What are tree shrews?

- “Northern tree shrews” Tupaia belangeri
- Small mammals (150 – 220 grams)
- Closely related to primates
- Native to SE Asia
- Diurnal (95% cones in retina)
- Short and long wavelength sensitive cones
- Highest brain to body mass ratio of any mammal (including humans)
- More neocortex than rats
- Lissencephalic
- Well-differentiated thalamic nuclei
- Excellent vision, hearing
- Amino acid sequence of most proteins 90 – 100% like human
- 2X genome sequenced

What are tree shrews used for?

- Over 1000 articles in PubMed
- May already be some tree shrew data in your field

Tree shrews have been used for studies of:

- Myopia (nearsightedness)
- Glaucoma
- Retina
- Circadian circuitry
- Alzheimer’s
- Stress
- Parkinson’s
- Memory
- Schizophrenia
- Neuromodulation
- Anxiety/neuropeptides
- Depression
- Attention/plasticity
- Brain networks

Why use tree shrews?

- Ever wonder if your results will translate to humans?
- Tree shrews are closely related to primates
- The most primate-like non-primate!
- Smarter than rats or mice
- Good for behavioral studies
- NIH appears to encourage use of animals closer to primates
- Three recent NIH-funded UAB grants; more pending

Advantage of tree shrews over primates

- Less expensive than primates
- Lower per diems than for primates
- Less political push-back than with primates
- Rapid postnatal development (sexual maturity at 4 - 5 months)
- Altricial at birth so CNS is still forming
- Can live over 7 years
- TSC can produce more than 100 new animals each year
- Can have more animals per group than with primates
- Unique resource; UAB is 1 of only 3 U.S. universities with tree shrews
- Be among the first in your department to use tree shrews!

For general information, contact
Dr. Tom Norton tnorton@uab.edu or 934-6742

To become a pilot investigator, contact
Russell S. Veale rveale@uab.edu
Phone (205) 934-6733 or (205) 975-5918

How to begin using tree shrews

To encourage UAB faculty to begin using tree shrews and help them design projects for NIH funding, the TSC has three levels of investigators, (1) pilot investigators, (2) intermediate investigators and (3) established investigators

Pilot Investigators:
- UAB faculty who are interested in exploring if tree shrews can become a useful animal model for their research.
- $50 per animal up to 10 animals
- must use animals unclaimed by established investigators
- eligible to receive postmortem tissues
- may be normal animals or ones that have completed other experiments

To become a pilot investigator, please discuss your interest and needs with Dr. Norton and then submit a paragraph to the Tree Shrew Core Committee explaining how using these pilot studies may lead to extramural grant funding using tree shrews. Pilot investigators will be notified when animals are to be euthanized and tissues can be available for their use. Due to limited staff, removal of tissues will be done by the investigator or personnel from that lab. TSC responsibility will end after the animal is euthanized.

Intermediate Investigators:
- UAB faculty who have used tissues from 10 animals at the introductory price and wish to continue to develop preliminary data in support of submitting an extramural grant application or an internal UAB grant application.
- Cost: $300 per animal
- must have an approved IACUC protocol for tree shrew use, even for postmortem tissues
- With IACUC approval, may use animals that have completed other experiments
- may use normal animals unclaimed by established investigators
- lower priority for available animals than established investigators

Established Investigators:
- UAB faculty who have IACUC protocols and have received internal grant funding (Faculty Development Grant, departmental, or similar funding) or have applied for extramural (hopefully, NIH) funding or received extramural funding for their tree shrew project(s)
- Cost: currently $700 per animal (juvenile animals, retired breeders) if the investigator is the sole user

Cost sharing:
- If two investigators share an animal, the first investigator works with a previously untreated animal; the second investigator uses postmortem tissue. Cost to be determined on a case-by-case basis by the Tree Shrew Core Committee.

The Tree Shrew Core is located in Volker Hall B34K and B002G3
TSC is managed by the TSC Committee comprised of faculty from the Department of Optometry Vision Science and the Department of Ophthalmology