

[首页](#) [实验室概况](#) [新闻中心](#) [研究团队](#) [科学研究](#) [人才培养](#) [开放交流](#) [招生信息](#) [科研安全](#)

■ [研究团队](#)

[首页](#) > [人员简介](#)

[研究方向](#)

[人员简介](#)

## Camilo Ayra-Pardo 教授



**姓名:** Camilo Ayra-Pardo

**性别:** male

**职称:** Associate Professor, PhD

**所在系别:** Henan Provincial Engineering Laboratory of Insect Bio-reactor

**电子邮箱:** cayrapardo73@yahoo.com

**个人简历:**

2017.10—present date: Associated Professor, Nanyang Normal University, Nanyang, Henan, China

•2017.01-2017-07: Invited Professor at School of Biology, University of Havana, Cuba

•2015.01-2016.12: Senior (Full) researcher, Centre for Genetic Engineering and Biotechnology (CIGB), Havana, Cuba

•2014.09-2014.12: Swiss NSF fellow at Department of Plant Molecular Biology, University of Lausanne, Switzerland

•2010.07-2014.08: Senior (Full) researcher, Centre for Genetic Engineering and Biotechnology (CIGB), Havana, Cuba

•2010.02-2010.06: Invited staff member at Department of Life Sciences, Imperial College London, UK

•2007.08-2010.01: Associated researcher, Centre for Genetic Engineering and Biotechnology (CIGB), Havana, Cuba

•2007.03-2007.07: UK Royal Society fellow at Department of Life Sciences, Imperial College London, UK

•2004.09-2008.12: Ph.D. in Biological Sciences, University of Havana, CUBA

•2004.02-2004.08: UK Royal Society fellow at Department of Biochemistry, University of Cambridge, UK

•1999.03-2004.01: Assistant researcher, Centre for Genetic Engineering and Biotechnology (CIGB), Havana, Cuba

•2000.03-2000.11: Project Management, School of Business of Madrid, SPAIN

•1998.02-1999.02: Assistant researcher, Centre for Research and Advanced Studies of the National Technological Institute (CINVESTAV-IPN), Mexico City, Mexico

•1996.08—1998.01: Junior researcher, Centre for Genetic Engineering and Biotechnology (CIGB), Havana, Cuba

•1991.09—1996.07: B.Sc. major Biochemistry, School of Biology, University of Havana, Cuba

**教学工作:**

From October 2017 – Present date: Professor. School of Agricultural Engineering, Nanyang Normal University, Nanyang, Henan, China. Lectures on diverse topics: Plant Molecular Breeding, Agroecology and Biotechnology, Industrial Biochemistry, Advances in Microbiology

•September 2009- July 2015. Invited Professor. School of Biology, University of Havana, CUBA. Lectures on: Agricultural Biotechnology, Plant Molecular Biology, Molecular Entomology, Molecular Host-Pathogen Interaction

•Invited lecturer in Master programs majoring Biotechnology at: University of Lausanne (SWITZERLAND, October 2014), University of Granada (SPAIN, November 2010), and CINVESTAV-IPN institute (MEXICO, 1998).

**研究方向:**

Insect pest control, Insect behaviour and microbiome

**科研成果:**

## RESEARCH GRANTS:

1.2018.01–2019.12: Nanyang Normal University (NYNU) Research Grant. China–UK–NYNU–RRES Joint Laboratory for Insect Biology. “Host preference behaviour in cotton bollworm and gut microbiota” . Group of Prof. Yunchao Kan. (¥ 150,000)

2.2014.08: Swiss National Science Foundation (SNSF) International Grant for a research visit to University of Lausanne. “Role of an Arabidopsis thaliana ERF/AP2 transcription factor for plant defence against insect herbivores” . Group of Prof. Philippe Reymond (CHF 12,030.00)

3.2007.03–2010.12: IFS (International Foundation for Sciences at SWEDEN; <http://www.ifs.se/>) Research Grant # C/3579-2. “Identification, cloning and characterization of Spodoptera frugiperda midgut genes involved in the defensive response against the Cry1Ca toxin of Bacillus thuringiensis” – Principal investigator (105,602.40 SEK)

4.2007.01: UK Royal Society International Grant (2006/R3) for a research visit to Imperial College London. “Identification of insect genes involved in defensive response to Bt Cry toxins” . Group of Prof. Denis J. Wright (£ 5,212.00)

5.2004.01: UK Royal Society International Exchange Grant for a research visit to University of Cambridge. “Protein engineering to improve the potency and specificity of Bacillus thuringiensis insecticidal toxins” . Group of Prof. David J. Ellar (£ 7,111.00)

6.2004.01- 2006.12: IFS Research Grant # C/3579-1. “Molecular identification of Spodoptera frugiperda gut genes induced after short-term

exposure to sublethal concentrations of the Cry1Ca toxin from *Bacillus thuringiensis* bacterium” – Principal investigator (86,400 SEK)

7.2003.01-2017.08: Centre for Genetic Engineering and Biotechnology, Institutional Research grant #3031-243 for Biotech solutions regarding insect pests control in Cuban agriculture – Head of research projects (CUP 5,000,000)

8.1996.09- 1999.01: IFS Research Grant # F/2560-1. “*Bacillus thuringiensis* spp. biodiversity: molecular screening of the national collection” – Co-applicant (86,400 SEK)

#### PEER-REVIEWED PUBLICATIONS IN SCI JOURNALS

1.R Portieles, ME Ochagavia, E Canales, Y Silva, O Chacón, I Hernández, Y López, M Rodríguez, R Terauchi, C Borroto, R Santos, MD Bolton, C Ayra-Pardo, et al. High-throughput SuperSAGE for gene expression analysis of *Nicotiana tabacum*–*Rhizoctonia solani* interaction. *BMC Res. Notes* 2017; 10: 603. I.F.: 0.669

2.C Ayra-Pardo\*, ME Ochagavia, B Raymond, A Gulzar, L Rodríguez, et al. HT-SuperSAGE of the gut tissue of a Vip3Aa-resistant tobacco budworm strain provides insights into the basis of resistance. *Insect Sci.* 2017; DOI: 10.1111/1744-7917.12535 (\*corresponding author) I.F.: 2.026

3.E Canales, Y Coll, I Hernández, R Portieles, M Rodríguez, Y López, M Aranguren, E Alonso, R Delgado, M Luis, L Batista, C Paredes, M Rodríguez, M Pujol, ME Ochagavia, V Falcón, R Terauchi, H Matsumura, C Ayra-Pardo et al. *Candidatus Liberibacter asiaticus*, causal agent of citrus Huanglongbing, is reduced by treatment with brassinosteroids. *PLoS One* 2016; 11(1): e0146223. I.F.: 2.806

4.C Ayra-Pardo\*, B Raymond, A Gulzar, L Rodríguez, I Morán, N Crickmore, DJ Wright. Novel genetic factors involved in resistance to *Bacillus thuringiensis* in *Plutella xylostella*. *Insect Mol. Biol.* 2015; 24(6): 589-600. (\*corresponding author) I.F.: 2.884

5.P Téllez, B Raymond, I Morán, L Rodríguez, DJ Wright, CG Borroto, C Ayra-Pardo\*. Strong oviposition preference for Bt over non-Bt maize in *Spodoptera frugiperda* and its implications for the evolution of resistance. *BMC Biology* 2014; 12(1): 48. (\*corresponding author) I.F.: 6.779

6.R. Portieles, C Ayra-Pardo, E González, A Gallo, R Rodríguez, O Chacón, et al. NmDef02, a novel antimicrobial protein isolated from *Nicotiana megalosiphon* confers high-level pathogen resistance under greenhouse and field conditions. *Plant Biotechnol. J.* 2010; 8: 678-690. I.F.: 7.443

7.L Rodríguez, D Trujillo, O Borrás-Hidalgo, D.J. Wright, C Ayra-Pardo\*. RNAi-mediated knockdown of a *Spodoptera frugiperda* trypsin-like serine-protease gene reduces susceptibility to a *Bacillus thuringiensis* Cry1Ca protoxin. *Environ. Microbiol.* 2010; 12: 2894–2903. (\*corresponding author) I.F.: 5.395

8.L Rodríguez, D Trujillo, O Borrás, DJ. Wright, C Ayra-Pardo\*. Molecular characterization of *Spodoptera frugiperda* – *Bacillus thuringiensis* Cry1Ca toxin interaction. *Toxicon* 2008; 51: 681-692. (\*corresponding author) I.F.: 2.492

- 9.C Ayra-Pardo\*, P Davis, DJ. Ellar. The mutation R423S in the *Bacillus thuringiensis* hybrid toxin CryAAC slightly increases toxicity for *Mamestra brassicae* L. *J Invertebr. Pathol.* 2007; 95: 41-47. (\*corresponding author) I.F.: 2.379
- 10.O Borrás, BPHJ Thomma, C Collazo, O Chacón, CJ Borroto, C Ayra-Pardo, et al. EIL2 transcription factor and glutathione synthetase are required for defense of tobacco against tobacco blue mold. *Mol. Plant Microbe In.* 2006; 19: 399-406. I.F: 4.332
- 11.A Fuentes, PL Ramos, C Ayra-Pardo, M Rodríguez, N Ramirez, M Pujol. Development of a highly efficient system for assessing recombinant gene expression in plant cell suspensions via *Agrobacterium tumefaciens* transformation. *Biotechnol. Appl. Biochem.* 2004; 39: 355-361. I.F.: 1.413
- 12.P Tellez, C Ayra-Pardo\*, D Barberia, E Gonzalez. Insect-resistant transgenic plants: the CIGB experience. *Phytopathology* 2002; 92(6s): 132-133. (\*corresponding author) I.F.: 2.896
- 13.C Ayra-Pardo\*, I.L. Montejó, R.I. Vázquez, C García. Beta-D-glucuronidase gene from *Escherichia coli* is a functional reporter in the methylotrophic yeast *Pichia pastoris*. *Lett. Appl. Microbiol.* 1999; 29: 278-283. (\*corresponding author) I.F.: 1.575
- 14.G.A. de la Riva, J González, R.I. Vázquez, C Ayra-Pardo. *Agrobacterium tumefaciens*: plant transformation tool without frontiers. *Electr. J. Biotechnol.* 1998; 3: <http://ejb.ucv.cl> I.F.: 1.527
- 15.R.I. Vázquez, A.F. Martínez, C Ayra-Pardo, J González, G.A. de la Riva. Biochemical characterization of the third domain from Cry1A toxins. *Biochem. Mol. Biol. Int.* 1998; 45(5): 1011-1020. (currently IUBMB life) I.F.: 3.141
- 16.D Prieto, R.I. Vázquez, C Ayra-Pardo, J González, G.A. de la Riva. *Bacillus thuringiensis*: from biodiversity to biotechnology. *J. Industr. Microbiol. Biotechnol.* 1997; 19: 202-219. I.F.: 2.810

#### PATENTS

- 1.O. Borrás, R. Portieles, M. Pujol, G. Enriquez, E.M. Gonzalez, C Ayra-Pardo. Aminoacids and nucleic acid sequences for controlling pathogens. WO 2009/117975A1
- 2.O Borrás, R Portieles, M Pujol, G Enriquez, E Gonzalez, C Ayra-Pardo. Nucleic and aminoacid sequences for the control of pathogen agents. US8,450,559B2
- 3.G.A. de la Riva, R.I. Vázquez, R. Pajón, J. González, A.F. Martínez, C Ayra-Pardo (2004). Use of Cry proteins from *Bacillus thuringiensis* as immune stimulators agents and as vectors for the presentation of vaccine epitopes. National Publication Number: CU/22977. International Patent Classification: A61K 39/02.

## BOOK CHAPTER

1.C Ayra-Pardo, O Borrás-Hidalgo (2018). Fall armyworm (FAW; Lepidoptera: Noctuidae): moth oviposition and crop protection. In: Olfactory concepts of insect control. (Jean-François Picimbon, Ed.). Springer (in press).

## PEER-REVIEWED PUBLICATIONS IN NON-SCI JOURNALS:

1.M Morejon, JA Herrera, C Ayra-Pardo, et al. Alternatives in nutrition of transgenic maize FR-Bt1 (*Zea mays* L.): response in growth, development and production. *Cultivos Tropicales* 2017; 38(4): 146-155. ISSN 1819-4087

2.P Téllez, C Ayra-Pardo\*, I Morán, L Rodríguez, AE Sosa, O Oliva, et al. New knowledge on insect-resistance management for transgenic Bt corn. *Biotechnol. Apl.* 2016; 33: 1511-1513. (\*corresponding author) ISSN 1027-2852

3.D Hernández, H Aragón, M González, G González, A González, A Tamayo, I Morán, P Téllez, E Sánchez, M Castillo, W Ferro, C Ayra-Pardo\*. Monoclonal antibody generation and characterization for Vip3Aa20 quantification in transgenic corn plants. *BioProcessing J.* 2016; 15: 30-43. (\*corresponding author) ISSN 1538-8786

4.L Rodríguez, I Morán, C Ayra-Pardo\*, et al. Functional identification of three new genes involved in resistance to *Bacillus thuringiensis* in *Plutella xylostella*. *Biotechnol. Apl.* 2016; 33: 3501-3503. (\*corresponding author) ISSN 1027-2852

5.I Morán, P Téllez, J Aguiar, D Hernández, L Rodríguez, M Ponce, R Valdés, C Ayra-Pardo\*. Maize genetic transformation procedure improvement using *Agrobacterium tumefaciens* and FR-28 Cuban synthetic corn variety as model. *J. Agronomy* 2014; 13(4): 169-178. (\*corresponding author) ISSN 18125379

6.D Hernández, L Rodríguez, R Valdés, I Morán, P Téllez, A Riberon, Y Ramos, L Gomez, C Ayra-Pardo\*. *Bacillus thuringiensis* Vip3Aa1 expression and purification from *E. coli* to be determined in seeds and leaves of genetically modified corn plants. *J. Agronomy* 2013; 12(4): 153-167. (\*corresponding author) ISSN 18125379

7.L Rodríguez, O Borrás, P Téllez, I Morán, M Ponce, Y Fernández, C Ayra-Pardo\*. Identification of a new trypsin from *Spodoptera frugiperda* involved in a defensive mechanism against the *Bacillus thuringiensis* Cry1Ca1 toxin. *Biotechnol. Apl.* 2011; 28(3): 176-179. (\*corresponding author) ISSN 1027-2852

8.C Ayra-Pardo\*, L Rodríguez, D Trujillo, et al. Broadening the target host range of the insecticidal Cry1Ac1 toxin from *Bacillus thuringiensis* by biotechnological means. *Biotechnol. Apl.* 2008; 25(3): 1-3. (\*corresponding author) ISSN 1027-2852

9.C Ayra-Pardo\*, L Rodríguez, D Trujillo, et al. The mutation R423S in the *Bacillus thuringiensis* hybrid toxin CryAAC increases in vitro

- oligomerisation and in vivo toxicity against *Spodoptera frugiperda*. *Biotechnol. Apl.* 2007; 24: 126-131. (\*corresponding author) ISSN 1027-2852
- 10.O Borrás, O Chacón, R Portieles, C Collazo, Y López, CJ Borroto, C Ayra-Pardo, et al. Identification of new disease resistance genes in tobacco via functional genomics. *Biotechnol. Apl.* 2007; 24(1): 76-78. ISSN 1027-2852
- 11.C Ayra-Pardo\*, L Rodríguez-Cabrera, Y Fernández-Parlá, P Téllez-Rodríguez. Increased activity of a hybrid Bt toxin against *Spodoptera frugiperda* larvae from a maize field in Cuba. *Biotechnol. Apl.* 2006; 23: 236-239. (\*corresponding author) ISSN 1027-2852
- 12.R Portieles, C Ayra-Pardo, O Borrás. Basic insight about plant defensins. *Biotechnol. Apl.* 2006; 23: 75-78. ISSN 1027-2852
- 13.M Pujol, CA Hernández, R Armas, Y Coll, JA Rubi, M Pérez, C Ayra-Pardo, et al. Inhibition of *Heliothis virescens* larva growth in transgenic tobacco plants expressing cowpea trypsin inhibitor. *Biotechnol. Apl.* 2005; 22: 127-130. ISSN 1027-2852
- 14.C Ayra-Pardo\*. Genetic Modified Organisms and Biodiversity: assessing the threats. *Biotechnol. Apl.* 2003; 20: 1-8. (\*corresponding author) ISSN 1027-2852
- 15.G Enriquez, A Arencibia, G Selman-Houseim, L Hernandez, K Tiel, A Fuentes, P Tellez, D Munoz, E Carmona, A Salazar, N Soto, L Trujillo, C Menendez, Y Coll, D Alfonso, M Pujol, C Ayra-Pardo. Sugarcane biotechnology and genetic engineering experience at CIGB. *Proc. Int. Soc. Sugar Cane Technol.* 2001; 24: 578-579.
- 16.M Saura, C Ayra-Pardo\*. Biochemical and Genetic characterization of thirteen Cuban *Bacillus thuringiensis* isolates. *J. Biochem. Mol. Biol. Biophys.* 2001; 5: 435-440. (\*corresponding author) ISSN 1025-8140
- 17.J González, RI Vázquez, DL Prieto, C Ayra-Pardo, et al. Genetic transformation of cabbage (*Brassica oleracea* var *capitata*) with *Bacillus thuringiensis* cry1Ab and cry1B genes. *Proc. Interamer. Soc. Trop. Hort.* 1998; 42: 367-373.
- 18.C Ayra-Pardo\*, C García, GA de la Riva. A single-step screening procedure for *Pichia pastoris* clones, by PCR. *Biotechnol. Apl.* 1998; 15: 175-177. (\*corresponding author) ISSN 1027-2852

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