

## 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, Secretary General, 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, President, 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, Future of Humanity Institute, 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: Diane Griffin, US National Academies of Sciences, Engineering, and Medicine

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&amp;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, International Centre for Genetic Engineering and Biotechnology, 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: Ernst-Ludwig Winnacker, Human Frontier Science Program

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** (25 min each):**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, Center for the Study of Existential Risk, 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**
- 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: Mitigation to the risk of 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: Mitigation to the risk of applications in agriculture** (Seminar 2)  
Chair: Sarah Hartley, University of Exeter  
Speaker: Rene Custers, Vlaams Institute for Biotechnology  
Rapporteur: Nina Hobbhahn, European Academies Science Advisory Council
- Breakout Group 3: Mitigation to the risk of 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: Mitigation to the risk of 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.**     **APERTIF 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

**Plenary 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****12.30 P.M. SESSION 6  
THE WAY AHEAD**

Chair: Robin Lovell-Badge, The Francis Crick Institute

Bärbel Friedrich, Alfred Krupp Institute of Advanced Studies, Greifswald  
 Ernst-Ludwig Winnacker, Human Frontier Science Program  
 Piers Millett, Future of Humanity Institute, Oxford University  
 Peter Mills, Nuffield Council  
 Indira Nath, All India Institute of Medical Sciences, New Delhi  
 Dietram Scheufele, University of Wisconsin-Madison

**01.15 P.M. CLOSING REMARKS**

Volker ter Meulen, InterAcademy Partnership

**01.30 P.M. END OF WORKSHOP / REFRESHMENTS**