International Workshop
Assessing the Security Implications of Genome Editing Technology
11-13 October, 2017
Herrenhausen Palace ● Hanover, Germany

WORKSHOP PROGRAM

WEDNESDAY, 11th OCTOBER

09.00 A.M.- 1:00 P.M.  REGISTRATION

Satellite Event:

09.00 A.M. - 1:00 P.M.  POLICY MINI-HACKATHON SATELLITE EVENT, GLOBAL YOUNG ACADEMY (Invitation Only)

12.30 P.M.  LUNCH

01.30 P.M.  WELCOME

Chair: Volker ter Meulen, InterAcademy Partnership
Wilhelm Krull, Volkswagen Foundation
Volker ter Meulen, InterAcademy Partnership
Thierry Courvoisier, European Academies Science Advisory Council
Diane Griffin, U.S. National Academies of Sciences, Engineering, and Medicine
Jörg Hacker, German National Academy of Sciences Leopoldina

02.00 P.M.  KEYNOTE LECTURES: A NEW AGE OF BIOLOGY

Chair & Introduction: Indira Nath, All India Institute of Medical Sciences, New Delhi

Presentations (20 min each):

A New Age of Biology
Sir Venki Ramakrishnan, Royal Society

The Latest Advances in Genome Editing: Between Promise and Alarm
Robin Lovell-Badge, The Francis Crick Institute

The Importance of Public Engagement for Discussions about Emerging Technologies
Dominique Brossard, University of Wisconsin-Madison

Questions & Answers

03.30 P.M.  COFFEE BREAK
04.00 P.M  SESSION 1
ADVANCES IN GENOME EDITING: PROMISE AND READINESS

Chair and Introduction: Bärbel Friedrich, Alfried Krupp Institute of Advanced Studies, Greifswald

Presentations (20 min each):

**Genome Editing in Medicine**
Duanqing Pei, Chinese Academy of Sciences

**Genome Editing in Agriculture**
Dan Voytas, University of Minnesota, St. Paul

**Gene Drives: From Species Eradication to Species Preservation**
Fred Gould, North Carolina State University

**Genome Editing in Microbes**
Lennart Randau, Max Planck Institute for Terrestrial Microbiology, Marburg

Questions & Answers

05.45 P.M.  SESSION 2
ASSESSING THE SECURITY DIMENSIONS ASSOCIATED WITH SPECIFIC APPLICATIONS OF GENOME EDITING TECHNOLOGIES

Chair & Introduction: David Relman, Stanford University

Assessing the Security Implications of Emerging Technologies: What Do We Need to Know?
Piers Millett, Oxford University

Questions & Answers

Introduction to the Breakout Groups
David Relman, Stanford University

06:30 P.M.  APERITIF

07:00 P.M.  DINNER
THURSDAY, 12th OCTOBER

09:00 A.M.  SESSION 2
BREAKOUT DISCUSSIONS: ASSESSING THE SECURITY DIMENSIONS ASSOCIATED WITH SPECIFIC APPLICATIONS OF GENOME EDITING

Breakout Group 1: Potential Security Concerns Arising from Human Cell Editing Applications (Auditorium)
Chair: Anthony Perry, University of Bath
Speaker: Jonathan Moreno, University of Pennsylvania
Rapporteur: Johannes Fritsch, German Academy of Sciences Leopoldina

Breakout Group 2: Potential Security Concerns Arising from Applications in Agriculture (Seminar 2)
Chair: Fred Gould, North Carolina State University
Speakers: Joachim Schiemann, German Federal Research Centre for Cultivated Plants
Angelika Schnieke, Technical University of Munich
Rapporteur: Nina Hobbhahn, European Academies Science Advisory Council

Breakout Group 3: Potential Security Concerns Arising from Gene Drive Applications (Seminar 5)
Chair: Zachary Adelman, Texas A&M University
Speaker: Todd Kuiken, North Carolina State University
Rapporteur: Sarah Carter, Science Policy Consulting LLC

Breakout Group 4: Potential Security Concerns Arising from Microbial Applications (Seminar 6)
Chair: Iqbal Parker, University of Cape Town, Cape Town
Speaker: Bert Rima, Queen's University Belfast
Rapporteur: James Revill, University of Sussex

10.30 A.M.  COFFEE BREAK

11.00 A.M.  SUMMARY OF SESSION 2
BREAKOUT GROUPS AND PLENARY DISCUSSION
Chair: Diane Griffin, U.S. National Academies of Sciences, Engineering, and Medicine

Report Out from Human Cell Editing Group
Report Out from Agriculture Group
Report Out from Gene Drive Group
Report Out from Microbe Group

Discussion of Breakout Group Reports

12.30 P.M.  LUNCH (Ceremony Hall)

01.30 P.M.  SESSION 3, Part I
STRATEGIES FOR ADDRESSING POTENTIAL SECURITY RISKS OF GENOME EDITING
Chair and Introduction: Pilar Ossorio, University of Wisconsin-Madison

Panels

01.35 P.M.  Legal, Regulatory, and Policy Strategies for Genome Editing: General Michele Garfinkel, EMBO
S.R.Rao, Ministry of Science & Technology, Government of India
02.00 P.M. **Legal, Regulatory, and Policy Strategies: Security-Specific**  
Daniel Feakes, Implementation Support Unit, Biological Weapons Convention  
Catherine Rhodes, University of Cambridge

02.25 P.M. **Norms of Responsible Behavior and Voluntary Guidelines**  
Indira Nath, All India Institute of Medical Sciences, New Delhi  
Ulrich Sieber, Max Planck Institutes for Foreign and International Criminal Law

03.00 P.M. **BREAK**

03.30 P.M. **SESSION 3, Part II**  
**STRATEGIES FOR ADDRESSING POTENTIAL SECURITY RISKS OF GENOME EDITING**

Scientific and Technical Strategies  
Ursula Jenal, Jenal & Partners  
Owain Edwards, Commonwealth Scientific & Industrial Research Organisation

03.55 P.M. **Discussion with Session 3 Speakers Followed by Questions & Answers**

Introduction to the Breakout Groups  
Pilar Ossorio, University of Wisconsin-Madison

04.45 P.M. **COFFEE BREAK**

05.15 P.M. **SESSION 4**  
**BREAKOUT DISCUSSIONS: ADDRESSING AND MITIGATING POTENTIAL SECURITY RISKS ASSOCIATED WITH SPECIFIC APPLICATIONS OF GENOME EDITING**

Breakout Group 1: Human Cell Editing Applications (Auditorium)  
Chair: Duanqing Pei, Chinese Academy of Sciences  
Speaker: Abhimanyu Veerakumarasivam, Sunway University  
Rapporteur: Johannes Fritsch, German Academy of Sciences Leopoldina

Breakout Group 2: Applications in Agriculture (Seminar 2)  
Chair: Sarah Hartley, University of Exeter  
Speaker: Rene Custers, Vlaams Institute for Biotechnology  
Rapporteur: Nina Hobhahn, European Academies Science Advisory Council

Breakout Group 3: Gene Drive Applications (Seminar 5)  
Chair: Elizabeth Heitman, University of Texas Southwestern Medical Center  
Speaker: Ary Hoffman, University of Melbourne  
Rapporteur: Sarah Carter, Science Policy Consulting LLC

Breakout Group 4: Microbial Applications (Seminar 6)  
Chair: Herawati Sudoyo, Eijkman Institute for Molecular Biology  
Speaker: Filippa Lentzos, Kings College London  
Rapporteur: James Revill, University of Sussex

06.45 P.M. **APERITIF AND POSTER SESSION**

07.30 P.M. **DINNER**
FRIDAY, 13th OCTOBER

09.00 A.M.  SUMMARY OF SESSION 4
BREAKOUT GROUPS AND PLENARY DISCUSSION

Chair: Peter Mills, Nuffield Council

Report Out from Human Cell Editing Group
Report Out from Agriculture Group
Report Out from Gene Drive Group
Report Out from Microbe Group

Report-Out from Policy Mini-Hackathon Satellite Event: Alexander Kagansky, University of Edinburgh

Discussion of Breakout Group Reports

10.30 A.M.  COFFEE BREAK

11.00 A.M.  SESSION 5
PUBLIC COMMUNICATION AND ENGAGEMENT ON POTENTIAL SECURITY RISKS OF GENOME EDITING APPLICATIONS

Chair & Introduction: Dietram Scheufele, University of Wisconsin-Madison

Commentaries (7 min each):

Science Journalism in a Changing World
Volker Stollorz, Science Media Center Germany

The Science of Communicating Risks and Benefits: When, Why, and How?
Dominique Brossard, University of Wisconsin-Madison

Public Engagement: Rationales, Methods and Intended Outcomes
Jason Delborne, North Carolina State University

Lessons from Engaging Global Communities of Science
Elizabeth Heitman, University of Texas Southwestern Medical Center

Connecting with Publics in a World of Twitter, Blogs, and Online News Environments
Reiner Korbmann, Wissenschaft Kommuniziert

Panel Discussion Followed by Questions & Answers

12.30 P.M.  SESSION 6
THE WAY AHEAD

Chair: Robin Lovell-Badge, The Francis Crick Institute

Bärbel Friedrich, Alfried Krupp Institute of Advanced Studies, Greifswald
Diane Griffin, U.S. National Academies of Sciences, Engineering, and Medicine
Piers Millett, Oxford University
Peter Mills, Nuffield Council
Indira Nath, All India Institute of Medical Sciences, New Delhi
Dietram Scheufele, University of Wisconsin-Madison

Panel Discussion Followed by Questions & Answers

01.15 P.M.  CLOSING REMARKS

Volker ter Meulen, InterAcademy Partnership

01.30 P.M.  END OF WORKSHOP / REFRESHERMENTS