

Return to In-Person Research Plan

P.I.: Terrance Kavanagh

Name of designated Covid19 supervisor for your group: Dianne Botta

Essential Kavanagh lab personnel: Dianne Botta, Collin White, Savannah Ferrell

This plan was developed in accordance with the UW Guide for Returning to In-Person Research, the UW Office of Research's "Checklist for Developing a Return to In-person Research Plan (Governor's Phase 1)" and the UW School of Medicine's Guidelines for COVID-19 prevention while working in the laboratory. The Office of Research checklist will be used to help with implementation of the plan and ensure compliance with UW guidelines.

*No research personnel may be required or pressured to come to campus, to their usual work location, or into the field if they are concerned about their safety, the safety of others, or if they have home-care obligations.

1. Stop, think, attest – perform daily attestations of wellness, and complete the DEOHS online check-in form on days that you work in the Roosevelt building.
2. Never come to work at a laboratory or research facility if you are experiencing any symptoms of infection. In particular, no one should come to work if they are beginning to experience any of the following symptoms: a. Fever b. Cough c. Shortness of breath or difficulty breathing d. Respiratory symptoms. If you develop any of these symptoms while at work, you must immediately leave work.
3. If you experience any symptoms of COVID-19, you must inform your PI or supervisor and healthcare provider. If your health care provider suspects or confirms you have COVID-19, contact the EH&S Employee Health Center at 206-685-1026 or emphlth@uw.edu.
4. If you have had close contact with anyone who is COVID-19 positive (e.g., household member), stay home for 14 days to monitor symptoms per public health guidance.
5. Develop a personal transportation plan that minimizes proximity to other people. Consider cycling, walking, or driving instead of public transit.
6. Consider footwear as a possible transmission medium. You should have a pair of shoes that you use for external use including working in a laboratory/facility that you do not wear into your place of residence. Clothing worn in the workplace should be immediately removed upon return to your residence.
7. Be present in the lab only as long as necessary for your experiment. Minimize time around other people. In order to work in the Kavanagh Lab you must fill out the Google lab calendar (see below) to ensure your efficiency and minimize overlap in rooms.
8. Assume everyone you see is infected, including yourself, and use appropriate precautions, including not touching your face and washing your hands often. Some transmission occurs from people with no symptoms.

Overview of Kavanagh Lab research:

Our studies involve three different lines of research. The first line of work involves experimental mouse studies; the second line of research involves assessing the response of cells to electronic cigarette-associated biologically reactive chemicals and characterizing the state of differentiation of mouse induced pluripotent stem cells stimulated to develop into mouse hepatocyte-like cells; the third line of research involves analytical biochemistry studies that utilize high performance liquid chromatography (HPLC), fluorescence and spectrophotometric biochemistry assays, digital and confocal microscopy, flow cytometry and laser cytometry.

Mouse studies: We will be breeding glutamate cysteine ligase modifier subunit (*Gclm*) wild type, *Gclm* heterozygous and *Gclm* null mice. These mice are housed at either the Roosevelt I vivarium, or the HSC K-wing vivarium. We will be supplying some of these mice to our collaborator, Dr. Ann Manicone, Associate Professor of Medicine, who is an investigator in the Center for Lung Biology at UW South Lake Union (SLU), and who is conducting experiments related to the effects of tobacco smoke on lung inflammation in young, middle aged and old mice. The mouse breeding is conducted under our IACUC approved protocol, and the cigarette exposures at SLU are conducted under Dr. Manicone's IACUC approved protocol. We obtain skin biopsies of the mice (ear punches) and these are used to genotype the mice in the Kavanagh lab using polymerase chain reaction-based DNA amplification with subsequent gel electrophoresis. Mice of appropriate ages and genotypes will be transported to the SLU vivarium by Department of Comparative Medicine personnel. During the breeding of these mice, there are times when mice that are not required for experiments are culled, or times when mice are needed to support other studies (e.g. *in vitro* tissue culture experiments; biochemistry experiments, etc.). In these instances, we will schedule time (sign-up sheet) to use Room 264 (shared procedure room) in order to humanely euthanize the mice per our IACUC approved protocol.

Cell culture studies: We routinely culture mammalian cell lines (including mouse lung and liver cells, and on occasion other human or rat cell lines). The cells are being used to assess the relative toxicity of electronic cigarette-associated biologically reactive carbonyl compounds, as well as flavors used in eCig vaping liquids. We conduct this work in the Roosevelt 1 shared tissue/cell culture facility (Room 267) which has a sign-up sheet for scheduling use of the tissue culture hoods. Use of centrifuges and microscopes and other equipment (water baths; sinks) will be coordinated with other users of facility (normally, a maximum of 4 users at a time) in order maintain appropriate distancing and cleaning of equipment between uses. We will also store tissue culture media in the shared walk-in cold room in Room 285 (1 person maximum occupancy at a time).

Analytical biochemistry studies:

Western immunoblotting: We routinely perform studies of the expression of various proteins/enzymes in cells and tissues using Western immunoblotting. These studies are conducted in the Kavanagh Lab, but also use the dark room (exposure of chemiluminescent blots to X-ray films) and the Common Equipment Laboratory (digital imager/gel readers).

Immunohistochemistry coupled with digital imaging and/or laser cytometry are initiated in the Kavanagh lab (tissue/cell prep; antibody binding; secondary reagent binding, etc.), and then analyzed with digital imaging, laser cytometry or flow cytometry (Room 260), or confocal microscopy (Room 263). Each of the

workstations/equipment benches where these instruments are located will have 1 person occupancy at a time, with no more than 3 people present in the entire laboratory at a time.

Chemistry assays for glutathione and other low molecular weight thiols (or other analytes of interest) are initiated in the Kavanagh lab and then analyzed on common equipment in Room 2298 using HPLC, spectrophotometry, or spectrofluorometry, as appropriate. This room has a maximum occupancy of 2 people at a time.

Return to In-Person Research Plan (Laboratory of Dr. Terrance Kavanagh)

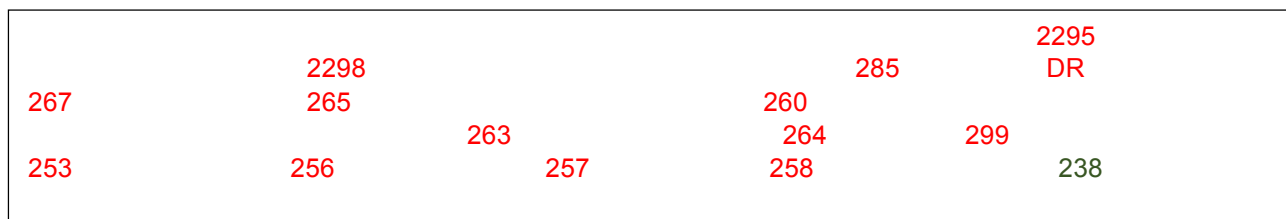
I. Critical Personnel

Dianne Botta (Research Scientist and Kavanagh Lab Manager), **Collin White** (Research Scientist and Analytical Cytology Lab Manager), and **Savannah Ferrell** (Undergraduate Laboratory Assistant) have been designated by DEOHS as Critical Personnel, and will be allowed to return to work as necessary to complete the experiments. They have all indicated a willingness to participate in the proposed research.

II. Social and Physical Distancing Plan.

This Social and Physical Distancing plan for physical facilities is designed to maintain social and physical distancing of 6 feet. The overall goal is to minimize the number of people in a given work area, to allow for 6-ft or more distance between personnel at all times.

A). Floor plans: Roosevelt I laboratory spaces used by the Kavanagh research group: (note: additional laboratory spaces include 1st floor freezer farm, autoclave and facilities for liquid nitrogen).



The molecular toxicology laboratory in R2295 houses investigators performing molecular, cellular, genetic and free radical toxicology research, and is currently occupied primarily by Dr. Kavanagh's research group (south side of the lab). The safe-distancing occupancy limit for the portion of the laboratory that Dr. Kavanagh's group utilizes is estimated to be 6 people maximum, one person at a time for each of the 6 research bays. Occupancy of shared use facilities such as the cold room (R285), dark room (DR), and each of the rooms in the vivarium (R299, R253, R256, R257, R258), analytical biochemistry laboratory (R2298) and common equipment room (R265) will be posted by the DEOHS building management and strictly adhered to. Personnel moving from one location to another within these spaces will be required to communicate verbally with the other personnel to ensure 6-ft distancing. While in the laboratory spaces at Roosevelt, personnel are required to wear a surgical mask at all times when other personnel are present nearby. Sinks for handwashing and laboratory use are available at the end of each double-sided bench in the molecular toxicology lab, as well as in the tissue culture facility, vivarium, and most other shared laboratory spaces.

When entering or exiting a hallway (in particular, the main hallway R275), watch for other personnel and wait until the hallway or room entrance is clear before entering.

The Kavanagh laboratory office (R238) has a maximum occupancy of one person at a time. All high-touch surfaces and equipment used in R238, R2295 and shared spaces (particularly the doorknobs and handles) will be cleaned before and after use, and every two hours if multiple of our staff are present, with 70% ethanol or Clorox wipes. To verify that the cleaning plan is being followed, we will use a check sheet marked and signed after each round of cleaning.

As in all UW vivaria, use of the Roosevelt 1 vivarium and ancillary laboratories requires appropriate PPE (disposable gown, hair bonnet, gloves, surgical mask) at all times, and sign-up sheets are used for scheduling. All surfaces, cages and equipment are disinfected before and after use with Clidox. Equipment is also cleaned with 70% ethanol between testing of individual animals. Handwashing sinks are available in each room, and hand sanitizer is available throughout the facility.

B). Facility usage scheduling plan:

It is expected that during Phase 1, all researchers will carry out any work they can do at home and will minimize the time spent on-site. Employees are encouraged to work from home whenever possible, and will return to work only as necessary to complete specific tasks relevant to the experiments. To minimize the number of researchers in the laboratory or other facilities at any one time, we will use a shared Google Calendar to create a scheduling plan for all of our experiments. This schedule, together with posted sign-up sheets for the other research spaces shared with Roosevelt investigators, will be used to plan research activities and stagger schedules as necessary. Scheduled use of the animal housing facilities and necropsy room is coordinated to accommodate the schedule of Comparative Medicine animal husbandry personnel, and by using sign-up sheets.

C) Types of work / tasks able to be performed at this time under distancing practices:

Work with mice: breeding, colony maintenance, weaning, ear tagging, animal transfers between Roosevelt I, SLU, and HSC K-wing; anesthesia, liver perfusions, euthanasia, and dissections, lung lavages.

Laboratory procedures: All laboratory procedures relevant to these experiments are able to performed under distancing practices, including primary cell culture, PCR, isolation of DNA / RNA / protein, Western blotting, analytical chemistry, biochemical assays, and immunohistology assays.

D). Social and physical distancing plan:

The goal is for employees to remain six feet apart at all times in all of the research spaces at Roosevelt I. The **Molecular Toxicology laboratory (R2295)** used by the Kavanagh research group is large enough for at least six employees to occupy the room at the same time if necessary, one person per research bay, and it will be no problem to maintain at least 6-ft distance when working in this space. Only one person at a time will be allowed to occupy each research bay or double-sided lab bench, and use of common areas of the lab will be coordinated to ensure only one person is using them at a time, with disinfection of surfaces and equipment before and after use. For spaces shared with other laboratories, we will adhere to the posted occupancy of each room, and will use the posted sign-up sheets for relevant shared spaces such as R264 (animal procedure room), R265 (common lab space), and R267 (tissue/cell culture). For use of R260 we will coordinate the schedule as needed with Collin White. Animal housing rooms in the vivarium in Roosevelt I each have a posted occupancy, and the Department of Comparative Medicine has released COVID-19-related guidelines for use of all of their facilities that we will adhere to. Whenever possible, one person will occupy the housing room at a time. If it is necessary to have two people in the room (e.g. for procedures requiring more than one person such as dissection with serial tissue processing) they will maintain 6-ft distance, with appropriate PPE including surgical masks.

E). Communicating social and physical distancing requirements to research personnel and visitors.

All laboratory spaces will have the maximum occupancy conspicuously posted. Social and physical distancing requirements, policies and procedures will be communicated directly to research personnel during regular laboratory research meetings and by email communication. We do not anticipate any visitors, but if we do have visitors or vendors, they will be asked to sign a print version of the UW Attestation Form at the Roosevelt front desk.

III. Responding to Illness

We are taking the following steps to prevent people with symptoms from coming on site and/or working while sick:

- Employees are required to monitor their health and complete the Symptom Attestation in Workday before they come in each day.
- Personnel are reminded that if they may be ill or symptomatic they must stay (or go) home.

In case of personnel with COVID-19 symptoms:

- Personnel with COVID-19 symptoms will be asked to stay home, notify their supervisor and notify the University of Washington Employee Health Center. Personnel with COVID-19 symptoms will also be asked to contact their healthcare provider.
- EH&S COVID-19 Enhanced Cleaning and Disinfection Protocols will be followed when applicable.

IV. Cleaning and Disinfecting the Workplace

All laboratory bench surfaces and equipment will be disinfected routinely (before and after each use, and at the end of each day) using 70% ethanol, using disposable gloves that are disposed into the garbage immediately after use. Additionally, Clorox wipes will be used to clean common surfaces such as door handles/refrigerator handles/microwave handles/keyboards after use. Special care should be taken to disinfect equipment that makes direct physical contact with skin, including eyepieces for microscopes, touch pads, etc. Each user will be responsible for disinfection of surfaces and equipment before and after use. Disinfection at the end of the day will be performed by Dianne Botta (Research Scientist and lab manager), Collin White (Research Scientist and analytical cytology lab manager), or by whichever employee is last scheduled to work on a given day based on the experimental schedule. In the vivarium, laminar flow hood surfaces, mouse cages, and research equipment are routinely cleaned by the researcher before and after use with 70% ethanol or Clidox, as directed by the Department of Comparative Medicine. Custodial staff will clean the common spaces, and staff in the Department of Comparative Medicine will clean all of the vivarium spaces routinely. Dr. Terrance Kavanagh is responsible for implementing the surface disinfection plan for the Kavanagh laboratory.

V. Safe Practices in the Laboratory / Encouraging Good Hygiene

Keeping a distance (at least 6 feet) from other people is our best protection against COVID-19; however, the following safe practices in the workplace provide additional layers of protection.

- Wear a mask. Masks can help protect others by containing respiratory droplets when the mask wearer coughs, sneezes or speaks. The DEOHS is requiring surgical masks on all personnel when moving about the building and whenever working in shared spaces and other personnel are nearby. DEOHS is providing staff with surgical masks for this purpose. Masks are also required in any of the vivaria on campus, in addition to other PPE including disposable gowns, hair bonnets, and gloves.
- Wash hands correctly at key moments, avoid touching face with unwashed hands, and cover mouth when coughing or sneezing (preferably into the crook of an elbow, or into a tissue).
- Hand hygiene before and after using ANY face covering is critical.
- Researchers will wash their hands with soap upon entering and before leaving the lab and touching shared accessory devices like phones (use speaker phone if possible). Hand Soap, hand sanitizer and wipes/towelettes have been made readily available for use.
- Each researcher will have their own set of any tools that are used very frequently, including pipets, frequently used reagent bottles, laboratory notebooks, and pens.
- Gloves, cloths, or disposable towels will be used when handling common reagent bottles, laboratory equipment, and cabinet handles.
- Door handles will be wiped or sprayed with 70% ethanol (or other approved disinfectant) after use. See EH&S guidelines.
- Disinfect shared materials as described above.
- No hand shaking or hugging.

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- Review additional resources as they become available: COVID-19 Health and Safety Resources and University Requirements for COVID-19 Prevention in the Workplace.

VI. Training and Documentation for enhanced COVID-19 practices and procedures

Research staff in the Kavanagh laboratory will be trained by Dr. Kavanagh in the practices and procedures described above, and all staff will sign an attestation that they have undergone the training and have read and understood this Return to In-Person Research Plan. Cleaning logs will document the regular cleaning of commonly-used surfaces.

I have read this document and agree to conform with the requirements set forth herein prior to returning to in-person research in the Kavanagh Lab:

Name: _____ Title: _____ Date: _____