# RESPONSIBLE RESEARCH

WITH BIOLOGICAL SELECT AGENTS AND TOXINS

NATIONAL RESEARCH COUNCIL

# Responsible Research With Biological Select Agents And Toxins

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#### **Responsible Research With Biological Select Agents And Toxins:**

Responsible Research with Biological Select Agents and Toxins National Research Council, Division on Earth and Life Studies, Board on Life Sciences, Committee on Laboratory Security and Personnel Reliability Assurance Systems for Laboratories Conducting Research on Biological Select Agents and Toxins, 2010-01-12 The effort to understand and combat infectious diseases has during the centuries produced many key advances in science and medicine including the development of vaccines drugs and other treatments A subset of this research is conducted with agents that like anthrax not only pose a severe threat to the health of humans plants and animals but can also be used for ill intended purposes Such agents have been listed by the government as biological select agents and toxins The 2001 anthrax letter attacks prompted the creation of new regulations aimed at increasing security for research with dangerous pathogens. The outcome of the anthrax letter investigation has raised concern about whether these measures are adequate Responsible Research with Biological Select Agents and Toxins evaluates both the physical security of select agent laboratories and personnel reliability measures designed to ensure the trustworthiness of those with access to biological select agents and toxins The book offers a set of guiding principles and recommended changes to minimize security risk and facilitate the productivity of research The book recommends fostering a culture of trust and responsibility in the laboratory engaging the community in oversight of the **Responsible Research with** Select Agent Program and enhancing the operation of the Select Agent Program **Biological Select Agents and Toxins** ,2009 **Sequence-Based Classification of Select Agents** National Research Council, Division on Earth and Life Studies, Board on Life Sciences, Committee on Scientific Milestones for the Development of a Gene Sequence-Based Classification System for the Oversight of Select Agents, 2010-11-08 Select Agents are defined in regulations through a list of names of particularly dangerous known bacteria viruses toxins and fungi However natural variation and intentional genetic modification blur the boundaries of any discrete Select Agent list based on names Access to technologies that can generate or synthesize any DNA sequence is expanding making it easier and less expensive for researchers industry scientists and amateur users to create organisms without needing to obtain samples of existing stocks or cultures This has led to growing concerns that these DNA synthesis technologies might be used to synthesize Select Agents modify such agents by introducing small changes to the genetic sequence or create entirely new pathogens Amid these concerns the National Institutes of Health requested that the Research Council investigate the science and technology needed to replace the current Select Agent list with an oversight system that predicts if a DNA sequence could be used to produce an organism that should be regulated as a Select Agent A DNA sequence based system to better define when a pathogen or toxin is subject to Select Agent regulations could be developed This could be coupled with a yellow flag system that would recognize requests to synthesize suspicious sequences and serve as a reference to anyone with relevant questions allowing for appropriate follow up Sequence Based Classification of Select Agents finds that replacing the current list of

Select Agents with a system that could predict if fragments of DNA sequences could be used to produce novel pathogens with Select Agent characteristics is not feasible However it emphasized that for the foreseeable future any threat from synthetic biology and synthetic genomics is far more likely to come from assembling known Select Agents or modifications of them rather than construction of previously unknown agents Therefore the book recommends modernizing the regulations to define Select Agents in terms of their gene sequences not by their names and called this sequence based classification

Biosecurity Challenges of the Global Expansion of High-Containment Biological Laboratories National Research Council, National Academy of Sciences, Division on Earth and Life Studies, Board on Life Sciences, Policy and Global Affairs, Committee on International Security and Arms Control, Committee on Anticipating Biosecurity Challenges of the Global Expansion of High-Containment Biological Laboratories, 2012-04-02 During July 10 13 2011 68 participants from 32 countries gathered in Istanbul Turkey for a workshop organized by the United States National Research Council on Anticipating Biosecurity Challenges of the Global Expansion of High containment Biological Laboratories The United States Department of State's Biosecurity Engagement Program sponsored the workshop which was held in partnership with the Turkish Academy of Sciences The international workshop examined biosafety and biosecurity issues related to the design construction maintenance and operation of high containment biological laboratories equivalent to United States Centers for Disease Control and Prevention biological safety level 3 or 4 labs Although these laboratories are needed to characterize highly dangerous human and animal pathogens assist in disease surveillance and produce vaccines they are complex systems with inherent risks Biosecurity Challenges of the Global Expansion of High Containment Biological Laboratories summarizes the workshop discussion which included the following topics Technological options to meet diagnostic research and other goals Laboratory construction and commissioning Operational maintenance to provide sustainable capabilities safety and security and Measures for encouraging a culture of responsible conduct Workshop attendees described the history and current challenges they face in their individual laboratories Speakers recounted steps they were taking to improve safety and security from running training programs to implementing a variety of personnel reliability measures Many also spoke about physical security access controls and monitoring pathogen inventories Workshop participants also identified tensions in the field and suggested possible areas for action Responsible Research for Better Business László Zsolnai, Mike J. Thompson, 2020-02-25 This book gathers original empirical and conceptual papers that address the complex challenges of conducting responsible research in the business and management professions It includes contributions related to and reflecting on the vision of the Responsible Research in Business and Management RRBM network which proposes that business can help provide a better world if it is informed by responsible research. The responsible research agenda requires new methods of scholarly assessment that include criteria for measuring impact systemic solutions and practitioner relevance Theories greatly influence business and management practices and as the late Sumantra Ghoshal warned bad

management theories are destroying good management practices. The authors of this book believe that good management theories can help to create new and better business practices **Ethics and Integrity in Health and Life Sciences** Research Zvonimir Koporc, 2018-12-06 This important volume covers ethics and integrity in health and life sciences research It addresses concerns in gene editing dual use and misuse of biotechnologies big data and nutritional science in health and medicine and covers attempts at ensuring ethical practices in such fields are shared internationally Challenges and Opportunities for Education About Dual Use Issues in the Life Sciences National Research Council, Division on Earth and Life Studies, Board on Life Sciences, Committee on Education on Dual Use Issues in the Life Sciences, 2011-01-16 The Challenges and Opportunities for Education About Dual Use Issues in the Life Sciences workshop was held to engage the life sciences community on the particular security issues related to research with dual use potential More than 60 participants from almost 30 countries took part and included practicing life scientists bioethics and biosecurity practitioners and experts in the design of educational programs The workshop sought to identify a baseline about 1 the extent to which dual use issues are currently being included in postsecondary education undergraduate and postgraduate in the life sciences 2 in what contexts that education is occurring e g in formal coursework informal settings as stand alone subjects or part of more general training and in what fields and 3 what online educational materials addressing research in the life sciences with dual use potential already exist Medical Aspects of Biological Warfare, NOTE NO FURTHER DISCOUNT FOR THIS PRINT PRODUCT OVERSTOCK SALE Significantly reduced list price while supplies last Addresses weaponization of biological agents Categorizes potential agents as food waterborne or agricultural toxins and discusses the **Evaluation of the Health and Safety Risks of the New USAMRIID High-Containment** respective epidemiology Facilities at Fort Detrick, Maryland National Research Council, Division on Earth and Life Studies, Board on Life Sciences, Committee to Review the Health and Safety Risks of High-Biocontainment Laboratories at Fort Detrick, 2010-05-12 The U S Army Medical Research Institute of Infectious Diseases in Frederick Maryland is designed to handle pathogens that cause serious or potentially lethal diseases which require the research performed on them be contained to specialized laboratories In 2007 a decision was made to expand those facilities causing concern among area residents that public health and safety risks and strategies to mitigate those concerns were not adequately considered in the decision to go forward with the expansion In Evaluation of the Health and Safety Risks of the New USAMRIID High Containment Facilities at Fort Detrick Maryland a group of experts in areas including biosafety infectious diseases industrial hygiene environmental engineering risk assessment and epidemiology explored whether measures were being taken to ensure prevention and mitigation of risk to the health and safety of workers and the public They also assessed whether the procedures and regulations employed meet accepted standards of the Centers for Disease Control and Prevention and the National Institutes of Health Evaluation of the Health and Safety Risks of the New USAMRIID High Containment Facilities at Fort Detrick

Maryland evaluates the health and safety aspects of the environmental impact statement developed to support the construction of the new laboratories and explores the institute s operating requirements medical and emergency management response plans and communication and cooperation with the public The book recommends that USAMRIID continue to set high standards for advancing security operational and biosurety measures and that additional measures be taken to provide assurance that experienced medical professionals are readily available to consult on unusual infectious diseases It also suggests that USAMRIID expand its two way communications with the public

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