

**Institutional Animal Care and Use Committee
San Francisco State University**

All use of vertebrate animals in research, teaching and testing is regulated by the Institutional Animal Care and Use Committee (IACUC). Avian embryos are not considered live animals by U.S. regulatory agencies and many universities do not regulate their use in research. Nonetheless, there is a consensus in the scientific community that avian embryos greater than two thirds of the way to hatching can experience pain. If avian embryos hatch, intentionally or unintentionally, they are live vertebrate animals and are regulated by the IACUC. Consequently, the SFSU IACUC has adopted the following guidelines. Chick embryos are considered the model species. If other avian species are used, then the guidelines should be adjusted based on relative time to hatching.

1. Research involving avian embryos that will be sacrificed prior to 3 days before hatching does not require IACUC review, as these are not considered to be live vertebrate animals. The IACUC does require submission of a complete animal protocol for projects utilizing pre-hatched avian embryos at or after 80% of the mean incubation period. This form will record your use of avian embryos for the IACUC.
2. Chick embryos younger than embryonic day 15 (E15) are assumed to be unable to experience pain. It is recommended that E14 or younger embryos be euthanized by hypothermia, typically by placing the eggs in a -20°C freezer.
3. Chick embryos from E15 to E18 can experience pain and should be euthanized by decapitation or other rapid and humane method.
4. Embryos E19 and older must be euthanized by humane methods such as CO₂, anesthetic agents or decapitation. It should be noted that embryos are resistant to CO₂. If this method is chosen, the embryos must be exposed to 90% CO₂ for at least 20 min. Dry ice is unacceptable as a source of CO₂ for euthanasia.
5. The IACUC recognizes that inadvertent hatching may occur. Investigators are asked to describe their methods for humane euthanasia of hatchlings.

These guidelines are based on recommendations of ILAR, the NIH intramural recommendations for rodent neonates, and the AVMA Panel on Euthanasia.