

Risk Assessment Form (3)

Must be completed before experimentation.

Student's Name(s) Randel A. Placino, David F. Durdaller

Title of Project Elevated temperature and DNA methylation affects Mago nashi expression and se

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).

5-Azacytidine, C-Fern Agar/Liquid C-Fern, Acetone, Invitrogen RNAqueous®-4PCR Total RNA Isolation Kit, Invitrogen SuperScript® III Platinum® One-Step RT-PCR Kit, Ethanol, Agarose Gel, Wash Solution #1/2/3, and Elution Buffer

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

Certain chemicals may cause eye, skin, and respiratory irritation and cause gastrointestinal discomfort if swallowed. May cause genetic defects, cancer, and is harmful if swallowed. 5-Azacytidine may cause genetic defects, cancer, and is harmful if swallowed. Acetone and Ethanol are highly flammable liquid and produce flammable vapors, and cause serious eye irritation.

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

Gloves, goggles, lab coats will be worn when handling materials. Fume hood will be utilized when necessary. Chemicals will be disposed of according to official regulations by the chemical safety officer of G. W. Hewlett High School.

4. Describe the disposal procedures that will be used (when applicable).

All hazardous chemicals will be kept in containers suitable for disposal; non-hazardous chemicals may be disposed of down the drain. All materials will be maintained and disposed of according to official regulations by the chemical safety officer of G. W. Hewlett High School.

5. List the source(s) of safety information.

MSDS were obtained from Carolina Biological, Sigma Aldrich, and ThermoFisher Scientific

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.

Dr. Terrence Bissoondial

Designated Supervisor's Printed Name

Signature

02/02/2019

Date of Review (mm/dd/yy)

Teacher, George W. Hewlett High School

Position & Institution

(516) 425-9991/bissoondialt@gmail.com

Phone or email contact information

Ph.D. in Molecular Biology

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

Risk and Safety:

Material Safety Data Sheets from Carolina Biological, Sigma Aldrich, ThermoFisher Scientific were used to obtain the information for these chemicals:

5-Azacytidine - may cause genetic defects, cancer, and is harmful if swallowed. Gloves, goggles, lab coats will be worn when handling. Will be disposed according to official regulations by the chemical safety officer of G.W. Hewlett High School.

<https://www.fishersci.com/store/msds?partNumber=AC226620500&productDescription=5-AZACYTIDINE%2C+99%25+50MG&vendorId=VN00032119&countryCode=US&language=en>

C-Fern Agar/Liquid C-Fern - more than minimal risk may cause eye, skin, and respiratory irritation and can cause gastrointestinal discomfort if swallowed. Gloves, goggles, lab coats will be worn when handling. <https://www.carolina.com/teacher-resources/Document/msds-basic-c-fern-medium-prepared/tr-msds-basic-c-fern-medium-prepared.tr>

Acetone- highly flammable liquid and vapor; more than minimal risk may cause serious eye irritation; toxic to aquatic life; potentially harmful if inhaled or absorbed through skin; potentially harmful if swallowed. Gloves, goggles, lab coats will be worn when handling. Will be disposed according to official regulations by the chemical safety officer of G.W. Hewlett High School.

<https://www.fishersci.com/shop/msdsproxy?productName=AC177170010&productDescription=ACETONE>

Invitrogen RNAqueous®-4PCR Total RNA Isolation Kit- more than minimal risk can potentially harmful if inhaled, absorbed through skin, or when in contact with the eyes, causing irritation; potentially harmful if swallowed. Gloves, goggles, lab coats will be worn when handling. Will be disposed of according to manufacturer's instructions and according to official regulations by the chemical safety officer of G.W. Hewlett High School.

https://assets.fishersci.com/TFS-Assets/LSG/manuals/cms_059300.pdf

Invitrogen SuperScript® III Platinum® One-Step RT-PCR Kit- more than minimal risk can potentially harmful if inhaled, absorbed through skin, or when in contact with the eyes, causing irritation; potentially harmful if swallowed. Gloves, goggles, lab coats will be worn when handling. Will be disposed of according to manufacturer's instructions and according to official regulations by the chemical safety officer of G.W. Hewlett High School.

https://www.thermofisher.com/document-connect/document-connect.html?url=https://assets.thermofisher.com/TFS-Assets/LSG/manuals/superscript_onestep_qrtPCR_man.pdf&title=Product%20Info%20Sheet%20SuperScript%20III%20Platinum%20One-Step%20qRT-PCR%20Kit

SYBR Safe® DNA Stain- nonhazardous; nonetheless, gloves, goggles, lab coats will be worn when handling.

<https://www.thermofisher.com/content/dam/LifeTech/Documents/PDFs/PG1290-PJ8342-CO128458-SYBRsafe-Green-Fact-Sheets-Corp-FHR.pdf>

1xTBE has no health effects and is not flammable. Gloves, goggles, lab coats will be worn when handling.

<https://www.fishersci.com/shop/msdsproxy?productName=BP24304&productDescription=1X+TRIS-BORATE-EDTA>

Ethanol - more than minimal risk of eye, skin, gastrointestinal, and respiratory irritation, ignition, reaction with oxidizers, and formation of carbon monoxide and carbon dioxide via decomposition. Will be disposed according to official regulations by the chemical safety officer of G.W. Hewlett High School.

<https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=E7023&brand=SIGALD&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigald%2Fe7023%3Flang%3Den>

Agarose gel - more than minimal risk of skin, eye, respiratory, and gastric irritation. Gloves, goggles, lab coats will be worn when handling.

<https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=P5472&brand=SIGMA&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigma%2Fp5472%3Flang%3Den>

Wash Solution #1 - more than minimal risk of skin, eye, respiratory, and gastrointestinal irritation, instability caused by excess heat and moisture, and reaction with oxidizing agents. Gloves, goggles, lab coats will be worn when handling. Will be disposed of according to manufacturer's instruction.

<https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=W0263&brand=SIGMA&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigma%2Fw0263%3Flang%3Den>

Wash Solution #2/3 - more than minimal risk of eye and gastric irritation. Gloves, goggles, lab coats will be worn when handling. Will be disposed of according to manufacturer's instructions.

<https://www.sigmaaldrich.com/MSDS/MSDS/PleaseWaitMSDSPage.do?language=&country=US&brand=SIGMA&productNumber=W4639&PageToGoToURL=https://www.sigmaaldrich.com/catalog/product/sigma/w4639?lang=en®ion=US>

Elution Buffer- more than minimal risk of eye and gastric irritation. Gloves, goggles, lab coats will be worn when handling.

<https://www.sigmaaldrich.com/MSDS/MSDS/DisplayMSDSPage.do?country=US&language=en&productNumber=C0241&brand=SIGMA&PageToGoToURL=https%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fproduct%2Fsigma%2Fc0241%3Flang%3Den>

Activities and Devices

Agarose Gel Electrophoresis- more than minimal risk of electric shock. Mentor will oversee use and assist will using device.

PCR Thermo-cycler- more than minimal risk of skin irritation and slight burns minor risk of burns to hand/fingers. Mentor will oversee use and assist will using device

Describe the Safety precautions and procedures that will be used to reduce the risks.

We will wear gloves, goggles, lab coats, and use the fume hood when necessary. Face masks will be used when handling chemicals that are hazardous with inhalation. Mentor handles safety precaution training, hazardous chemicals, and will assist with the use of potentially harmful equipment.

Describe the disposal procedures that will be used.

Hazardous and organic chemicals will be stored in hazardous and organic chemical waste containers to be properly disposed by the Chemical safety officer. Most other chemicals are safe to dispose of down the drain diluted with water according to manufacturer's instructions.