# Use of Rapamycin

**Purpose**:
To provide guidance for the use of Rapamycin in the laboratory and animal facility environment. Rapamycin is an immunosuppressant drug commonly used to prevent organ transplant rejection and is used at UW-Madison in animal research. Rapamycin binds to 'FK Binding Protein-12' and prevents T-Lymphocyte activation/proliferation and antibody production. It is also an inhibitor of mTOR and causes cells to pause in their growth cycle before replicating DNA, and so is used as a cytostatic agent.

**Precautions**:
The following information can be used to complete the Safety section of your animal protocol.

1. Chemical hazard agents – (Identify the category of the chemical): *(Select the following)*
   - Reproductive Hazard/Teratogen
   - Carcinogen
   - Mutagen

2. Containment preparation – (Containment equipment required for the preparation of the chemical): (*Select one of the following*)
   - Fume Hood

     **OR**
   - Ducted Biosafety Cabinet (BSC)

3. Containment animals – (Containment equipment required for chemical administration and handling animals after exposure to the chemical): (*Select the following*)
   - No special containment needed.

4. PPE needed - (for handling live animals, carcasses, or animal waste/dirty bedding): *(Select the following)*
   - Exam gloves – nitrile
   - Safety glasses/goggles
   - Lab coat or disposable gown

5. Waste Disposal: (disposal of animal waste/dirty bedding from animals after exposure to the chemical): (Select both options and include additional information for Other)

   -Bag animal waste/dirty bedding and place sealed bag in secondary container and place secondary container in regular trash.

- Other: Chemical Hazard Cage Labels are required on each individual cage containing the hazard and must contain the chemical health hazard symbol and "Agent and Disposal method". Labels are removed or crossed out when the special handling time has ended. *Chemical Hazard Cage Labels are available at www.ehs.wisc.edu/ehs-signage

6. Carcass disposal: *(Select the following)*
   - Pick up by EH&S for incineration.

7. Chemical human risk: *(Add the following)*
   - The suppression of the immune system by Rapamycin has been shown to increase the development of various cancers. Chronic exposure may cause susceptibility to infection, embryo toxicity and/or metabolic disorders, testicular damage, and various abnormalities in blood composition. Rapamycin accumulated in the fetus to a higher level than are present in maternal blood.

**References:**

"Rapamycin SDS"
https://www.sigmaaldrich.com/US/en/sds/SIAL/37094

"Chemical Safety Practices Recommendations Rapamycin"
https://ncifrederick.cancer.gov/ehs/Safety/Media/Documents/CSPR_Rapamycin.pdf