

CV Date

25/01/2024

## Part A. PERSONAL INFORMATION

First Name	Gonzalo		
Family Name	de Gonzalo Calvo		
Sex	Male	Date of Birth	09/07/1976
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## A.3. Education

Degree/Master/PhD	University / Country	Year
Química organometálica	Universidad de Oviedo	2003
Licenciado en Química	Universidad de Oviedo	1998

## Part B. CV SUMMARY

After obtaining my degree in Chemistry at the Universidad de Oviedo in October 1998, I joined the Bioorganic Research Group at the Departamento de Química Orgánica e Inorgánica. Until June 2003, I worked on my Doctoral Thesis entitled "Biotransformations in the synthesis and resolution of compounds with pharmaceutical interest" (summa cum laude) under the supervision of Prof. Vicente Gotor. My Thesis was devoted to the synthesis of the antidepressant (-)-Paroxetine precursors by chemoenzymatic methods using different types of hydrolases and to the preparation of optically active hydroxycyanohydrins, valuable chiral synthons in organic chemistry, employing oxynitrilases or lipases. In 2004 I was awarded with a Postdoctoral Fellowship (FICYT, Principado de Asturias) at the Istituto di Chimica del Riconoscimento Molecolare (CNR, Milan, Italy) under the supervision of Prof. Giacomo Carrea. During those two years, my research was focused on Baeyer-Villiger monooxygenases (BVMOs) as valuable catalysts in asymmetric synthesis. From January 2006 I spent a nine-months stage at the Universidad de Oviedo, and then, I was awarded with a three-month postdoctoral fellowship from the Human Frontier Scientific Program (European Union) at the Department of Chemistry, Organic and Bioorganic Chemistry, Karl-Franzens University (Graz, Austria) working with Prof. Wolfgang Kroutil. My research was focused on the application of alcohol dehydrogenases in chemistry. In 2007, I got a Juan de la Cierva contract (Ministerio de Educación y Ciencia, Spain) at the Universidad de Oviedo, working in the study and application of lipases and oxidative enzymes in organic synthesis. In that period, I have codirected two Doctoral Thesis. In 2010, I spent nine months at the University of Groningen (the Netherlands). I was appointed to work on the European FP7-project Oxygreen with Prof. Marco W. Fraaije. In 2011 I returned back to the Universidad de Oviedo, to participate during six months in the European FP7-project BIONEXGEN. On July 2011 the pharmaceutical company Antibióticos S.A.U (León, Spain) hired me to work at the R&D Department until January 2014. In 2013 I got a Ramón y Cajal position from MINECO (Spain) in the field of chemistry. On April 2014, I started my contract at the Departamento de Química Orgánica of Universidad de Sevilla in the research group of Prof. Rosario Fernandez. Since then, I have been working in the development of novel catalytic routes for the preparation of valuable compounds employing both organocatalysts and biocatalysts. On August 2017, I have performed a three-month stage at the Stockholm University (Sweden) in the research group of Prof. Jan. E. Bäckvall, whereas in 2018 I spent two months at the Technical University of Delft (the Netherlands) working with Prof. Frank Hollmann. My research experience among these years is reflected in the more than 80 research papers that I have published in different indexed publications (JCR), with an h-index of 31. I have also published two Spanish patents, then extended to Europe and the United States. I have been coauthor of seven book chapters and Guest Editor of four Special Issues in biocatalysis and Green Chemistry. I have been coeditor of the books "Biocatalysis: an Industrial Perspective", published in 2017 by the Royal Society of Chemistry

and "Biocatalysis for Practitioners", published in 2021 by Wiley-VCH. I am Associate Editor of the publications Molecules, Catalysts and Frontiers in Catalysis. I have participated in several national and international congresses in the fields of organic chemistry, biotechnology and biocatalysis, presenting posters and oral communications. In 2023, I have been granted as principal investigator in an European Doctoral Network, entitled "Design of catalytic processes with Deep Eutectic Solvents".

## Part C. RELEVANT ACCOMPLISHMENTS

### C.1. Most important publications in national or international peer-reviewed journals, books and conferences

AC: corresponding author. (nº x / nº y): position / total authors. If applicable, indicate the number of citations

- 1 **Scientific paper.** Patricia Rodríguez Salamanca; Gonzalo de Gonzalo; José Antonio Carmona; Joaquín López Serrano; Javier Iglesias Sigüenza; Rosario Fernández; José María Lassaletta; Valentín Hornillos. 2023. Biocatalytic Atroposelective Synthesis of Axially Chiral N-Arylindoles via Dynamic Kinetic Resolution. ACS Catalysis. American Chemical Society. WOS (8) <https://doi.org/10.1021/acscatal.2c06175>
- 2 **Scientific paper.** Karl P. J. Gustafson; Tamas Görbe; (3/10) Gonzalo de Gonzalo-Calvo; et al; Jan.-E. Bäckvall. 2019. Chemoenzymatic Dynamic Kinetic Resolution of Primary Benzylic Amines using Pd-0-CaIB CLEA as a Biohybrid Catalyst. Chemistry a European Journal. Wiley VCH. 25-39, pp.9174-9179. ISSN 0947-6539. WOS (29) <https://doi.org/10.1002/chem.201901418>
- 3 **Scientific paper.** (1/4) Gonzalo de Gonzalo; Si; Giacomo Carrea; Marco W. Fraaije. 2005.  $[\text{Cp}^*\text{Rh}(\text{bpy})(\text{H}_2\text{O})]^{2+}$  as coenzyme substitute in enzymatic oxidations catalyzed by Baeyer-Villiger monooxygenases. Chemical Communications. Royal Society of Chemistry. 29, pp.3724-3726. ISSN 1359-7345. WOS (39) <https://doi.org/10.1039/b504921k>
- 4 **Scientific paper.** Juan M Coto-Cid; (2/8) Gonzalo de Gonzalo (AC); José A. Carmona; Javier Iglesias-Sigüenza; Patricia Rodríguez-Salamanca; Rosario Fernández; Valentín Hornillos; José M. Lassaletta. 2023. Atroposelective Synthesis of 2-(Quinolin-8-yl)benzyl Alcohols by Biocatalytic Dynamic Kinetic Resolutions. Advanced Synthesis and Catalysis. Wiley VCH. <https://doi.org/10.1002/adsc.202301310>
- 5 **Scientific paper.** Pedro D. García-Fernández; Juan M. Coto-Cid; Gonzalo de Gonzalo. 2023. Green Oxidative Catalytic Processes for the Preparation of APIs and Precursors. Catalysts. MDPI. 13-3, pp.638.
- 6 **Scientific paper.** Margherita Miele; Veronica Pillori; Vittorio Pace; Andrés R. Alcántara; (5/5) Gonzalo de Gonzalo (AC). 2022. Application of Biobased Solvents in Asymmetric Catalysis. Molecules. MDPI. 27-1967, pp.6701. WOS (4) <https://doi.org/10.3390/molecules27196701>
- 7 **Scientific paper.** (1/4) Gonzalo de Gonzalo; Andrés R. Alcántara; Pablo Domínguez de María; José M. Sánchez Montero. 2022. Biocatalysis for the asymmetric synthesis of Active Pharmaceutical Ingredients (APIs): this time is for real. Expert Opinion in Drug Discovery. Taylor & Francis. 17-10, pp.1159-1171. WOS (5) <https://doi.org/10.1080/17460441.2022.2114453>
- 8 **Scientific paper.** Gonzalo de Gonzalo; Nikola Loncar; Marco W. Fraaije. 2022. Sulphoxidation reactions catalysed by the Baeyer-Villiger monooxygenase OTEMO from *Pseudomonas putida* ATCC 17453. Biocatalysis and Biotransformations. Taylor and Francis. 43-1, pp.77-84. <https://doi.org/10.1080/10242422.2022.2113519>
- 9 **Scientific paper.** (1/3) Gonzalo de Gonzalo (AC); Nikola Loncar; Marco W. Fraaije. 2022. Kinetic resolution of racemic benzofused alcohols catalysed by HMFO variants in presence of natural deep eutectic solvents. Biocatalysis and Biotransformations. Taylor and Francis. WOS (2) <https://doi.org/10.1080/10242422.202>

- 10 Scientific paper.** (1/2) Gonzalo de Gonzalo (AC); Andrés R. Alcántara. 2021. Multienzymatic Processes Involving Baeyer-Villiger Monooxygenases. *Catalysts*. MDPI. 11-5, pp.605. WOS (11) <https://doi.org/10.3390/catal11050605>
- 11 Scientific paper.** (1/1) Gonzalo de Gonzalo (AC). 2021. Biocatalysed reductions of alpha-ketoesters employing Cyrene(TM) as cosolvent. *Biocatalysis and Biotransformations*. Taylor & Francis Ltd.. WOS (13)
- 12 Scientific paper.** (1/2) Gonzalo de Gonzalo (AC); Caroline E. Paul. 2021. Recent trends in synthetic enzymatic cascades promoted by alcohol dehydrogenases. *Current Opinion in Green and Sustainable Chemistry*. Elsevier. 32, pp.100548. WOS (20) <https://doi.org/10.1016/j.cogsc.2021.100548>
- 13 Scientific paper.** Gonzalo de Gonzalo. 2020. Biocatalyzed Sulfoxidation in Presence of Deep Eutectic Solvents. *Sustainable Chemistry*. MDPI. 1, pp.290-297.
- 14 Scientific paper.** Gonzalo de Gonzalo; Caterina Martin; Marco W. Fraaije. 2020. Positive Impact of Natural Deep Eutectic Solvents on the Biocatalytic Performance of 5-Hydroxymethyl-Furfural Oxidase. *Catalysts*. MDPI. 10-4, pp.447. WOS (16) <https://doi.org/10.3390/catal10040447>
- 15 Scientific paper.** Hugo L. van Beek; (2/3) Gonzalo de Gonzalo; Marco W. Fraaije. 2012. Blending Baeyer–Villiger monooxygenases: using a robust BVMO as a scaffold for creating chimeric enzymes with novel catalytic properties. *Chemical Communications*. Royal Society of Chemistry. 48-27, pp.3288-3290. ISSN 1359-7345. WOS (48) <https://doi.org/10.1039/c2cc17656d>
- 16 Scientific paper.** Aníbal Cuetos; Ana Rioz-Martínez; Fabricio R. Bisogno; Barbara Grischek; Iván Lavandera; (6/8) Gonzalo de Gonzalo; Wolfgang Kroutil; Vicente Gotor. 2012. Access to enantiopure alpha-alkyl-beta-hydroxyesters through dynamic kinetic resolutions employing purified/overexpressed alcohol dehydrogenases. *Advanced Synthesis and Catalysis*. Wiley-VCH Verlag GMBH. 354-9, pp.1743-1749. ISSN 1615-4150. WOS (34) <https://doi.org/10.1002/adsc.201200139>
- 17 Scientific paper.** Ana Rioz-Martínez; Aníbal Cuetos; Cristina Rodríguez; (4/7) Gonzalo de Gonzalo; Iván Lavandera; Marco W. Fraaije; Vicente Gotor. 2011. Dynamic kinetic resolution of alpha-substituted beta-ketoesters catalysed by Baeyer–Villiger monooxygenases: Access to enantiopure alpha-hydroxy esters. *Angewandte Chemie International Edition*. Wiley-VCH Verlag GMBH. 50-36, pp.8387-8390. ISSN 1433-7851. WOS (28) <https://doi.org/10.1002/anie.201103348>
- 18 Scientific paper.** Cristina Rodríguez; (2/4) Gonzalo de Gonzalo; Marco W. Fraaije; Vicente Gotor. 2010. Ionic liquids for enhancing the enantioselectivity of isolated BVMO-catalysed oxidations. *Green Chemistry*. Royal Society of Chemistry. 12-12, pp.2255-2260. ISSN 1463-9262. WOS (16) <https://doi.org/10.1039/c0gc00560f>
- 19 Scientific paper.** Cristina Rodríguez; (2/4) Gonzalo de Gonzalo; Marco W. Fraaije; Vicente Gotor. 2007. Enzymatic kinetic resolution of racemic ketones catalyzed by Baeyer–Villiger monooxygenases. *Tetrahedron: Asymmetry*. Pergamon Elsevier Science Ltd. 18-11, pp.1338-1344. ISSN 0957-4166. WOS (46) <https://doi.org/10.1016/j.tetasy.2007.05.033>
- 20 Scientific paper.** (1/5) Gonzalo de Gonzalo; Rosario Brieva; Victor M. Sánchez; Miguel Bayod; Vicente Gotor. 2001. Enzymatic resolution of trans-4-(4'-fluorophenyl)-3-hydroxymethylpiperidines, key intermediates in the synthesis of (-)-Paroxetine. *Journal of Organic Chemistry*. Americal Chemical Society. 66-26, pp.8947-8953. ISSN 0022-3263. WOS (39) <https://doi.org/10.1021/jo010809+>
- 21 Book chapter.** (1/2) Gonzalo de Gonzalo (AC); Andrés R. Alcántara. 2022. Enzyme-catalyzed asymmetric synthesis. *Catalytic Asymmetric Synthesis*. John Wiley & Sons. pp.531-558. ISBN 9781119736394.
- 22 Book chapter.** (1/2) Iván Lavandera; Gonzalo de Gonzalo. 2020. Recent advances in selective biocatalytic (hydrogen transfer) reductions. *Homogeneous Hydrogenation with non-Precious Catalysts*. Wiley-VCH. pp.227-259. ISBN 978-3-527-34439-0. WOS (4)

- 23 Scientific book or monograph.** Iván Lavandera; Gonzalo de Gonzalo. 2021. Biocatalysis for Practitioners: Techniques, Reactions and Applications. Wiley-VCH. ISBN 978-3-527-34683-7.

### C.2. Conferences and meetings

- 1 Juan M. Coto-Cid; Gonzalo de Gonzalo; José A. Carmona; Valentín Hornillos; Rosario Fernández; José M. Lassaletta. LIPASE-CATALYZED RESOLUTIONS OF HETEROBIARYL COMPOUNDS. XXXIX Reunión Bienal de Química. Real Sociedad Española de Química. 2023. Spain. Participatory - oral communication. Conference.
- 2 Gonzalo de Gonzalo; Valentín Hornillos; Patricia Rodríguez Salamanca; Rosario Fernández; José María Lassaletta. Chemoenzymatic synthesis of heterobiaryl systems. XXXVIII Reunión Bienal de la Real Sociedad Española de Química. Real Sociedad Española de Química. 2022. Spain.
- 3 Gonzalo de Gonzalo; Patricia Rodríguez Salamanca; Valentín Hornillos; Rosario Fernández; José María Lassaletta. Síntesis de heterobiaryl alcoholes quirales empleando alcohol deshidrogenasas. III Jornadas Españolas de Biocatálisis. SOCIEDAD ESPAÑOLA DE BIOTECNOLOGIA. 2021. Spain. 'Participatory - poster. Conference.

### C.3. Research projects and contracts

- 1 **Project.** 101072731, Design of catalytic processes with Deep-Eutectic-Solvents (DECades). European Commission. Gonzalo de Gonzalo. (Universidad de Sevilla). 01/01/2023-28/02/2027. 2.626.934,4 €. Principal investigator. Graduation manager, WP2 coordinator and responsible of one of the PhDs.
- 2 **Project.** DYNAMIzation Strategies for Atroposelective CAtalysis (DYNAMICA). José M. Lassaletta. (Instituto de Investigaciones Químicas). 01/09/2023-31/08/2026. 250.000 €.
- 3 **Project.** Red de Investigación en Catálisis Asimétrica. (Universidad de Sevilla). 01/06/2023-31/05/2025. 20.390 €.
- 4 **Project.** PID2019-106358GB-C21, Catalizadores, Ligandos, Métodos y Reactivos para Síntesis Organica Selectiva. Proyectos I+D+i 2019. (Instituto de Investigaciones Químicas). 01/06/2020-30/05/2023. 177.870 €.
- 5 **Project.** US-1262867, Diseño Racional de Catalizadores Quirales Avanzados Orientados a Aplicaciones en Catálisis Enantioselectiva. Proyectos I+D+i FEDER Andalucía 2014-2020. Rosario Fernández Fernández. (Universidad de Sevilla). 01/02/2020-31/01/2022. 80.000 €. Team member.
- 6 **Project.** CTQ2016-76908-C2-2-P, Desarrollo y diversificación de sistemas catalíticos innovadores. Aplicaciones en catálisis asimétrica. Rosario Fernández Fernández. (Universidad de Sevilla). 01/01/2017-31/12/2019. 121.000 €. Team member.
- 7 **Project.** FQM-1078, Desarrollo de modos de activación, sistemas reactivos y catalizadores bifuncionales para la expansión de las reacciones heteroénicas. (Universidad de Sevilla). 16/05/2014-16/02/2019. 273.984 €. Team member.
- 8 **Contract.** SINTESIS DE COMPUESTOS AROMATICOS EN UN REACTOR DE FLUJO Fundación de Investigación Universidad de Sevilla. Gonzalo de Gonzalo. 01/01/2024-01/04/2024. 13.692,36 €.