Safety Symposium: Safety Considerations in Recombinant DNA Research with Highly Pathogenic Viruses

Safety Symposium September 2004

- Recent advances in recombinant DNA techniques
  - Reverse genetics
- Recombinant research with highly pathogenic viruses
  - 1918 influenza virus
  - Highly pathogenic avian influenza viruses
  - SARS
- Issues regarding containment and risk assessment

NIH Guidelines for Research Involving Recombinant DNA Molecules

- **Appendix B-II-D. Risk Group 2 (RG2) – Viruses**
  - **Orthomyxoviruses**
    - **Influenza viruses types A, B, and C**
- **Section III-D. Experiments that Require Institutional Biosafety Committee Approval Before Initiation**
  - **Section III-D-1.** Experiments Using Risk Group 2, Risk Group 3, Risk Group 4, or Restricted Agents as Host-Vector Systems
  - **Section III-D-2.** Experiments in Which DNA From Risk Group 2, Risk Group 3, Risk Group 4, or Restricted Agents is Cloned into Nonpathogenic Prokaryotic or Lower Eukaryotic Host-Vector Systems
  - **Section III-D-3.** Experiments Involving the Use of Infectious DNA or RNA Viruses or Defective DNA or RNA Viruses in the Presence of Helper Virus in Tissue Culture Systems

NIH Guidelines for Research Involving Recombinant DNA Molecules

- **Section II-A-3 Comprehensive Risk Assessment**
  - **"In deciding on the appropriate containment for an experiment, the initial risk assessment from Appendix B should be followed by a thorough consideration of the agent and how it is to be manipulated."**
    - **Agent factors: virulence, pathogenicity, infectious dose, environmental stability, route of spread, communicability, quantity, availability of vaccine or treatment**
    - **Gene product effects: toxicity, physiological activity, and allergenicity**

Goals for Safety Symposium

- Review of new areas of research and associated containment issues
- Update on revision of influenza section of Biosafety in Microbiological and Biomedical Laboratories
- Development of Points to Consider to guide IBCs reviewing these types of research

Steering Committee

- **Members:**
  - **RAC members**: Terry Kwan, Larry Johnson, Philip Johnson, Madison Powers, Naomi Rosenberg, Emmett Barkley, Neal DeLuca
  - ***Ad hoc* experts**: Christina Cassetti, Kanta Subbarao, Brian Murphy, Robert Webster, Robert Krug, Kathryn Holmes, Sam Lipson
- **Mission:**
  - Review agenda and recommend presentations
  - Recommend panelists for discussion sessions
  - Frame questions to lead discussion to useful points to consider for IBCs

Introduction to Safety Symposium

Kanta Subbarao, M.D.

Laboratory of Infectious Diseases, NIAID, NIH

Christina Cassetti, Ph.D.

Division of Microbiology and Infectious Diseases, NIAID, NIH