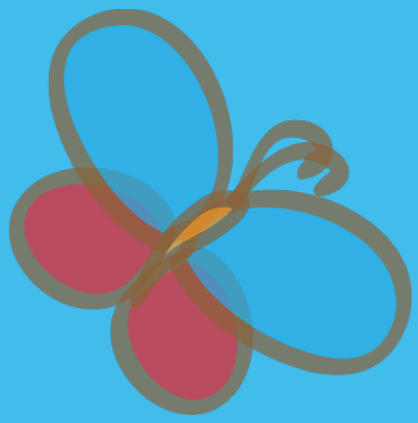
Insect Hormones

June 30, 2019 Orthodox Academy of Crete, Greece



4th International Insect Hormone Workshop
Kolymbari, Crete, Greece
Organizers: Arash Bashirullah & Pierre Leopold
June 30, 2019 - July 6, 2019
www.insecthormones.org

Crete 2019 Meeting Organizers:

- **Arash Bashirullah** (University of Wisconsin-Madison, USA)
- **Pierre Léopold** (Institut Curie, Paris, France)

International Organizing Committee:

- Michael Adams (University of California, Riverside, USA)
- Andrew Andres (University of Nevada, Las Vegas, USA)
- Arash Bashirullah (University of Wisconsin, Madison, USA)
- Xavier Belles (Institute of Evolutionary Biology, CSIC-UFP, Barcelona, Spain)
- Mark Brown (University of Georgia, USA)
- Ron Hill (University of Sydney, Australia)
- Marek Jindra (Biology Center CAS, Czech Republic)
- Kirst King-Jones (University of Alberta, Canada)
- Henry Krause (University of Toronto, Canada)
- Pierre Léopold (Institut Curie, Paris, France)
- Sheng Li (Institute of Plant Physiology and Ecology, SIBS, China)
- Christen Mirth (Monash University, Australia)
- Fred Nijhout (Duke University, USA)
- Ryusuke Niwa (University of Tsukuba, Japan)
- Michael B. O'Connor (University of Minnesota, USA)
- Subba Reddy Palli (University of Kentucky, USA)
- Alexander Raikhel (University of California, Riverside, USA)
- Kim Rewitz (University of Copenhagen, Denmark)
- Lynn Riddiford (HHMI Janelia Farm, USA)
- Tetsuro Shinoda (National Institute of Agrobiological Sciences, Japan)
- Guy Smagghe (Ghent University, Belgium)
- James W. Truman (HHMI Janelia Farm, USA)
- Naoki Yamanaka (University of California, Riverside, USA)

Program Summary

Day 1 (Sunday)

Arrival
21:00 Welcome dinner

Day 2 (Monday)

09:00 Plenary 1: Irene Miguel-Aliaga
10:00 Session 1: Nutrient sensing and enteroendocrine cells
13:00 Lunch & free afternoon
16:30 Poster session
18:00 Session 2: Ecdysone production & transport
21:00 Dinner

Day 3 (Tuesday)

09:00 Plenary 2: Norbert Perrimon
10:00 Session 3: Hormonal control of physiology I
13:00 Lunch & free afternoon
16:30 Poster session
18:00 Session 4: Transcriptional mechanisms of hormone action
21:00 Dinner

Day 4 (Wednesday)

09:00 Plenary 3: François Leulier
10:00 Session 5: JH: from hormone to biology
13:30 Lunch & free afternoon/evening
15:00 Excursions (depart from OAC)
21:30 Excursions (return to OAC)

Day 5 (Thursday)

09:00 Plenary 4: Suzanne Eaton
10:00 Session 6: Control of organ and body size
13:00 Lunch & free afternoon
18:00 Session 7: Hormonal control of physiology II
21:00 Dinner

Day 6 (Friday)

09:00 Plenary 5: Carl Thummel
10:00 Session 8: Control of developmental progression
13:00 Lunch & free afternoon
18:00 Business meeting
18:45 Session 9: Hormonal control of innate immunity
20:00 Karlson Lecture
21:00 Dinner Banquet & Celebrations

Day 7 (Saturday)

Departure

49

Progression Through Pupariation Behaviors Requires Dilp8-Lgr3 Signaling Between the Cuticle Epidermis and Thoracic CNS Neurons

Andres Garelli[1,2,5], Fabiana Heredia[1], Yanel Volonté[1,2], Joana Pereirinha[1], Andreia Casimiro[1], Filipe Viegas[1], Claudia Belém[1], Kohtaro Tanaka[4], Gisele Cardoso[1,3], Andre Macedo[1], Ana Leal[1], Malwina Kotowicz[1], Facundo Spalm[2], Cesar Mendes[1], **Alisson Gontijo[1,5]**

[1]CEDOC, Chronic Diseases Research Center, NOVA Medical School | Faculdade de Ciências Médicas, Universidade Nova de Lisboa, [2]INIBIBB, Instituto de Investigaciones Bioquímicas de Bahia Blanca, Universidad Nacional del Sur - CONICET, [3]Laboratório de Genômica e Evolução de Artrópodes, Departamento de Genética e Biologia Evolutiva, Universidade de São Paulo, [4]Instituto Gulbenkian de Ciências, [5]Corresponding authors

Higher dipterans undergo metamorphosis within a puparium, a protective capsule made up of the reshaped and hardened cuticle of the last larval instar. Puparium formation (pupariation) in *Drosophila* starts when wandering stage larvae reduce their locomotion and initiate increasingly strong whole body contractions that together with the internalization of the three anteriormost body segments remodel the body and cuticle, reducing their length/width ratio from ~5 to ~3. This behavior lasts 5-10 min and culminates with the extrusion of a proteinaceous mix (glue) produced by the salivary glands. The animal then slowly moves forward in a caterpillar-like fashion, traveling about half its length for ~1 min to its final pupariation site. We call this behavior glue-spreading behavior (GSB), as it helps to spread the glue over the ventral part of the animal, promoting its attachment to the underlying substrate. Following GSB, the final shape of the puparium is set, even though weak and periodic contractions occur over the next 40-50 min (post-GSB), the operculum becomes defined, and the cuticle (i.e., the future puparium) starts to gradually sclerotize and tan. Here, we show that proper progression through three pupariation behaviors (pre-GSB, GSB, and post-GSB) requires the Dilp8-Lgr3 pathway, a relaxin-like pathway that has been previously implicated in controlling the timing of pupariation in animals carrying aberrantly growing imaginal discs. During pupariation, however, Dilp8-Lgr3 signaling is spatially- and temporally-distinct: a strong, epidermis-derived dilp8 expression peak that starts at the pre-GSB phase of pupariation appears to signal via Lgr3 in a novel subpopulation of thoracic CNS neurons. While this signaling ensures partial progression through the pre-GSB phase, and total progression through GSB and post-GSB phases, it is not required for sclerotization and tanning. These results demonstrate a new transient epidermis to neuron signaling event that facilitates progression through the cascade of pupariation-associated behaviors.