MIT GUIDANCE ON RESEARCH FACILITIES AND LABORATORIES FOR COVID-19 PREPAREDNESS

Research facilities and laboratories at MIT should be preparing for disruptions to normal research operations resulting from the growing threat of COVID-19. The health and safety of members of the MIT community remain our highest priority and is the cornerstone of our response. Each lab should have a business/research continuity plan to meet its unique research activity needs and to minimize loss of research resources.

The guidance and resources outlined below are provided to help DLC Heads, Administrative Officers, Facilities Managers, Principal Investigators and Lab members in considering the additional steps that should be taken now and, in the future, to protect laboratory personnel and the valuable research being conducted at MIT.

Assumptions you can use for contingency planning, based on a scenario with widespread COVID-19 community transmission:

Personnel

- Personal safety and the wellbeing of the MIT research community are the primary consideration.
- A significant percentage of your laboratory workforce may be out sick or be unable to come to work (resulting from imposed isolations due to recent travel history, family and personal health matters, closures of schools and daycare centers, etc.).
- Exposure to a confirmed or suspected case of COVID-19, either at MIT or elsewhere, may result in the self-isolation or self-quarantine at home of ALL close contacts of the individual(s).
    - If you know of or hear about a suspected exposure in your group, please follow the guidance provided by MIT Medical on the COVID-19 website.

Animals

- Plans should include ensuring continued animal care and humane treatment of research animals. Please follow-up with veterinary care staff on specific plans. Please see APPENDIX B: LAB-LEVEL EMERGENCY RESPONSE RESOURCE GUIDE for ANIMAL CARE

Facilities and Supplies

- Orders for critical supplies may be delayed.
- Core facilities and other resources may not be available.
- Facility and equipment repairs, calibrations and certifications may be delayed.
- Increased disinfection treatment of your workspace or heavily touched surfaces may be necessary in the event of a local illness. MIT Custodial staff will be notified if an exposed individual has visited your space.
- Essential research infrastructure, such as power and telecommunications, will be maintained.

Procedures and Communications

- Collaborators at other institutions (domestic or international) may be similarly impacted and unable to participate in the project.
- The Institute will communicate any disruptions to laboratory access.

Steps you can take now to ensure continuity of critical functions:

Identify Essential Needs

- Identify procedures and processes that require regular personnel attention (e.g. cell culture maintenance, animal studies).
- Assess and prioritize critical laboratory activities. For examples, see Appendix A.
- Identify projects that should not be started.

- Identify any research experiments that can be ramped down, curtailed, suspended or delayed.
- Identify all personnel able to safely perform essential activities

Personnel

- Maintain an updated list of everyone who works in the lab or research facility. Include home and cell phone numbers and ensure access to the information even while away from the lab. Create a phone tree or email group to facilitate emergency communication amongst lab researchers and staff.
- Cross-train research staff to fill in for others who may be out sick or unable to come to work. Consider documenting either via video or written documentation critical step-by-step instructions.
- Coordinate with colleagues who have similar research activities to identify ways to ensure coverage of critical activities or sharing of personnel.
- Communicate significant planned absences and/or lab closures to your PI/Lab Manager/designee, Departmental Research Operations Manager and Department Administrators. Maintain a system to know the whereabouts of all members.
- Confirm that all lab members have registered for MIT Alert the tool the Institute uses for widespread notification of emergencies or widespread disruptions. Anyone with a Kerberos is automatically uploaded into the system, but they should customize their portfolio with desired phone numbers and emails for alerts. Any contractors or lab group members without a Kerberos can register as an external community member.
- Review contingency plans and emergency procedures with researchers and staff.
- Recognize that events like these can cause anxiety and emotional strain and your colleagues may be dealing with other difficult situations outside of work.

Animals

- If your lab works with research animals, follow guidance provided by the Division of Comparative Medicine and Committee on Animal Care, plan accordingly, and ensure that your Lab-Level Emergency Response Guide for Animal Care (see Appendix B) is up-to-date and

that you have made provisions for their care. Please consult with veterinary staff to coordinate animal care needs.

Facilities and Supplies

- Prepare to limit access to shops or core facilities if warranted by reductions in staff.
- Maintain frequent communication with collaborators with whom you have dependencies for materials, components of the research, or data.
- Maintain a sufficient inventory of critical lab and safety supplies that may be impacted by global shipping delays.
- Plan for delays or loss of vendor support over an extended period of time such as gas or dry ice deliveries, chemical or biological waste removal, etc.
- Ensure you have adequate supply of cryogenic liquids needed to maintain samples (e.g. cell lines) or cool equipment (e.g. magnets).
- Ensure you have enough inert gases needed to control environments e.g. gloveboxes with pyrophoric materials, or make the materials safe for a non-inert environment.

Procedures and Communications

- Arrange for the removal of full and dated chemical waste containers in SAAs prior to staff reductions.
- Preserve critical/irreplaceable samples such as cell lines or mouse lines.
- Consider installing remote control monitoring devices for critical equipment (e.g., -80C freezers, liquid nitrogen storage dewars, incubators).
- Secure all research materials and Personal Protective Equipment (order distributions already on special allocation only to existing customers) from loss, misdirection, or misuse.
- Before shipping, check for service alerts from eShipGlobal or your shipper and the ability of the recipient institution to receive the shipment. FedEx Statement on Coronavirus and UPS Service Alerts

Measures you can take to prevent the spread of illness among your group if the risk of COVID-19 increases within the University community:

MIT Medical has provided guidance on their COVID-19 pages—three ways to protect yourself and others from COVID-19 MIT has established guidance to offices and research/lab groups on how to work in a social distancing environment. Guidance on this is available on the COVID-19 website.

Research and Lab Group Guidance Some specific guidance is as follows:

- If at all possible alternate work schedules to meet the demands of the laboratory while limiting close contact with others (and still ensuring the safety of the work partner).
- Identify work that can be done from home or remotely, such as data analysis.
- Test and update remote work collaboration technologies (Zoom video conferencing, WebEx) available through your local IT staff or through IS&T and see the latest information on the MIT COVID-19 site.
- Avoid in-person meetings. Use remote work technologies such as Zoom and WebEx conferencing.
- If people are forced to self-isolate or self-quarantine, they may by asymptomatic and feeling well and can contribute to research remotely.

Other safety considerations:

- Ensure that individuals performing critical tasks have been adequately trained, have access to all personal protective equipment (PPE) and essential safety equipment, and understand whom to contact with technical or safety questions.
- Do not perform high-risk procedures alone. When working alone is necessary, exercise maximum caution.
- Notify colleagues of your schedule when working alone for an extended period of time.

- Ensure that high-risk materials (radioactive, biohazards, chemicals) are secured.

Grant-related questions:

- Any federal funding guidance associated with potential coronavirus-related disruptions to research will be shared by the Research Administration Services (RAS) and the Vice President for Research. Contact your designated Research Administrator for additional information or to coordinate notification of regulatory and funding agencies.

Next Steps

Reviewing and updating your Research Continuity Plan and maintaining situational awareness on the part of all members of your unit throughout this outbreak may help limit loss of research and will prevent illness.

APPENDIX A: EXAMPLES OF CRITICAL EQUIPMENT, OPERATIONS & SUPPLIES

Equipment and Supplies

- Equipment
- NMR/MRI/other magnets requiring cryogens
- GC/MS, PET, EM, Confocal microscopes, irradiators, cleanrooms
- Glove boxes
- Solvent Purification Systems
- Incubators
- Refrigerators/freezers, -80 Freezers, cryogenic storage
- Information resources (IT and paper)
- Samples and specimens (live, fresh, frozen, and fixed)
- Novel compounds and biochemicals
- Type specimens
- Cell lines

- Seeds
- Animals
- Specialized reagents and chemical inventories
- Supplies
- Personal Protective Equipment (e.g. gloves, masks, respirators)
- Disinfectants and spill cleanup materials
- Biological safety cabinets

Vital laboratory support functions

- Basic utility inputs of electricity, heating and cooling, potable water, sewage, and telecommunications
- Specialized utilities such as de-ionized water, process chilled water, and local exhaust
- Procurement, transportation, receiving, and delivery networks
- Uninterrupted vendor operations
- Service and maintenance on sophisticated equipment
- Waste management services
- Emergency response services

APPENDIX B: LAB-LEVEL EMERGENCY RESPONSE RESOURCE GUIDE for ANIMAL CARE

Applies to: All users of research animals housed in DCM animal facilities. Animals within vivariums will be managed in accordance with the DCM emergency management plans.

Purpose: To provide guidance and action steps to lab personnel to help ensure the well-being of research animals in their labs when an emergency or disaster occurs.

Responsibilities: The research animal user is responsible for assessing the situation and the condition of the animals, taking emergency action steps, and providing status updates to DCM.

COVID-19 Planning Steps:

- Labs that perform studies with animals should contact DCM as soon as possible to discuss their emergency plans for caring for their breeding

colonies and animals on study during the COVID-19 pandemic. Research staff will be responsible for ensuring the health and welfare of their animals on studies and should not depend on DCM to inform them when animals have reached study or humane endpoints. DCM vet staff will be available to advise on any questions/concerns when labs are developing their emergency plans. Confirm that all lab members have contacted DCM with updated contact information (email and cell phone number). Correct contact information should be present on all rodent cage cards.

- Rodent users should limit the number of breeding cages to those needed to maintain rodents on study or any continued research. Colonies should be checked and retired breeders and animals no longer needed for studies humanely euthanized.
- DCM vet staff will continue to perform health checks for rodents. As always, investigators will not be notified if rodents are scheduled for euthanasia in 7 or more days given lab personnel should be checking their mice weekly. They will continue to contact labs by email for rodents set for euthanasia between 1 and 6 days.
- Investigators that work with large animals must wear appropriate PPE to protect the animals from potentially COVID-19 infected personnel.

Pre-Emergency Planning Steps:

- Know your building, department and local emergency plans and stay alert for communication and updates from your department's emergency lead.
- Take weather forecasts into account when planning experiments.
- Always maintain sufficient quantities of euthanasia agent(s) to euthanize all animals in the lab.
- Maintain paper copies of emergency contact lists and call trees in both home and work areas. Power/computers/internet access may be unavailable or inoperable during an emergency.
- Verify that critical animal-related equipment (including storage of research materials) is plugged into functioning emergency outlets, if needed.
- To the degree possible, maintain supplies locally that would enable continued animal care during an emergency (e.g., flashlights, rubber boots, plastic sheeting for leaks, emergency extension cords, required PPE, back-up food supplies, etc.).

- Investigators are strongly encouraged to cryopreserve mouse strains (embryos or sperm) that are irreplaceable, especially those that do not exist with collaborators elsewhere. Contact the Division of Comparative Medicine for a list of vendors/kits that perform this service. If you have specific animals which cannot be replaced in the event of an emergency, please contact your facility supervisor to identify them.

Lab-specific emergency contact information:
PI:
Lab Manager:
Other emergency contacts:

APPENDIX C: LAB RAMPDOWN CHECKLIST

Link to checklist