

Dual Use Research of ConcernHow we do things at St. Jude

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Why does DURC affect St. Jude?

- NIAID Centers of Excellence for Influenza Research and Surveillance; WHO Collaborating Center for Studies on the Ecology of Influenza in Animals (Pls Drs. Webby and Schultz-Cherry)
- Influenza-positive samples (of unknown genotype) submitted to St.
 Jude from all around the world
- Highly pathogenic avian influenza virus is one of the organisms regulated by DURC
- Sequencing, biochemical and in vivo studies are performed on derived virus
- Swapping of viral segments into low risk category virus is frequently undertaken to assess role of identified mutations



How is DURC research identified at St. Jude?

- Pls use an online submission process for IBC protocols/amendments
- One section addresses the NSABB concerns

National Security Advisory Board for Biosecurity(NSABB) Certain research projects that do or do not involve Select Agents may be considered dual use research depending on the nature of the particular experiments and the potential for misuse of the results and/or betonology. The National Security Advisory Board for Biosecurity(NSABB) provides advice regarding biosecurity oversight of dual use research. Therefore, identification of such technology that could be misapplied to threaten public health or national security, it is necessary that the following additional questions be addressed so that an appropriate determination can be achieved. 1.0 **Does the proposed research have the highest potential for yielding knowledge, products, or technational security? Yes = No 1.5 **Will the research enhance the harmful consequences of a biological agent or toxin? Yes = No 2.0 **Does the research have the potential of disrupting immunity or the effectiveness of an immunizate Yes = No 3.0 **Can the proposed research confer to a biological agent or toxin, resistance to clinically, and/or against that agent or toxin or facilitate their ability to evade detection methodologies? Yes = No

- Answering 'Yes' to any of these questions (regardless of pathogen) triggers review by BSO and DURC chairman
- Any member of the IBC can suggest DURC review of a protocol
- We (St. Jude) err on the cautious side, i.e., we review all HPAI research to consider the possibility of DURC



How we evaluate potential DURC science

- DURC subcommittee with expertise from different disciplines
 - 2-4 faculty experts in proposed research area
 - BSO
 - Director, EH&S
 - IRB coordinator
 - scientific editing
 - legal counsel
- PI delivers detailed proposal to committee in advance
- 1-2hr meeting for PI presentation and Q&A
- Specifically asked to address the DURC issues based upon the 'algorithm'
- In camera discussion with vote
- Chair of DURC subcommittee writes memo to IBC with summary of discussion and result of vote



Problems interpreting the algorithm

- In general, following the DURC algorithm works well, however there are two areas where we, as a committee, struggle
 - '5. Alters the host range or tropism of the agent or toxin'
- A decrease in these properties triggers DURC review
- We realize that the criteria will evolve over time, but currently H7N9 virus is not subject to DURC
- We recently reviewed studies that proposed to evaluate the biology of H7N9 virus and concluded that this was durc (not DURC), i.e., that the results may be enabling, but since HPAI was not used (H7N9 is not an HPAI/DURC agent), technically it may not be covered by the guidelines



DURC Algorithm

Step 1 - Does the work involve one of the 15 agents/toxins listed in the policy?

- 1. Avian influenza virus (highly pathogenic)
- 2. Bacillus anthracis
- 3. Botulinum neurotoxin
- 4. Burkholderia mallei
- 5. Burkholderia pseudomallei
- 6. Ebola virus
- 7. Foot-and-mouth disease virus
- 8. Francisella tualrensis
- 9. Marburg virus
- 10. Reconstructed 1918 Influenza virus

YES

- 11. Rinderpest virus
- 12. Toxin-producing strains of Clostridium botulinum
- 13. Variola major virus
- 14. Variola minor virus
- 15. Yersinia pestis

Step 2 - Does the work involve any of the seven effects in the policy?

- 1. Enhances the harmful consequences
- 2. Disrupts immunity
- 3. Confers resistance
- 4. Increases the stability or transmissibility
- 6. Enhances the susceptibility of a host population to the agent
- or extinct agent

Step 3 – Does the work meet the definition of DURC in the policy?

"Life sciences research that. based on current understanding, can be reasonably anticipated to provide knowledge. information. products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural crops and other plants, animals, the environment, or materiel or national security".

Apply Dual Use of YES Concern Criteria



Requires additional Federal and local oversight and risk mitigation strategies to address dual use concerns

YES 5. Alters the host range or tropism

7. Generates an eradicated

If NO, not Dual Use Research of Concern