

University of Groningen

In the heat of the moment

Soto Padilla, Andrea

DOI:
[10.33612/diss.109887653](https://doi.org/10.33612/diss.109887653)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Soto Padilla, A. (2020). *In the heat of the moment: How Drosophila melanogaster's response to temperature is modulated by sensory systems, social environment, development, and cognition*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.
<https://doi.org/10.33612/diss.109887653>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

In the heat of the moment

How *Drosophila melanogaster*'s response to temperature is modulated by sensory systems, social environment, development, and cognition

Andrea Soto Padilla



university of
groningen

In the heat of the moment

How *Drosophila melanogaster*'s response to temperature is modulated by sensory systems, social environment, development, and cognition

PhD thesis

to obtain the degree of PhD at the University of Groningen on the authority of the Rector Magnificus Prof. C. Wijmenga and in accordance with the decision by the College of Deans.

This thesis will be defended in public on

Monday 6 January 2020 at 11.00 hours

by

Andrea Soto Padilla

born on 19 May 1987
in Mexico City, Mexico

This research was carried out in the Evolutionary Genetics, Behaviour and Development (EGDB) group at the Groningen Institute for Evolutionary Life Sciences (GELIFES) according to the requirements of the Graduate School of Science and Engineering (Faculty of Science and Engineering) and the Graduate School of Medical Sciences (University Medical Center Groningen) from the University of Groningen.

This research was supported by a BCN/BCN-BRAIN Graduate Program grant from the Research School of Behavioural and Cognitive Neurosciences (BCN) within the University of Groningen, and a grant from the Consejo Nacional de Ciencia y Tecnología (CONACyT) from Mexico. Financial support for the printing of this thesis was kindly provided by the BCN and the Library of the University of Groningen.

Cover design: Nele Zickert and Andrea Soto Padilla

Lay-out: Roberto Moratore Jr. and Andrea Soto Padilla

Printed by: Ridderprint

ISBN: 978-94-034-2188-9 (Printed version)

ISBN: 978-94-034-2187-2 (Electronic version)

Dissertation of University of Groningen, Groningen, the Netherlands

Copyright © 2019 Andrea Soto Padilla

Supervisors

Prof. J.C. Billeter

Prof. D.H. van Rijn

Prof. O.C.M. Sibon

Assessment Committee

Prof. M. Merrow

Prof. L.W. Beukeboom

Prof. B. Helm

Table of Contents

6	Chapter 1 General Introduction
32	Chapter 2 An automated method to determine the performance of <i>Drosophila</i> in response to temperature changes in space and time
48	Chapter 3 Thermosensory perception regulates speed of movement in response to temperature changes in <i>Drosophila melanogaster</i>
72	Chapter 4 Qualitative differences between male and female social interactions modulate heat stress response in <i>Drosophila melanogaster</i>
100	Chapter 5 Offspring developmental temperature is more relevant than maternal environment in determining adult temperature performance of <i>Drosophila melanogaster</i>
120	Chapter 6 Assessment of <i>Drosophila</i> interval timing ability through temperature-based conditioning
144	Chapter 7 General Synthesis
158	Chapter 8 Summaries
168	Chapter 9 Acknowledgements