Risk Assessment Form (3)

Must be completed before experimentation.

Student's Name(s) Matthew Friedman

Title of Project Optimization of Murine Organoids in Modeling Prostate Cancer Through Infection With Adenovirus Containing Cre

To be completed by the Student Researcher(s) in collaboration with Designated Supervisor/Qualified Scientist:
(All questions must be answered; additional page(s) may be attached.)

1. List all hazardous chemicals, activities, or devices that will be used; identify microorganisms exempt from pre-approval (see Potentially Hazardous Biological Agent rules).
   See attached

2. Identify and assess the risks involved in this project.
   See attached

3. Describe the safety precautions and procedures that will be used to reduce the risks.
   See attached

4. Describe the disposal procedures that will be used (when applicable).
   Unless otherwise noted in the safety precautions section, all chemicals will be disposed of in biohazardous waste containers which will be autoclaved prior to disposal. Pipette tips and other objects used to handle chemicals will also be discarded into biohazardous waste containers as well.

5. List the source(s) of safety information.
   Laboratory Safety Training and material safety data sheets for all chemicals

To be completed and signed by the Designated Supervisor (or Qualified Scientist, when applicable):
I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the Research Plan/Project Summary and will provide direct supervision.

Caroline Buckholtz	Caroline B.	07/01/19
Designated Supervisor's Printed Name	Signature	Date of Review (mm/dd/yy)

Research Tech at Weill Cornell Medicine	clb2014@med.cornell.edu
Position & Institution	Phone or email contact information

2+ years working in a research lab

Experience/Training as relates to the student's area of research

- Paraformaldehyde (4%)
    - Risk Assessment: PFA has a high risk due to potential flammability and toxicity to humans. It can irritate the skin and damage the respiratory system if inhaled.
    - Safety Precautions: PFA will only be used under a fume hood to minimize exposure. A lab coat and gloves will also be worn at all times when handling it to prevent harm if there is a spill. Risks of using PFA is further limited by using a low concentration of it and storing it at 4℃ to prevent it from catching fire. It will be disposed of in on-site biohazardous waste containers to prevent contamination. Additionally, items, such as test tubes and pipette tips, that are used in handling it will be disposed of in biohazardous waste containers as well. PFA will be disposed of in a special waste container, not in biohazardous waste containers.
- 1x □-mercaptoethanol
    - Risk Assessment: □-mercaptoethanol has a high associated risk due to flammability and toxicity. It is harmful if ingested and can irritate the skin.
    - Safety Precautions: □-mercaptoethanol will only be used under a fume hood to minimize exposure. A lab coat and gloves will also be worn at all times when handling it to prevent harm if there is a spill. It will be disposed of in on-site biohazardous waste containers to prevent contamination. Additionally, items, such as test tubes and pipette tips, that are used in handling it will be disposed of in biohazardous waste containers as well. □-mercaptoethanol will also be stored at 4℃ to minimize the risk of the chemical catching fire.
- 10% Bleach
    - Risk Assessment: Bleach is moderately reactive and can be an irritant if it comes into contact with the skin. It is not a fire hazard.
    - Safety Precautions: Beakers containing bleach for sterilization will be covered in aluminum foil to prevent the release of hazardous fumes. Additionally, gloves, a lab coat, and goggles will be worn when handling bleach to ensure no skin can be exposed to the bleach.
- 70% Ethanol
    - Risk Assessment: Ethanol is flammable and can irritate the skin on contact. It is also hazardous if ingested as it can damage a variety of organs.
    - Safety Precautions: Gloves and a lab coat will be worn when handling ethanol to prevent contact with the skin. It will also be kept in sealed containers and kept away from heat to prevent a fire from starting.
- 1 x TrypLE
    - Risk Assessment: There is a low risk associated with TrypLe. It is not flammable, highly reactive, or toxic to humans, but it can break apart intercellular connections.

    - Safety Precautions: It will be used in a biosafety cabinet when creating/passaging organoids. Gloves and a lab coat will be worn at all times when dealing with it, so no skin will be exposed. This will prevent TrypLe from affecting body cells. Finally, all pipette tips used to handle TrypLe will be discarded into a biohazardous bag on site for proper disposal.
- 4 x Laemmli buffer
    - Risk Assessment: Laemmli buffer is not a flammable chemical and it is stable. It is not an irritant either, so it has a low associated risk.
    - Safety Precautions: It will be used under a fume hood and only handled while wearing gloves and a lab coat. Finally, all pipette tips used to handle Laemmli buffer will be discarded into a biohazardous waste bag on site for proper disposal.
- TEMED (Tetramethylethylenediamine)
    - Risk Assessment: TEMED is flammable chemical that can irritate or burn the skin, but it has a low reactivity rating.
    - Safety Precautions: Gloves and a lab coat will be worn at all times when handling TEMED to prevent exposure to the skin. All work will be done in a chemical fume hood to prevent exposure to harmful vapors. Finally, all pipette tips used to handle TEMED will be discarded into a biohazard bag on site for proper disposal.
- 30% Acrylamide
    - Risk Assessment: Acrylamide can cause irritation if it comes into contact with skin, and it is a potent toxin when inhaled or ingested. It also has a minor associated risk due to its flammability and reactivity.
    - Safety Precautions: Acrylamide will be stored in diluted concentrations and kept in a sealed container to prevent exposure to light and water. Additionally, it will only be handled under a fume hood while gloves and a lab coat are being worn.
- 10% Sodium Dodecyl Sulfate
    - Risk Assessment: SDS is a potentially toxic irritant to the skin, but it is not a flammable or highly reactive chemical.
    - Safety Precautions: Gloves and a lab coat will be worn at all times when handling this substance to prevent it from touching the skin. The stock of SDS is also at a low concentration to minimize risk and ensure safety. All objected used in handling SDS will be disposed of in biohazardous waste containers.
- Tris Base (1 M and 1.5 M)
    - Risk Assessment: Skin irritant that can cause damage to the eyes and respiratory system if inhaled
    - Safety Precautions: Tris will be handled under a chemical fume hood to minimize exposure to vapors, and a lab coat and gloves will be worn at all times when handling it to prevent it from touching the skin. Additionally, pipette tips and other items used in handling Tris will be disposed of in biohazardous waste bags

for proper disposal.

- 10% Ammonium persulfate
    - Risk Assessment: APS can irritate the skin and respiratory system, if inhaled. It is not flammable, but it is a reactive oxidizing compound
    - Safety Precautions: APS will only be used under a chemical fume hood when in liquid form to minimize exposure through vapors. Gloves and a lab coat will be worn at all times when using APS. The low concentration of the chemical further limits the risk associated with using it. All objected used in handling APS will be disposed of in biohazardous waste bags. Additionally, it will be stored in a dark closed container kept at a low temperature (4℃).
- Biorad detection reagent
    - Risk Assessment: The reagent is a mild irritant. There is little danger in its reactions, and it is not flammable.
    - Safety Precautions: These reagents will be used according to procedures provided by the manufacturer to ensure safety. Gloves and a lab coat will be worn at all times when working with the buffers.All objected used in handling the detection reagents will be disposed of in biohazardous waste canisters.
- 10 x RIPA lysis buffer
    - Risk Assessment: 10 x RIPA lysis buffer can corrode or irritate the skin, and it can also have damaging effects on ecosystems due to bioaccumulation. However, it is not a flammable chemical.
    - Safety Precautions: This chemical will only be handled while gloves and a lab coat are worn to protect the body, and work will occur under a hood to further ensure safety. Additionally, all items that come into contact with the buffer will be placed in biohazardous waste containers for proper disposal.
- Triton X-100
    - Risk Assessment: Triton x 100 is a toxic chemical if ingested, and it can also damage the eyes. It is a stable and non-flammable chemical.
    - Safety Precautions: Gloves and a lab coat will be worn at all times when handling Triton x 100. Additionally, work will be completed in a chemical fume hood to prevent exposure to fumes. All items that come into contact with Triton x 100 will be placed in biohazardous waste containers for proper disposal. It will also be diluted to Triton x 10 for regular use.
- Tween 20
    - Risk Assessment: Tween 20 has the potential to cause minor irritation if it comes into contact with skin, but it has no other health related effects. It has a low risk of flammability. There is no risk associated with its reactivity.
    - Safety Precautions: Tween 20 will only be handled while wearing gloves and a lab coat. All items that come into contact with it will be placed in biohazardous

waste containers for proper disposal.

- 2,000 ug/mL BSA (bovine serum albumin)
    - Risk Assessment:
    - Safety Precautions: A lab coat and gloves will be worn when handling BSA to prevent the skin's exposure to the chemical. All objects used in handling BSA will be disposed of in biohazardous waste bags. It will also be stored at 4℃
- FBS (fetal bovine serum)
    - Risk Assessment: FBS can potentially cause irritation if it comes into contact with skin or the gastrointestinal tract. It is not flammable, and there is no danger involved in its reactions.
    - Safety Precautions: Gloves and a lab coat will be worn at all times when handling FBS for protection. All objects used in handling FBS will be disposed of in biohazardous waste containers for proper disposal. It will also be stored at 4℃
- Ampicillin (100 mg/mL)
    - Risk Assessment: Ampicillin can cause an allergic reaction for some people, but there are no other health related risks for humans. There are no risks associated with reactivity when using ampicillin. It is not a flammable chemical.
    - Safety Precautions: Ampicillin will be stored at -20℃. Gloves and a lab coat will be worn when handling it, and all objects used in handling ampicillin will be disposed of in biohazardous waste canisters to be disposed of properly.
- 1 x Matrigel
    - Risk Assessment: Matrigel is not flammable or reactive, and there are no health risks associated with using the chemical.
    - Safety Precautions: Matrigel will be handled while using gloves and a lab coat. All pipette tips and other objects that come into contact with matrigel will be placed in biohazardous waste bags for proper disposal.
- 1 x DMEM full medium
    - Risk Assessment: There are no health risks associated with using 1 x DMEM medium as it has no effects on humans. It is not a flammable substance, and it does not cause dangerous reactions.
    - Safety Precautions: Proper protective equipment, gloves and a lab coat, will be worn at all times when using the medium. All pipette tips used to handle the medium will be discarded in biohazardous waste containers. Additionally, it will be aspirated into 10% bleach when it contains viral particles or organoid cells.
- 1 x Phosphate Buffered Saline (PBS)
    - Risk Assessment: There are no health, reactivity, or fire risks involved in using 1 x PBS. It is a stable, non-flammable compound that does not affect human health or cause irritation.
    - Safety Precautions: PBS will only be handled when wearing gloves and a lab coat.

All objected used in handling PBS will be placed in biohazardous waste containers for proper disposal.

- 50 x TAE (Tris Acetate EDTA buffer)
    - Risk Assessment: TAE buffer can irritate the skin or eyes if it comes into contact with them, and it can irritate the respiratory system as well. However, it is a stable and non-flammable compound.
    - Safety Precautions: TAE buffer will only be handled when gloves and a lab coat are being worn. The 50 x TAE buffer will also be diluted to 1 x TAE for general lab use. Containers used to hold TAE buffer will be washed and autoclaved, while pipettes and other objects used to handle the buffer will be placed in biohazardous waste containers.
- Agarose
    - Risk Assessment: Agarose can cause irritation if it comes into contact with the skin or eyes. It can also cause irritation of the gastrointestinal tract if ingested. It is a stable compound that is not flammable.
    - Safety Precautions: Agarose will only be handled when wearing gloves and a lab coat to prevent the chemical from coming in contact with the skin. All objects used in handling agarose will be disposed of in biohazardous waste bags so they can be properly disposed.