity of transgene expression by genotyping of pups and by crossbreeding of transgene positive and compares advantages and disadvantages of obtaining homozygot transgenic lines.

Key words:

Transgenic mouse, perinuclear injection, ovarian stimulation, capacitation, *in vitro* fertilization, embryo transfer