

Why does it cost so much to make a mouse?

The UMMS **TAMC Service Fee** for pronuclear injection of fertilized oocytes is based upon the expense of the experimental procedure and therefore is strain-dependent. For example, the expense is greater when performing transgenic or nuclease editing work using fertilized oocytes of C57BL/6 inbred strain of mice than when working with B6/SJL hybrid mice. This is partly due to the purchase cost of each mouse, but is mostly due to the increased fertility of hybrid strains and increased fragility of inbred oocytes.

For example, in a typical **C56BL/6** oocyte experiment (**\$5,850**), the TAMC performs 4-5 injection experiments using 100-125 oocytes injected per experiment. For a single experiment, we start with eight super-ovulated female C57BL/6 mice, eight fertile C57BL/6 stud male mice, eight vasectomized male mice, and eight Swiss-Webster recipient female (pseudo-pregnant) mice (not all of these mice plug and can be used). This typically results in 3 good transfers, yielding ~15 live births. In contrast, using **C57BL/6 x SJL hybrid** mice we obtain the same numbers of transfers and live births using two-thirds the numbers of starting mice, as the hybrid mice super-ovulate better than inbred mice (more embryos per female), have fewer fragile oocytes (so fewer injections are needed), and have better “take” rates in embryo implantations. Thus, the cost for hybrid work is less (**\$4,200**).

But why does it cost so much in general? Because animal costs are expensive.

For example, when generating a transgenic inbred C57BL/6 mice:

Mouse purchase costs ~\$22/mouse (x 32 = \$700). For 5 sessions = \$3,500

Cage costs -15 cages in embryo production x 8 weeks (5 sessions) x UMMS per diem = \$480

Thus, the animal costs for an inbred C57BL/6 experiment are approximately **\$3,980**.

Note that this “animal cost” is ~66% of the overall Core service fee, but does not include the TAMC costs for many other non-reusable items such as sutures, needles, hormones, media, or analgesics. Nor does it include the technician labor time and expertise needed for plugging, timed mating, embryo harvests, oocyte microinjections, implantation surgeries, post-op care, weaning of mice, and/or animal tail biopsies. These costs are also calculated into the overall fee set by the UMMS Office of Research.

Please note- there will be additional cage cost expenses associated with your project that are not covered by this service fee, as we must place the pregnant foster-moms onto your IACUC docket number and associated IBC approval (which describe the transgene, its potential effect, etc.). Such information is not present (obviously) on the Core’s IACUC docket (nor its linked IBC approval). Our docket (A619) describes the procedures we undertake using wildtype mice or embryos (prior to injection of your transgene). Thus, Animal Medicine will bill you separately for the handful of cages needed for the foster moms and for cages involved in weaning of putative founder pups. However, we do minimize the cage numbers involved on your behalf, and transfer the mice to your own room ASAP (which the Coe can easily arrange to happen with Animal Medicine, as the mice are already on your IACUC docket).

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