



## CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

### Part A. PERSONAL INFORMATION

CV date	26/04/2024
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First name	José Luis		
Family name	Micol Molina		
Gender (*)	Man	Birth date (dd/mm/yyyy)	
ID number			
e-mail	jlmicol@umh.es	URL Web	<a href="http://genetics.edu.umh.es">genetics.edu.umh.es</a>
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-0396-1750		

(\*) Mandatory

#### A.1. Current position

Position	<i>Catedrático de Universidad</i>		
Initial date	19/6/2000		
Institution	Universidad Miguel Hernández de Elche (UMH)		
Department/Center	Instituto de Bioingeniería		
Country	España	Teleph. number	966658504
Key words	Arabidopsis, plant genetics, plant genomics, plant development		

#### A.2. Previous positions (research activity interruptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
1979-1985	<i>Profesor Ayudante, Universidad de Murcia</i>
1986-1989	<i>Becario Postdoctoral, Centro de Biología Molecular Severo Ochoa, CSIC (CBMSO); Plan de Biología Molecular y sus Aplicaciones de la Fundación Juan March.</i>
1989-1991	Research Fellow / Senior Research Fellow, California Institute of Technology (Caltech, Pasadena, USA); <i>Becas de perfeccionamiento para doctores del MEC; subprograma general de becas en el extranjero / Lucille P. Markey Charitable Trust fellowship.</i>
1991-1997	<i>Profesor Titular de Universidad</i> (Universidad de Alicante; UA)
1997-2000	<i>Profesor Titular de Universidad</i> (UMH)

#### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
<i>Licenciado en Ciencias Químicas</i>	Universidad de Murcia	1979
<i>Licenciado en Ciencias Biológicas</i>	Universidad Autónoma de Madrid	1983
<i>Doctor en Biología</i>	Universidad de Murcia	1985

See B and C3-C5 of this CVA for my dissemination, training and mentoring activities, and my distinctions and responsibilities.

### Part B. CV SUMMARY (max. 5000 characters, including spaces)

**I describe myself in a single word as a geneticist.** I am very proud and grateful that I have had a chance to obtain much of my background in Genetics with Prof. Francisco J. Murillo at the Universidad de Murcia (1980-85), and with Prof. [Antonio García-Bellido](#) at the CBMSO (Madrid; 1986-89), and in Molecular Biology with Prof. [Eric H. Davidson](#) at Caltech (Pasadena, California; 1989-91 and summers of 1992, 1993 and 2000). I also worked five weeks in the laboratory of Prof. [Marc Van Montagu](#), at the University of Gent (Belgium; 1991). Prof. Murillo was an EMBO member and a good microbial geneticist, retired in 2015. Prof. García-Bellido is the person with the most powerful mind that I have ever met, and perhaps the most awarded Spanish scientist alive, creator of the Spanish school of researchers in *Drosophila* developmental genetics; he retired in 2006. Prof. Davidson was a member of the National

Academy of Sciences of the USA, and a pioneer of the study of the mechanisms of regulation of eukaryotic gene expression, as well as of the dissection of gene regulatory networks; he passed away in 2015.

**Over the course of my career, I have used genetics to analyze the development of distinct and distant species ranging across kingdoms.** For my doctoral thesis, I studied the genetics of spore germination in the filamentous fungus *Phycomyces blakesleeanus*, and for my postdoctoral research, I examined the regulation of the *Ultrabithorax* homeotic gene of the insect *Drosophila melanogaster*, and the role of genes encoding members of the Transforming Growth Factor beta (TFG- $\beta$ ) superfamily in the embryonic development of the sea urchin *Strongylocentrotus purpuratus*. As a Principal Investigator (hereafter PI), I have studied the genetics of leaf organogenesis and salt tolerance in *Arabidopsis thaliana* (hereafter *Arabidopsis*). **I purposefully jumped from the study of one to another of these biological systems, aiming to obtain a perspective as wide as possible of genetics and development.**

**As a PI, I have taken experimental approaches both hypothesis- and curiosity-driven.** Indeed, I have based part of my work in brute-force and high-throughput genetic strategies: I am one of the pioneers in Spain in large-scale mutant screens through forward and reverse genetic approaches, such as quantitative trait loci (QTL) analyses and iterative analysis of linkage to molecular markers in *Arabidopsis*.

**One of the singularities of my career is that I devoted an important part of my time to develop methods, to generate resources and to implement non-profit platforms that were beneficial for the scientific community.** My group developed methods for long PCR, for the cloning of tagged genes, and for gene expression analysis by multiplex PCR and fragment analysis. We isolated circa one thousand *Arabidopsis* leaf mutants that were made freely available. We also developed tools (e.g., Easymap) for mutation identification and for the simulation and actual construction of mapping populations and their linkage analysis based on massive DNA sequencing (mapping-by-sequencing). Together with Prof. María Rosa Ponce, I developed a high-throughput gene mapping method that allowed us to keep open for 13 years a gene mapping service that helped tens of *Arabidopsis* PIs in the identification by mutation of about 200 genes, when positional cloning was a tough, time-consuming endeavor.

**Plant leaves capture sun light, reduce the level of CO<sub>2</sub> in our atmosphere, produce a significant part of the oxygen that we breath and are the direct or indirect source of almost all the food that we eat.** My group made pioneer causal analyses of leaf venation pattern formation and natural variation in leaf form. We identified and functionally characterized 56 *Arabidopsis* genes required for plant leaf development. We isolated 261 leaf mutants by means of forward genetics: 78 from public collections, 153 induced by EMS, 2 of natural origin, and 28 induced by fast-neutron bombardment. Complementation and linkage analyses of these mutants indicated that they represent 147 different genes required for leaf development. We also isolated 706 leaf mutants from a gene-indexed collection, and built a public database with the information obtained (PhenoLeaf).

**I see the *Arabidopsis* leaf as the model organ of a model plant.** Some of the genes that we identified and characterized specifically act in leaf organogenesis, yet others play roles in cellular processes shared by other plant organs, whose loss of function is easily visible and tractable in leaves: genes involved in the homeostasis of several amino acids, some of which seem to retain an ancient signaling role (*RE*, *RER1-RER6*, *VEN1*, *VEN3* and *VEN6*), of nucleotides (*VEN4*), and of hormones such as brassinosteroids (*UCU1* [*BIN2*] and *UCU2*), auxin (*HVE* [*CAND1*], *ICU6* [*AXR3*] and *RON3*), inositides (*RON1*) and cytokinins (*DEAL1* [*VCC*]-*DEAL4* and *EODL*); the transcriptional regulation of nuclear (*RON2* and *ICU4* [*ATHB-15*]) and organellar (*SCA3* and *RUG2*) genes; the epigenetic machinery (*ICU1* [*CLF*], *ELO1-ELO4*, *ANG4*, *ICU2*, and *ICU11* and *CP2-CP5*); the morphogenetic role of the ribosome as a regulator of mRNA translation (*ANG3*, *DEN5*, *DEN12*, *DEN29*, *DEN30*, *API2*, *API7*, *DEN3*, *DEN10* and *DEN15*); and chloroplast biogenesis and retrograde signaling (*ANU7*, *ANU10*, *ANU1*, *ANU4*, *ANU9*, *ANU12* and *ORBI*). My main current interest is the dissection through systems biology of the molecular mechanisms of the specification of size and symmetry of plant organs.

## **Part C. RELEVANT MERITS** (sorted by typology)

### **C.1. Publications**

**I authored 120 publications**, 105 of which with Web of Science (WOS) Journal Citation Reports (JCR) Impact Factor (IF); 91 of these were Q1 in at least one JCR category at the year of their publication, of which 57 also were D1. I am corresponding or single author in 77 (67 with IF) of my publications, and first author in 5 (4 with IF). My average IF is 5,800 (using the IFs of the year of publication of each paper). According to WOS (“All databases” option)/WOS (“WOS core collection” option)/Scopus/Google Scholar, my total number of citations is 7793/6783/7073/9853, with an annual average over the last 5 years of 471/430/437/587 citations; my h (Hirsch’s) index is 44/40/41/48. PubMed contains 109 of my publications. **My most productive year was 2018:** 1 *Mol Plant*, 2 *Plant*

*Cell*, 1 *New Phytol*, 2 *Plant Physiol*, 1 *J Exp Bot*, 1 *Front Plant Sci*, 1 *Plant Sci* and 1 *Plant Biotechnol*. My year with a higher number of citations was 2022: 520/452/496/622.

Since January 2014, I have published 38 papers with JCR IF: 1 *Trends Plant Sci*, 1 *Mol Plant*, 1 *Nucleic Acids Res*, 2 *Plant Cell*, 1 *Proc Natl Acad Sci USA*, 2 *New Phytol*, 2 *Plant Physiol*, 4 *Plant J*, 3 *J Exp Bot*, 1 *Development*, 1 *J Integr Plant Biol*, 6 *Front Plant Sci*, 1 *Front Microbiol*, 1 *Physiol Plantarum*, 1 *Plant Cell Physiol*, 1 *Ann Bot*, 4 *Sci Rep*, 2 *Plant Sci*, 1 *Planta*, 1 *Plant Direct* and 1 *Plant Biotechnol*. These papers are underlined in next paragraph.

My publications include: 1 *Nature* (Chini *et al.*, 2007), 2 *Trends Plant Sci* (Candela *et al.*, 2011; Navarro-Quiles *et al.*, 2024), 2 *Mol Plant* (Robles *et al.*, 2012b; Nadi *et al.*, 2018), 2 *Nucleic Acids Res* (Ponce and Micol, 1992a; Wilson-Sánchez *et al.*, 2019), 1 *Trends Genet* (Pérez-Pérez *et al.*, 2009a), 1 *Mol Biol Evol* (Ponce *et al.*, 1999a), 5 *Plant Cell* (González-Guzmán *et al.*, 2002; Fleury *et al.*, 2007; Barrero *et al.*, 2007; Derrien *et al.*, 2018; Mateo-Bonmatí *et al.*, 2018), 3 *Proc Natl Acad Sci USA* (Micol and García-Bellido, 1988; Nelissen *et al.*, 2005; Karampelias *et al.*, 2016), 2 *New Phytol* (Wilson-Sánchez *et al.*, 2018a; Ponce and Micol, 2020), 1 *Current Opin Plant Biol* (Micol, 2009), 11 *Plant Physiol* (Quesada *et al.*, 2002; Micol and Hake, 2003; Pérez-Pérez *et al.*, 2004; Ochando *et al.*, 2006; Hricová *et al.*, 2006; Massonet *et al.*, 2010; Robles *et al.*, 2010; Esteve-Bruna *et al.*, 2013; Pérez-Pérez *et al.*, 2013; Bustillo-Avendaño *et al.*, 2018; Yoshida *et al.*, 2018), 3 *Plant Cell Environ* (Barrero *et al.*, 2006; 2008; Pérez-Pérez *et al.*, 2011), 9 *Plant J* (Ponce *et al.*, 1998; Fujikura *et al.*, 2009; Mollá-Morales *et al.*, 2011; Horiguchi *et al.*, 2011; Quesada *et al.*, 2011; Coego *et al.*, 2014; Wilson-Sánchez *et al.*, 2014; Jover-Gil *et al.*, 2014; Muñoz-Nortes *et al.*, 2017a), 6 *J Exp Bot* (Cnops *et al.*, 2004; Barrero *et al.*, 2005; González-Bayón *et al.*, 2006; Muñoz-Nortes *et al.*, 2014; Casanova-Sáez *et al.*, 2014a; Pěňčík *et al.*, 2018), 2 *Development* (Alonso-Peral *et al.*, 2006; Gallemí *et al.*, 2016), 3 *Bioinformatics* (Micol, 1987; 1989; Ponce and Micol, 1992b), 1 *J Integr Plant Biol* (Candela *et al.*, 2015), 6 *Front Plant Sci* (Navarro-Quiles *et al.*, 2018; Ibáñez *et al.*, 2019; Lup *et al.*, 2021; Navarro-Quiles *et al.*, 2022; Lup *et al.*, 2023; Nadi *et al.*, 2023), 1 *Front Microbiol* (Martínez-Pérez *et al.*, 2021), 2 *Physiol Plantarum* (Van Minnebruggen *et al.*, 2010; Robles *et al.*, 2015), 3 *Plant Cell Physiol* (Pérez-Pérez *et al.*, 2010b; Jover-Gil *et al.*, 2012; Micol-Ponce *et al.*, 2015), 7 *Genetics* (González-Gaitán *et al.*, 1990; Castelli-Gair *et al.*, 1990; Micol *et al.*, 1990; Berná *et al.*, 1999; Quesada *et al.*, 2000; Serrano-Cartagena *et al.*, 2000; Pérez-Pérez *et al.*, 2002a), 1 *Ann Bot* (Fernández-Nohales *et al.*, 2014), 4 *Sci Rep* (Casanova-Sáez *et al.*, 2014b; Mateo-Bonmatí *et al.*, 2015; Muñoz-Nortes *et al.*, 2017b; 2017c), 3 *Plant Sci* (Horiguchi *et al.*, 2012; Robles *et al.*, 2018; Sarmiento-Mañús *et al.*, 2023), 2 *Current Genet* (Micol and Murillo, 1986a; 1986b), 2 *Planta* (Ponce *et al.*, 2000; Mateo-Bonmatí *et al.*, 2014), 1 *FEBS Lett* (Quesada *et al.*, 1999), 2 *Dev Biol* (Candela *et al.*, 1999; Pérez-Pérez *et al.*, 2002b), 5 *Mol Genet Genomics* (Castelli-Gair *et al.*, 1992; Martínez-Laborda *et al.*, 1996; Ponce *et al.*, 1999b; Serrano-Cartagena *et al.*, 1999; Robles and Micol, 2001), 5 *PLOS ONE* (Rubio-Díaz *et al.*, 2012; Robles *et al.*, 2012a; Quesada *et al.*, 2012; Ferrández-Ayela *et al.*, 2013a; 2013b), 1 *J Plant Res* (Pérez-Pérez *et al.*, 2010b), 1 *Evol Dev* (Juenger *et al.*, 2005), 1 *Plant Direct* (Parry *et al.*, 2020), 2 *Int J Dev Biol* (Micol and Blázquez, 2005; Pérez-Pérez *et al.*, 2009b) and 1 *Plant Biotechnol* (Luong *et al.*, 2018). I also posted 7 preprints at *bioRxiv*, 5 of which have already been published by conventional journals, and published 8 articles without IF and 6 book chapters (e.g., Bensmihen *et al.*, 2008; Ponce *et al.*, 2006; 2007).

## C.2. Congresses, outreach and research transfer

I made 414 (147 since January 2014) contributions to congresses: 157 international and 257 national; 20 invited talks, 46 oral communications, and 348 posters. I was president of the organizing committee of 2 national and 3 international congresses and 4 international meetings, member of the organizing committee of 1 national and 3 international congresses, and chaired 9 national and 10 international congress sessions.

I have been organizer or contributed to the organization of outreach activities at my institute, and sometimes at the internet: @jlmicol and scoop.it. I wrote some public domain books as teaching aid materials for my undergraduate students.

Although I do not have any patents myself, my publications have been cited 69 times in 66 patents, according to the WOS database.

## C.3. Research projects

Since 1991, I have been PI of 76 projects and subprojects: 3 international, 27 national, 31 regional and 15 local; 26 three/four-year research grants, 20 equipment grants, 8 complementary actions, 8 grants for personnel hiring, and 14 aids for the organization of congresses and meetings. I was also head of the host laboratory of 2 European Commission Marie Curie International Reintegration Grants.



**I was PI of 25 projects that were fully or partially developed along the last 10 years.** I list here those that were funded with more than 40.000 € by the European Commission (EC), the Government of Spain (MEC, MinECo, MCIU and MCI), the Generalitat Valenciana (GV) or the UMH. These grants were provided for general research purposes (#1, 4, 5, 9, 10 and 15), equipment (#2, 3, 8 and 11-13) or personnel hiring (#6, 7, 14 and 16):

**1.** Clonación posicional y caracterización fenotípica de mutantes reticulados en *Arabidopsis thaliana* (2012-2015; GV [GRISOLIA/2012/033](#)). **2.** Equipamiento para la primera fase de una unidad de fenómica de plantas (2014; UMH). **3.** Equipamiento para la fragmentación e inmunoprecipitación automatizada de cromatina / Sistema para aféresis vegetal (2015; UMH). **4.** Identificación y manipulación de genes de rendimiento intrínseco en *Arabidopsis* (2014-17; GV [PROMETEOII/2014/006](#)). **5.** Novel chromatin modifiers in *Arabidopsis* (2015-17; MinECo [BIO2014-53063-P](#)). **6.** Caracterización de CP2, un nuevo componente de la maquinaria epigenética de *Arabidopsis* (2016-20; GV [GRISOLIAP/2016/131](#)). **7.** Formación en técnicas relacionadas con la secuenciación masiva y la cartografía mediante secuenciación (2018-20; GV [GJIDI/2018/A/214](#)). **8.** Servicio de cartografía génica mediante secuenciación masiva (*mapping-by-sequencing*) (2018-20; MCIU [EQC2018-005181-P](#)). **9.** Nuevos componentes de la maquinaria epigenética de las plantas (2019-22; MCIU [PGC2018-093445-B-I00](#)). **10.** Claves moleculares del crecimiento de las plantas: un abordaje multidisciplinar (2019-22; GV [PROMETEO/2019/117](#)). **11.** Unidad de fenómica de plantas (2019-21; MCIU [EQC2019-006592-P](#)). **12.** Plataforma robotizada para fenómica de plantas (2020-21; GV [IDIFEDER/2020/019](#)). **13.** Nanoscopio de agotamiento de emisiones estimuladas para histología funcional *in vivo* (2021-22; GV [IDIFEDER/2021/033](#)). **14.** Ayudas destinadas a la financiación del “Programa Investigo” (2022-24; GV [INVEST/2022/509](#)). **15.** 2023-26; Programa PROMETEO; GV [CIPROM/2022/2](#)). **16.** Ayudas destinadas a la financiación del “Programa Investigo” (2023-25; GV [INVEST/2023/534](#)).

#### C.4. Distinctions and responsibilities in scientific societies and academia

I was included in the 2022 and 2023 updates of the **World’s Top 2% Scientists list** ([Ioannidis, 2022](#); [2023](#)).

**I was President of the Sociedad Española de Genética** (SEG; 2018-2023), of which I also was Vice president (2002-05) and webmaster (1998-2006). I was member of the board of directors of the SEG (1998-2001) and of the *Sociedad Española de Biología del Desarrollo* (SEBD; 2001-11). The UA and UMH granted me **6 quinquenios**. The *Comisión Nacional de Evaluación de la Actividad Investigadora* (CNEAI) granted me **7 sexenios**: 6 of *investigación* and 1 of *transferencia*. **I was awarded the Premio Nacional de Genética (2013) by the SEG.** I represented Spain at the *Multinational Arabidopsis Steering Committee* (2014-21). I was member of the *Comité Asesor 3: Biología Molecular y Celular* of the CNEAI (2018).

I was honored by the *Consejo Social* of the UMH as both **best researcher (2010)** and **best teacher (2012)** of the UMH. I also received the Distinguished Teacher Diploma (2001, 2002, 2003 and 2006), the Teaching Talent Award (2016, 2021 and 2023) and the Excellence in Research Award (2022) of the UMH. I am member of the *Consejo de Gobierno* (2002-...) and *Director del Departamento de Biología Aplicada* (2000-...) of the UMH.

#### C.5. Leadership, training and mentoring capabilities

**I founded the group of Genetics of the UA**, which I joined in **1991** as *Profesor Titular de Universidad*, and the **group of Genetics of the UMH**, which I joined in **1997**, at the time of its creation. I was co-founder of the *Instituto de Bioingeniería* of the UMH.

I supervised 128 **undergraduate students** (summer two-month, full-time internships in my laboratory) and 56 **end of study projects**: 9 Advanced Studies Diploma works, 15 Master’s Theses, and 8 End of Career and 24 End of Degree Assignments. I also supervised 29 graduate students (6 ongoing and 23 already presented **doctoral theses**, 7 of which obtained Extraordinary Doctorate Award; 2 of my graduate students halted their theses), 16 postdocs (10 of these had already been graduate students of mine), and 15 laboratory technicians.

**My former graduate students and postdocs reached the following professional categories:** 3 *Catedráticos de Universidad*, 7 *Profesores Titulares de Universidad*, 1 *Profesora Contratada Doctora*, 8 high school teachers (7 in Spain and 1 in Tunisia), 6 researchers in private companies (4 in Spain and 2 in the United Kingdom), 1 Senior Scientist (Slovakia), 1 Group Leader (Australia), 1 Lab Manager (Austria) and 5 postdocs (2 in Spain, and 1 in Sweden, Australia and Germany). **This list includes 16 women and 17 men. Twelve of my former associates are now PIs.**