

10:10-10:20      Purpose of the workshop

Dr. Ryo Ohsawa, Professor, University of Tsukuba,  
Representative of SIP, NBT Social Implementation  
Consortium, Japan





# Purpose of the workshop

Prof. Ryo Ohsawa

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Cross-ministerial Strategic Innovation Promotion Program(SIP), Technologies for Creating Next-Generation Agriculture, Forestry and Fisheries “Establishment of New Breeding Techniques” Research Leader, Group4 Social implementation Consortium

## Present status of genome editing

No of reports for CRISPR/Cas in 2016

| Species                     |              | no. of report |
|-----------------------------|--------------|---------------|
| <i>Brassica oleracea</i>    | Cabegge      | 1             |
| <i>Citrus sinensis</i>      | Sweet orange | 1             |
| <i>Hordeum vulgare</i>      | Barley       | 1             |
| <i>Lactuca sativa</i>       | Lettuce      | 1             |
| <i>Solanum tuberosum</i>    | Potato       | 2             |
| <i>Triticum aestivum</i>    | Wheat        | 3             |
| <i>Solanum lycopersicum</i> | Tomato       | 4             |
| <i>Zea mays</i>             | Corn         | 4             |
| <i>Glycine max</i>          | Soybean      | 6             |
| <i>Oryza sativa</i>         | Rice         | 18            |

Song et al (2016) The Crop J : 75-82

Tycko et al (2016) Molecular cell 63:355-370

Ma et al (2016) Molecular Plant 9:961-974

New Plant Breeding Techniques  
several Japanese academic meeting  
in 2016

| Species                     |            | no. of<br>report | in SIP |
|-----------------------------|------------|------------------|--------|
| <i>Brassica napus</i>       | Canola     | 1                | *      |
| <i>Brassica oleracea</i>    | Broccoli   | 1                | *      |
| <i>Glycine max</i>          | Soybean    | 1                | *      |
| <i>Vigna angularis</i>      | Azuki bean | 1                | *      |
| <i>Allium cepa</i>          | Onion      | 1                | *      |
| <i>Cucumis melo</i>         | Melon      | 1                | *      |
| <i>Citrus spp</i>           | Orange     | 1                | *      |
| <i>Carica papaya</i>        | Papaya     | 1                | *      |
| <i>Fragaria × ananassa</i>  | Strawberry | 1                |        |
| <i>Vitis spp</i>            | Grape      | 2                | *      |
| <i>Malus spp</i>            | Apple      | 2                | *      |
| <i>Solanum lycopersicum</i> | Tomato     | 7                | *      |
| <i>Solanum tuberosum</i>    | Potato     | 7                | *      |
| <i>Oryza sativa</i>         | Rice       | 13               | *      |

Ref: Tachikawa & Tsuda 2016, GMO-RA 202-2

## ILSI workshops on NBT/genome editing since 2013

### ➤ October 15, 2013

- Workshop on New Breeding Techniques for Regulatory Considerations
  - Progress of new breeding techniques including genome editing
  - Regulatory considerations

### ➤ Dec., 3, 2014

- International Trends regarding New plant Breeding Techniques (NBT)
  - Understanding situations on NBT in Japan and other countries

### ➤ Sep., 28, 2015

- Workshop on Genome Editing in Agricultural Area
  - Sharing and understanding situations on development, regulation and acceptance of genome editing in Japan and other countries

# 14<sup>th</sup> International Symposium on the Biosafety of Genetically Modified Organisms

Guadalajara, Mexico, 4-8 June 2017



## Plant genome-editing , any novel feature to consider for ERA and regulation?

New genome editing techniques open the gate to a so far unknown spatially and functionally precise surgery of genes to the end of a controlled mutagenesis. . . . .

At the same time decisions on whether organisms created by these developments do require legal regulation lags behind in numerous jurisdictions.

The progress on genome editing may challenge both risk assessment and regulation: There is a need to balance the public's need for food, feed and environmental safety and the costs for developers, growers, shippers and processors, without wasting resources in a proportional way. . . . .

## Objectives in this workshop:

### Application of genome editing techniques in agriculture in and outside of Japan

- Share information on R & D progresses as well as regulatory considerations in and outside Japan
- Discuss significance of the on-going R & D programs and lay out challenges for the future among academia, industry, consumers, etc

# Case examples showing contribution of genome editing

## 1. Gene editing in Maize and Wheat at CIMMYT, Impact on Smallholder Farmers

Dr. Kanwarpai Dhugga

- Maize Lethal Necrosis

## 2. Japanese efforts on applying genome editing technologies for agriculture, forestry and fisheries in SIP Program

Prof. Hiroshi Ezura

- Strategy and goal of NBT in SIP
- Rice, Potato, Tuna, Tomato

## 3. Genome editing in Argentina: Initiatives and Prospective

Dr. Sergio E. Feingold

- Outline of plant breeding and positioning of genome editing
- Nutrient quality, water use efficiency and disease resistance in Potato

## 4. Target breeding Applications of CRISPR-Cas technology

Dr. Neal Gutterson

- Target breeding
- Waxy-Corn and High Yield Rice
- Dupont Pioneer's research attitude

### Panel Discussion

Prof, Nobuhiro Tsutsumi, University of Tokyo and Chair of Japanese Society of Plant Breeding participates as a panel

### Expectations on Genome editing

## Challenges and efforts towards social implementation (including regulatory considerations)

### 1. Plant breeding innovation: A Concept Paper

Dr. Bernice Slutsky

- Plant Breeding innovation
- Importance of Consistent, Science-based Policies etc.

### 2. Gene editing in New Zealand: Building Social Acceptance of emerging Opportunities

Dr. David Penman

- Role of the Panel
- Importance of social acceptance

### 3. Gene editing: Progress towards social implementation in Australia, Dr Alison Wardrop

- Australia's Gene technology regulatory systems
- Features of new technologies

### Progress towards social implementation in Japan

### 4. Molecular-level Analysis of product derived from genome editing Dr. Yutaka Tabei

### 5. Communication strategy and consumer outreach by Ministry of Agriculture, Forestry and Fisheries

Mr. Hiroaki Yamada

### Panel Discussion

Ms Hisa Anan, Former Director of Consumers Affairs Agency participates as a panel

### Challenges towards social implementation

# **COI Disclosure Information**

**Ryo Ohsawa**

**I have no financial relationships to disclose.**