March 7, 2024

COLUMBIA UNIVERSITY
INSTITUTIONAL BIOSAFETY COMMITTEE

CHARGE, BY LAWS AND PROCEDURES

I. Charge

The Columbia University (**Columbia** or the **University)** Institutional Biosafety Committee **(IBC** or the **Committee)** is charged with the responsibilities described in Section III below in connection with:

- Compliance with the National Institute of Health (**NIH**) Office of Science Policy (**OSP)** *Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (***rDNA***)* (the **Guidelines);**
- Oversight of research involving human gene transfer (**HGT)**;
- Oversight of the University's policies and procedures with respect to research using infectious materials and other potentially dangerous biological agents;
- Compliance with the U.S. Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern and the University's Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern (the **DURC Policy)**; and
- Oversight of certain gene editing research.

Certain capitalized terms used in the IBC Governing Document are defined in Section II below.

II. Definitions

Appendix A: Columbia University Hazardous Materials Appendix A.

Appendix M: Columbia University Hazardous Materials Appendix M.

DURC: Dual Use Research of Concern; as defined in Section III(D).

DURC Policy: as defined in Section I.

EVPR: as defined in Section III(D).

EVPR Designee: as defined in Section IV(B).

Guidelines: as defined in Section I.

HGT: as defined in Section I.

HGT Expert: as defined in Section V(A).

IBC Governing Document: this Charge, By Laws and Procedures

Infectious Materials: as defined in Section III(C).

NIH: as defined in Section I.

OSP: as defined in Section I.

PI: Principal Investigator

Protocol: any research project, as applicable, including: the Columbia University Human Subjects Protocol Data Sheet, the Columbia University Animal Care Protocol Data Sheet, Appendix A, Appendix M and any supplementary materials relating to such study.

rDNA: as defined in Section 1.

III. IBC Responsibilities

A. Research involving rDNA

The IBC shall be responsible for the following in connection with research involving rDNA:

- Reviewing Protocols for such research, including those with respect to experiments listed in Section III-A, B, C and D of the Guidelines;
- Notifying the applicable PI of any IBC determination;
- Assessing containment levels required by the Guidelines for the proposed research;
- Setting containment levels and modifying such levels for ongoing experiments as warranted;
- Assessing the facilities, procedures, practices and the training and expertise of personnel involved in rDNA research;
- For rDNA research involving human research participants, assessing the biosafety aspects of such research;
- Periodically reviewing rDNA research at the University to ensure compliance with the Guidelines and other relevant regulations;
- Adopting emergency plans covering accidental spills and personnel contamination resulting from rDNA research;
- Reporting to the appropriate institutional official and the OSP any significant problems with or violations of the Guidelines and any significant research-related accidents or illnesses unless the IBC determines that a report has already been filed by the applicable PI; and
- Performing such other functions that are delegated to the IBC by the University.

B. HGT Research

The IBC shall be responsible for the following in connection with research involving HGT:

- Assessing the biosafety issues relating to such research (e.g., route and dose of administration, shedding);
- Reviewing Protocols for HGT research;
- Notifying the applicable PI of any IBC determination; and
- Generally overseeing such research until the last research subject has been administered the final dose of the product or such other end point determined by the IBC has been reached.

C. Infectious Materials

The IBC shall be responsible for the following in connection with research involving infectious materials and other potentially dangerous biological agents (**Infectious Materials)**:

- Reviewing such research, including studies using cultured agents required to be handled at Biosafety Level 2 (**BSL-2)** and above, or agents of public health concern, such as SARS-CoV-2. Reviewing research with biological materials, if a risk assessment by the biosafety office identifies the potential for infectious agents of concern or their biologically active products to be produced during culture of the material.
- Reviewing Protocols for such research;
- Notifying the applicable PI of any IBC determination;
- Reviewing and advising on policies and procedures proposed by Environmental Health & Safety (**EH&S)** or other University departments directed to mitigating exposure to Infectious Materials; and
- Maintaining biosecurity and adhering to applicable regulations and standards, including *Biosafety in Microbiology and Biomedical Laboratories* of the Centers for Disease Control and Prevention (**CDC)**.

D. Dual Use Research of Concern

In connection with Dual Use Research of Concern (as defined in the DURC Policy) (**DURC)**, the IBC shall be responsible for:

- Reviewing materials provided by the applicable PI with respect to whether such research directly involves nonattenuated forms of one or more DURC Agents (as defined in the DURC Policy) and any other relevant materials, and determining whether the research is or is not subject to additional DURC oversight and so notifying the PI;
- If the IBC concludes that the research does involve one or more DURC agents and Experimental Effects of Concern (as defined in the DURC Policy), referring the review to the University's Executive Vice President for Research (**EVPR**);
- Performing such other functions in connection with the review of such research and the development of a Risk Mitigation Plan (as defined in the DURC Policy) as directed by the EVPR; and

- At least annually, reviewing all active Risk Mitigation Plans at the University and, with the applicable PI, making such modifications to any Plan as needed to ensure that the Plan still adequately mitigates the risks associated with the DURC.

E. Research Involving Gene Editing

In connection with research involving gene editing, the IBC shall be responsible for:

- Reviewing and approving, disapproving, or requiring modifications of any gene editing constructs introduced by Risk Group 2 (as defined in Section III-D and E of the Guidelines) viral vectors such as lentiviral vectors whether *in vitro* or *in vivo*, including gene editing experiments in plant or invertebrate animals that are vectors of disease and gene editing in vertebrate animals and human subjects; and
- Reviewing and approving, disapproving, or requiring modifications of any experiments involving gene drives in any sexually reproducing organism, including animals (vertebrates and invertebrates), plants and fungi.

Note that IBC review is not required for any gene editing experiment that is exempt from the Guidelines, including *in vitro* experiments in Risk Group 1 prokaryotes, eukaryotic cell lines or embryonic stem cells or embryos that are not implanted and experiments in invertebrates such as *D. melanogaster* or *C. elegans* (but excluding gene-drive experiments).

IV. Biosafety Officer Responsibilities

A. Review of Research Studies

The Biosafety Officers (each, a **BSO)** shall be responsible for:

- Reviewing Protocols of all research studies described in Section III above prior to submission of the Protocol to the IBC:
- Reviewing Protocols involving rDNA for compliance with the Guidelines;
- Supporting and enhancing systems that allow for the submission of Protocols to the IBC;
- Reviewing containment levels for any proposed research activity as required by the NIH, the U.S. Occupational Safety and Health Administration and the CDC; and
- Assessing personnel training, practices, procedures and laboratory facilities for the proposed research.

B. Training

The BSOs shall be responsible for:

- Training IBC members to ensure that the necessary expertise is maintained;
- Periodically reviewing the Guidelines and other relevant regulations to ensure that updates are incorporated into IBC practices and recommendations; and
- If necessary, on a quarterly basis, reserving time at an IBC meeting to provide in-house training to IBC members.

C. Reporting

The BSOs shall be responsible for:

- Providing the NIH on an annual basis a roster of the IBC members, together with their biographical sketches;
- Reporting to the OSP the following:

    - Any significant problem in any rDNA research study, any violation of the Guidelines or any significant accident or illness relating to a rDNA study;
    - If rDNA research is conducted in a BSL-2 laboratory, any spill or accident resulting in an overt exposure to organisms containing rDNA molecules immediately upon notification from the applicable PI;
    - Any public comment received regarding rDNA activities or IBC affairs, and the IBC's response to such comments; and
    - With respect to HGT research, any serious adverse event that is unexpected and associated with the gene transfer product within 15 days or the if event is fatal or life threatening, within 7 days of notification from the applicable PI.

- Ensuring that all rDNA research involving human subjects is performed in compliance with Section III-C of the Guidelines and that such research is not initiated until IBC and IRB approval have been granted; and
- Reviewing this IBC Governing Document for adjustments or amendments no less than annually or upon request by any voting member of the IBC.

V. Bylaws

A. IBC Membership

All members shall meet the qualifications set forth in Section B below.

B. Member Qualifications

The membership of the IBC shall consist of faculty members and administrative officials of the University with relevant knowledge of, and interest in, molecular biology, epidemiology, infection control, regulatory compliance and research facility design. The membership must include the following individuals as provided in Section IV-B-2-a of the Guidelines:

1. At least five individuals who collectively have experience and expertise in rDNA technology and the capability to assess the safety of rDNA research and to identify any potential risk to public health or the environment;
2. At least two individuals who are not affiliated with the institution and who represent the interest of the surrounding community with respect to health and protection of the environment;
3. At least one scientist with expertise in animal containment principles;

4. At least one scientist with expertise and training in HGT research (an **HGT Expert)**;
5. The EH&S Associate Director for Biosafety; and
6. At least one BSO.

Although not required by Section IV-B-2-a of the Guidelines, in order to ensure the competence necessary to review and approve rDNA activities, the Guidelines recommend that the IBC (a) include persons with expertise in rDNA technology, biological safety and physical containment, (b) include or have available as consultants persons knowledgeable in institutional commitments and policies, applicable law, standards of professional conduct and practice, community attitudes and the environment, and (c) include at least one member representing the laboratory technical staff.

C. Alternate Members

Any member of the IBC may request that an alternate be appointed to take his/her place at meetings to permit more consistent participation and representation on the IBC. Such appointment must meet the following conditions:

1. The alternate member shall be appointed by the EVPR or his/her duly qualified designee (**EVPR Designee),** formally added to the Committee roster and receive training as to his/her role and responsibilities as a member of the IBC;
2. If the alternate member is serving as such for an IBC member with special expertise, he/she must have sufficient expertise to fill that role, and the authority to speak and vote on behalf of the regular member;
3. The alternate may attend those meetings when the member for whom he/she is an alternate is present, but will not count towards a quorum or be able to vote; and
4. The alternate member must attend at least two quarterly meetings annually.

D. Appointment of Members

The members of the IBC shall be appointed by the EVPR or the EVPR Designee.

E. Chair

The Chair of the IBC shall be appointed by the EVPR or the EVPR Designee.

F. Recording Secretary

The Chair of the IBC shall appoint one of the BSOs as the Recording Secretary of the IBC.

G. Term

Each member of the IBC shall be appointed for a term of three years from the date of appointment, provided that the Chair of the IBC may recommend to the EVPR that the term of any member be extended for an additional three-year term. Subject to Section G below, a member may serve for successive three-year terms.

H. Resignation or Removal of Members

Any member may resign from the IBC by delivering a written notice of resignation to the EVPR or the EVPR Designee. The EVPR or the EVPR Designee may remove any member at any time and for any reason.

I. Meetings

Meetings of the Committee shall be held at least once a month. *Ad hoc* meetings may be held on at least three days' prior notice for urgent or time-sensitive issues.

Meetings may be held in person or by videoconference (e.g., Zoom, Ring Central). If any member is unable to be present at an in-person meeting, attendance may be accomplished by videoconference or teleconference.

When possible and consistent with the protection of privacy and proprietary interests, the IBC meetings will be open to the public and any person may contact a BSO for information on meeting attendance.

J. Quorum

A quorum consisting of at least 50% of the members shall be present at all IBC meetings, including, whenever possible, the Chair. In the absence of the Chair, the Associate Director for Biosafety shall chair the meeting.

K. Actions

Any action of the Committee may be taken if it is approved by a majority of the members at a duly convened meeting at which a quorum is present at the time of the vote.

L. Conflicts of Interest

Each member of the IBC must execute a Conflict of Interest and Confidentiality Statement in a form approved by the Committee that provides that a member must recuse him/herself from any meeting should any issue arise where his/her presence might pose a real or perceived conflict of interest,

M. Minutes

Minutes of each meeting of the Committee will be recorded by the Recording Secretary. The minutes will include:

1. The date and time of the meeting;
2. The members present and absent;
3. Whether the minutes of the previous meeting were approved;

4. A summary of deliberations and discussions;
5. Recommended actions and the numerical results of each vote; and
6. If an action is not taken by unanimous vote, any minority views.

Section IV-B-2-a-(7) of the Guidelines requires that IBC minutes and documents be made available to the public upon request. In reviewing all requests for IBC minutes or other documents, the University reserves the right to redact predefined information from the minutes or other documents due to privacy, security or proprietary concerns.
Information that will not be redacted includes:

- The IBC roster and biographical sketches of the members;
- The names of the PIs;
- The vectors, inserts, hosts and animal species employed;
- Details of any significant problems with, or violations of the Guidelines; and
- Any significant rDNA accidents or illnesses.

Information that will be redacted includes:

- Private information, such as names of research staff other than the PIs, addresses, telephone numbers, email addresses, etc.);
- Proprietary information, information that could affect the conduct or outcome of research or the ability to patent or copyright the research or any related trade secrets or sponsor information;
- The location of biohazardous agents or toxins, or research animals, or any other information that might compromise the University or local or national security; and
- Any information relating to non-rDNA-related studies.

The IBC shall refer to or coordinate with the University's Office of the General Counsel and the Office of Communications and Public Affairs any requests that it receives from the public for IBC minutes or documents. The IBC will be notified of all such requests. PIs identified in the minutes will be notified that a public request has been made and will be offered copies of the redacted minutes. All such requests shall be handled expeditiously.

VI. Procedures

A. IBC Approvals

The IBC must review (1) all newly submitted Protocols relating to research required by this IBC Governing Document, (2) all renewals of any such Protocol, and (3) any modification of any such Protocol that includes significant changes or additions to the Hazardous Materials Appendices, before approval is granted by a BSO in Rascal. The IBC must also review each Protocol (4) involving animals or human subjects annually and (5) involving *in vitro* research triannually.

Protocols are approved by action of the IBC in accordance with Section V(5) above. If a protocol does not receive approval, the Recording Secretary will direct any comments or requests for additional information to the PI. The IBC will determine if the Protocol must be resubmitted at the next meeting (**tabled)** for a re-vote, after the PI addresses any issues of concern or if the Recording Secretary may approve the Protocol on behalf of the IBC (**conditional approval).** If conditional approval of a Protocol is granted, the Recording Secretary or another BSO designated by the Recording Secretary may grant final approval once the conditions to approval are met by the PI, without further IBC or IBC Chair review.

B. BSO Approvals

1. Research Involving rDNA or Infectious Materials

A BSO may grant preliminary administrative approval for Protocols in advance of an IBC meeting, provided that the PI agrees in writing that he/she will not begin work associated with rDNA- or Infectious Materials-related activities until final approval is given by the IBC. Administrative approval is intended solely to permit administrative work relating to the research to begin (e.g., ordering of animals, animal breeding, grant writing, etc.)

A BSO may grant final approval for annual renewals or modifications of a Protocol submitted in advance of an IRB meeting, if the Protocol has previously been approved by the IBC and there are no changes to the Protocol involving the use of rDNA or Infectious Materials. A BSO will provide a summary of such approvals at the next subsequent meeting of the IBC.

2. HGT Research

For time sensitive proposals, an *ad hoc* meeting of the IBC can be convened to consider a Protocol involving HGT research so long as a HGT Expert is present at the meeting at which the Protocol is discussed or a BSO receives feedback from such Expert in advance of the meeting and such information is provided at the meeting.

A PI requesting approval of a HGT research study (a **HGT Study)** must submit to the IBC at least one week prior to the IBC meeting:

- The relevant IRB Protocol with an Appendix M attached;
- The relevant scientific abstract, which may be from the grant proposal or may be included in the Investigator's Brochure;
- A copy of the Investigator's Brochure; and
- The informed consent document that is or will be reviewed by the IRB.

A member of the IBC will present each HGT Study at the meeting, which presentation will include:

- The clinical trial phase of the project;
- The condition or disease being addressed;

- A description of the vector, the gene product(s) to be expressed and how this might have a positive impact on the study subjects;
- Whether viral replication is expected if a viral vector is being used;
- Any relevant information on adverse events from prior clinical or pre-clinical activities; and
- The means to ensure that rDNA or its products are not spread to personal contacts of the subjects or the community.

The minutes of the discussion at the IBC meeting considering a HGT Study will include:

- Any questions or issues raised during the discussion and how they were addressed;
- Whether the Protocol was approved during the meeting or made contingent on the provision of addition information;
- Whether the Recording Secretary was permitted to grant approval on behalf of the IBC or if the discussion was to be continued at a subsequent meeting; and
- Any minority viewpoints presented, if the approval is not unanimous.

Following approval of the HGT Study, the PI shall notify the IBC of the following, as applicable:

- Significant changes in the Investigator Brochure of Protocol;
- A safety report, if any serious adverse event that is unexpected and there is a reasonable possibility that the event is due to the use of the gene transfer product; and
- Any occurrences at other study sites that might affect the relevant Columbia study.

A HGT Expert will review any reports relating to human subject safety. If there are technical or environmental issues, additional IBC expertise will be solicited. The IBC will be briefed upon completion of the review.

IBC oversight of a HGT Study may conclude only after the last subject has been administered the final dose of the product.

3. DURC Research

The IBC will follow the review process described in the DURC Policy.

4. SARS-CoV-2 Research

In 2020, the University required institutional review of all research involving SARS-CoV-2 because of public health concerns. The IBC reviews all work where infectious SARS-CoV-2 is being handled in a laboratory (e.g., viral culture, processing of specimens from patients).

In his/her discretion, a BSO may approve research employing only inactivated viral material using an inactivation method approved by the IBC. Submission of an Appendix A is not required for this type of research; a written description of the inactivation method submitted to the BSO via email is adequate. If an Appendix A is submitted, it may be approved by a BSO without IBC review, provided that a summary report is presented to the IBC.

A BSO may review and approve procurement requests and Material Transfer Agreements for infectious SARS-Co-V-2 and full-length viral genomes that have the potential to recreate an infectious virus, provided that a summary report is presented to the IBC. The BSO may request that the PI submit an Appendix A describing the proposed research prior to approving the procurement request. Alternatively, the PI may attest that he/she will receive and store infectious SARS-CoV-2, but may not commence any active work until the IBC has reviewed and approved the research.

5. Emerging agents of public health concern

In the event of any future infectious disease outbreak, epidemic or pandemic, in order to protect the health and safety of the University and wider community, the IBC may review any associated research, including in vitro, in vivo or clinical studies. Such reviews may include, in addition to reviews of research studies to be conducted with such agent, reviews of requests for procurement of infectious materials, establishment of biocontainment levels, and evaluation of inactivation methods.