



## CURRICULUM VITAE (CVA)

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

<b>CV date</b>		10/01/2022	
<b>Part A. PERSONAL INFORMATION</b>			
First name	Juan		
Family name	Nogales Enrique		
Gender (*)	Hombre	Birth date (dd/mm/yyyy)	06-06-1978
Social Security, Passport, ID number	53261087X		
e-mail	j.nogales@csic.es	URL Web	
Open Research and Contributor ID (ORCID)(*)	0000-0002-4961-0833		

(\*) Mandatory

### A.1. Current position

Position	Tenured Scientific		
Initial date	10/03/2017		
Institution	Agencia Estatal CSIC		
Department/Center	<a href="#">Systems Biology/Centro Nacional de Biotecnología</a>		
Country	Spain	Teleph. number	
Key words	Systems Biology, Biodegradation, Metabolic Modeling, Environmental Biology, Microbial communities, Synthetic Biology		

### A.2. Previous positions (research activity interruptions, art. 45.2.c)

Period	Position/Institution/Country/Interruption cause
2021	Tenured Scientific/CNB-CSIC/Spain/ birth of a child
2018	Tenured Scientific/CNB-CSIC/Spain/ birth of a child
2015-2017	Junior IP/CIB-CSIC/Spain
2013-2015	Post-Doct/CIB-CSIC/Spain
2011-2013	Post Doct/University of California at San Diego/USA
2010-2011	Post Doct/University of Iceland/Iceland

### A.3. Education

PhD	University/Country	Year
Molecular Biology and Biochemistry	University Complutense of Madrid	2009

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

My research career spans multidisciplinary approaches whose common goal is the understanding of microbial living systems, from the molecular characterization of their fundamental components (e.g., gene, proteins, metabolites) and their interrelationships, to their systems properties (e.g., phenotype, metabolic robustness/versatility).

My predoctoral stage cover my Thesis Degree focused on the molecular characterization of the malate synthase of *C. rehinhardtii* at Univ. Extremadura (2003), "Premio extraordinario de licenciatura" and my PhD, performed at CIB-CSIC and obtained from the Univ. Complutense of Madrid (2003-2009). During my **PhD** I was involved in several research projects covering fundamentals and biotechnological aspect of aromatic acid degradation. After my PhD I joining to the group of Prof. Bernhard Palsson, first at University

of Iceland (2010) and after at University of California, San Diego (USA, 2011-12). My post-doctoral stage under the supervision of Prof. Palsson provided me with a deep knowledge on the basic and applied foundations of metabolic modeling. During my postdoc I published five research papers in high impact journals such as **Nature Biotechnology** and **PNAS**, and a review paper in **Current Opinion in Biology**. I returned to CIB-CSIC joining to Environmental Microbiology group headed by Dr. Eduardo Díaz (2013-2017). During this stage I developed at CIB my own platform for genome-scale reconstruction and analysis, germ of current **IBISBA1.0** project. Noteworthy during these years I was awarded as PI with a JIN project in its first call (**BIO2014-59528-JIN**) and a **FETOPEN project (686585)**. These projects boosting my career by helping me create my own line of research focus on the use of metabolic robustness both at cellular and supracellular level as novel biotechnological tool.

**Since mid-2017 I'm the head of Systems Biotechnology Group** at CNB-CSIC. My broad background allows me to address biological questions from a multidisciplinary and holistic point of view, while positioning me as one of the few research profiles that currently are able to apply such approaches, not only in Spain, but also worldwide. Currently I'm PI of several research projects, including four H2020 research projects being coordinator of **SynBio4Flav**. In addition, I'm part of CSIC IBISBA core and funder member of **SusPlast** Platform, an interdisciplinary platform for Sustainable Plastic towards a Circular Economy. I'm **co-founder of Darwin Bioprospecting Excellence**, a start-up focus on microbial bioprospection and metagenomics analysis.

Overall, I have: **sexenios**, 2, last 31/12/2015. **Quinquenios**, 2, last 31/12/2016: **Publications** peer-review ISI 55, **Research articles** 36 (Q1 (33), First author (9), Corresponding author (10)), **Reviews** 7 (Q1 (7) Corresponding author (3)), **Book chapters** 12. **Total Cites**: 2280 (Google); Average cites: 41,3 (Google); **H Index**: 22 (Google). **PhD Thesis**: 3 + (5 in progress); **Mc Thesis**: 10. **Teaching**: Recurrent collaborator of 5 Official Masters, currently coordinator of CNB activities in the Master on Integrative Synthetic Biology (CSIC-UIMP). **Research projects**: 16 in the last 10 years, 13 international, **6 as IP, 1 H2020 as Consortium Coordinator and 4 nationals as PI. Private Contracts**: 3 (ERCROS, BIOPOLYS, MOA FOOD). **Total funds recruited as PI** in the last 5 years: 4.050.874,92 (International), 408.160 (National) and 260.796 (Private). **Exploitation**: Two Patents extended to PCT; co-founder of the start-up Darwin Bioprospecting; Responsible of IBISBA M<sup>2</sup>A<sup>2</sup>S<sup>2</sup>, a modeling and metabolic engineering service belonging CSIC catalogue.

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

### C.1. Publications (\*corresponding author)

1. Manoli M.T., \***Nogales J.** and \*Prieto A. **2022**. Synthetic control of metabolic states in *Pseudomonas putida* by tuning polyhydroxyalkanoate cycle. **Mbio** in press.
2. Gudmundsson S. & \***Nogales J.** **2021** Recent advanced in model-assisted metabolic engineering. **Curr Opin Syst Biol.** Vol 28, December 2021, 100392
3. Torres-Bacete J., García JL and \***Nogales J.** **2021**. A portable library of phosphate-depletion based synthetic promoters for customizable and automata control of gene expression in bacteria. **Microb Biotechnol.** Nov;14(6):2643-2658
4. Goris T., Pérez-Valero A., Martínez I., [...] \***Nogales, J.** **2021**. Repositioning microbial biotechnology against COVID-19: the case of microbial production of flavonoids. **Microb Biotechnol.** Jan;14(1):94-110
5. \***Nogales, J** et al. **2020** High-quality genome-scale metabolic modeling of *Pseudomonas putida* highlights its broad metabolic capabilities. **Environ Microbiol** (1):255-269

6. Lieven C, Beber M, Olivier BG [...] Sonnenschein N. **(47/69) 2020** MEMOTE for standardized genome-scale metabolic model testing. **Nat Biotechnol.** 38 (3), 272-276
7. García-Jimenez, B; García, J.L; \***Nogales, J.** 2018. FLYCOP: metabolic modeling-based analysis and engineering microbial communities **Bioinformatics.** 1;34(17): i954-i963
8. Gudmundsson, S and \***Nogales J.** 2015 Cyanobacteria as photosynthetic biocatalysts: a systems biology perspective **Mol Biosyst.** 11(1):60-70.
9. †Monk, J; †**Nogales, J;** and Palsson, BO. 2014. Optimizing genome-scale network reconstruction. **Nat Biotechnol.**;32(5):447-52. †**Equal contribution.**
10. **Nogales J,** Gudmundsson S, Knight EM, Palsson BO, Thiele I. 2012. Detailing the optimality of photosynthesis in cyanobacteria through systems biology analysis **PNAS.** 109(7):2678-83.

## C.2. Congress

68 participations in congress and workshops (19 keynoted and/or plenary talks in the last 5 years).

### **Key contributions related with SyCoSys:**

1. **Juan Nogales.** Updating the DBTL cycle for standardized synthesis of complex compounds using synthetic microbial consortia. **Plenary talk.** XIX Congreso Nacional de Biotecnología y Bioingeniería. Online Mexico DF, **29/09/2021.**
2. **Juan Nogales.** Providing complex biological outputs by engineering division of labor in bacteria. **Invited Keynote.** Congress ISME Latino Americano. Online Bogotá, **29/07/2021.**
3. Igor Martínez & **Juan Nogales.** Genetic engineering of *Synechococcus elongatus* to produce sucrose from CO<sub>2</sub>. A path towards third-generation biorrefineries. **Invited Keynote.** International on-line Workshop Programme "Genetic modification tools in cyanobacteria and microalgae". Online Madrid, **29/10/2020**
4. **Juan Nogales.** Cost-effective production of Flavonoids: the UE H2020 Project Synbio4Flav. **Invited Keynote.** Online MixUp Workshop on systems and synthetic biology tools. **06/11/2020**
5. **Juan Nogales.** Bridging Biology with Architecture. **Plenary talk.** Living and non-living Architecture 1st Int. Seminar. Sevilla, **14/03/2019.**
6. Beatriz García-Jiménez and **Juan Nogales.** Flycop: metabolic modeling-based analysis and engineering microbial communities. **Oral communication.** ECCB2018 17TH European Conference on Computational Biology. Athens, **12/09/2018.**
7. **Juan Nogales.** Metabolic optimality: biological objectives beyond fast growth. **Invited Keynote.** University of Trento PhD Colloquium 2017. Trento, **12/10/2017.**
8. **Juan Nogales.** *Pseudomonas putida* metabolic network: Polyhydroxyalkanoates metabolism as guarantee of optimal metabolic fitness. **Invited Keynote.** International Symposium on Biopolymers 2016 (ISBP2016). Madrid, **27/09/2016.**
9. **Juan Nogales.** Constraint-based metabolic modeling: applications on microalgae biotechnology and beyond. **Invited Keynote.**ACHEMA 2015. Frankfurt am Main, **17/06/2015.**
10. **Juan Nogales.** Genome-scale metabolic reconstruction and analysis of Cyanobacteria: A systems biology approach towards full exploitation of their biotechnological applications. **Invited Keynote.** Workshop on Sustainable Chemicals from Microalgae: Encompassing Biocrude through to Fine Chemicals. London, **19/11/2013.**

## C.3. Research projects

1. **101000733,** Harnessing the power of nature through productive microbial consortia in biotechnology: Measure, Model, Master (**PROMICOM**). EU H2020-FNR-2020-2. **Co-PI CSIC Juan Nogales** 01/06/2021-31/05/2025. Total funding 5,999.712,50€. CSIC funding: 974.375€

2. **101027389**, Metabolic heterogeneity of monoclonal bacterial cells as a biotechnological tool to produce natural compounds (**MENTHOL**). EU H2020-MSCA-IF. **Coordinator and Co-PI CSIC Juan Nogales** 01/06/2021-31/05/2023. Total funding 160.932,48€
3. **PID2019-108458RB-I00**. System analysis and biotechnological applications of bacterial metabolic robustness at supracellular level (**RobExplode**). MCIU. **PI Juan Nogales** (CNB-CSIC). 01/06/2020-31/5/2023. Total fundings: 157.300,00 €
4. **870294**, MIXed plastics biodegradation and UPcycling using microbial communities (**MIXUP**). EU H2020-NMBP-BIO-CN-2019. **Co-PI CSIC Juan Nogales** (CNB-CSIC). 01/2020-12/2024. Total funding: 7,365,335.00€, CSIC funding: 780,838.75€
5. **814650**, Synthetic microbial consortia-based platform for flavonoids production using synthetic biology (**SynBio4Flav**). EU H2020-NMBP/0500. **Coordinator and CSIC PI Juan Nogales** (CNB-CSIC). 01/03/2019-28/02/2023. Total funding: 7.371.051,25€, CNB funding: 1.704.071,25€
6. **730976**, Industrial Biotechnology Innovation and Synthetic Biology Accelerator (**IBISBA1.0**). EU INFRAIA-02-2017. **Co-PI CSIC Juan Nogales** (CNB-CSIC). 12/2017-11/2021. Total funding: 5.000.157,97 €, CSIC funding: 270.100€
7. **686585**, Living Architecture (**LIAR**). EU FETOPEN-RIA-2014-2015 - FET-Open research projects. **CSIC PI Juan Nogales** (CIB-CSIC and CNB-CSIC). 01/04/2016-31/06/2019. Total funding: 3.216.555€, CSIC funding: 975.151,25€
8. **BIO2014-59528-JIN**, System level analysis of the metabolic robustness in bacteria (**RobDcode**) MINECO. **PI Juan Nogales** (CIB-CSIC and CNB-CSIC), **PI**. 16/10/2015-14/10/2018. 200.860€
9. **633962**, From Plastic waste to Plastic value using *Pseudomonas putida* Synthetic Biology (**P4SB**). EU H2020-LEIT-BIO-2014-1. **Juan Nogales** (CIB-CSIC and CNB-CSIC), **CSIC Team member**. 01/04/2015-31/03/2019. Total funding: 7.056.968,75€, CSIC funding: 561.875€
10. **S2013/ABI2783**, (**INSPIRA1-CM**). Aplicaciones industriales de la espirulina (**INSPIRA-1**). CAM. **Juan Nogales** (CIB-CSIC), **CSIC Team member**. 01/10/2014-30/09/2018. Total funding: 749.415€, CSIC funding: 160.000€

#### **C.4. Contracts, technological or transfer merits**

##### **Contracts**

1. Construcción de una herramienta computacional para la optimización de consorcios microbianos con propiedades nutricionales incrementadas-ALBATROS. **MOA Biotech S.L.** 07/2020-01/2022. **PI J. Nogales**. Fundings 26.692,06 €
2. Diseño e implementación de un bioproceso para la producción de polímeros de base biológica. **ERCROS** 11/2020-11/2021. **Co-PI J. Nogales & MA Prieto**. Fundings 194.174,57€
3. Systems analysis and in silico design of methionine-producing *Corynebacterium striatum* strains with polyurethane hydrolysates. **BIOPOLIS S.L.** 04/2018-01/2019. **PI J. Nogales** Funding: 39.930€

##### **Patents**

1. Recombinant *Pseudomonas putida* strains for the production of Polyhydroxyalkanoate. Manoli MT, Prieto MA and **Nogales J** (2020). **WO 2021/089636 A1**
2. A procedure for continuous, growth-coupled and saline stress independent production of sucrose from CO<sub>2</sub> using recombinant cyanobacteria strains. Martínez I, García JL, **Nogales J** (2020). **WO 2021/148693 A1**.

**Co-founder of Darwin Bioprospecting Excellence**, a start-up focus on microbial bioprospection and metagenomics analysis.