

Part A. PERSONAL INFORMATION

CV date

September 2019

First and Family name	Avalos Cordero, Francisco Javier		
Social Security, Passport, ID number	05362299X	Age	61
Researcher numbers	Researcher ID	B-4218-2011	
	Orcid code	0000-0001-5484-2893	

A.1. Current position

Name of University/Institution	Universidad de Sevilla		
Department	Genética		
Address and Country	Avenida Reina Mercedes, 6 . 41012 Sevilla, Spain		
Phone number	+34 954557110	E-mail	avalos@us.es
Current position	Professor	From	15-01-2010
Espec. cód. UNESCO	2409, 2415, 2407		
Keywords	Secondary metabolism, carotenoids, Fusarium, regulation		

A.2. Education

PhD	University	Year
Graduate (Biology)	Universidad de Sevilla	1981
Ph. Doctor	Universidad de Sevilla	1987

A.3. JCR articles, h Index, thesis supervised...

Nº sexenios (recognized 6-years periods of research): 5 (last one 2012-2017)

Total number of supervised Theses: 11

Publications in 1st quarter (Q1): 36

Updated data in Google scholar:

Publications with citations: 82

Total nº citations: 3433

Index h: 38

Index i10: 73

PhD Theses supervised in the last 10 years

Obdulia Parra Rivero (2018) Nuevos mecanismos moleculares de regulación de la carotenogénesis en *Fusarium oxysporum*. Thesis dissertation: December 2018

Macarena Ruger Herreros. "Participación de la proteína CarS en la regulación de la carotenogénesis y el estrés en *Fusarium fujikuroi*". Thesis dissertation: July 2016.

Jorge García Martínez. "Respuestas fúngicas a señales ambientales: Funciones de las proteínas CarO, CutA y AcyA en *Fusarium fujikuroi*". Thesis dissertation: December 2014.

Marta Castrillo Jiménez. "Análisis funcional de fotoproteínas en *Fusarium*". Thesis dissertation: June 2014

Violeta Díaz Sánchez. "Enzimas fúngicas implicadas en la síntesis y modificación de compuestos de interés aplicado. Thesis dissertation: July 2013

Luis Roberto Rodríguez Ortiz. "Análisis genético y molecular del fenotipo *carS* en *Fusarium*". Thesis dissertation: March 2012

Alejandro Fernández Estrada "Análisis funcional de enzimas de la carotenogénesis y fotoproteínas en hongos". Thesis dissertation: April 2009.

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Bachelor of Biological Sciences in 1981. I did my doctoral thesis in the Department of Genetics of the University of Seville under the direction of Professor E. Cerdá Olmedo. The subject was "Modification of carotenoid biosynthesis in *Fusarium fujikuroi*", and its realization included stays of 3 months at the Universities of London, United Kingdom (Prof. P. Bramley,

Royal Holloway College) and Munich, Germany (Prof. W. Rau, Botanical Institute), funded by short-term-fellowships from Junta de Andalucía and DAAD, respectively. The results of the thesis gave rise to four publications and obtained the extraordinary doctorate award. Subsequently, I made a postdoctoral stay in 1988 at the University of Georgia, USA (Prof. NH Giles, Department of Genetics), supported by a postdoctoral NATO fellowship, where I worked on the regulation of the QA cluster in *Neurospora crassa*. In 1989 I returned to Prof. Cerdá-Olmedo's group at the University of Seville, obtaining a position as full professor in 1990, and participating as a member of their research projects until 2002. During that time I extended my international experience with nine-month stays at the MRC in Cambridge, England (laboratory of Dr. S. Brenner), three months at the University of Southwestern Louisiana, USA. (laboratory of Dr. T. Schmidhauser) and one month in laboratories in the Netherlands, Freiburg and Mexico, supported by different fellowship programs. I am the author of about eighty publications and one hundred communications to congresses and I have been director of 11 doctoral theses. During my research activity, I have worked mostly with fungi, with publications with *Neurospora crassa*, *Phycomyces blakesleeianus*, *Ustilago maydis*, and three *Fusarium* species: *F. verticillioides*, *F. oxysporum* and *F. fujikuroi*.

From 1999 I formed my own research group, initially overlapped with my participation in a project by Prof. Cerdá-Olmedo, and later independently, dedicated to the study of secondary metabolism of *Fusarium*. Since that year I have been a principal investigator of research projects of different calls to the present, including the coordination of a European project.

The main objective of my research group has been the investigation of the molecular mechanisms involved in the the synthesis of secondary metabolites in *Fusarium* fungi. A major achievement was the identification of all the genes of the biosynthetic pathway of carotenoids, and the metabolism of apocarotenoids. Among the most notable milestones of the group's work are the discovery for the first time of an enzyme for the synthesis of vitamin A (retinal) in fungi, the identification of a new family of carotenoid oxygenases that use torulene as a substrate, and more recently, the discoveries of the participation of a cryptochrome and a non-coding RNA in the regulation by light of the synthesis of carotenoids.

Part C. RELEVANT MERITS**C.1. Publications (including books): Selection of ten publications in last 10 years**

Ruger-Herreros M, Parra-Rivero O, Pardo-Medina J, Romero-Campero F, Limón MC, Avalos J (2019) Comparative transcriptomic analysis unveils interactions between the regulatory CarS protein and light response in *Fusarium*. BMC Genomics 20:67 1-19.

IF 3.730, position 40 of 161 in Microbiology and Applied Biotechnology 2016. Q1

Díaz-Sánchez V, Limón MC, Schaub P, Al-Babili S, Avalos, J (2016). A RALDH-like enzyme involved in *Fusarium verticillioides* development. Fungal Genetics and Biology 86: 20-32.

IF 3.072, position 8 of 30 in mycology 2016. Q2

Castrillo M, Avalos J (2015) The flavoproteins CryD and VvdA cooperate with the White Collar protein WcoA in the control of photocarotenogenesis in *Fusarium fujikuroi*. PLoS ONE. 10: e0119785

IF 3,057, Position 11 of 62 in multidisciplinary sciences 2015. Q1

García-Martínez J, Brunk M, Avalos J, Terpitz U (2015) The CarO rhodopsin of the fungus *Fusarium fujikuroi* is a light-driven proton pump that retards spore germination. *Scientific Reports*, 5: 7798, 1-11.

IF 5,228, position 7 of 62 in multidisciplinary sciences 2015. Q1

Castrillo M, García-Martínez J, Avalos J (2013) Light-dependent functions of the *Fusarium fujikuroi* CryD DASH cryptochrome in development and secondary metabolism. *Applied and Environmental Microbiology* 79: 2777-2788.

IF 3,952, position 24 of 119 in microbiology 2013. Q1

Díaz-Sánchez V, Estrada A, Limón MC, Al-Babili S, Avalos J (2013). The oxygenase CAO-1 of *Neurospora crassa* is a resveratrol cleavage enzyme. *Eukaryotic Cell*. 12: 1305-1314.

IF 3,179, position 36 of 119 in microbiology 2013. Q2

Rodríguez-Ortiz R, Michielse C, Rep M, Limón MC, Avalos J (2012). Genetic basis of carotenoid overproduction in *Fusarium oxysporum*. *Fungal Genetics and Biology* 49: 684-696.

IF 3,263, position 4 of 23 in mycology 2012. Q1

Díaz-Sánchez V, Estrada AF, Trautmann D, Al-Babili S, Avalos J (2011) The gene *carD* encodes the aldehyde dehydrogenase responsible for neurosporaxanthin biosynthesis in *Fusarium fujikuroi*. *FEBS Journal* 278: 3164-3176.

IF 3,790, position 89 of 290 in biochemistry and molecular biology 2011. Q2

Rodríguez-Ortiz R, Limón MC, Avalos J (2009) Regulation of carotenogenesis and secondary metabolism by nitrogen in wild-type *Fusarium fujikuroi* and carotenoid-overproducing mutants. *Applied and Environmental Microbiology* 75: 405-413.

IF 3,686, position 29 of 152 in biotechnology & applied microbiology 2010. Q1

Estrada AF, Avalos J (2009) Regulation and targeted mutation of *opsA*, coding for the NOP-1 opsin orthologue in *Fusarium fujikuroi*. *Journal of Molecular Biology* 387: 59–73.

IF 3,871, position 80 of 283 in biochemistry and molecular biology 2009. Q2

C.2. Research projects and grants

Funded by Ministerio de Economía y Competitividad or equivalents:

“Mecanismos moleculares responsables del control de la síntesis de xantofilas y apocarotenoides en *Fusarium*”. RTI2018-101902-B-I00. Ministerio de Innovación, Ciencia y Universidades. Proyectos I+D+I «Retos Investigación» del Programa Estatal de I+D+I orientada a los retos de la sociedad. From January 2019 to December 2021. IP: F. Javier Ávalos Cordero y M. Carmen Limón Mirón.

“Mecanismos moleculares de control de la síntesis de carotenoides en *Fusarium*”. BIO2015-69613-R. Ministerio de Economía y Competitividad, Plan Estatal 2013-2016. Retos - Proyectos I+D+i. From January 2016 to December 2018. IP: F. Javier Ávalos Cordero y M. Carmen Limón Mirón.

“Control de la síntesis de carotenoides en *Fusarium*: mecanismo de acción del sistema CarS y regulación por microARN”. BIO2012-39716. Financiado por Ministerio de Economía y Competitividad. From January 2013 to December 2015. IP: F. Javier Ávalos Cordero

“Síntesis y función de xantofilas, apocarotenoides y giberelinas en hongos”. BIO2009-11131. Ministerio de Ciencia e Innovación. From January 2010 to December 2012. IP: F. Javier Ávalos Cordero

“Regulación del metabolismo secundario en *Fusarium*: producción de giberelinas, carotenoides y policétidos”. BIO2006-01323. Ministerio de Educación y Ciencia. From October 2006 to September 2009. IP: F. Javier Ávalos Cordero.

Funded by Junta de Andalucía

“Producción de neurosporaxantina en hongos y análisis de su potencial biotecnológico como colorante natural beneficioso para la salud”. Proyecto de Excelencia. Junta de Andalucía. From July 2011 to June 2015. CTS-6638. IP: F. Javier Ávalos Cordero

“Producción de giberelinas y bikaverinas por el hongo *Fusarium fujikuroi*: desarrollo de nuevas estirpes y aplicaciones biotecnológicas”. P07-CVI-02813. Junta de Andalucía. Proyecto de investigación de Excelencia. Universidades de Sevilla y de Granada. Desde: 31 January 2008 to 30 January 2012. IP: F. Javier Avalos Cordero.

C.3. Contracts

Exploitation by the company BioflowSur (CIF B18805275, sede social en C/ Industria 9, Polígono Industrial El Florío, 18015 Granada) of the patent “Método de producción de giberelinas GA1 y GA3 mediante fermentaciones con estirpes silvestres del hongo *Gibberella fujikuroi*”. Authors: Oller-López JL, Cerdá-Olmedo E, Avalos J, Barrero AF; Oltra JE. Rights owned by Universidad de Sevilla, Registration date: 20/12/2002

C.4. Patents

No patents in the last 10 years

C.5. Memberships of scientific societies and networks

Member of the Spanish Society of Genetics

Member of the Spanish network of carotenoids - from microbes and plants to food and health (CaRed, BIO2015-71703-REDT)

Member of The COST (*European Cooperation in Science and Technology*) action Eurocaroten (European Network to Advance Carotenoid Research and Applications in Food and Health. <https://www.eurocaroten.eu/>).

C.6. Organización de congresos y reuniones científicas. Últimos 5 años (2010-2014).

Member of local and national committees of the 12th European Conference on Fungal Genetics (ECFG12), celebrated in Sevilla in March 2014.

Member of the organizing committee of the National Biotechnology Congress Nacional de Biotecnología, celebrated in Sevilla in September 2010.

C.7. Institutional responsibilities

Secretary, Departamento de Genética, Universidad de Sevilla. From January 2007 to March 2009

Director, Departamento de Genética, Universidad de Sevilla. From September 2009 to October 2013

Supervisor of radiactivity laboratory IRA-1974 from 1990 to present, licensed by Consejo de Seguridad Nuclear. Departamento de Genética, Universidad de Sevilla.

Coordinator of the Master of Molecular Genetics and Biotechnology, Universidad de Sevilla, during the term 2013-14.