MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE (CVA)

Part A. PERSONAL INFORMATION

CV date	07/12/2025

First name	Mohit		
Family name	Kumar		
Gender (*)	Male	Birth date (dd/mm/yyyy)	24/06/1986
ID number	NIE: Y8441981Y		
e-mail	mohit.kumar@ub.edu	URL Web: https://mohitkumarub.wixsite.com/saml	
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-0083-7217		

A.1. Current position

Position	Ramon y Cajal researcher		
Initial date	01/01/2023		
Institution	University of Barcelona		
Department/Center	Department of Inorganic and Organic Chemistry		Organic Chemistry
Country	Spain	Teleph. number	+34-934039090
Key words	Nanomaterials, Supramolecular chemistry, Systems Chemistry, Nanomedicine, Sensing and diagnostics, Soft matter, Synthetic lipids		

A.2. Previous positions (research activity interuptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
March 2023 to July 2023	4 months of paternity leave
June 2021 to Dec 2022	La Caixa Junior Leader, Inst. for Bioengin. of Catalonia (IBEC) / Spain
April 2020 to May 2021	COVID-19 pandemic related discontinuity in research career
April 2015 to March 2020	Postdoctoral researcher / City university of New York / USA

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Chemistry	J. Nehru Centre for Advanced. Scientific Research-India	2014
Master in chemistry	Sri Sathya Sai Institute of Higher Learning / India	2009

A.4. Academic achievements and awards:

Award / Achievements	Years
Ramon y Cajal fellowship	2023-27
La Caixa Junior leader fellowship, Marie Skłodowska-Curie fellow	2021-22
Beatriu de Pinós postdoctoral fellowship	2021 (declined)
Best PhD thesis award (cum laude equivalent)	2014
Fully funded 5-year PhD scholarship (JRF and SRF)	2009-14
GATE 2009 exam: All India rank 6, percentile 99.91	2009
Bachelor in chemistry (score 4.77/5)	2004-07
Master in chemistry (score 4.96/5)	2007-09

Part B. CV SUMMARY

Dr. Mohit Kumar is currently a Ramon y Cajal researcher and a group leader at the university of Barcelona since Jan 2023. The main objective of his research is to design and develop **bio-inspired, functional, supramolecular nanomaterials.** His research involves developing novel soft material,

basic understanding of its properties and the exploration of its applications in the field of healthcare, energy and environment. The cross disciplinary nature of his research involves organic chemistry, nanoscience and soft material for application in nanomedicine, sensing and diagnostics, nanomaterials for organic electronics etc.

His more than 15 years of international research experience consist of Ph.D. in India (2009-14), Postdoctoral training in New York (2015-20), a short stay in California (April 2017) and as La Caixa Junior leader in IBEC-Barcelona (2021-22). He has published a total of **28 articles** (all in first quartile (Q1) journals), **13 first author**, **7 corresponding author** articles, **One US patent** with an **h-index = 20,** total citations = 2270), source: Google scholar. His PhD thesis won the best PhD thesis award (***cum laude* equivalent**) of the year.

Main highlights of his research:

1) Supramolecular active material whose functional lifetime can be regulated, resulting in transient vesicles and electro conducting nanowires (**Angew. Chem.** 2025, **Nat. chem.** 2018)
2) Temporal control over supramolecular gels and super-resolution imaging of dynamic nanostructures for smart hydrogels (**Angew. Chem. 2023**, **Chem. Eur. J.** 2020, **ACS Nano** 2020)
3) Bioinspired design of peptides-based nanomaterials for targeted therapeutics (**ACS Nano** 2019)
4) Biomolecular responsive soft material (**Nat. Commun.** 2014, **Chem. Sci.** 2014)
5) Development of supramolecular polymers for organic electronics (**Chem. Eur. J.** 2014)
6) Supramolecular sensors (**J. Mater. Chem. B** 2024, **Nanoscale** 2011, **US patent** 2013)

Dr. Kumar has demonstrated his scientific independence and leadership by obtaining 5 research grants as PI. He is the PI of **La Caixa health 2024** grant (his part 102,019 €), PI of **La Caixa Junior Leader grant** (**292,500 Euro**) and Proyectos De Generación De Conocimiento 2021 (**75,020 Euro**). In 2022, he was granted the **Ramon y Cajal fellowship** to start his independent research career (total 236,000 €, 42,000 € for research). He also obtained the starting grant of 8,000 € from the IQTC (Univ. of Barcelona), to kick-start his lab. He won the competitive, three-year Beatriu de Pinós postdoctoral fellowship but declined the offer to accept La Caixa fellowship. Apart from these grants as PI, he has co-written three research proposal with his supervisor to agencies in USA to obtain funds **worth close to a million dollars,** which significantly funded his postdoctoral stay. His *5-year PhD was fully funded by a highly competitive national fellowship* from the Indian ministry of science.

He has experience in teaching master and senior undergraduate students in India, USA, and Spain in various topics in Chemistry. He has mentored three PhD students and supervised 14 masters and undergraduate students towards their thesis which has resulted in 5 publications in international journals. He is currently supervising three PhD students (where he is the official supervisor) and a postdoc who is funded by his research grant. Mentoring and supervising activities have made him a matured scientist and helped him transition into an independent PI. He has also initiated several collaborations with physicist, chemical engineer, biologist, from Spain and abroad (Portugal, USA, France, India), which have resulted in 6 publications in scientific journals and a joint research grant. These collaborations have shaped him into a scientist with international recognition.

He has participated in more than 30 internationally recognized conferences with many as **invited talks**. He has also been invited to give department seminars in Universities in USA, Spain and India. He has been the **co-organizer of an international conference** (ICONAN-2024) organized in Barcelona and session chairs of multiple conferences like prestigious GRC conference. He has been reviewers of many international journals like Nature Chemistry, Nature Communication, Angewandte Chemie, Adv. Funct. Mater., Chem. Eur. J., ChemBioChem etc. *He has been **reviewer of Spanish National grants**, PhD and Master thesis reviewer, member of PhD thesis committee etc.*

Thus, as a young PI, he has demonstrated independence and promising career trajectory through personal research grants (>600K €), corresponding author publications (7), PhD and postdoc supervision (4), being in various reviewing committee and through international collaborations.

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

C1. Publications (Selected, source: google scholar)

First / corresponding Author articles:

1. Article: A. Venugopal, S. Ghosh, A. Calo, G. M. Tuveri, G. Battaglia, M. Kumar*, Enzyme Controlled Transient Phospholipid Vesicles for Regulated Cargo Release, **Angew. Chem. Int. Ed.**, 2025, DOI: 10.1002/anie.202500824. (***corresponding author***) **cited by:** 1

2. Article: P. Sharma, A. Venugopal, C. M. Verdi, M. S. Roger, A. Calò, M. Kumar*, Heparin Binding Induced Supramolecular Chirality into Self-Assembly of Perylenediimide bolaamphiphile, **J. Mater. Chem. B**, 2024, 12, 7292-7297. (***corresponding author, invited)*** **cited by:** 5

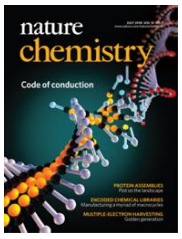
3. Review: A. Venugopal, L. Ruiz-Perez, K. Swamynathan, C. Kulkarni, A. Calo, M. Kumar*****, Caught in Action: Visualizing Dynamic Nanostructures Within Supramolecular Systems Chemistry, **Angew. Chem. Int. Ed.**, 2023, doi: 10.1002/anie.202208681. (***corresponding author, invited)*** **cited by:** 13

4. Review: F. Sheehan, D. Sementa, A. Jain, M. Kumar‡, M. Tayarani-Najjaran, D. Kroiss, R. V. Ulijn, "Peptide-Based Supramolecular Systems Chemistry", **Chem. Rev.** 2021, doi: 10.1021/acs.chemrev.1c00089, 121, 13869-13914. ‡ (**co-first author**) **cited by:** 304

5. Article: M. Kumar*****, J. Son, R. H. Huang, D. Sementa, M. Lee, S. O'Brien, R. V. Ulijn, In Situ, Noncovalent Labeling and Stimulated Emission Depletion-Based Super-Resolution Imaging of Supramolecular Peptide Nanostructures, **ACS Nano** 14, 11, 15056–15063 (2020), doi: 10.1021/acsnano.0c05029. **Q1**. (***corresponding author***) **cited by:** 20

6. Article: M. Kumar*****, D. Sementa, V. Narang, E. Riedo, R. V. Ulijn, Self-Assembly Propensity Dictates Lifetimes in Transient Naphthalimide-dipeptide Nanofibers, **Chem. Eur. J.** 26, 8372-8376 (2020) doi: 10.1002/chem.202001008. **Q1** (***corresponding author, VIP article***) **cited by:** 31.

7. Article: N. K. Wijerathne, M. Kumar*, R. V. Ulijn, Fmoc-dipeptide/Porphyrin Molar Ratio Dictates Energy Transfer Efficiency in Nanostructures Produced by Biocatalytic Coassembly, **Chem. Eur. J.** 25, 11847-11851 (2019), doi: 10.1002/chem.201902819. **Q1, cited by**: 19 (***corresponding author and co first-author***).



8. Article: M. Kumar, N. Ing, V. Narang, N. Wijerathne, A. Hochbaum, R. V. Ulijn, Amino acid-encoded biocatalytic self-assembly enables the formation of transient conducting nanostructures, **Nat. Chem.** 10, 696-703 (2018), doi: 10.1038/s41557-018-0047-2. **JIF:** 19.2, **Q1**, **cited by:** 225 (***cover article***).

9. Article: M. Kumar, P. Brocorens, C. Tonnelé, D. Beljonne, M. Surin, S. J. George, A dynamic supramolecular polymer with stimuli responsive handedness for in situ probing of enzymatic ATP hydrolysis, **Nat. Commun.** 5, 5793 (2014), doi: 10.1038/ncomms6793. **ISSN:** 2041-1723, **JIF:** 12.121, **Q1**, **cited by:** 155 (*first author, highlighted in Nature Chemistry*).

10. Article: M. Kumar, S. J. George, Homotropic and heterotropic allosteric regulation of supramolecular chirality, **Chem. Sci.** 5, 3025-3030 (2014), doi: 10.1039/C4SC00813H. **ISSN:** 2041-6520, **JIF:** 9.346, **Q1**, **cited by:** 55 (*first author*).

C2. Congress (Selected)

1. **Oral conference talk**: XL Reunión Bienal de la RSEQ, Bilbao, Spain, 30th June-3rd July, 2025, Title: Active Phospholipid Vesicle as Cellular Membrane Mimic.
2. **Invited discussion leader**: Self-Assembly and Supramolecular Chemistry, Gordon Research Conferences, Switzerland, 11-16th May, 2025, Title: Supramolecular Designs for Materials and Medicine.
3. **Invited conference talk**: XIX Iberian Peptides Meeting (EPI), Santiago de Compostela, Spain, 26-28 Feb, 2025, Title: Active vesicle as synthetic cell and their role in peptide/protein self-assembly.
4. **Invited conference talk:** Active nano/microsystems in the Spanish context, Barcelona, 24-25 Oct, 2024, Title: Chemically fueled active vesicles for temporally controlled cargo release.
5. **Invited conference talk:** ESAB 2024-European South Atlantic Biophysics Congress, San Sebastian, Spain, 5-7 June, 2024, Title: Vesicles: Nanocontainers for temporally regulated cargo delivery.
6. **Invited symposium talk:** IBEC – KAIST Symposium, IBEC, Barcelona, 20th May, 2024, Title: Active Vesicles for temporally regulated cargo delivery.
7. **Invited department seminar**: Indian Institute of Technology, Bombay (Mumbai-India), 5th Jan 2024, Active Vesicles: Nanocontainers for temporally regulated cargo delivery.

8. **Invited conference talk:** From Bioinorganic Chemistry to Catalysis, 4th ed., San Sebastian, 12th May 2023, Title: Supramolecular materials with life-like functions.
9. **Invited conference talk:** Mach-5: Molecular Machinery: Making, Measuring, Modeling Conference Series, Plon, Germany, 13th Sep, 2022, Title: Temporally regulated peptide nanostructures
10. **Invited department seminar:** Universitat Jaume I (Valencia-Spain), 22nd Oct 2021, Title: Nanomaterials with life-like functions.

C3. Research projects

Persons research grant as PI:

1) **Title:** Pep-SICO: Peptide-based systems as artificial compartments to diagnose non-Alzheimer Tauopathies diseases; **Agency: La Caixa health 2024, La Caixa foundation**; Oct 2024-Sep 2027, University of Barcelona, Total Amount: 999,994 € (Amount for Dr. Kumar's research: 102,019 €). PI: Mohit Kumar, Co-Ordinator: Prof. Ana Pina.

2) **Title:** Out of equilibrium self-assembled materials as adaptive bio- interfaces; **Agency:** La Caixa foundation, June 2021 to May 2024, Institute for Bioengineering of Catalonia, Amount: 292,500 €. **PI:** Mohit Kumar

3) **Title:** materiales blandos quimicamente alimentados con funciones similares a sistemas vivos; PID2021-126244NA-I00, **Agency:** Proyectos De Generación De Conocimiento 2021, Sep 2022 to July 2024, IBEC, Amount: 75,020 €. **PI:** Mohit Kumar

4) **Title:** Chemically Fueled Soft Materials with Life-like Functions, RYC2021-035016-I, **Agency:** Ayudas para contratación Ramón y Cajal 2021, Jan 2023 till Dec 2027, University of Barcelona. Amount: 196,350 €-fellowship and 40,000 €-research. **PI:** Mohit Kumar

5) **Travel grants:** Dr. Kumar has received 4 travel grants: 1) From Dept. of Science and Technology, India (nearly 1880$) in 2014 to attend the Chirality Conference in Prague; 2) From CUNY (New York) Postdoctoral award program (1500$) in 2019 to travel to GRC Systems Chemistry conference; 3) From UB (Spain) 300 € to travel to ESAB 2024 in San Sebastian; 4) COST Action: 1800 € to attend GRC Self-assembly conference in 2025.

6) **Welcome grant:** Dr. Kumar has received a starting grant of 8,000 € in Sep 2023 to start his independent lab in UB. **Agency:** Theoretical and Computational Chemistry Institute (IQTC), University of Barcelona.

7) **Postdoc fellowship:** Dr. Kumar won the competitive Beatriu de Pinós postdoctoral fellowship (2020 call) awarded by the AGAUR/Catalan government. It was worth 144,300 € for a 3 year of postdoc. He declined the offer due to the existing La Caixa fellowship.

Research grant as team member:

8) Grant to support the scientific activity of the group of research of Catalunya SGR - Grup consolidat (SGR-Cat 2021) Grup de Recerca de la Generalitat de Catalunya "Molecular Bionics". Agency: Generalitat de Catalunya, Amount: 40,000 €. Co-ordinator: Prof. Giuseppe Battaglia, Dr. Mohit Kumar: member of the research group.

9) **Title:** Metabolic nanotechnology; **Agency:** United States-Israel Bi national science foundation, 2017 to 2020; City University of New York; Amount: 297,551 $, **Principal Investigator(s):** Prof. Rein Ulijn, **My role:** I cowrote the proposal, as a postdoc, I was responsible for conducting research.

10) **Title:** Active assembly of conducting peptide gels; **Agency:** National science foundation (NSF, USA), From 2018 to 2021; City University of New York. Award Number: 1808143, Amount: $488,319.00. **PI (s):** Prof. Rein Ulijn (ASRC-CUNY) and Prof. Allon Hochbaum (University of California, Irvine UCI). **My role:** I co-wrote the proposal, as a postdoc. I mentored the PhD student in this project which resulted in my corresponding author article in Q1 journal (Chem. Eur. J. 2019).

C4. Contracts, technological or transfer merits

Patent / Technology transfer: A US patent was filed based on the technology I developed on sensing various volatile organic compounds. M. Kumar and S. J. George, Chromophores and methods for detection of volatile organic compounds, **U.S. Pat. Appl. Publ.** (2013), US 20130078731 A1 20130328. The patent was bought by the company Intellectual Ventures Asia.

C5. Thesis Supervision/Committees/responsibilities

- Currently supervising 1 postdoc and 3 PhD students towards their thesis. One PhD will defend in Jan 2026 and others in 2-3 years.
- Supervision of Masters/Undergraduate students: Total 15 where Dr. Kumar is the thesis director of 10 of them.
- Reviewer of PhD thesis (3 student) from University of Valencia and Master thesis (4 students)
- He has been invited to review three research grants submitted to the Proyectos De Generación De Conocimiento (Spain) in 2022, 2023 and 2024.