

Pablo Emiliano Cantón Ojeda

PERSONAL INFORMATION

Date of birth: 16 de junio, 1984

Place of birth: Mexico City

Address: Av. México 3535, Int. A-5, Villas de San Javier, Zapopan, Jalisco. CP 45120

Google Scholar: <https://tinyurl.com/ScholarPEC>

LinkedIn: <https://www.linkedin.com/in/pecanton>

Website: emilianocanton.weebly.com

SUMMARY

Researcher and science communicator with experience in the use of biotechnology for control of pest and disease vector insects. With a mixed training in molecular biology techniques and bioinformatic analysis, as well as science communication, I can work and lead interdisciplinary academic groups and serve as an efficient translator between specialists, students, and general public.

ACADEMIC DEGREES

2012-2016	Doctor in Science (Biochemistry)	Universidad Nacional Autónoma de México
2008-2011	Masters in Science (Biochemistry)	Universidad Nacional Autónoma de México
2003-2007	Bachelor in Genomic Science	Universidad Nacional Autónoma de México

PROFESSIONAL AND ACADEMIC EXPERIENCE

Scientific Communications Officer – *Research Center for Molecular Medicine of the Austrian Academy of Science (CeMM)* **October 2019 – December 2019**

- Internship at Dr. Giulio Superti-Furga's group. During this period, I was involved in the creation of newsletters, social media posts, and organization of the RESOLUTE-IMI consortium of the European Union.

Postdoctoral Research Associate - *University of Florida*

2017 – 2019

Curriculum vitae

Pablo Emiliano Cantón Ojeda

- Led an academy/industry interface project for CAMTech at Dr. Bryony Bonning's group to research the digestive physiology of the crop pest *Nezara viridula* to identify novel targets for agricultural control strategies in agriculture.
- Wrote and delivered quarterly progress reports for the industry partner advisory board.
- Established and maintained insect colonies of different diets and adapted enzymatic assay protocols to new lab settings.
- Obtained and analyzed gene expression data for a non-model organism.
- Performed Cytochrome P450 enzymatic analysis from gut extracts of pest the pest moth species *Helicoverpa zea*, *Plutella xylostella*, y *Trichoplusia ni*.
- Coordinated professional development resources for postdoctoral research associates of the Entomology and Nematology Department.

Senior Editor – *Más Ciencia por México, A.C.*

2013 – to date

- Receive, supervise, and edit content for online publishing and physical distribution of the scientific and communication projects.
- Recruit collaborators and edit short articles for the organization's online blog.
- From 2013 to 2016, oversaw the production team behind the webcast interview show "Charlas con Científicos" in association with the newspapers "La Unión de Morelos" and the Academy of Science of Morelos, which covered multidisciplinary topics of governance, academy, and social leadership.
- Worked in the organization committee for the scientific photography and video contests "Proyecta 2011" and "Proyecta 2013" which received over 150 submissions nationwide in Mexico.

Treasurer – *Más Ciencia por México, A.C.*

2014 - 2017

- Worked on the board of directors of the organization and helped define annual and long-term plans and objectives.
- Managed the financial assets, fiscal responsibilities, and analyzed project viability and resource assignment.

Ph. D. student – *Institute of Biotechnology, UNAM*

2012 - 2016

- Designed and executed a transcriptome study to research the midgut response of the vector mosquito *Aedes aegypti* to exposure to the mosquitocidal protein Cry11Aa from *Bacillus thuringiensis israelensis*.
- Worked on gene silencing in the mosquito *Aedes aegypti* and the moth *Manduca sexta* to validate physiological responses to insecticidal proteins.
- Quantified gene expression changes in insecticide resistant lines of *Spodoptera frugiperda* from Brazil.

Co-founder – *Más Ciencia por México, A.C.*

2012

3/12/2020

Curriculum vitae

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- Participated in defining vision and mission of a non-profit organization focused on science communication and outreach in Mexico.
- Formed part of the legal consolidation of the organization and in the creation of the legal statutes for its activity.

Master's student - *Institute of Biotechnology, UNAM* 2008 - 2011

- Developed biochemical assays to identify specificity, toxicity, and synergy determinants of the mosquitocidal protein Cyt1Aa from *Bacillus thuringiensis israelensis*.
- Worked with phage display libraries for the selection of Cyt1Aa proteins with modified insect specificity.

Research assistant – *Institute of Biotechnology, UNAM* 2006 – 2007

- With Dr. Susana López and Dr. Carlos Arias, participated in the initial development phase of a phylogeny database for the creation of a microchip for the detection of enteric virus.
- Researched the role of Flotillin-1 in the adhesion and internalization of rotavirus in epithelial cells.

Research assistant – *Institute of Biotechnology, UNAM* 2004 – 2006

- In Dr. Yvonne Rosenstein's group, worked on a project to determine the hierarchy of CD43 and TCR stimuli in the activation of T lymphocytes.
- Examined the methylation state of the CD43 promoter in immune and cancer cell lines.

Research intern - *Bessie F. Lawrence International Science Summer Institute at Weizmann Institute of Science (Rehovot, Israel)* 2003

- Worked with Dr. Eilon Woolf in the identification of the role of the RUNX3 transcription factor in the maturation of γ/δ T lymphocytes in the gut of mice.

ACKNOWLEDGEMENTS AND AWARDS

- 2018 Accepted as candidate member of the National Registry of Researchers of CONACYT (Mexico)
- 2018 Accelerate to Industry (A2i) scholarship for outstanding application (University of Florida-CSRA and Pheronym, Inc.)
- 2016 Honors mention, doctoral thesis (UNAM)
- 2011 Honors mention, master's thesis. (UNAM)
- 2009 *Gabino Barreda* medal for outstanding academic achievements (UNAM)
- 2009 Diploma for academic merits, 2008 (UNAM).
- 2007 Diploma for academic merits, 2004 (UNAM)
- 2003 Scholarship from the "Asociación Mexicana de Amigos del Instituto Weizmann de Ciencia" organization for the *Bessie F. Lawrence* international summer science

institute.

- 2003 XXIII Metropolitan Chemistry Olympics (Sociedad Química de México). First place, level A.
- 2002 XXII Metropolitan Chemistry Olympics (Sociedad Química de México). Second place, level B

PUBLICATIONS

In international indexed, peer-reviewed journals

- **Cantón, PE**, Bonning, BC. Outsourcing the gut functions: characteristics of hemipteran extra oral digestion fluids. *Current Opinion in Insect Science*. (submitted)
- Velásquez LF, **Cantón PE**, Sanchez-Flores A, Bravo A, Cerón J. The transcriptome of *Premnotrypes vorax* (Coleoptera: Curculionidae). *Frontier in Genetics* (in review)
- **Cantón PE**, Bonning, BC. (2020) Transcription and Activity of Digestive Enzymes of *Nezara viridula* Maintained on Different Plant Diets. *Frontiers in Physiology*, 10 (1553)
- **Cantón PE**, Bonning, BC. (2019) Proteases and nucleases across midgut tissues of *Nezara viridula* (Hemiptera: Pentatomidae) display distinct activity profiles that are conserved through life stages. *Journal of Insect Physiology*. 119 (103965).
- **Cantón PE**, Cancino-Rodezno A, Gill SS, Soberón M, Bravo A. (2015) Transcriptional cellular responses in midgut tissue of *Aedes aegypti* larvae following intoxication with Cry11Aa toxin from *Bacillus thuringiensis*. *BMC Genomics*, 16, 1042
- Pacheco S, **Cantón PE**, Zúñiga-Navarrete F, Precorari F, Bravo A, Soberón M. (2015) Improvement and efficient display of *Bacillus thuringiensis* toxins on M13 phages and ribosomes. *AMB Express*, 5(1), 73
- **Cantón PE**, López-Díaz JA, Gill SS, Bravo A, Soberón M. (2014) Membrane binding and oligomer insertion are necessary but insufficient for *Bacillus thuringiensis* Cyt1Aa toxicity. *Peptides*, 53, 286-291
- López-Díaz JA, **Cantón PE**, Gill SS, Soberón M, Bravo A. (2013) Oligomerization is a key step in Cyt1Aa membrane insertion and toxicity but not necessary to synergize Cry11Aa toxicity in *Aedes aegypti* larvae. *Environmental Microbiology*, 15(11), 3030-3039
- Zavala LE, Pardo-López L, **Cantón PE**, Gómez I, Soberón M, Bravo A. (2011) Domains II and III of *Bacillus thuringiensis* Cry1Ab Toxin Remain Exposed to the Solvent after Insertion of part of Domain I into the Membrane. *Journal of Biological Chemistry*, 286(21), 19109-17
- **Cantón PE**, Reyes EZ, Ruiz de Escudero I, Bravo A, Soberón M. (2011) Binding of *Bacillus thuringiensis* subsp. *israelensis* Cry4Ba to Cyt1Aa has an important role in synergism. *Peptides*, 32(3), 595-600
- Rodríguez-Almazan C, Ruiz de Escudero I, **Cantón PE**, Muñoz-Garay C, Pérez C, Gill SS, Soberón M, Bravo A. (2010) The Amino- and Carboxyl-Terminal Fragments of the *Bacillus*

Curriculum vitae

Pablo Emiliano Cantón Ojeda

thuringiensis Cyt1Aa Toxin Have Differential Roles in Toxin Oligomerization and Pore Formation. *Biochemistry*, 50(3), 388-96

Chapters in Books

- Bravo A., Martínez-de-Castro D.L., Sánchez-Quintana J, **Cantón P.E.**, Mendoza G., Gómez I., Pacheco S., García-Gómez B.I., Onofre J., Ocelotl J., Soberón M. 2015. *Mechanism of action of Bacillus thuringiensis insecticidal toxins and their use in the control of insect pests* en: Alouf, J.E. *Comprehensive Sourcebook of Bacterial Protein Toxins* 4a ed. Elsevier. pags. 858-873
- Bravo A, Martínez de Castro DL, Sánchez J, Muñoz-Garay C, Matus V, **Cantón PE**, López-Díaz JA, Portugal L, Mendoza G, Soberón M. *Mode of action of Bacillus thuringiensis toxins and their use in transgenic crops to control insect pests*. En *Biotechnology: Beyond Borders*. ed. Deshpande MV, Ruiz-Herrera J. 2013, CSIR-National Chemical Laboratory.

In communication magazines

- "Conociendo al enemigo: estrategias del mosquito para evitar la acción de los insecticidas biológicos." *Biotecnología en Movimiento*, 2. (7). 2 December, 2016. Universidad Nacional Autónoma de México.

TEACHING AND HUMAN DEVELOPMENT

Invited lecturer – *University of Florida*

May 2019

Introduction topic to transcriptomics in the undergraduate course "Omics in Entomology/Nematology Research" imparted by Dr. Adam Wong of the Entomology and Nematology Department.

Volunteer teacher "DNA Day 2019" – *University of Florida*

April 2019

Visited high-school students in Trenton and Williston, Florida on behalf of the Institute of Genetics of the University of Florida to give classes and practical demonstrations of DNA extraction and repair.

Course coordinator – *Institute of Biotechnology, UNAM*

August 2013 - December 2013

Supervised the topic on intracellular response to stress agents induced by pore forming toxins, in the Graduate Program on Biochemical Sciences, in conjunction with Dr. Alejandra Bravo. Responsibilities: Prepare syllabus, select bibliographical material, coordinate classes and discussions with Masters and Ph.D. students.

3/12/2020

Teaching assistant – *Bachelor's in Genomic Science, UNAM* August 2008 – December 2008
Course: "Discrete and Combinatorial Mathematics" by Dr. Margareta Boege von Mentz.
Responsibilities: Prepare written course material, student evaluation, individual mentorship.

Teaching assistant - *Bachelor's in Genomic Science, UNAM* February 2008 - June 2008
Course: "Linear Algebra" de la Dr. Margareta Boege von Mentz. Responsibilities: Prepare written course material, student evaluation, individual mentorship.

Teaching assistant – *Bachelor's in Genomic Science, UNAM* August 2007 – December 2007
Course: "Discrete and Combinatorial Mathematics" by Dr. Margareta Boege von Mentz.
Responsibilities: Prepare written course material, student evaluation, individual mentorship.

PROFESSIONAL AND ACADEMIC MEETINGS

- 2019 CAMTech Industry Advisory Board Meeting, Gainesville, Florida. EUA.
- 2018 Joint Annual Meeting of the ESA, ESC, y ESBC. Vancouver, Canada. Oral presentation "Compartmentalization of digestive enzymes across gut regions in adults and nymphs on *N. viridula*".
- 2018 CAMTech Industry Advisory Board Meeting, Vancouver, BC, Canada.
- 2018 Florida Genetics Symposium. University of Florida, EUA. Poster: "Tissue-specific transcription of proteases and nucleases across the accessory salivary gland, principal salivary gland and gut of *Nezara viridula*".
- 2018 CAMTech Industry Advisory Board Meeting, Ankeny, Iowa. EUA.
- 2017 CAMTech Industry Advisory Board Meeting, Denver, Colorado. EUA
- 2017 CAMTech Industry Advisory Board Meeting, Lexington, Kentucky, EUA.
- 2015 63rd Annual Meeting of the Entomological Society of America. Minneapolis, Minnesota, USA. Oral presentation: "Study of the Transcriptional response to intoxication by Cry toxins in *Aedes aegypti* midgut".
- 2014 XXX National meeting of the Mexican Society of Biochemistry. Guadalajara, Jalisco, Mexico. Oral presentation: "Characterization of the transcription induced by intoxication of Cry toxins in mosquitoes".
- 2013 1st Science Communication Conference of the Board of Science and Technology of the State of Morelos. Cuernavaca, Morelos, Mexico.
- 2013 7th Annual Arthropod Genomics Symposium and Vectorbase Workshop. University of Notre Dame, Indiana, USA. Poster: "Transcriptomic Analysis of

Aedes aegypti response to Cry toxins".

- 2010 XXVII National meeting of the Mexican Society of Biochemistry. Tuxtla Gutiérrez, Chiapas, Mexico. Poster: "Analysis of the insertion of the Cyt1Aa toxin of *Bacillus thuringiensis israelensis* in midgut membranas of *Aedes aegypti* and *Manduca sexta*".
- 2004 1st National Meeting on Genomic Medicine. Mexico City, Mexico.
- 2004 XXIX National Meeting on Human Genetics. San Luis Potosí, San Luis Potosí, Mexico. Invited lecturer in the symposium "Genomic Projects in Mexico".

MEMBERSHIPS AND AFFILIATIONS

- National Registry of Researchers, CONACYT, Mexico. Member level C.
- Entomological Society of America

WORKSHOPS AND TRAINING

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| 2019 | Workshop on Insect Genetic Technologies | IBBR/University of Maryland |
| 2018 | A2i: Accelerate to Industry Workshop | IFAS/CALS, University of Florida |
| 2016 | International Visiting Leaders Program: NGO Management in the United States | United States Department of State - Bureau of Educational and Cultural Affairs |
| 2016 | Exploring Leadership Workshop | The Phoenix Nest. Washington, D.C., EUA. |
| 2015 | "Communicating Science" Workshop | Institute of Biotechnology-UNAM |
| 2015 | High-throughput sequencing data analysis workshop, intermediate level. | Institute of Biotechnology-UNAM |
| 2011 | Workshop on Comparative Genomics | Colorado State University, Fort Collins, EUA |

VOLUNTEERING AND SOCIAL INTEGRATION

- 2019 Volunteer in scientific demonstrations at the CADE Museum for Creativity & Invention. Gainesville, Florida, USA.
- 2018 Moderator. "Miscellaneous 10 Minute Talks, PBT Branch". Joint Annual Meeting of the ESA, ESC, y ESBC. Vancouver, Canada.
- 2016 Event volunteer "2nd Open Doors Day " of the Institute of Biotechnology, UNAM.
- 2014 Workshop volunteer in "Proyecto Con...ciencia 2014". Colegio Morelos de Cuernavaca, A.C.

Curriculum vitae

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- 2014 Workshop volunteer at "Experiencia Ambulante. Un chispazo científico en Buenavista del Monte". Board of Science and Technology of Morelos.
- 2014 Event volunteer "1st Open Doors Day " of the Institute of Biotechnology, UNAM.
- 2013 Workshop volunteer in the "José Antonio Alzate Festival of Science, Technology, and Humanities". Mexican Society for the Communication of Science and Technology.

SKILLS

Interpersonal

Project management
Report preparation
Public speaking
Science
communication
Science lobbying
Lab safety training
NGO management
Science journalism
Social media
management

Languages

Spanish: mother
tongue
English: 100%
bilingual
German: level
A2
French: Beginner

Lab techniques

Insect embryo
transformation
Insect colony rearing
Toxicity assays
Enzymatic activity assays
Gene cloning
Protein, DNA, RNA
purification
Protein
immunodetection
PCR/qPCR/RT-PCR
Fluorescence
spectroscopy

Informatics

Perl, C, R
programming
Statistics
Database
management
Office software
Bioinformatics
