



CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION		CV date	09/02/2026
First name	Marc		
Family name	Garcia Borràs		
Gender (*)	Male	Birth date (dd/mm/yyyy)	07/10/1988
Social Security, Passport, ID number	171021953118	PAJ159200	41525862Y
e-mail	marc.garcia@udg.edu	http://iqcc.udg.edu/portfolio/marc-garcia-borras-2/	
Open Research and Contributor ID (ORCID)	0000-0001-9458-1114		

A.1. Current position

Position	Ramón y Cajal Fellow (<i>starting March 1st 2026</i> : ICREA Research Professor)		
Initial date	01-02-2022		
Institution	Universitat de Girona (UdG)		
Departament/Center	Institut de Química Computacional i Catàlisi (IQCC), Dept. de Química		
Country	Spain	Teleph. number	+34 658641967
Key words	Biocatalysis, enzyme design, multiscale modeling, reaction mechanisms, molecular dynamics, computational chemistry		

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

1/02/2020 – 31/01/2022	Beatriu de Pinós Research Fellow, IQCC, UdG (Spain)
1/02/2019 – 31/01/2020	Juan de la Cierva – Incorporación Fellow, IQCC, UdG (Spain)
1/01/2016 – 31/01/2019	Postdoc at Prof. Kendall N. Houk group. Department of Chemistry and Biochemistry, University of California, Los Angeles (UCLA), USA.
1/01/2012 – 31/12/2015	PhD. student, Department of Chemistry, UdG (Spain). FPU PhD fellowship
1/09/2010 – 31/04/2011	Teacher Assistant, Department of Chemistry, UdG (Spain)

A.3. Education

Degree in Chemistry (Licenciatura en Química)	Universitat de Girona (Spain)	2010
Master in Computational and Theoretical Chemistry	Universitat Rovira i Virgili (Spain)	2011
PhD in Chemistry (Doctorado en Ciencias Químicas)	Universitat de Girona (Spain)	2015

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

Dr. Garcia-Borràs (b. 1988) is a **Ramón y Cajal** Researcher at the IQCC (UdG) and will become an **ICREA Research Professor** in Feb.-2026. He got his BSc in Chemistry (2006-2010) from the University of Girona, obtaining the Extraordinary BSc Degree Award 2010. He coursed the Master in Theoretical and Computational Chemistry coordinated by Universitat Rovira i Virgili (2020-2011) being awarded the Extraordinary Master Award. In Sept.-2011 he started his PhD in Chemistry (2011-2015) under the supervision of Prof. Miquel Solà and Dr. Josep M. Luis at the IQCC-UdG, supported by a **FPU PhD fellowship**, obtaining the 2015 Extraordinary PhD Thesis Award. He visited the groups of Prof. K. N. Houk (UCLA, USA, 3 months in 2014) and Prof. W. Thiel (Max Planck Institute, Germany, 2 months in 2015). Upon graduation, he did a short postdoc (6 months) in the group of Dr. S. Osuna at UdG, where he worked on the development of computational tools for characterizing the conformational heterogeneity of laboratory evolved enzymes. In Jan.-2016, Marc joined the group of **Prof. K. N. Houk** in the Chemistry and Biochemistry Department at the **University of California, Los Angeles (UCLA)**, a Postdoctoral Research associate and after obtaining a prestigious **Ramón Areces Postdoctoral Fellowship** (Oct.-2016 – Sept.-2018, 2-years grant) as a Postdoctoral Fellow associate, with a project entitled “*Multiscale Modelling Strategies for designing Functional Redox (Metallo)enzymes*” (PI: Garcia-Borràs). He spent a total of **3 years and one month** as a **Postdoc in the Houk lab**, where he was in charge of the Enzyme Design research line of the group. During that period, Marc worked on the application of multiscale computational tools to understand important (bio-)catalytic processes. At UCLA, he was **awarded** the “2018 UCLA Department of Chemistry and Biochemistry Postdoctoral Research Award”. In Feb. 2019 Marc moved back to Spain as a recipient of a **JdC-Incorporación Fellowship**, that allowed him to start his independent career as a junior researcher at the IQCC (UdG)

working on the computational modelling of biocatalytic processes. In Nov-2019, he spent 1 month visiting the group of Prof. S. Flitsch (U. Manchester) to carry out wet lab experimental enzymology work funded by his JdC grant, expanding his skills in experimental protein engineering and biocatalysis. In Feb.-2020 he was awarded a **MSCA-H2020-COFUND *Beatriu the Pinós*** project (3 year contract + associated budget), to continue supporting his work as junior researcher at the IQCC. In July-2020 he was awarded a **MICINN National plan project** (PID2019-111300GA-I00, 2020-2023) as **PI**, supporting **his independent research program**, which aims to develop new **computationally-guided protocols for rational enzyme design** based on the computational characterization of biocatalytic reactive intermediates, and applying them to **engineer new and more efficient biocatalysts** expanding enzymatic catalytic towards new unprecedented applications in chemical synthesis, and also in cell and metabolic engineering. Dr. Garcia-Borràs collaborates with **world-leading research groups** in the **biocatalysis and protein engineering** fields (see publications) that complement his **multidisciplinary approach**. In Nov.-2020 he was appointed as a senior **independent PI** at the IQCC. In 2021 Marc was awarded a **Ramón y Cajal (RyC)** to become assistant Prof. at the UdG (start: Feb.-2022), which allowed him to **consolidate his independent research program** on the computational modelling and design of new enzymatic processes. In 2022, he was awarded a coordinated **TED project** (TED2021-130173B-C42) as co-PI, and in 2023 a **MICINN National plan** research project PID2022-141676NB-I00, 2023-2026 as co-PI. Recently, Dr. Garcia-Borràs as PI has been awarded an **ERC Consolidator Grant (BioReInt ERC-2025-CoG, 2M€)**. He has been **PI of several computational projects** (in 2019, 2020, 2021, 2024, 2025) at the **BSC-RES** that provide the necessary computational resources to carry out the research in his Team. Dr. Garcia-Borràs has published **96** papers in international scientific, **77** in the 2016-2025 period after obtention of the PhD. He has supervised several undergraduate students, and has supervised **3 PhD Thesis** and **two Master's Thesis** at IQCC. He is **currently supervising 6 PhD students** working on different biocatalysis-related projects, and has received **numerous prestigious awards** (see below). Marc regularly participates in **outreach activities** and acts as reviewer for the Spanish AEI agency, and has been part of evaluation committee panels for the AEI as an expert (Chemistry panel).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications. Dr. Garcia-Borràs has published **97** papers in international scientific journals (+2 book chapters), **78** in the 2016-2025 period after obtention of the PhD, accumulating a total of **3710 citations**, with an **H index of 37** (Scopus, 4 Feb. 2026). Publication list includes contributions in recognized general scientific and chemistry journals, including: 2 *Science* (1 as corresponding author), 4 *Nat. Chem.* (2 as corresponding author), 6 *Nat. Catal.* (4 as corresponding author, among them 1 *News&Views*), 2 *Nat. Synth.* (as corresponding author), 3 *PNAS*, 3 *Nat. Commun.*, 1 *Chem.*, 3 *Nat. Chem. Biol.*, 1 *ACS Cent. Sci.*, 17 *JACS*, 8 *ACIE*, 8 *ACS Catal.*, 1 *Chem. Soc. Rev.*, 7 *Chem. Commun.*, among others. His profile has been recently highlighted in ACIE: "*Introducing... Marc Garcia-Borràs*", *ACIE*, **2023**, e202308868. <https://doi.org/10.1002/anie.202308868>). Full publication list: <https://orcid.org/0000-0001-9458-1114>

Selection of 10 publications relevant to biocatalysis (2021-2025 period):

(*: corresponding author; ‡: These authors contributed equally; ∇: PhD student under Dr. Garcia-Borràs supervision)

1. **M. Garcia-Borràs***, S. B. J. Kan, R. D. Lewis, A. Tang, G. Jimenez-Osés, F. H. Arnold*, K. N. Houk*, "*Origin and Control of Chemoselectivity in Cytochrome c Catalyzed Carbene Transfer into Si-H and N-H bonds*", *J. Am. Chem. Soc.*, 143, 18, 7114-7123, (2021) . DOI: [10.1021/jacs.1c02146](https://doi.org/10.1021/jacs.1c02146)
2. Z. Liu, C. Calvó-Tusell∇, A. Z. Zhou, K. Chen*, **M. Garcia-Borràs***, F. H. Arnold*, "*Dual-function enzyme catalysis for enantioselective carbon-nitrogen bond formation*", *Nat. Chem.*, 13, 12, 1166-1172, (2021) . DOI: [10.1038/s41557-021-00794-z](https://doi.org/10.1038/s41557-021-00794-z) + Journal Cover (December 2021 issue)
3. M. T. Reetz*, **M. Garcia-Borràs***, "*The Unexplored Importance of Fleeting Chiral Intermediates in Enzyme-Catalyzed Reactions*", *JACS*, 143, 37, 14939-14950, (2021). DOI: [10.1021/jacs.1c04551](https://doi.org/10.1021/jacs.1c04551)
4. J. Rui, Q. Zhao, A. Huls, J. Soler∇, J.C. Paris, Z. Chen, V. Reshetnikov, Y. Yang, Y. Guo*, **M. Garcia-Borràs***, X. Huang*, "*Directed evolution of nonheme iron enzymes to access abiological radical-relay C(sp³)-H azidation*", *Science*, 376, 6595, 869-874, (2022). DOI: [10.1126/science.abj2830](https://doi.org/10.1126/science.abj2830)
5. J. Soler‡∇, S. Gergel‡, C. Klaus, S. Hammer*, **M. Garcia-Borràs*** "*Enzymatic Control over Reactive Intermediates Enables Direct Oxidation of Alkenes to Carbonyls by a P450 Iron-Oxo Species*". *J. Am. Chem. Soc.*, 144, 35, 15954-15968, (2022). DOI: [10.1021/jacs.2c02567](https://doi.org/10.1021/jacs.2c02567)
6. S. Gergel, J. Soler∇, A. Klein, K. Schülke, B. Hauer, **M. Garcia-Borràs***, S. Hammer*, "*Engineered P450 for direct aryl alkene to ketone oxidation via highly reactive carbocation intermediates*", *Nat. Catal.*, 6, 7, 606-617, (2023) DOI: [10.1038/s41929-023-00979-4](https://doi.org/10.1038/s41929-023-00979-4)

7. C. Calvó-Tusell^{‡,¶}, Z. Liu^{‡,*}, K. Chen, F.H. Arnold, **M. Garcia-Borràs***, "Reversing the Enantioselectivity of Enzymatic Carbene N–H Insertion Through Mechanism-Guided Protein Engineering". *Angew.Chem.-Int.Ed.*, 62, 35, e202303879, (2023). DOI: [10.1002/anie.202303879](https://doi.org/10.1002/anie.202303879).

8. Q. Zhao[‡], Z. Chen[‡], Jordi Soler^{‡,¶}, X. Chen, J. Rui, N. Ji, Q. Yu, Y. Yang*, **M. Garcia-Borràs***, X. Huang*, "Engineering Nonhaem Iron Enzymes for Enantioselective C(sp³)–F Bond Formation via Radical Fluorine Transfer". *Nat. Synth.*, 3, 958–966 (2024). DOI: [10.1038/s44160-024-00507-7](https://doi.org/10.1038/s44160-024-00507-7)

9. Bruffy, S.K.; Meza, A.; Soler, J.; Doyon, T.J.; Young, S.H.; Lim, J.; Huseh, K.G.; Willoughby, P.H.; **Garcia-Borràs, M.***; Buller, A.R.*. "Biocatalytic asymmetric aldol addition into unactivated ketones", *Nat. Chem.* 16, 2076–2083, (2024). DOI: [10.1038/s41557-024-01647-1](https://doi.org/10.1038/s41557-024-01647-1)

10. Rui, J.[‡]; Mu, X.[‡]; Soler, J.[¶]; Paris, J. C.; Guo, Y.*; **Garcia-Borràs, M.***; Huang, X.* "Merging photoredox with metalloenzymatic catalysis for enantioselective decarboxylative C(sp³)–N₃ and C(sp³)–SCN bond formation", *Nat. Catal.*, 7, 1394–1403, (2024). DOI: [10.1038/s41929-024-01257-7](https://doi.org/10.1038/s41929-024-01257-7)

C.2. Congress. Dr. Garcia-Borràs has been invited to give seminars at: Caltech (2016), Univ. of Manchester (2019), Univ. of Stuttgart (2019), ISQCH (Univ. Zaragoza, 2023), NIBS (Beijin, 2024), Tsinghua Univ. Shenzhen (2024), Johns Hopkins Univ. (2025). Participated as coauthor in several international conferences, being the presenting author of **15** invited talks, **20** oral communications and **19** posters. Selected relevant contributions to conferences (2020-2025 period):

Oral Contribution (virtual): "Computational characterization of enzymatic intermediates for the discovery and design of new biocatalytic activities", **Pacificchem** 2021, Online event, Dec. 16 – 21, **2021**.

Invited Lecture: "Computational Characterization of Enzymatic Reactive Intermediates for the Discovery and Design of New Biocatalytic Activities", Next Generation Biocatalysis - An International Young Investigator Symposium 2022 **NextGenBiocat**, April 25-26, **2022**. Delft, The Netherlands.

Oral Contribution: "Computational characterization of enzymatic reactive intermediates for the discovery and design of biocatalytic activities", **GironaSeminar** 2022, May31-June3, **2022**. Girona.

Invited Lecture: "Computational modelling for the characterization of biocatalytic intermediates and rational enzyme design.", **TrEnCa: Trends in Enzyme Catalysis**, December 1-2, **2022**. Benicàssim.

Invited Lecture: "Computational characterization of biocatalytic reactive intermediates for the discovery and design of new enzymatic activities", Symposium in honor of the 80th Birthday of Prof. Kendall N. Houk: Pushing Back the Frontiers of Computational Organic Chemistry and Chemical Biology, **ACS Meeting** Fall 2023, August 13-17, **2023**. San Francisco, US.

Invited Lecture: "Computational characterization of biocatalytic reactive intermediates for designing new-to-nature enzymatic activities", **Future of Enzyme Modeling**, Oct. 23-25, **2024**. Tianjin, China.

Invited Lecture: "Computational characterization of biocatalytic reactive intermediates for designing new-to-nature enzymatic activities", **2024 Conference on Computational Biology & Bioinformatics**, Warshel Institute for Computational Biology, CUHK-Shenzhen, Oct. 30-31, 2024. Shenzhen, China.

Invited Lecture: "Controlling biocatalytic reactive intermediates for the discovery and design of new enzymatic activities", OpenEye Cadence Molecular Sciences Outstanding Junior Faculty Award Symposium, **ACS Meeting** Spring 2025, March 23-27, **2025**. San Diego, US.

C.3. Research projects. Most important projects in the **2020-2025 period**, as Principal Investigator (PI):

Year: 2025 Reference/award number: **ERC-2025-CoG- 101232334**

Title: "BioReInt: Controlling Reactive Intermediates in Biocatalysis through Computational Design Tools" Funding agency and call: European Research Council, **ERC-2025-CoG**.

Principal Investigator and affiliation: Marc Garcia-Borràs , Universitat de Girona.

Start date: 2026 (TBD) End: 2030 Total Funding: 1.999.562€ Project role: Principal Investigator

Year: 2024 Reference/award number: **MMT24-ISQCH-01**

Title: "Desarrollo Automatizado de Biocatalizadores a través de Inteligencia Artificial para la Producción de Compuestos de Interés Farmacéutico" Funding agency and call: CSIC MOMENTUM Program 2024.

Principal Investigator and affiliation: Marc Garcia-Borràs , Universitat de Girona. & JuanVicente Alegre Requena, ISQCH, University of Zaragoza-CSIC

Start date: 1-12-2024 End: 31-11-2028 Total Funding: 458.022€ Project role: co-Principal Investigator

Year: 2023 Reference/award number: **PID2022-141676NB-I00**

Title: "Integrative Computational Modeling of Biochemical and Biocatalytic Processes: From Understanding to Design (**CompBioCat**)"

Funding agency and call: Ministerio Ciencia e Innovación, "Generación de Conocimiento" 2022.

Principal Investigator and affiliation: Marc Garcia-Borràs , Universitat de Girona
Start date: 1-12-2023 *End:* 31-11-2026 *Total Funding:* 168.750€ *Project role:* co-Principal Investigator

Year: **2022** *Reference/award number:* **TED2021-130173B-C42**

Title: "Towards Digital Transition in Solar Chemistry (SolarChem 5.0): Computational characterization and design of a photoelectrode supported heterogenous Photo(electro)- biocatalytic platform"

Funding agency and call: Ministerio Ciencia e Innovación, "Proyectos estratégicos orientados a la transición ecológica y a la transición digital" 2021.

Principal Investigator and affiliation: Marc Garcia-Borràs , Universitat de Girona

Start date: 1-12-2022 *End:* 31-10-2025 *Total Funding:* 125.350€ *Project role:* co-Principal Investigator

Year: **2021** *Reference/award number:* **RYC2020-028628-I**

Title: Ramón y Cajal *Funding agency and call:* Ministerio de Ciencia e Innovación, Ramón y Cajal Program *Principal Investigator and affiliation:* Marc Garcia-Borràs, Universitat de Girona.

Start date: 1-2-2022 *End date:* 31-1-2027 *Total Funding:* 324.250 € *Project role:* Principal Investigator

Year: **2020** *Reference/award number:* **PID2019-111300GA-I00**

Title: Multiscale characterization of reactive intermediates for the design of new biocatalytic activities

Funding agency and call: Ministerio Ciencia e Innovación, P I+D Generación de Conocimiento Tipo A

Principal Investigator and affiliation: Marc Gracia-Borràs , Universitat de Girona

Start date: 01/06/2020 *End:* 31/05/2023 *Total Funding:* 72.600€ *Project role:* Principal investigator

Participation in International Collaborative Projects

Year: **2023** *Reference/award number:* **FOR 5596** DFG - Project number 510974120)

Title: "Unfolding the potential of S-adenosylmethionine-dependent enzyme chemistry"

Funding agency and call: Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), Research Units DFG Programme. *Principal Investigators and affiliation:* J. Andexer, M. Boll, G. Layer, M. Müller (U. Freiburg); L. Barra (U. Konstanz); W. Blankenfeldt (Helmholtz-Center for Infection Research); S. Hammer (U. Bielefeld); J. Pleiss (U. Stuttgart); A. Rentmeister (U. Munich); F. Seebeck (U. Basel). *Start date:* 1-09-2023 *End:* 31-08-2029 *Total Funding:* ca. 4M€ (for the first period) *Project role:* **Mercator Fellow**, International Associated Researcher.

For more information: <https://gepris.dfg.de/gepris/projekt/510974120> , <https://for5596.uni-freiburg.de>

- Member of the **COST Action: "CA21162 - Establishing a Pan-European Network on Computational Redesign of Enzymes (COZYME)"**, part of WG1 and WG2 groups. <https://www.cost.eu/actions/CA21162/>

C.4. Contracts, technological or transfer merits

Dr. Garcia-Borràs has established a collaboration with the multinational energy company **REPSOL** (2023, confidential information under NDA, collaboration project of ca. 21K€. PI: Dr. M. Garcia-Borràs) to design new biocatalysts for biofuel production. Since 2022, Marc is part of the **Advisory Board of InSeit**, a spin-off company from the Univ. of Bern (Switzerland), devoted to the development of computational tools for guiding the immobilization of enzymes for continuous flow chemistry (<https://www.inseit.ch/company>).

C.5. Other scientific merits (after obtention of the PhD):

- My work has been recognized by several **awards**, including: **Emerging Scientific Talent 2025 award**, Catalan Society of Chemistry (SCQ); **ACS OpenEye/Cadence Outstanding Junior Faculty Award Spring 2025**, ACS Division of Computers in Chemistry; **Early Career Researcher RSEQ-Lilly 2024**; **Premio Marcial Moreno-Mañas 2023**, STCAT-RSEQ; **2021 RSC Organic Division Horizon Prize: Bioorganic Chemistry Award** (part of the international multidisciplinary Team); **2018 UCLA Department of Chemistry and Biochemistry Postdoctoral Research Award**.

- Member of the Spanish Royal Society of Chemistry (**RSEQ**, since 2014); the Catalan Society of Chemistry (**SCQ**, since 2011); the American Chemical Society (**ACS**, since 2023).

- Since 2021 **external reviewer** for the Spanish National Research Agency (AEI) (2021, 2022, 2023 calls). I have been part of two **evaluation committee panels** for the AEI (Chemistry panel).

- Since 2023, **external reviewer** for the Barcelona Supercomputing Center (BSC-RES).

- **Reviewer** for different journals from the main publishing groups (Science, PNAS, Nat. Chem., Nat. Catal., JACS, JACS Au, ACS Catal., ACIE, Wiley, RSC, etc.). Full contributions in my ORCID.

- I regularly participate in outreach activities organized by the UdG and the IQCC.

- On paternity leave during August-October 2022; and half-time paternity leave during April-August 2023. On Paternity leave during September 2025 - January 2026.