

Part A. PERSONAL INFORMATION		CV date	06/10/2023
First and Family name	Ignacio Vayá Pérez		
Social Security, Passport, ID number		Age	
Researcher codes	ORCID	0000-0003-1682-9342	
	SCOPUS Author ID	8656337800	
	WoS Researcher ID	AAY-9201-2020	

A.1. Current position

Name of University/Institution	Universitat Politècnica de València		
Department	Instituto de Tecnología Química (UPV-CSIC)		
Address and Country	Avenida de los naranjos s/n, 46022, Valencia, Spain		
Phone number	E-mail	igvapre@qim.upv.es	
Current position	Profesor Titular de Universidad	From	20/10/2022
Keywords	Organic Chemistry, Photochemistry, Photophysics, Ultrafast Spectroscopy, Photobiology, Photosensitized DNA or Protein Damage, Nanomaterials		

A.2. Education

PhD, Licensed, Graduate	University	Year
Degree in Chemistry	Universitat de València	2002
PhD in Chemistry	Universitat Politècnica de València	2007

A.3. General indicators of quality of scientific production

- Co-director of 1 PhD: Alejandro Blasco Brusola. I am currently supervising two PhD (Lorena Tamarit Mayo and Guillermo García Laínez)
- Co-director of two Master Projects (TFM) in Experimental and Industrial Organic Chemistry (Yameiri Rondón and Lorena Tamarit Mayo) and six Final Degree Projects (TFG)
- Total citations: 1198
- h-Index: 19
- Publications in peer-reviewed journals: 49; 31 in Q1
- Recognition of 3 Sexenios de Investigación by ANECA (2003-2008; 2009-2014; 2015-2020).

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Dr. Ignacio Vayá is currently **Profesor Titular de Universidad** (TU) at the Universitat Politècnica de València (UPV). He started his research career the last year of his higher studies, carrying out the final project degree at the University of Leiden (Erasmus student). He was awarded with several fellowships, among them the **FPU** to perform his PhD at the UPV. His research aimed to study the photoreactivity of drug/biomolecule models and the real complexes by means of spectroscopic techniques, in particular the laser flash photolysis, with which he developed a novel methodology to investigate these interactions. In 2006, Dr. Vayá joined Prof. Olivucci's research group (Italy) with the aid of grant from MEC as a pre-doctoral visitor to work in the field of computational chemistry. He earned his PhD in Chemistry (**European Doctorate**) in November 2007 with the highest mark and he was awarded with a prize for his PhD (Dec. 2009). In September 2008, Dr. Vayá moved to the Laboratoire Francis Perrin (France) as a postdoctoral researcher. He was first awarded with a contract from the Centre National de la Recherche Scientifique within an International ANR project, and later with the most prestigious postdoctoral contract from the Generalitat Valenciana (**GV, VALi+D program**). He focused his interests in the photoreactivity of natural DNA and DNA model helices as well as G-quadruplexes in different environments. In April 2012, Dr. Vayá was awarded with a **Juan de la Cierva** contract and joined the Departamento de Química-Instituto de Tecnología Química (DQ-ITQ) at the UPV. He was given the freedom to independently design various research projects aiming to study the photoreactivity of drugs in biomolecule media. Indeed, he obtained financial support to develop his own research line as Principal Investigator (PI) from the European Union (**Marie Curie CIG**) and from national institutions (**GV, Proyectos Emergentes and UPV, Primeros Proyectos**). Additionally, he obtained

funding from a **European LASERLAB project** to continue his collaboration with Prof. Markovitsi. In May 2015, Dr. Vayá moved to the University of East Anglia (UEA, UK) as a **Marie Skłodowska-Curie Fellow** (funded by the EU, H2020) to expand his research experience in the field of functionalized gold nanoparticles for their use in biological applications. In 2016, Dr. Vayá was awarded with the **Ramón y Cajal** contract and came back to the ITQ (2017-2022) to continue his research about the reactivity of photoactive nanoparticles functionalized with drugs and biomolecule targets for their use in biological applications. In parallel, he also focused his attention in the photobehavior of anticancer drugs in biological environments. In this regard, Dr. Vayá obtained **funding from MICINN (CTQ2017-89416-R and PID2020-115010RB-I0)**, from **GV (CIAICO/2021/061)** and from **UV-IISLaFe (AP2022-5)** to continue his research line. He obtained the I3 certificate by MICIU (2019). He has published 49 “peer-reviewed” articles in high impact journals, and he has been invited to international conferences and seminars. Dr. Vayá has directed the research of 1 PhD student and of several TFM and TFG projects, in addition of leading the laboratory work trainees; he is currently supervising 2 additional PhDs, and he is the **coordinator** of the **postdoctoral project** of A. Blasco (**CIAPOS/2021/87**).

Part C. RELEVANT MERITS

C.1. Publications

1. Tamarit, L.; García-Gabarda, L.; Jiménez, M. C.; Miranda, M. A.; Vayá, I. **(CA)** Topological effects in ultrafast photoinduced processes between flurbiprofen and tryptophan in linked dyads and within human serum albumin. *Phys. Chem. Chem. Phys.* **2023**, *25*, 16148-16156.
2. Cabrero-Antonino, M.; Melillo, A.; Montero-Lanzuela, E.; Álvaro, M.; Ferrer, B.; Vayá, I.; Baldoví, H. G.; Navalón, S. Solar-driven gas phase photocatalytic CO₂ methanation by multimetallic UiO-66 solids decorated ruthenium nanoparticles. *Chem. Eng. J.* **2023**, *468*, 143553.
3. Tamarit, L.; El Ouardi, M.; Lence, E.; Andreu, I.; González-Bello, C.; Vayá, I. **(CA)**; Miranda, M. A. Switching from ultrafast electron transfer to proton transfer in excited drug-protein complexes upon biotransformation. *Chem. Sci.* **2022**, *13*, 9644–9654.
4. Tamarit, L.; El Ouardi, M.; Andreu, I.; Vayá, I. **(CA)**; Miranda, M. A. Photoprocesses of the tyrosine kinase inhibitor gefitinib: from femtoseconds to microseconds and from solution to cells. *Chem. Sci.* **2021**, *12*, 12027-12035.
5. García-Laínez, G.; Vayá, I.; Marín, M. P.; Miranda, M. A.; Andreu, I. In vitro assessment of the photo(genotoxicity associated with Lapatinib, a Tyrosine Kinase inhibitor. *Arch. Toxicol.* **2021**, *95*, 169-178.
6. **Vayá, I. (CA)**; Andreu, I.; Lence, E.; González-Bello, C.; Cuquerella, M. C.; Navarrete-Miguel, M.; Roca-Sanjuán, D.; Miranda, M. A., Characterization of the locally excited and charge-transfer states of the anticancer drug lapatinib by ultrafast spectroscopy and computational studies. *Chem. Eur. J.* **2020**, *26*, 15922-15930.
7. Blasco-Brusola, A.; **Vayá, I. (CA)**; Miranda, M. A., Regioselectivity in the adiabatic photocleavage of DNA-based oxetanes. *Org. Biomol. Chem.* **2020**, *18*, 9117-9123.
8. Blasco-Brusola, A.; **Vayá, I. (CA)**; Miranda, M. A., Influence of the Linking Bridge on the Photoreactivity of Benzophenone-Thymine Conjugates. *J. Org. Chem.* **2020**, *85*, 14068-14076.
9. Blasco-Brusola, A.; Navarrete-Miguel, M.; Giussani, A.; Roca-Sanjuán, D.; **Vayá, I. (CA)**; Miranda, M. A., Regiochemical memory in the adiabatic photolysis of thymine-derived oxetanes. A combined ultrafast spectroscopic and CASSCF/CASPT2 computational study. *Phys. Chem. Chem. Phys.* **2020**, *22*, 20037-20042.
10. Andreu, I.; Lence, E.; González-Bello, C.; Mayorga, C.; Cuquerella, M. C.; **Vayá, I. (CA)**; Miranda, M. A., Protein Binding of Lapatinib and Its N- and O-Dealkylated Metabolites Interrogated by Fluorescence, Ultrafast Spectroscopy and Molecular Dynamics Simulations. *Front. Pharmacol.* **2020**, *11*.

*CA, Corresponding Author

C.2. Research projects

1. Título: Sunscreen-based photocages (CIAICO/2021/061)
Entidad Financiadora: Generalitat Valenciana
IPs: Ignacio Vayá Pérez, Virginie Lhiaubet
Fecha de inicio: 01/01/2022; fecha final: 31/12/2024
Cuantía: 90.000 €
Tipo de participación: investigador principal
2. Título: Dormant Photosensitizers to Combat Antimicrobial Resistance (CIAPOS/2021/87)
Entidad Financiadora: Generalitat Valenciana
IP: Ignacio Vayá Pérez
Fecha de inicio: 01/10/2022; fecha final: 30/09/2024
Cuantía: 92.470 €
Tipo de participación: investigador principal
3. Título: Fotocomportamiento de los Inhibidores de la Tirosina Quinasa: de Disolución a Células (PID2020-115010RB-I00)
Entidad Financiadora: Ministerio de Ciencia e Innovación
IPs: Ignacio Vayá Pérez, Inmaculada Andreu Ros
Fecha de inicio: 01/09/2021; fecha final: 31/08/2024
Cuantía: 133.100 €
Tipo de participación: investigador principal
4. Título: MOFs fotoactivos con actividad biocida por inactivación fotodinámica (AP2022-5)
Entidad Financiadora: Fundación para la investigación Hospital Universitario La Fe
IPs: Ignacio Vayá Pérez, Sergio Tatay Aguilar
Fecha de inicio: 01/09/2022; fecha final: 28/02/2024
Cuantía: 6.000 €
Tipo de participación: investigador principal
5. Título: Functionalization of gold nanoparticles with biological targets and singlet oxygen photosensitisers for their use in biomedicine (CTQ2017-89416-R)
Entidad Financiadora: Ministerio de Ciencia, Innovación y Universidades,
IP: Ignacio Vayá Pérez
Fecha de inicio: 02/01/2018; fecha final: 30/09/2021
Cuantía: 71.269 €
Tipo de participación: investigador principal
6. Título: Excited states as probes to investigate drug-DNA and drug-protein interactions. Photosensitised processes leading to damage to biomolecules (PCIG12-GA-2012-334257)
Entidad Financiadora: REA/7th Framework Programme for Research
IP: Ignacio Vayá Pérez, Universidad Politécnica de Valencia
Fecha de inicio: 01/03/2013; fecha final: 01/03/2015
Cuantía: 50.000 €
Tipo de participación: investigador principal
7. Título: Interacciones fármaco-biomolécula: procesos fotosensibilizados y reactividad fotoquímica (GV/2013/051)
Entidad Financiadora: Generalitat Valenciana Consellería d'Educació, Cultura i Esport,
IP: Ignacio Vayá Pérez
Fecha de inicio: 01/01/2013; fecha final: 31/12/2014
Cuantía: 12.000 €
Tipo de participación: investigador principal
8. Título: Sistemas fotoactivos para el estudio de las interacciones fármaco-biomolécula (SP20120757)
Entidad Financiadora: Universidad Politécnica de Valencia
IP: Ignacio Vayá Pérez
Fecha de inicio: 31/12/2012; fecha final: 31/12/2014
Cuantía: 10.500 euros
Tipo de participación: investigador principal

C.3. Contracts, technological or transfer merits

1. Título: Contrato Ramón y Cajal (Ministerio de Economía y Competitividad)
Investigador y Entidad: Ignacio Vayá Pérez, Universidad Politécnica de Valencia
Fecha de inicio: 15/05/2017; fecha final: 14/10/2022
Cuantía: 308.600 euros
2. Título: Marie Sklodowska-Curie IF Research Fellow (European Research Council H2020)
Investigador y Entidad: Ignacio Vayá Pérez, University of East Anglia (UK)
Fecha de inicio: 01/05/2015; fecha final: 30/04/2017
Cuantía: 183.454,8 euros
3. Título: Contrato postdoctoral Juan de la Cierva (MICINN)
Investigador y Entidad: Ignacio Vayá Pérez, Universidad Politécnica de Valencia
Fecha de inicio: 16/04/2012; fecha final: 15/04/2015
Cuantía: 96.000 euros
4. Título: Contrato postdoctoral VALi+D (Generalitat Valenciana)
Investigador y Entidad: Ignacio Vayá Pérez, Laboratoire Francis Perrin, CEA-Saclay
Fecha de inicio: 16/04/2010; fecha final: 15/04/2012
Cuantía: 93.369,99 euros

C.4. Others

- **Prize** to the **best PhD** in the area of Chemistry, Physics and Mathematics (awarded by the Consejo Social of the Universitat Politècnica de València, December 2009).
- Participation in international/national **conferences**: 48; 13 as invited or oral presentations.
- **Collaborations** with research groups of distinguished international quality: Dr. Inmaculada Andreu (UPV, IISLaFe), Dr. Concepción Bello (USC), Dr. Daniel Roca (UV-ICMOL), Dr. Sergio Tatay (UV-ICMOL), Dr. Carlos Martí (UV-ICMOL), Dr. Luis A. Villaescusa (UPV), Prof. Dimitra Markovitsi (CEA-Saclay), Prof. Thomas Gustavsson (CEA-Saclay).
- **Reviewer** in the following journals: *Sci. Rep.*, *Front. Pharmacol.*, *ACS Omega*, *J. Photochem. Photobiol. A*, *J. Photochem. Photobiol. B*, *Molecules*.
- Member of the European Photochemistry Association (EPA), 2009, and European Society for Photobiology (ESP), 2015.
- Member of the **Microcluster Research** "Interacciones luz-fármaco en sistemas biológicos y reacciones adversas" (VLC/Campus International Campus of Excellence).
- Publication of scientific results in the CNRS public journal (March 2013).
- Speaker at the "Jornadas de Ayudas a la Movilidad del Personal Investigador", asociación RUVID (Valencia, 2013).
- **Teaching activities**: 630h in different degrees: Grado en Ingeniería de Técnicas Industriales, Grado en Ingeniería Química, Grado en Ingeniería de Organización Industrial y Grado en Ingeniería de la Energía, de la ETSII de la UPV.