

Dr Abraham Mendoza

Born 26/09/1982
PhD awarded: 19/06/2009

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Institute of Molecular Science (ICMol)
University of Valencia
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Education and career

- since 2022 Head of Sustainable Organic Chemistry, ICMol (Spain)
- 2018 – 2022 Knut & Alice Wallenberg Academy Fellow / Associate Professor (2021-2022)
Stockholm University, Sweden.
- 2013-2018 Group leader - Stockholm University, Sweden.
- 2012-2013 Research Associate - University of Cambridge, UK (Prof. M. Gaunt).
- 2010-2012 Research Associate - The Scripps Research Inst., USA (Prof. P. S. Baran).
- 2004-2010 PhD in Organic Chemistry - Institute for Organometallic Chemistry E. Moles,
Spain (Prof. J. Barluenga, Prof. F. J. Fañanás and Dr. F. Rodríguez).
- 2000-2004 BSc in Chemistry from University of Oviedo.

Publications (independent)

Colas, K.; dos Santos, A. Catarina V. D.; Kohlhepp, S. V.; Mendoza, A.*

"Direct Addition of Grignard Reagents to Aliphatic Carboxylic Acids Enabled by Bulky *turbo*-Organomagnesium Anilides"

Chem. Eur. J. **2022**, e202104053

<https://doi.org/10.1002/chem.202104053>

* Highlighted in the Cover of Chem. Eur. J.

* Highlighted in Chemistry Author Profile

Costantini, M.; Mendoza, A.*

"Modular Enantioselective Synthesis of *cis*-Cyclopropanes through Redox-Active Carbene Transfer and Stereoselective Photo-Decarboxylation"

ACS Catalysis **2021**, *11*, 13312–13319

<https://doi.org/10.1021/acscatal.1c03949>

Planas, F.; Costantini, M.; Montesinos-Magraner, M.; Himo, F.*; Mendoza, A.*

"Combined Experimental and Computational Study of Ruthenium *N*-hydroxyphthalimidoyl Carbenes in Alkene Cyclopropanation Reactions"

ACS Catalysis **2021**, *11*, 10950–10963

<https://doi.org/10.1021/acscatal.1c02540>

Chowdhury, R.; Mendoza, A.*

"*N*-hydroxyphthalimidyl diazoacetate (NHPI-DA): a modular methylene linchpin for the C–H alkylation of indoles"

Chem. Commun. **2021**, *57*, 4532–4535

<https://doi.org/10.1039/D1CC01026C>

Chowdhury, R.; Yu, Z.; Kohlhepp, S. V.; Yin, X.; Mendoza, A.*

"Time-Resolved Decarboxylative Alkyl Coupling Promoted by NADH and Blue Light"

J. Am. Chem. Soc. **2020**, *57*, 4532–4535

<https://doi.org/10.1021/jacs.0c09678>

* Highlighted in the Cover of JACS

* Highlighted in Synfacts

Planas, F.; Kohlhepp, S. V.; Huang, G.; Mendoza, A.*; Himo, F.*

"Computational and Experimental Study of Turbo-Organomagnesium Amide Reagents: Cubane

Aggregates as Reactive Intermediates in Pummerer Coupling"

Chem. Eur. J. **2020**, *27*, 2767–2773

<https://doi.org/10.1002/chem.202004164>

Martinez de Castro, E.; Suarez-Pantiga, S.; Mendoza, A.*

"Scalable Synthesis of Esp and Rhodium(II) Carboxylates from Acetylacetone and RhCl₃.xH₂O"

Org. Proc. Res. Dev. **2020**, *24*, 1207–1212

<https://doi.org/10.1021/acs.oprd.0c00164>

Colas, K.; dos Santos, A. Catarina V. D.; Mendoza, A.*

"*i*-Pr₂NMgCl·LiCl Enables the Synthesis of Ketones by Direct Addition of Grignard Reagents to Carboxylate Anions"

Org. Lett. **2019**, *21*, 7908–7913

<https://doi.org/10.1021/acs.orglett.9b02899>

Yu, Z.; Mendoza, A.*

"Enantioselective Assembly of Congested Cyclopropanes using Redox-Active Aryldiazoacetates"

ACS Catalysis **2019**, *9*, 7870–7875

<http://dx.doi.org/10.1021/acscatal.9b02615>

Bratt, E.; Suárez-Pantiga, S.; Johansson, M. J.; Mendoza, A.*

"Mechanism and regioselectivity of the anionic oxidative rearrangement of 1,3-diketones towards all-carbon quaternary carboxylates"

Chem. Commun. **2019**, *55*, 8844–8847

<http://dx.doi.org/10.1039/c9cc03331a>

* Invited contribution for the Emerging Investigators Issue 2019

* Highlighted in Chemistry Views

Montesinos-Magraner, M.; Costantini, M.; Ramirez-Contreras, R.; Muratore, M.; Johansson, M. J.; Mendoza, A.*

"General Cyclopropane Assembly via Enantioselective Transfer of a Redox-Active Carbene to Aliphatic Olefins"

Angew. Chem. Int. Ed. **2019**, *58*, 5930–5935

<http://dx.doi.org/10.1002/anie.201814123>

* Highlighted in the cover of *Angewandte Chemie*

* Highlighted in ACS Axial as one of the most read pre-prints on ChemRxiv

Colas, K.; Mendoza, A.*

"Iterative Synthesis of Pluripotent Thioethers through Controlled Redox Fluctuation of Sulfur"

Synlett **2018**, *29*, 1329–1333

<http://dx.doi.org/10.1055/s-0036-1591864>

* Invited contribution - 9th EuCheMS Young Investigator Workshop

Qiu, Y.; Mendoza, A.; Posevins, D.; Himo, F., Kalek, M.*; Bäckvall, J.-E.*

"Mechanistic Insight into Enantioselective Palladium-Catalyzed Oxidative Carbocyclization-Borylation of Enallenes"

Chem. Eur. J. **2018**, *24*, 2433–2439

<http://dx.doi.org/10.1002/chem.201705239>

* In collaboration with Profs. Bäckvall, Himo and Kalek

Colas, K.; Martin-Montero, R.; Mendoza, A.*

"Intermolecular Pummerer Coupling with Carbon Nucleophiles in Non-Electrophilic Media"

Angew. Chem. Int. Ed. **2017**, *56*, 16042–16046

<http://dx.doi.org/10.1002/anie.201709715>

* Highlighted in *Synfacts* **2018**, *14*(2), 189

* Highlighted in The Organometallic Chemistry Blog

Otero-Fraga, J.; Suarez-Pantiga, S.; Montesinos-Magraner, M.; Rhein, D.; Mendoza, A.*

"Direct and Stereospecific [3+2] Synthesis of Pyrrolidines from Simple Unactivated Alkenes"

Angew. Chem. Int. Ed. **2017**, *56*, 12962–12966

<http://dx.doi.org/10.1002/anie.201706682>

* Highlighted in The Organometallic Chemistry Blog

Otero-Fraga, J.; Montesinos-Magraner, M.; Mendoza, A.*

"Perspectives on Intermolecular Azomethine Ylide [3+2] Cycloadditions with Non-Electrophilic Olefins"

Synthesis **2017**, *49*, 802–809

<http://dx.doi.org/10.1055/s-0036-1588662>

*Invited contribution (Ed: Prof. P. Knochel)

Mendoza, A.*; Colas, K.; Suarez-Pantiga, S.; Goetz, D.; Johansson, M. J.

"Chemical Innovation through Ligand Total Synthesis"

Synlett **2016**, *27*, 1753–1759

<http://dx.doi.org/10.1055/s-0035-1562144>

* Invited contribution (Ed: Prof. K. P. C. Vollhardt)

Suarez-Pantiga, S.; Colas, K.; Johansson, M. J.; Mendoza, A.*

"Scalable synthesis of piperazines enabled by visible light irradiation and aluminum organometallics"

Angew. Chem. Int. Ed. **2015**, *54*, 14094–14098

<http://dx.doi.org/10.1002/anie.201505608>

* Highlighted in *ChemInform* **2016**, *47*

Publications (pre- & post-doctoral)

Chan, L.; McNally, A.; Toh, Q. Y.; Mendoza, A.; Gaunt, M. J.* "A Counteranion Triggered Arylation Strategy Using Diaryliodonium Fluorides"

Chem. Sci. **2015**, *6*, 1277–1281

<http://dx.doi.org/10.1039/C4SC02856B>

Wilde, N.; Isomura, M.; Mendoza, A.; Baran, P. S.* "Two phase synthesis of (–)-Taxuyunnanine D"

J. Am. Chem. Soc. **2014**, *136*, 4949–4912

<http://dx.doi.org/10.1021/ja501782r>

Ishihara, Y.; Mendoza, A.; Baran, P. S.* "Total Synthesis of taxane terpenes: cyclase phase"

Tetrahedron **2013**, *69*, 5685–5701 - [special issue]

<http://dx.doi.org/10.1016/j.tet.2013.04.028>

Cala, L.; Mendoza, A.; Fañanás, F. J.*; Rodríguez, F.* "A catalytic multicomponent coupling reaction for the enantioselective synthesis of spiroacetals"

Chem. Commun. **2013**, *49*, 2715–2717

<http://dx.doi.org/10.1039/C3CC00118K>

Voica, A.-F.; Mendoza, A.; Gutekunst, W. R.; Otero Fraga, J.; Baran, P. S.* "Guided desaturation of unactivated aliphatics"

Nature Chem. **2012**, *4*, 629–635

<http://dx.doi.org/10.1038/nchem.1385>

Mendoza, A.; Ishihara, Y.; Baran, P. S.* "Scalable enantioselective total synthesis of taxanes"

Nature Chem. **2012**, *4*, 21–25

<http://dx.doi.org/10.1038/nchem.1196>

Mendoza, A.; Baran, P. S.* "Synthesis: a constructive debate – Practical synthesis"

Nature **2012**, *492*, 188–189 - [forum article with Keasling, J.D.]

<http://dx.doi.org/10.1038/492188a>

Fañanás, F. J.*; Mendoza, A.; Arto, T.; Temelli, B.; Rodríguez, F.* "Scalable total synthesis of (–)-Berkelic Acid by a protecting group-free strategy"

<http://dx.doi.org/10.1002/anie.201109076>

Angew. Chem. Int. Ed. **2012**, *51*, 4930–4933

Fañanás, F. J.*; Arto, T.; Mendoza, A.; Rodríguez, F.* "Synthesis of 2,5-dihydropyridine derivatives by gold-catalyzed reactions of beta-ketoesters and propargylamines"

<http://dx.doi.org/10.1021/ol201655u>

Org. Lett. **2011**, *13*, 4184–4187

Mendoza, A.; Pardo, P.; Rodríguez, F.*; Fañanás, F. J.* "Synthesis of [3.3.1] bicyclic compounds by a Bronsted acid catalysed double intramolecular Michael addition"

<http://dx.doi.org/10.1002/chem.201001109>

Chem. Eur. J. **2010**, *16*, 9758–9762

Barluenga, J.*; Calleja, J.; Mendoza, A.; Rodríguez, F.; Fañanás, F. J. "Synthesis of polycyclic compounds by a cascade cycloisomerization/Diels-Alder reaction"

<http://dx.doi.org/10.1002/chem.201000515>

Chem. Eur. J. **2010**, *16*, 7110–7112

Barluenga, J.*; Mendoza, A.; Rodríguez, F.; Fañanás, F. J. "A palladium(II)-catalyzed synthesis of spiroacetals through a one-pot multi-component cascade reaction"

<http://dx.doi.org/10.1002/anie.200805519>

Angew. Chem. Int. Ed. **2009**, *48*, 1664–1647

Barluenga, J.*; Mendoza, A.; Rodríguez, F.; Fañanás, F. J. "Synthesis of furoquinolines through a one-pot multicomponent cascade reaction catalyzed by platinum complexes"

<http://dx.doi.org/10.1002/chem.200802146>

Chem. Eur. J. **2008**, *14*, 10892–10895

Barluenga, J.*; Mendoza, A.; Rodríguez, F.; Fañanás, F. J. "Synthesis of spiroquinolines through a one-pot multicatalytic and multicomponent cascade reaction"

<http://dx.doi.org/10.1002/anie.200802582>

Angew. Chem. Int. Ed. **2008**, *48*, 7044–7047

Barluenga, J.*; Mendoza, A.; Dieguez, A.; Rodríguez, F.; Fañanás, F. J. "Umpolung reactivity of alkenyl Fischer carbene complexes, copper enolates and electrophiles"

<http://dx.doi.org/10.1002/anie.200601364>

Angew. Chem. Int. Ed. **2006**, *48*, 4848–4850

Mendoza, A.; Rodríguez, F.*; Fañanás, F. J.* "Asymmetric halocyclization of unsaturated compounds: an overview and recent developments"

<http://www.ingentaconnect.com/content/ben/cos/2013/00000010/00000003/art00004>

Curr. Org. Chem. **2013**, *10*, 384–393 - [invited review]

Book chapters

Arto, T.; Mendoza, A.; Fañanás, F. J.*; Rodríguez, F.* "Chapter 2 – (–)-Berkelic Acid: Lessons Learned From Our Investigations on a Scalable Total Synthesis"

Strategies and Tactics in Organic Synthesis 2014, *10*, 33–50

<http://dx.doi.org/10.1016/B978-0-12-417185-5.00002-8>

(Ed: M. Harmata), Elsevier

Research grants and fellowships

2022-2026	CIDEGENT Senior (Generalitat Valenciana) 400 000 EUR – Principal Investigator
2022-2026	Swedish Research Council Project Grant (VR) 340 000 EUR - Principal Investigator
2022-2027	Wallenberg Academy Fellows (Knut & Alice Wallenberg Foundation) 875 000 EUR - Principal Investigator
2021-2025	Swedish Foundation for Strategic Research Industrial PhD (SSF) 250 000 EUR - Principal Investigator (AstraZeneca R&D co-applicant)
2017-2023	ERC Starting Grant (European Union) 1 500 000 EUR - Principal Investigator
2017-2021	Wallenberg Academy Fellows (Knut & Alice Wallenberg Foundation) 750 000 EUR - Principal Investigator
2014-2018	Marie Curie Career Integration Grant (European Union) 50 000 EUR - Principal Investigator
2013-2017	Swedish Research Council Junior Researcher (VR) 400 000 EUR - Principal Investigator
2012-2013	Marie Curie Intra-European Fellowship (European Union).
2010-2012	Fulbright Postdoctoral fellowship (U.S. Department of State)
2004-2009	National FPU Pre-doctoral fellowship (Spanish government)
2003-2004	National Research Fellowship (Spanish government).
2000-2004	National Undergraduate Fellowship (Spanish government).

Awards

- 2017 Thieme Chemistry Journals Award
- 2017 Swedish Chemical Society EuCheMS Young Investigator representative
- 2010 Extraordinary Doctorate Award (University of Oviedo)

Invited lectures

- 2023 University of Oxford (UK), University of Gothenburg (Sweden), EuChemS Highlighting Organic Chemistry in Spain (online), University of Manchester (UK - scheduled), Janssen Toledo (Spain - scheduled).
- 2022 RUDN VI International Conference, Moscow (Russia – SU banned); Barluenga Lecture, Oviedo (Spain)
- 2021 University of Warsaw (Poland, postponed).
- 2020 National Spanish Royal Society Meeting (Spain, cancelled); IIT Bombay (India, postponed); University of Münster (Germany, postponed); University of Zaragoza (Spain, postponed).
- 2019 Aarhus University, Aarhus (Denmark); Norwegian Chemical Society Meeting, Oslo (Norway); Frontiers in Organic Chemistry Symposium (Tallin, Estonia); University of Alcalá, Alcalá de Henares (Spain); Markovnikov Congress, Kazan (Russia); Symposium Future Stars of Chemistry (Stockholm, Sweden).
- 2018 1st National meeting of the Swedish Chemical Society, Lund (Sweden); University of Oviedo (Spain).
- 2017 EUChemS Young Investigator Workshop, Cologne (Germany); Spanish Japanese Symposium in Modern Synthetic Methodology (Gijón, Spain); ACES Sustainability Workshop (Stockholm, Sweden).
- 2016 Imperial College London (UK), Lundbeck Pharma (Copenhagen, Denmark), CIQUS Research Institute (Santiago de Compostela, Spain); Uppsala University (Sweden)
- 2015 CIQUS Research Institute (Santiago de Compostela, Spain); AstraZeneca Gothenburg (Sweden); University of the Basque Country (Bilbao, Spain).

Teaching

- 2022 Sustainable Organic Chemistry (KO7015) - 7.5 ECTS
Lecturer; MSc level; Stockholm University
- 2021 Frontiers in Organic Chemistry (KO40010) - 7.5 ECTS
Course manager and lecturer; PhD level; Stockholm University
- 2021 - 2022 Organic Chemistry II (KO3005) - 7.5 ECTS
Lecturer; 1st year undergraduate level; Stockholm University
- 2021 Advanced Organic Chemistry (KO40002) – 15 ECTS
Lecturer; PhD course; Stockholm University
- 2020 Physical Organic Chemistry (KO7008/KO40003) – 15 ECTS
Course manager and lecturer; MSc/PhD level; Stockholm University
- 2020 Drug Synthesis – 3.6 ECTS
Invited lecturer; PhD level; University of Copenhagen
- 2019, 2021 General Organic Chemistry (KO40001) – 10 ECTS
Lecturer; PhD level; Stockholm University
- 2014 - 2021 Organic Chemistry: Reactivity and structure (KO5001) – 15 ECTS
Course manager and lecturer; 3rd year undergraduate level; Stockholm University

Outreach

Personal interviews: La Nueva España (2020); Kemivarlden Biotech (2018); SU Magazine (2018).
Research introduction with local High School Students (2019, 2022)