

10:00-10:10 Opening remarks :

Dr. Yuko Harayama, Executive Member, Council for Science,
Technology and Innovation, Cabinet Office, Japan

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Recognized as a technological breakthrough with high socio-economic impact, genome editing technologies continue to evolve and expand their fields of application since their inception, while the adjustment of the institutional framework and the social acceptance have difficulty in following the pace of this advancement.

Today, we will be focusing on agriculture to discuss about the potential benefits and challenges of genome editing technologies, expecting to benefit from interdisciplinary and international insights.

Genome Editing Transforming the Future of Agriculture

Yuko Harayama
Executive Member
Council for Science, Technology and
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Cabinet Office



Advancement of Science

- **Science** – The Endless Frontier (Bush, 1945)
- Advent of Molecular Biology
 - Double helical structure of the DNA molecule (Watson & Crick, 1953)
- Birth of Genetic Engineering
 - Recombinant DNA (Berg, 1972; Boyer & Cohen, 1973)
Asilomar Conference on Recombinant DNA (1975)
 - ➔ Guidelines (safety hazards)
➔ **Science and Society**
 - **Genome Editing** ➔ CRISPR/CAS9 (Doudna & Charpentier, 2014)
 - US President's Office OSTP
 - ➔ A Note on Genome Editing (human germline) (5/2015)
 - ➔ Memorandum for Heads of FDA, EPA & UADA (7/2015)
« **Modernizing the Regulatory System**
for Biotechnology Products »

Regarding Genome Editing

- Advancement of Science, Technology & Innovation (STI)
 - Speed↑ Scope↑ Impact↑
 - ➔ Regulatory framework?
 - ➔ Social acceptance?
- 5th Science and Technology Basic Plan (2016-2020)
Chap. 6 Deepening the Relationship Between STI & Society
- Expert Panel on Bioethics
 - Interim Report for Research Using Genome Editing Technology on **Human Embryos** (4/2016)
- **Technologies for Creating Next-Generation Agriculture** /SIP (2013-2018)
 - Future of crop breeding ➔ Exploring Genome-Editing Technology
 - **Study on public acceptance of genome-edited agricultural products**

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Socially Responsible STI

- Advancement of STI
 - Potential benefits of Genome-Editing Technologies
 - Challenges to be addressed
 - Revisiting the existing regulatory framework



Sharing ➔ Experiences across countries
Promoting ➔ A continuous dialogue among stakeholders (scientists, scientific communities, government, private sector, citizen)
Exploring ➔ Innovative rule-making

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COI Disclosure Information

- I have no financial relationships to disclose

