UiO : Universitetet i Oslo
Institutt for medisinske basalfag, Avdeling for komparativ medisin

Standard operasjonsprosedyre: Tamoxifen
SOP nr: 12-01
Opprinnelig dato: 18.09.2019 Forfattet av: Frøydis Lie Kilmer og Knut Tomas Dalen
Revidert dato: 19.01.2021 Revidert av: Frøydis Lie Kilmer
Gyldig til dato: 29.09.2022 Godkjent av: Espen Engh

# TAMOXIFEN

## 1.0 PURPOSE

1.1 The purpose of this procedure is to ensure that Tamoxifen is used in experiments in such a way that researchers, staff at KPM, personnel at the dirty side of the washery and the environment are protected from exposure to Tamoxifen.

1.2 Tamoxifen is carcinogenetic, can harm the reproductive system, cause fetal defects and is toxic to aquatic organisms. Tamoxifen is associated with an increased risk of endometrial carcinoma and an increase in rare forms of uterine cancer in women taking Tamoxifen for the treatment or prevention of breast cancer. Research has indicated that Tamoxifen can cause mutations in the development of reproductive organs. Tamoxifen is carcinogenic, teratogenic (causes fetal malformations) and mutagenic.

## 2.0 PHARMACOLOGY

2.1 When injected into mice, tamoxifen is rapidly metabolized in the liver to various metabolites, of which 4-hydroxy-tamoxifen (4OH-Tamoxifen) and N-desmethyl-tamoxifen (ND-Tamoxifen) are the most important in mice. The metabolites are biologically active as in Tamoxifen, and some of the effects of 4OH-Tamoxifen *in vivo* are specified as 100 times higher than Tamoxifen.
Following a single oral dose of Tamoxifen in mice (200 mg/kg), maximum serum values of the above metabolites may be observed after 3-6 hours. Elimination t½ from serum will be 6-12 hours for Tamoxifen, 4OH-Tamoxifen and ND-Tamoxifen. When the dose of Tamoxifen (200 mg/kg) is repeated daily, serum values increase steadily throughout the first 4 days of accumulation of Tamoxifen and the above-mentioned Tamoxifen derivatives. After administering further injections, stable high serum levels will be achieved equivalent to the level of the maximum values after a single dose, with t½ of about 170 hours. Tamoxifen and its metabolites are eliminated through bile (about 80%) and urine (about 10%) and enter into an enterohepatic cycle after intestinal hydrolysis. Feces contains both conjugated and non-conjugated Tamoxifen and metabolites. There is no excretion of Tamoxifen via the lungs.

2.2 **Hazard identification**:

Tamoxifen citrate CAS No: 10540-29-1

H350 May cause cancer.
H360 May impair reproductive performance or cause fetal harm.
H362 May cause harm to breast-fed infants.

2.3 **Quarantine rules**: All additional precautions described in this procedure apply to the quarantine period, starting with the first injection of the compound. During the quarantine period, animals, cages and waste must be treated and disposed of as hazardous. The animals will be moved to the regular animal room at the end of the quarantine period, if they are not terminated.

*The quarantine time below is based on 6 x $t_{1/2}$ for the elimination of Tamoxifen and depends on the number of days of subsequent doses given.*

| Number of days with repeated injections | Serum $t_{1/2}$ | Quarantine time (6 x $t_{1/2}$) |
|---|---|---|
| 1 | 12 t | 3 days |
| 2-3 | Unknown | 21 days |
| 4 or more days | 170 t | 40 days |
| Number of days of feed with added Tamoxifen | Serum $t_{1/2}$ | Quarantine time (6 x $t_{1/2}$) |
| 4 or more days | Unknown | 40 days |
| | | |

## 3.0 DISTRIBUTION OF RESPONSIBILITY

**KPM's responsibility**

3.1 The Head of Department at KPM is responsible for obtaining and disseminating relevant information about the experiment and the substances in use to the PMSK (personnel with special screening responsibility), HSE coordinator and room manager well ahead of the scheduled commencement of the experiment.
3.2 The HSE coordinator at KPM ensures that the SOP is tailored to KPM and personnel at the dirty side of the washery and that protective equipment for said personnel is in place before the start of the experiment. The HSE coordinator follows up on HSE for the duration of the experiment.
3.3 The room manager ensures that the room is equipped, that the cages are marked in compliance with current rules and that laboratory coats are replaced every Friday.
3.4 The HSE coordinator ensures that the washery is properly equipped.
3.5 The Head of Department ensures that all personnel at KPM are well trained.
3.6 The PMSK follows up on animal welfare during the experiment.
3.7 KPM checks the cages daily and changes water bottles if necessary. In exceptional circumstances, KPM changes cages and euthanizes sick animals at weekends (if the user is not available).

3.8 If any deviations are discovered by KPM, the user, Head of department at KPM and PMSK must be contacted.

3.9 The room manager moves the animals to the regular animal room at the end of the quarantine period.

3.10 Employees at KPM are responsible for handling animals and equipment in accordance with the current guidelines.

**Responsibility of the research group**

3.11 The research leader is responsible for the dissemination of this SOP, product information and safety data sheets (SDS) to KPM. An HSE declaration has to be submitted to KPM. All information about the experiment must be communicated to KPM well ahead of the start of the experiment. The research leader cannot initiate the experiment until KPM gives the signal that everything is ready.

3.12 The investigator listed as the main applicant in the FOTS application is responsible for the overall experiment. The main applicant is responsible for instructing all other persons listed on the FOTS and ensuring that they comply with this SOP.

3.13 The research leader is responsible for identifying the appropriate respiratory protection for the substance in use and for ensuring that protective equipment and other equipment needed by their employees are in place before the start of the experiment.

3.14 The research group is responsible for preparing solutions for injection, administrating the substance, terminating/euthanizing animals, changing cages and monitoring the health of the animals. A score form (available in a folder in the animal room) must be filled out as required.

3.15 All solutions stored at KPM must be properly marked with the compound name, CAS number and pictograms and must be stored according to regulations. KPM must be informed of all substances used and stored at KPM.

3.16 The research leader is responsible for identifying a proper decontaminant, if any, and for purchasing this and sponges for decontamination purposes.

3.17 The persons listed on the FOTS application are responsible for the final disposal of the generated hazardous waste.

## 4.0 PROCEDURE

4.1 It is mandatory for all animals in experiments involving hazardous substances, where there is a quarantine time involved with the animals due to excretion of hazardous substances or if food or water contains hazardous substances, to be house in DU-008A (Tox- room). All handling of animals and substance must take place in the fume hood in DU-008A.

4.2 DU-008, DU-008A and the fume hood in DU-008A must at all times be equipped with the following equipment:

DU-008:

- Protective coat placed in a marked bag

- Full facemask with a proper filter, placed in a closed bag marked with name of owner (filter must be replaced according to instructions and use)
- Kimtech Purple Nitrile Xtra gloves (or other suitable gloves)

Room DU-008A:

- Autoclaved water bottles
- Autoclaved cages
- Paper tunnels/ paper houses
- Extra paper for environmental enrichment
- Disposable liners
- New prefilters for ventilation unit
- Cadaver bags
- Garbage bags (black and white)
- Yellow bags
- Large, durable bags
- Cable ties
- Masking tape
- Permanent marker
- Paper towels
- Spray bottle with soapy water
- Spray bottle with 70% ethanol
- Bottle with 5% chlorine
- Sponges for decontamination after spills
- Large container for hazardous waste
- All equipment in DU-008A must be marked "DU-008A (Tox- room)".

The fume hood in DU-008A:

- Kimtech Purple Nitrile Xtra gloves (or other suitable gloves)
- Container for hazardous waste
- Cannula box
- Sponges

4.3 **Protective equipment and procedure**: All handling of hazardous substances and animals under quarantine must be carried out in the fume hood in DU-008A (see picture 1) and in compliance with the requirements for protective equipment, as listed below.

1. Required personal protective equipment (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. The surface of the fume hood must be covered with blue paper toweling or absorbent pads.

3. Spray bottles and other clean equipment should only be handled with inner, non-contaminated gloves.
4. After use, roll up the blue paper toweling/ pads, place in a dual waste bag closed with a knot/cable tie and discard as hazardous waste in the fume hood. Discard outer gloves as hazardous waste in the fume hood and put on new gloves.
5. Clean the work surface with soapy water and spray with 70% ethanol. Place paper towels in a dual waste bag, close with a knot/cable tie and discard as hazardous waste in the fume hood. Discard outer gloves as hazardous waste in the fume hood.
6. The yellow waste bags containing bedding etc. must be placed in a durable bag, closed with a cable tie, labelled as hazardous waste and placed in the storage room for hazardous chemicals (see illustration 1).
7. Bags with dirty cages and bottles must be placed on the shelf outside the dirty side of the washery.
8. Place the coat in a marked bag in DU-008.
9. Clean the facemask and place in a sealed, marked bag in DU-008.
10. Disposed of inner gloves as hazardous waste.
11. Wash hands thoroughly with soap and water.

4.4 **On commencement and completion of experiments:** All cages used in these experiments are to be placed in DU-008A no earlier than three days before experiment is started and must be placed in a clean cage containing a disposable liner. Cages must be set as “Experimental” in Science Linker (SL). Information regarding the experiment must be added by the user under “Notes” on the cage card in SL and a new cage card printed out. This information must include a short description of the experiment, the substance in use, expected complications or phenotypes, special dietary needs, contact person and phone number. A label stating the experiment start date and the end of quarantine date must be attached to the cage. At the end of the quarantine period, the cage must be changed (no liner needed). The cage is then moved to the regular animal room.

4.5 **Decontaminating after unforeseen spills:**

1. Required personal protective equipment (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. Soak up spills with a sponge. Place sponge in a dual waste bag and close with a knot/cable tie. Dispose of as hazardous waste in the container in the fume hood. Discard outer gloves as hazardous waste and put on new gloves.
3. Clean surface twice with paper soaked in water from a clean water bottle. Place paper in a dual waste bag and close with a knot/cable tie. Dispose of bag as hazardous waste in the container in the fume hood. Dispose of gloves as hazardous waste in the container in the fume hood. Place the bottle in in a dual waste bag labelled “Hazardous/Farlig” and close with a knot/cable tie. Put on new gloves.

4. Decontaminate area with paper soaked in 5% chlorine. Place paper in a waste bag and close with a knot/cable tie. Dispose of as hazardous waste in the fume hood. Discard outer gloves as hazardous waste.
5. If lab coat or other clothing has been contaminated with tamoxifen, remove at once and place in a dual waste bag labelled “hazardous”. Place the bag outside the dirty side of the washery. Wash affected skin with water and contact a doctor.
6. Place the bag with the bottle outside of the dirty side of the washery.
7. Place the coat in a marked bag in DU-008.
8. Clean the facemask and place in a sealed, marked bag in DU-008.
9. Disposed of inner gloves as hazardous waste.
10. Wash hands thoroughly with soap and water.

4.6 **Repackaging of feed**: Tamoxifen feed must only be handled in the fume hood. Put on new gloves before handling the bags containing portions of feed.

1. Required (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. The surface of the fume hood must be covered with blue paper toweling or absorbent pads.
3. Feed with Tamoxifen must be packed into smaller bags, if not already portioned. The bags must be labelled with the user’s name, "Tamoxifen diet" and the expiry date of the feed. Place the empty feed bag in a dual waste bag, close with a knot/ cable tie and discard as hazardous waste in the fume hood. Discard outer gloves as hazardous waste and put on new gloves.
4. After use, roll up the blue paper toweling/ pads, place in a dual waste bag closed with a knot/cable tie and discard as hazardous waste in the fume hood. Discard outer gloves as hazardous waste and put on new gloves.
5. Clean the work surface with soapy water and spray with 70% ethanol. Place paper towels in a dual waste bag, close with a knot/cable tie and discard as hazardous waste in the fume hood. Discard outer gloves as hazardous waste in the fume hood.
6. Place the portioned packs of feed in a designated box in the refrigerator. The box must be marked with “Hazardous”, the user’s name, “Tamoxifen diet”, the expiry date of the feed and the hazard symbol: Toxic (T). Dispose of gloves as hazardous waste in the container in the fume hood.
7. Place the coat in a marked bag in DU-008.
8. Clean the facemask and place in a sealed, marked bag in DU-008.
9. Disposed of inner gloves as hazardous waste.
10. Wash hands thoroughly with soap and water.

4.7 **Injecting animals/ refilling tamoxifen diet:** This task is carried out by the user.

1. Required (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. Discard outer gloves as hazardous waste if you have handled Tamoxifen. Put on new gloves.
3. Place the cage in the fume hood.
4. Open the lid of the cage. Inject the animals/ refill Tamoxifen diet. Change the cage if necessary (see section 4.7). Only put the lid on if the animals are stressed/very active, this to reduce the contamination on the outside of the cage.
5. Discard outer gloves as hazardous waste and put on new gloves before closing the lid and placing the cage back in the rack.
6. **Follow the routine described from point 4 in section 4.3.**

4.8 **Changing the cages during the quarantine period:** This task is carried out by the user. If the researcher is not available at all during the weekend, KPM will change cages if water leakages and the like occur.

1. Required (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. The surface of the fume hood must be covered with blue paper toweling or absorbent pads.
3. Feed containing Tamoxifen should be taken from the refrigerator and placed in the fume hood before cages are changed.
4. Disposable liners must be used. A paper tunnel/ house is placed on the new liner, in addition to bedding and paper from the clean cage. Add more paper if needed and transfer some dirty paper to prevent fighting among males. The new cage should not have a basket, since the basket from the animal's former cage will be transferred to its new cage.
5. Close the hood as far down as possible.
6. Open the clean cages and empty the contents onto a disposable liner. Put the disposable liner back in the clean cage.
7. Open the dirty cages and move the feed basket and animals over to the clean cage. Top the food basket with Tamoxifen diet/ regular food. Only put the lid on if the animals are stressed/very active, this to reduce the contamination on the outside of the cage.
8. Liners with dirty bedding, all other content and feed must be disposed of in a dual yellow waste bag labelled "Hazardous/Farlig" and closed with a cable tie. Place temporarily on the floor if the bag is full. If not full, leave in the fume hood for later use.
9. Place dirty cages, with empty food baskets, and bottles in a dual waste bag labelled "Hazardous/Farlig" and close with a knot/cable tie. Place temporarily on the floor.
10. Dispose of the outer gloves in container for hazardous waste inside the fume hood and put on new gloves.
11. Put the lids on the clean cages and place cages in the rack.
12. **Follow the routine described from point 4 in section 4.3.**

4.9 **Termination of animals:** The cages should only be opened in the fume hood in DU-008A.

7. Required (PPE): laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
8. Remove the lid of the cage. Terminate the animal by dislocating its neck. Place the cadaver in a dual cadaver bag closed with a knot/ cable tie.
9. If the cage is empty, disposed of liners with dirty bedding, other content and feed in a dual yellow waste bag labelled “Hazardous/Farlig” and closed with a cable tie. Place temporarily on the floor if the bag is full. If not full, close the bag and leave in the fume hood for later use.
10. Used water bottles and cages with empty food baskets must be placed in a dual waste bag labelled “Hazardous/Farlig” and closed with a knot/cable tie. Place temporarily on the floor.
11. **Follow the routine described from point 4 in section 4.3.**
12. Place the cadaver in the freezer.
13. Dispose of gloves as hazardous waste.
14. Wash hands thoroughly with soap and water.

4.10 **Daily inspection:** Daily inspection is carried out by KPM. Cages should only be opened in the fume hood.

1. Required (PPE): laboratory coat, a full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves. Protective gear can be found inside DU-008
2. Collect dirty bottles in a dual waste bag marked “Hazardous/Farlig” (the bottles contain plain water) and close the bag with a knot or a cable tie. Dispose of the outer gloves as hazardous waste and put on new gloves.
3. Place new bottles in the cages.
4. Inspect the animals. Do not open the cages if not necessary. Contact the user if any discrepancies.
5. Discard of outer gloves.
6. Place the coat in a marked bag in DU-008.
7. Clean the facemask and place in a sealed, marked bag in DU-008.
8. Disposed of inner gloves as hazardous waste.
9. Wash hands thoroughly with soap and water.

- Used laboratory coats are gathered up every Friday, placed in a dual bag labelled “Hazardous/Farlig” and placed outside the dirty side of the washery.
- Cleaning the ventilation unit**:** Prefilters are disposed of as hazardous waste every third week. Do not vacuum the prefilters! Use dual gloves. Carefully remove the prefilters from the ventilation unit, place in dual yellow bags and close with cable ties. Dispose of as hazardous waste in the fume hood. Dispose of the outer gloves as hazardous waste and put on new gloves. Place a new prefilter in the ventilation unit.

### 4.11 Cleaning cages, bottles and other equipment:

1. **Required (PPE):** protective coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. Wash the cages, bottles and and other equipment in the usual way.
3. Place contaminated bags in a new bag, tie with a knot and dispose of bags as hazardous waste. Discard outer gloves as hazardous waste and put on new gloves.
4. Clean all surfaces that have been in contact with equipment with soapy water. Place contaminated paper in a new bag, tie with a knot and discard paper and gloves as hazardous waste.
5. Rinse the coat in water, let dry and send to be cleaned.
6. Clean the facemask and place in a sealed, marked bag.
7. Disposed of inner gloves as hazardous waste.
8. Wash hands thoroughly with soap and water.

1. **Equipo de protección personal requerido**: bata protectora, máscara completa con sus respectivos filtros y dos pares de guantes Kimtech Purple Nitrile Xtra que puedan cubrir parte de las mangas de la bata. También se puede usar otra marca de guantes de las mismas características.
2. Lave las jaulas, botellas y el resto del equipo en la manera acostumbrada.
3. Ponga las bolsas contaminadas dentro de bolsas nuevas, ciérrelas haciéndoles un nudo y tirelas en el lugar destinado para desechos peligrosos. Quítese el par exterior de guantes, tírelos como desecho peligroso y póngase un nuevo par de guantes exterior sobre el par interior.
4. Limpie con agua enjabonada todas las superficies que han estado en contacto con el equipo. Meta los papeles sucios en bolsas nuevas, ciérrelas con un nudo; quítese el par exterior de guantes y tírelos juntos a las bolsas en el recipiente para material peligroso.
5. Enjuague la bata, déjela secar y envíela a la lavandería
6. Limpie la máscara y guárdela en la bolsa destinada específicamente para ella.
7. Quítese su par interior de guantes y tírelos en la basura peligrosa.
8. Lávese bien las manos con agua y jabón.

### 4.12 Handling contaminated/used mops and coats:

1. **Required (PPE):** protective coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. Thoroughly rinse the clothes/mops with water in the sink. Dry the clothes before they are delivered to the laundry.
3. Place contaminated bags in a new bag, tie with a knot and dispose of bags as hazardous waste. Dispose of outer gloves as hazardous waste.
4. Clean all surfaces that have been in contact with mops and coats with soapy water. Place contaminated paper in a new bag, tie with a knot and discard paper and gloves as hazardous waste.
5. Rinse the coat in water, let dry and send to be cleaned.

6. Clean the facemask and place in a sealed, marked bag.
7. Disposed of inner gloves as hazardous waste.
8. Wash hands thoroughly with soap and water.

1. **Equipo de protección personal requerido**: bata protectora, máscara completa con sus respectivos filtros y dos pares de guantes Kimtech Purple Nitrile Xtra que puedan cubrir parte de las mangas de la bata. También se puede usar otra marca de guantes de las mismas características.
2. Enjuague cuidadosamente las batas y trapeadores en el lavandero (fregadero). Deje secar las batas antes de enviarlas a la lavandería.
3. Ponga las bolsas contaminadas dentro de bolsas nuevas, ciérrelas haciéndoles un nudo y tirelas en el lugar destinado para desechos peligrosos. Quítese el par exterior de guantes, tírelos como desecho peligroso y póngase un nuevo par de guantes exterior sobre el par interior.
4. Limpie con agua enjabonada todas las superficies que han estado en contacto con el equipo. Meta los papeles sucios en bolsas nuevas, ciérrelas con un nudo; quítese el par exterior de guantes y tírelos juntos a las bolsas en el recipiente para material peligroso.
5. Enjuague la bata, déjela secar y envíela a la lavandería
6. Limpie la máscara y guárdela en la bolsa destinada específicamente para ella
7. Quítese su par interior de guantes y tírelos en la basura peligrosa.
8. Lávese bien las manos con agua y jabón.

### 4.13 **Weekly cleaning of the room by cleaning staff:**

1. **Required PPE:** laboratory coat, full facemask with a proper filter and dual Kimtech Purple Nitrile Xtra gloves (or other suitable gloves) covering sleeves.
2. Bring a clean mop to the room. Leave the trolley outside the room. Use a mop rack and cleaning solution located in the room.
3. Clean the floor as usual.
4. Place the used mop in a dual waste bag marked “Hazardous/Farlig” and tie with a knot.
5. Discard the outer gloves as hazardous waste (yellow container in the room).
6. Place the coat in a bag marked “Farlig” and place outside of the dirty side of the washery.
7. Clean the facemask and place in a sealed bag marked with your name. Leave the mask in DU-008 (outside of DU-008A).
8. Disposed of inner gloves as hazardous waste.
9. Place the used mop outside of the dirty side of the washery.
10. Wash hands thoroughly with soap and water.

1. **Equipo de protección personal requerido**: bata protectora, máscara completa con sus respectivos filtros; dos pares de guantes Kimtech Purple Nitrile Xtra que puedan cubrir parte de las mangas de la bata. También se puede usar otra marca de guantes de las mismas características.
2. Deje la carretilla de limpieza fuera del cuarto y meta solo el trapeador (fregona). Use el palo de trapeador y la solución enjabonada que está dentro del cuarto.
3. Limpie el piso de la manera acostumbrada.
4. Meta el trapeador en una bolsa doble, ciérrela un nudo y márquela como “peligrosa/hazardous/farlig”.

5. Quítese el par de guantes exteriores y tírelos en el recipiente amarillo para desechos peligrosos.
6. Meta la bata en una bolsa marcada como “peligrosa/hazardous/farlig” y déjela afuera del lado sucio de la lavandería.
7. Limpie la máscara y guárdela en la bolsa destinada específicamente para ella, y marcada con su nombre. Deje la máscara adentro del cuarto DU-008, afuera del cuarto DU-008A.
8. Quítese su par interior de guantes y tírelos en la basura peligrosa.
9. Deje el trapeador (fregona) sucio afuera del lado sucio de la lavandería.
10. Lávese bien las manos con agua y jabón.

## 5.0 HEALTH, SAFETY AND ENVIRONMENT (HSE)

5.1 Tamoxifen is a drug that binds to estrogen receptors in breast cancer cells and blocks the ability of estrogen to stimulate. Tamoxifen is a synthetic cytotoxic agent used to treat both early and advanced ER (estrogen receptor positive) breast cancer in pre- and post-menopausal women. Tamoxifen is associated with an increased risk of endometrial carcinoma and an increase in rare forms of uterine cancer in women taking Tamoxifen for the treatment or prevention of breast cancer. Research has indicated that Tamoxifen can cause mutations in the development of reproductive organs. Tamoxifen is carcinogenic, teratogenic (causes fetal malformations) and mutagenic.

| Chemical | CAS no | Pictogram | Hazard statements | Precautionary statements |
|---|---|---|---|---|
| Tamoxifen | 10540-29-1 |  | H350 May cause cancer.<br>H360 May impair reproductive performance or cause fetal harm.<br>H362 May cause harm to breast-fed infants. | P201 Obtain special instructions before use.<br>P263 Avoid contact during pregnancy/lactation.<br>P308 + P313 If exposed or suspected: seek medical attention. |

5.2 Pregnant or breastfeeding women must not handle Tamoxifen, animals treated with Tamoxifen or equipment that has been in contact with Tamoxifen.

5.3 Cages and animals must always be handled in the fume hood.

5.4 Protective equipment when handling animals, inspecting animals and washing equipment: laboratory/protective coat, full facemask with a proper filter and dual Kimtech purple nitrile Xtra gloves (or other suitable gloves) covering sleeves.

5.5 Spills are soaked up with a sponge and the area is cleaned with water. The sponge and paper are placed in a dual bag and discarded as hazardous waste.
5.6 If liquid Tamoxifen is spilt on clothes, the clothes must be removed immediately and placed in a bag labelled “Hazardous/Farlig”. The bag must be delivered to the washery. The washery rinses the clothes thoroughly before delivering them to be laundered.
5.7 If liquid Tamoxifen, feed containing Tamoxifen, water from the bottle or litter from the cage are spilt onto the skin, the area should be washed with soap and plenty of water. Contact a doctor.
5.8 If Tamoxifen gets into the eyes, rinse the eyes thoroughly with plenty of eyewash for at least 15 minutes. Contact a doctor.
5.9 All surfaces that have been in contact with animals or cages must be thoroughly washed with soapy water.
5.10 All syringes and cannulas etc. must be disposed of in the cannula box in the fume hood.
5.11 Cages and their contents and cadavers must be treated as hazardous waste.
5.12 Cleaning the ventilation unit: dispose of prefilters as hazardous waste every third week. Do not vacuum the prefilters!

## 6.0 EQUIPMENT AND MAINTENANCE

6.1 Fume hood
6.2 Kimtech Purple Nitrile Xtra (or other suitable gloves)
6.3 Protective coat
6.4 Personal full facemask with a proper filter: washed after each use and placed in a sealed bag. Filter cartridges must be replaced when needed.
6.5 Sponges
6.6 Cadaver bags, garbage bags, yellow bags, durable bags
6.7 Containers for hazardous waste
6.8 Paper towels
6.9 Spray bottle with soapy water and 70 % ethanol
6.10 Bottle with 5% Chlorine
6.11 Cable ties
6.12 Masking tape
6.13 Permanent marker
6.14 GM500 cages, 250 ml bottles
6.15 Paper houses/ tunnels, paper for environmentally enrichment
6.16 Disposable cage liners
6.17 Tamoxifen feed
6.18 Tamoxifen solution

## 7.0 HISTORY OF EDITING

7.1 07.05.2020: Upgrade on extra PPE while inside animal room and routines regarding handling of prefilters in the ventilation unit. General upgrade on content.

7.2 29.05.20: section 4.9 “Weekly cleaning of the room by cleaning staff” added.
7.3 01.05.2020: update regarding decontaminant (Frøydis Lie Kilmer)
7.4 16.09.2020: Update after risk assessment; decontamination after spills, transport of dirty equipment to the washery and cleaning of dirty equipment in the washery. (Frøydis Lie Kilmer)
7.5 19.01.2021: Spanish translations of part 4.11, 4.12 and 4.13 added (translations by Jorge Rodas Foeller) (Frøydis Kilmer).

## 8.0 REFERENCES

8.1 SAFETY DATA JOURNAL in accordance with Regulation (EF) no. 1907/2006, edition 5.3, revised 19.09.2017. SIGMA-ALDRICH
8.2 SAFETY DATA SHEET according to Regulation (EC) no. 1907/2006, version 6.2, revised 22.03.2019. SIGMA-ALDRICH
8.3 Tamoxifen diets for inducible Cre-LoxP systems. Envigo.

Picture 1: Fume hood
https://kilab.no/produkter/kategori/avtrekkskap/


Illustration 1: Waste room for hazardous waste etc.