

International Workshop

Assessing the Security Implications of Genome Editing Technology

11-13 October, 2017
Herrenhausen Palace • Hanover, Germany

PRELIMINARY PROGRAM

WEDNESDAY, 11th OCTOBER

12.30 P.M. **REGISTRATION & LUNCH**

01.30 P.M. **WELCOME**

Chair: Volker ter Meulen, InterAcademy Partnership

Wilhelm Krull
Secretary General, Volkswagen Foundation

Volker ter Meulen
InterAcademy Partnership (IAP)

Thierry Courvoisier
European Academies Science Advisory Council (EASAC)

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

02.00 P.M. **Introduction to the Keynote Lectures – Indira Nath**

02.05 P.M. **A New Age of Biology — Sir Venki Ramakrishnan, Royal Society**

02.25 P.M. **The Latest Advances in Genome Editing: Between Promise and Alarm— Robin Lovell-Badge, The Francis Crick Institute**

02.45 P.M. **The Importance of Public Engagement for Discussions about Emerging Technologies — Dominique Brossard, University of Wisconsin-Madison**

03.05 P.M. **Questions & Answers**

03.30 P.M. COFFEE BREAK

**04.00 P.M. SESSION 1
ADVANCES IN GENOME EDITING: PROMISE AND READINESS**

Chair: **Bärbel Friedrich**, Alfred Krupp Institute of Advanced Studies, Greifswald

04.00 P.M. Introduction to the Session — Bärbel Friedrich

04.05 P.M. Genome Editing in Medicine — TBA

04.25 P.M. Genome Editing in Agriculture — Dan Voytas, University of Minnesota, St. Paul

04.45 P.M. Gene Drives: From Species Eradication to Species Preservation — Fred Gould,
North Carolina State University

05.05 P.M. Genome Editing in Microbes — Lennart Randau, Max Planck Institute for Terrestrial Microbiology,
Marburg

05.25 P.M. Questions & Answers

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

Chair: **David Relman**, Stanford University

05.45 P.M. Introduction to the Session — David Relman

05.50 P.M. Assessing the Security Implications of Emerging Technologies: What Do We Need to Know?
— **Piers Millett**, Future of Humanity Institute, Oxford University

06.15 P.M. Questions & Answers

06:25 P.M. Introduction to the Breakout Groups — David Relman

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
TECHNOLOGIES****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**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:****Plants —** Joachim Schiemann, German Federal Research Centre for Cultivated Plants**Animals —** Angelika Schnieke, Technical University of Munich**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**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**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****11:30 A.M. Discussion of Breakout Group Reports****12.30 P.M. LUNCH
Ceremony Hall**

- 01.15 P.M. SESSION 3, Part I
STRATEGIES FOR MITIGATING POTENTIAL SECURITY RISKS OF GENOME EDITING**
- 01.15 P.M. Chair's introduction to the session**
Chair: Pilar Ossorio, University of Wisconsin- Madison
- 01.20 P.M. Legal, Regulatory, and Policy Strategies for Genome Editing: General**
Michele Garfinkel, EMBO
S.R.Rao, Ministry of Science & Tehcnology, Government of India
- 01.45 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
- 02.10 P.M. Norms of Responsible Behavior and Voluntary Guidelines**
Lessons from the IAP Work on Responsible Conduct of Science — Indira Nath, All India Institute of Medical Sciences, New Delhi
Recommendations from the Committee on the Handling of Security-Relevant Research in Germany — TBA
- 02.35 P.M. COFFEE BREAK**
- 03.05 P.M. SESSION 3, Part II
STRATEGIES FOR MITIGATING POTENTIAL SECURITY RISKS OF GENOME EDITING**
- 03.05 P.M. Scientific and Technical Strategies**
General Overview — Ursula Jenal, Jenal & Partners
Gene Drives — Owain Edwards, Commonwealth Scientific & Industrial Research Organisation
- 03.30 P.M. Discussion with Session 3 Speakers**
- 04.10 P.M. Introduction to the Breakout Groups — Pilar Ossorio**, University of Wisconsin Law School
- 04.15 P.M. BREAK**

**04.30 P.M. SESSION 4
BREAKOUT DISCUSSIONS: MAPPING POTENTIAL SECURITY RISKS TO
MITIGATION STRATEGIES**

Breakout Group 1: Mitigation to the risk of human cell editing applications
(Auditorium)

Chair: **Duanqing Pei**, Chinese Academy of Sciences

Speaker: **Abhimanyu AL Veerakumarasivam**, Perdana University

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

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

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

06.00 P.M. APERTIF

07.00 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 Hackathon: Alexander Kagansky, University of Edinburgh

09:35 A.M. 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: **Dietram Scheufele**, University of Wisconsin-Madison

11.00 A.M. Introduction to Session 5 — Dietram Scheufele

11.05 A.M. Commentary 1: Science Journalism in a Changing World — Volker Stollorz, Science Media Center Germany

11.12 A.M. Commentary 2: The Science of Communicating Risks and Benefits: When, Why, and How? — Dominique Brossard, University of Wisconsin-Madison

11.19 A.M. Commentary 3: Public Engagement: Rationales, Methods and Intended Outcomes — Jason Delborne, North Carolina State University

11:26 A.M. Commentary 4: Lessons from Engaging Global Communities of Science — Elizabeth Heitman, University of Texas Southwestern Medical Center

11.33 A.M. Commentary 5: Connecting with Publics in a World of Twitter, Blogs, and Online News Environments — Reiner Korbmann, Wissenschaft Kommuniziert

11.35 A.M. Panel Discussion

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

Chair: **Robin Lovell-Badge**, The Francis Crick Institute

Panel: TBA

01.15 P.M. CLOSING REMARKS

Volker ter Meulen, InterAcademy Partnership (IAP)

01.30 P.M. END OF WORKSHOP / REFRESHMENTS