

## **Poster Instructions for Ag-ESD Symposium 2010**

### **Poster Abstract**

Please follow these instructions for preparation of a one page abstract of your poster presentation.

1. Language  
English Only
2. Abstract format (Refer to example below)

**Title of Presentation (Bold 14 pt Times New Roman)**

Author name, affiliation and body of abstract should follow the title without bold type and with a 12 pt Times New Roman font

Name(s) of author(s) should include the Given Name first, Middle Name next and FAMILY NAME last with Family Name in All Capital Letters

Your abstract should be single spaced.

Use right justification with a 3.0 cm top margin and 2.5 cm margins for the bottom and both sides.

Length of the summary should not exceed one page.

## Poster Format, Display and Example

### 1. Language

English only

### 2. Size

We recommend you prepare an A0 size poster (841 mm wide × 1189 mm tall).

### 3. Format

The format of the poster is basically free. However, please include your presentation title, names(s) of presenter(s) and affiliation(s). You can include a photograph of yourself if you would like. (Font size should be large enough to be read from 2 m)

### 4. Display

Posters can be hung in the designated area of the University of Tsukuba 30th Anniversary Hall (総合交流会館) between 12:00 noon on Monday November 8th and 5:00 pm November 10th. Please hang your poster as soon as possible during so participants of the symposium will have more opportunities to view your poster. Each poster will be assigned a number and a list of the numbers for the posters will be displayed in the poster room. Please confirm the number of your poster on the list and hang your poster under the designated number. Supplies needed to hang your poster will be available in the poster room.

You are expected to stand in front of your poster during the poster session on Thursday November 11th from 9:00 am to 11:30 am to explain and answer questions about your poster.

### 5. Removal

Please remove your poster on November 12th before 5 pm. If a poster is not removed by that time we will take it down and keep it at the Agricultural and Forestry Research Center, where you can claim it at your convenience.

### 6. Best Poster Award

Each poster will be evaluated by international guests and faculty members of the University of Tsukuba during the poster session on Thursday November 11th between 9:00 and 11:30 am. Best poster award(s) will be presented based on the evaluation. Awards for best posters will be presented at 13:00 pm on November 11th at the beginning of the afternoon session of the symposium in the Special Conference Room of University Hall A.

# Genetic Studies on Tick Ecdysteroid Regulation for Development of Sustainable Tick Control Strategies

Mari HORIGANE<sup>1,2</sup> and DeMar TAYLOR<sup>1</sup>

<sup>1</sup>Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan.

<sup>2</sup>Fellow of the Japanese Society for the Promotion of Science

Ticks are exoparasites of mammals and important pest of livestock production. Presently, tick management is limited to the use of acaricides that provide great advantages to livestock production but also ticks develop resistant against acaricides. Development of alternative ways for sustainable livestock production is required. The knowledge of tick ecology and physiology is important to construct strategies for integrated tick management. Tick molting and reproduction require blood feeding and are under endocrinological regulation. Therefore, our studies focus on the roles of blood feeding and mating in the regulation of these endocrinological mechanisms.

Viable egg production requires both engorgement and mating, but the distinct roles of these two stimuli are not understood. The soft tick *Ornithodoros moubata* provides an excellent model to study the separate roles of feeding and mating because both virgin and mated females engorge but only mated females produce viable eggs. Ecdysteroid titers significantly increased in only mated females and remained low in virgin females. In addition, both mated and virgin females showed up-regulation of *EcR* and *RXR* hormonal receptors immediately after engorgement. Both mated and virgin females showed *Vg* expression during an early phase (3 to 10 days) after engorgement, whereas only mated females showed increased *Vg* expression during the late phase (12 to 20 days). Whole mount *in situ* hybridization revealed the main site of *Vg* expression is the midgut during the early phase while the fat body enlarges and shows strong *Vg* expression during the late phase in only mated females. Therefore, feeding stimulates *Vg* expression in both virgin and mated females while mating is required for *Vg* up-regulation in the late phase. Furthermore, mating appears to induce secretion of ecdysteroids after engorgement and high titers of ecdysteroids up-regulate *Vg* expression in mated females leading to mature egg production. This two phase regulation of vitellogenesis in *O. moubata* reveals the importance of investigating the separate roles of nutrition and mating in arthropod reproduction. Understanding these mechanisms may lead to the development of better strategies for the use of hormone agonists in controlling tick populations.