

In fulfillment of our requirement for reporting an incident subject to the *NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules* to the OSP, please find enclosed the completed incident report of the potential exposure to recombinant DNA that occurred in a laboratory at The University of North Carolina at Chapel Hill.

Please let me know if you require any further information.

Kind regards,
Garry

Garry Coulson, Ph.D, RBP

Biosafety Officer | Institutional Biosafety Committee (IBC)
Environment, Health and Safety | University of North Carolina at Chapel Hill
Chapel Hill, NC 27599
Phone | 919 962-5722
Email | garry.coulson@ehs.unc.edu

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From: Coulson, Garry Brian

Sent: Wednesday, April 22, 2020 8:05 PM

To: Harris, Kathryn (NIH/OD) [C] <harriskath@mail.nih.gov>

Cc: Cyr, Douglas M. <douglas_cyr@med.unc.edu>; Brennan, Catherine <crbrennan@ehs.unc.edu>; Tucker, Jessica (NIH/OD) [E] <jessica.tucker@nih.gov>

Subject: RE: NIH Incident Report - Preliminary

Hi Dr. Harris,

We have a single, unified BSL-3 Laboratory Medical Surveillance SOP for our research program, which I have attached. The applicable exposure response procedure for exposure to SARS-CoV-2 ("2019-nCoV") can be found on page 13. The individual has been instructed to complete a 14 day self-quarantine at home and actively self-monitoring with temperature checks twice daily consistent with CDC guidance for medium/high-risk exposures in healthcare personnel (HCP). Of note, the individual was uncertain if the mouse bite actually broke the skin as no blood was observed upon inspection of their finger. However, given the uncertainty surrounding the exposure, we are treating this as a medium/high-risk exposure. The Orange County Health Department Medical Director is aware of the exposure and there are existing protocols in place with our academic medical center, including SARS-CoV-2 PCR testing, to ensure that the public and other patients are not at risk of exposure if the individual becomes symptomatic and requires medical evaluation and treatment.

Please don't hesitate to reach out to me if you have any further questions. If needed, my cell phone number is 919-869-5874.

Kind regards,
Garry

Garry Coulson, Ph.D, RBP

Biosafety Officer | Institutional Biosafety Committee (IBC)
Environment, Health and Safety | University of North Carolina at Chapel Hill
Chapel Hill, NC 27599
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From: Harris, Kathryn (NIH/OD) [C] <harriskath@mail.nih.gov>
Sent: Wednesday, April 22, 2020 5:41 PM
To: Coulson, Garry Brian <garry.coulson@ehs.unc.edu>
Cc: Cyr, Douglas M. <douglas_cyr@med.unc.edu>; Brennan, Catherine <crbrennan@ehs.unc.edu>; Tucker, Jessica (NIH/OD) [E] <jessica.tucker@nih.gov>
Subject: RE: NIH Incident Report - Preliminary

Dear Dr. Coulson:

Thank you for your preliminary report of an incident involving a potential exposure to a recombinant SARS-CoV-2 virus. In your email, you indicate the exposed researcher reported to the Occupational Health Clinic and has been placed on medical surveillance protocols as described in the standard operating procedure (SOP).

We understand you are still gathering information for your formal report, but in the meantime, please provide NIH OSP a copy of the post-exposure SOP for the laboratory, and indicate whether the CDC guidelines for exposure are being followed. Please also verify whether any applicable local and/or state public health notifications have been made.

In advance of your final report, please advise NIH OSP of any pertinent information/further developments as they occur (for example if the researcher develops symptoms or tests positive for SARS-CoV-2). Please do not identify any potentially exposed individuals by name in any correspondence to NIH OSP.

If the research is NIH-funded, the terms and conditions of the award may require notification to the program officer of any significant incidents occurring during the conduct of the research. In any event, we recommend notifying the program officer, if this has not already occurred.

Thanks again for your preliminary incident report, and we will await further information as it becomes available.

Regards,

Dr. Kathryn Harris

From: Coulson, Garry Brian <garry.coulson@ehs.unc.edu>
Sent: Tuesday, April 21, 2020 5:49 PM
To: NIH guidelines <NIHguidelines@od.nih.gov>
Cc: Cyr, Douglas M. <douglas_cyr@med.unc.edu>; Brennan, Catherine <crbrennan@ehs.unc.edu>
Subject: NIH Incident Report - Preliminary

Dear Office of Science Policy (OSP), National Institutes of Health (NIH)

We wanted to notify you of a potential exposure to recombinant DNA involving a worker in a BSL-3 laboratory. Our initial investigation indicates a researcher received a mouse bite from a mouse infected with recombinant SARS-CoV-2 virus adapted for growth in mice. The Researcher has reported to the Occupational Health Clinic, and placed on medical surveillance protocols as described in the standard operating procedure (SOP).

We are currently investigating the incident and will submit a formal Incident Report to NIH OSP as soon as we have all the pertinent facts and details.

Please feel free to reach out to me if you have any questions.

Kind regards,

Garry

Garry Coulson, Ph.D, RBP

Biosafety Officer | Institutional Biosafety Committee (IBC)

Environment, Health and Safety | University of North Carolina at Chapel Hill

Chapel Hill, NC 27599

Phone | 919 962-5722

Email | garry.coulson@ehs.unc.edu

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**Template for Reporting Incidents Subject to the
*NIH Guidelines for Research Involving
Recombinant or Synthetic Nucleic Acid
Molecules* to the National Institutes of Health
Office of Science Policy (OSP)**

| | |
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| Does this incident involve research subject to the <i>NIH Guidelines</i>? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, this incident does not require reporting to OSP |
| Institution Name: | University of North Carolina at Chapel Hill |
| Date of Report: | 4/23/2020 |
| Reporter name and position: | Garry Coulson, Biosafety Officer |
| Telephone number: | 919.962.5722 |
| Email address: | garry.coulson@ehs.unc.edu |
| Reporter mailing address: | Environment, Health and Safety 1120 Estes drive Campus Box 1650 Chapel Hill, NC 27599 |
| Date of incident: | 4/21/2020 |
| Name of Principal Investigator: | Dr. Ralph Baric |
| Is this an NIH-funded project? | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, please provide the following information (if known) <i>NIH grant number: U19AI100625 / U19AI142759 /</i> <i>Task order 75N93020F00001 for contract</i> <i>HHSN272201700036I</i> <i>NIH funding institute or center: NIAID</i> <i>NIH program officer (name, email address): Qian Liu /</i> <i>Maureen Beanan / Eric Stemmy and Chelsea Lane</i> |

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| What was the nature of the incident? | <input type="checkbox"/> Failure to follow approved containment conditions <input type="checkbox"/> Failure to obtain IBC approval <input type="checkbox"/> Incomplete inactivation <input type="checkbox"/> Loss of containment <input type="checkbox"/> Loss of a transgenic animal <input checked="" type="checkbox"/> Personnel exposure <input type="checkbox"/> Spill <input type="checkbox"/> Other (please describe): |
| Did the Institutional Biosafety Committee (IBC) approve this research? | <div style="text-align: right;"> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO </div> Date approved: 4/3/2020 |
| What was the approved biosafety level of the research? | <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> BL1 <input type="checkbox"/> BL2 <input checked="" type="checkbox"/> BL3 <input type="checkbox"/> BL4 </div> <div style="width: 50%;"> <input type="checkbox"/> BL2+ <input type="checkbox"/> BL3+ </div> </div> |
| What section(s) of the <i>NIH Guidelines</i> is the research subject to? | III-D |
| Has a report of this incident been made to other agencies? If so, please indicate | <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> CDC <input type="checkbox"/> USDA <input type="checkbox"/> FDA <input type="checkbox"/> EPA <input type="checkbox"/> OSHA </div> <div style="width: 50%;"> <input type="checkbox"/> Funding agency/sponsor <input checked="" type="checkbox"/> State or local Public Health <input type="checkbox"/> Law enforcement <input type="checkbox"/> Other (please describe): </div> </div> |
| Nature of recombinant or synthetic material involved in incident (strain, attenuation, etc.) | A molecular infectious clone for the SARS-CoV-2 Seattle strain was used to isolate a recombinant virus encoding two mutations in the S glycoprotein gene (SARS-CoV-2 2AA that promotes mACE2 binding and virus docking and entry into mice. |

Description of the incident:

At approximately 10:00 am on Tuesday, April 21, 2020 the Researcher was checking mouse weights with experimental unanesthetized mice when the incident occurred. Mice used in this experiment were BALB/c mice. These mice had previously been infected via intranasal administration with a recombinant SARS CoV-2 strain (SARS CoV-2 2AA) encoding two mutations in the spike (S) glycoprotein to promote binding of the virus to the murine ACE2 (mACE2) receptor on 04/20/2020. The Researcher was working within a biological safety cabinet (BSC) inside a BSL-3 laboratory. For personal protective equipment (PPE), the Researcher was wearing the required protection for the BSL-3 laboratory, which included scrubs, lab shoes, shoe covers, Tyvek suit, hood, purified air powered respirator (PAPR), apron and 2 pairs of gloves.

The mice used for this experiment have ear tags that identify them. Reading of the small ID numbers on each ear tag requires scruffing the mice. It was during this procedure that the mouse flipped in the Researchers hand and bit the Researcher on their right hand index finger. The bite penetrated through both gloves, but did not appear to break the skin as there was no evidence of blood.

The Researcher immediately returned the mouse to its cage and replaced the cage back on the rack. After removing both gloves, the Researcher immediately sprayed down their hands with 70% ethanol followed by thorough hand washing with soap and water for at least a minute. No blood was observed during the hand washing and disinfection procedure. The Researcher then deconned out of the lab as per SOP and returned to their lab space where they informed a senior co-worker of the incident. The Researcher reported to The University Employee Occupational Health Clinic (UEOHC) after calling ahead. At the UEOHC, the Researcher was evaluated by the medical staff and received medical care as indicated for the incident and as per BSL-3 Laboratory Medical Surveillance Standard Operating Procedure (SOP). The Department of Environment, Health, and Safety (EHS) was notified of the incident by the Medical Director at 3:32 pm on Tuesday, April 21, 2020.

The Researcher is an experienced BSL-3 worker and compliant with all required EHS training. Additionally, the Researcher had completed the required animal handling training provided by the Division of Comparative Medicine (DCM) and is experienced in handling animals.

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| Has the IBC reviewed this incident? | <div style="text-align: center;"> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO </div> <p>The IBC is aware of the incident and will discuss the incident at the next IBC meeting (5/6/2020).</p> |
| Please describe the root cause of this incident: | <p>Due to the inherent challenges of working with unpredictable live mice, a root cause cannot readily be assigned to this incident. The Researcher involved in the incident was appropriately trained in proper handling of the mice (including manual restraint), was wearing the appropriate PPE, and was acting according to the established procedures for the experiment. It is possible that the routine use of small ID ear tags requiring manual restraint of the mice to read the tag contributed to the incident.</p> |

Describe measures taken by the institution to mitigate any problems identified. For measures identified but not yet taken, please include a timeline for their implementation (use additional space as necessary):

As part of the corrective and preventative actions to be taken, an internal Incident Report will be submitted by the Department of Environment, Health and Safety (EHS) to the Principal Investigator (PI) detailing the incident and including recommendations for the lab to follow to mitigate future reoccurrence of the incident.

The affected Researcher was trained in animal handling, was performing all duties according to established laboratory procedures, and was wearing the appropriate PPE for the procedure. As part of the recommendations, the PI will be instructed to review this incident with their laboratory and discuss safe methods for handling and restraining mice, including review of the UNC Mouse Handling and Technique Guide that describes safe methods for handling mice. The guide also addresses the use of restraining devices that minimize the contact between the mouse and the researcher. Additionally, it will be recommended to the PI to review the biosafety practices with this and other related animal models, and evaluate whether bite resistant gloves and/or other restraining devices might be employed to minimize reoccurrence of the incident. Lastly, potential risk mitigation strategies may also include anesthesia for uncooperative or aggressive mice and evaluation of alternative means for tagging mice that don't require manual restraint ("scruffing") for mouse identification.

The expected date of completion for recommendations will be 5/8/2020.