Robert Kesterson, Ph.D. - Director

Mission

This Shared Facility provides a centralized resource for the efficient production of genetically modified or transgenic mouse models with a primary goal to generate models of human disease that provide a mammalian system to study the pathophysiology of disease and the efficacy of potential treatment interventions. The DNA/ES cell “microinjection resource” supported by the CCC is one of two major components of the UAB Transgenic Mouse Facility with the “gene targeting core facility” (primarily supported by the AMC) as the other.

Facility Description

Located in the Kaul Human Genetics Building, TMF services include the production of mouse models using DNA microinjection and embryonic stem (ES) cell transfer techniques. More than 5,000 founder animals (transgenic and ES cell germ-line chimeras) have been produced by the facility since its inception. Additional services include: complete mouse ES cell gene targeting experiments; embryo cryopreservation; rederivation of pathogen-free rodents; and assisted reproduction techniques such as *in vitro* fertilization, superovulation, rederivation and embryo transfer.

Research Information

The TMF works with investigators to design optimum constructs, genotyping screens, and breeding paradigms for generating desired mouse models, Methodologies are also developed when necessary to meet an investigator's needs. For instance, we recently used nuclear exchange techniques to produce mice harboring mitochondria from one defined strain but the nuclear DNA of a different mouse strain. These mitochondrial nuclear exchange (MNX) mice are now being characterized for cancer and cardiovascular phenotypes. More recently, considerable effort has been exerted to create knockout and conditional knockout mouse models using commercially available ES cell lines that can be ordered from international consortiums. The TMF also is supported by the RPKDCC to create "cilia-knockout" mice as well as renal-specific cre transgenics. Similarly, support from the CMBD provides funds to generate "bone-specific" mouse models and cre transgenics which are then available to all CMBD members.

Services and Fees

Fees for major research services are as follows:

--Production of transgenic mice by oocyte microinjection ($2900)

--Gene targeting of ES cells ($4,500 - investigator responsible for screening)

--Gene targeting of ES cells ($6,000 – TMF responsible for screening)

--Blastocyst microinjection of ES cells and transfer to pseudopregnant females ($2800/day or 40 blastocysts).

--Embryo cryopreservation ($900 - $1200)

--Re-derivation ($1000)

Charges for other services will be prearranged by the Director and will be formulated on a cost recovery basis.

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