Genome Editing R&D at KU

Asst. Prof. Dr. Anongpat Suttangkakul
Plants in ongoing Genome Editing projects

01 Dendrobium orchid
02 Sugar cane
03 Andrographis
04 Cassava
05 Pineapple
06 Cucumber
Salt tolerant orchid

- **Plant:** Dendrobium orchid
- **Trait:** Salt tolerance trait
- **Status:** Obtained protocorms with increase salt tolerance
Salt tolerant sugar cane

<table>
<thead>
<tr>
<th>Plant:</th>
<th>Sugar cane</th>
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<tbody>
<tr>
<td>Trait:</td>
<td>Salt tolerance trait</td>
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<tr>
<td>Status:</td>
<td>Obtaining calli with resistance to selectable marker</td>
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</tbody>
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High production Andrographis

- **Plant:** Andrographis
- **Trait:** High Andrographolide production
- **Developing platform for editing**
- **Analysing Andrographis biosynthesis pathway**
- **Status:** Testing varieties appropriated for tissue culture
Inbred cassava

- **Plant:** Cassava
- **Trait:** Haploid inducer
- **Status:** Constructing vectors for editing
Non-browning pineapple

Plant: Pineapple

Trait: Non-browning

- Developing platform for editing
- Disrupting polyphenol oxidase

Status: Constructing vectors for editing
N use efficiency cucumber

- **Plant:** Cucumber
- **Trait:** High nitrogen-use efficiency
  - Editing genes involved with N-use efficiency
  - Altering gene expression
- **Status:** Constructing vectors for editing
Perspectives

Potentials
- Orchid: on schedule to get GE plants in 3 years
- Many more plants and traits to benefit from this technique
- Fast, cheap, precise

Challenges
- Specie-specific problem: algae
- Tissue culture and protoplast problem

Future
To use this to full capacity to solve problems,
- Public acceptance: Japan
- Realistic and science-based regulation: Europe, Thailand?
Thank you for your time!

Please let me know if you have any questions.