

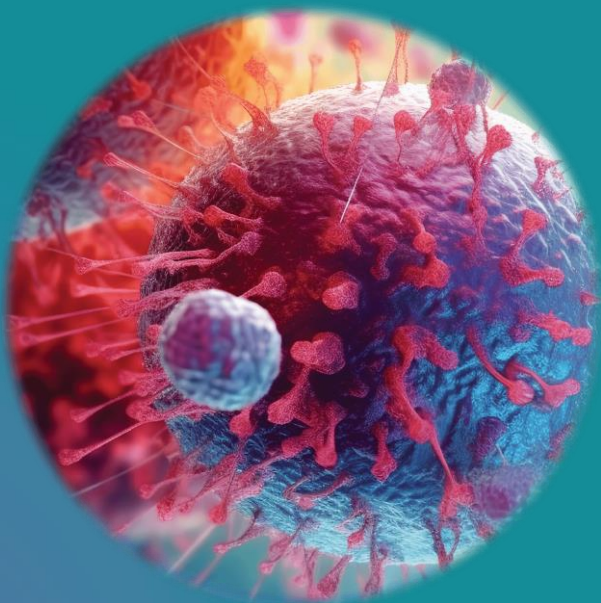


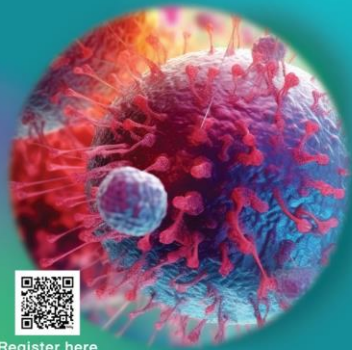
# Spanish Delegation to Thailand 2024

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*Harnessing the Potential of  
Nanotechnology in Future Health,  
Personalized Medicine  
and Wellbeing*

9<sup>th</sup> -12<sup>th</sup> JULY 2024  
Bangkok





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# SPAIN-THAILAND INNOVATION FORUM

## Harnessing the Potential of Nanotechnology in Future Health, Personalized Medicine and Wellbeing

### 1. Organizer

*CDTI (Centre for the Development of Technology and Innovation).  
Ministry of Science, Innovation and Universities. Government of Spain*



**Mr. Carlos de la Cruz**

*Director of the Department of Technology and Internalization*

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The **Centre for the of Technology Development and Innovation** (CDTI) is a Business Public Entity, answering to the *Ministry of Science, Innovation and Universities* (MSIU), which fosters the technological development and innovation of Spanish companies. Since 2009, it has been the entity used the MSIU to channel the funding and support applications for national and international R&D&i projects of Spanish companies. The CDTI thus seeks to contribute to improving the technological level of the Spanish companies by means of implementing the following activities:

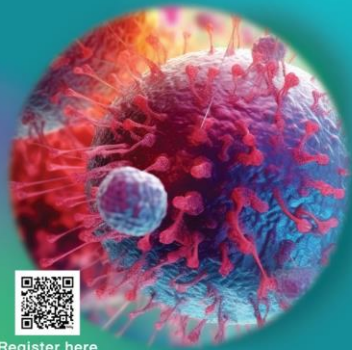
- Assessing R&D projects implemented by companies from a financial and economic-technical point of view.
- Managing and fostering Spanish participation in international technological cooperation programs.
- Fostering international business technology transfer and support services for technological innovation.
- Supporting the setting up and consolidation of technological companies.

The CDTI employs over 300 people, three quarters of whom are engineers and graduates. Even though the bulk of the CDTI infrastructure is in Madrid, the Centre offers Spanish companies a strategic external network of offices or representatives present in nine countries promoting the establishment of institutional partnerships between CDTI and other counterpart agencies from different countries with similar competences in the field of R&D.

The mission of the External CDTI Network is to help innovative Spanish entities to have a good technological position in the international arena. Therefore, it (a) offers support to those Spanish entities that are interested in developing technological cooperation projects with companies in other countries, (b) facilitates the identification of technological opportunities outside the EU, and (c) promotes technology transfer.

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## 2. Collaborator

NANOMED

(Spanish Nanomedicine Platform)



# NANOMED

S P A I N

**Dr. Teresa Sanchis**

Executive Coordinator

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The **Plataforma Española de Nanomedicina** (NANOMED Spain) is an initiative that unites key Spanish stakeholders in research, industry, and administration to promote a common strategy in the field of nanomedicine. Established in 2005, NANOMED Spain focuses on accelerating the development of innovative medical and pharmaceutical products based on nanotechnology.

NANOMED Spain aims to facilitate the translation of nanomedicine from early research stages to market and clinical applications, particularly in Spain. It provides a common space for dialogue and cooperation among all involved parties. Nanomedicine involves using nanotechnology to develop new therapies and diagnostic tools. This science aims to improve the understanding of molecular interactions and to create innovative pathways for diagnosing and treating human diseases, aligning with the global evolution of medicine.

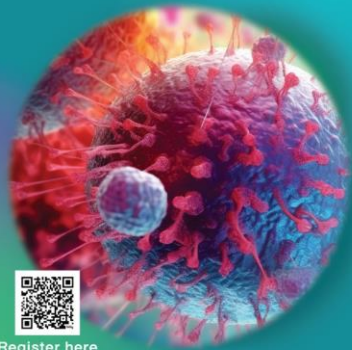
### Key Objectives:

- **Translational Science:** Promote the application of nanotechnology in developing new diagnostic and therapeutic systems.
- **Personalized Healthcare:** Enhance patient care quality through more personalized and cost-effective healthcare technologies.
- **Interdisciplinary Research:** Encourage multidisciplinary scientific excellence and collaboration among academia, hospitals, industry, and research centers.
- **Public-Private Partnerships:** Support projects and collaborations between public and private sectors to advance nanomedicine.

Nanomedicine is prioritized in strategic agendas of OECD countries and emerging nations due to its potential to offer high-value, competitive healthcare products. NANOMED Spain works efficiently with available resources to maintain and strengthen Spain's leading position in this emerging field.

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### 3.R&D centers

*CIC biomaGUNE*

*(Center for Cooperative Research in Biomaterials)*



## CIC biomaGUNE

MEMBER OF  
BASQUE RESEARCH  
& TECHNOLOGY ALLIANCE

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The **Center for Cooperative Research in Biomaterials** (CIC biomaGUNE) is a non-profit organization based in the *Science and Technology Park of Gipuzkoa*, in Donostia-San Sebastián, Spain. It is part of the *Basque Research and Technology Alliance* (BRTA) and aims to advance scientific research and technological innovation in biosciences.

CIC biomaGUNE is structured around three primary research priorities:

- Biofunctional Nanomaterials: Designing and characterizing nanostructures and biomaterials for biomedical applications.
- Molecular and Functional Imaging: Using advanced imaging to understand biological processes and develop diagnostic and therapeutic tools.
- Synthetic Bioengineering: Creating synthetic biological systems for medical innovations.

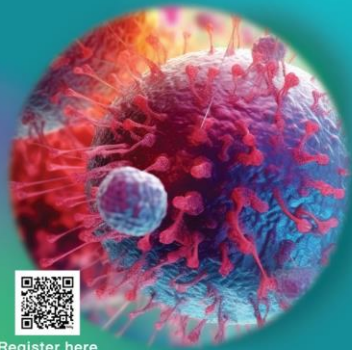
CIC biomaGUNE's research at the intersection of chemistry, physics, and biology emphasizes nanostructures and biomaterials to:

- Develop diagnostic tools and therapies.
- Improve understanding of diseases through imaging techniques.
- Create theranostic applications combining therapy and diagnostics.

The center has advanced facilities, including nanoscience and molecular imaging labs, and the Molecular Imaging Facility, recognized as a Singular Scientific and Technical Infrastructure by the Spanish Government.

With over 140 researchers, CIC biomaGUNE is nationally and internationally recognized for its contributions to biomaterials research, evidenced by numerous publications, patents, and collaborations. In 2018, it received the "María de Maeztu Unit of Excellence" accreditation.





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CIPF

(Príncipe Felipe Research Center)



**Dr. Mar Orzaez Calatayud**

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The **Príncipe Felipe Research Center (CIPF)** is a cutting-edge biomedical institute affiliated with the *Department of Health of the Generalitat Valenciana* in Valencia, Spain. The mission of the CIPF is to understand the cellular and molecular mechanisms of human disease and apply this knowledge to the development of innovative diagnostic and therapeutic approaches.

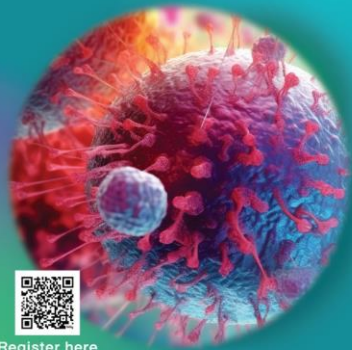
The CIPF structure is constituted by three scientific research programs:

- The **Cancer Biology and Therapeutics program**, formed by eight labs with highly complementary backgrounds and synergies. The program aims to advance multidisciplinary and translational research in cancer by focusing on identifying novel therapeutic targets and developing innovative treatments, advanced therapies, and diagnostic, prognostic, and response-predictive biomarkers.
- The **Neuronal Pathologies program** seeks to understand the molecular basis of relevant human diseases including Parkinson's, spinal cord injury, dementia, retinal neurodegeneration, and rare neuromuscular diseases.
- The **Metabolic Disorders program** of the CIPF focuses on the molecular and cellular defects that underlie chronic metabolic disorders such as diabetes and obesity and their associated complications.

These disease-focus research lines are supported by the cutting-edge technologies of our Transversal programs: Drug Discovery and Nanomedicine; Biomedical Engineering and Cell Therapy; and Preclinical Models and Computational Tools and Data Science. The CIPF has established a series of joint units (JU) with major hospitals, universities and research entities that are critical for advancing our mission related to translation of results to the clinic, and for our objectives related to training of young scientists. These JU are based on the development of synergies and projects through use of shared scientific-technical resources and infrastructures.

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## Harnessing the Potential of Nanotechnology in Future Health, Personalized Medicine and Wellbeing

*IMDEA Nanociencia*  
*(Institute of Advanced Studies of Madrid)*



**Dr. Isabel Rodríguez**  
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**IMDEA Nanociencia**, founded in 2007 in Madrid, is a premier research institute focused on nanoscience. It aims to address significant societal and technological challenges through cutting-edge research, with a particular emphasis on sustainability and innovation.

The main objective of their Key Program, *Nanotechnology for Critical Raw Materials and Sustainability*, is to mitigate Europe's reliance on critical raw materials (CRMs, which are essential for industries such as electronics, health, defense, and aerospace) by developing sustainable alternatives. The research is focused in:

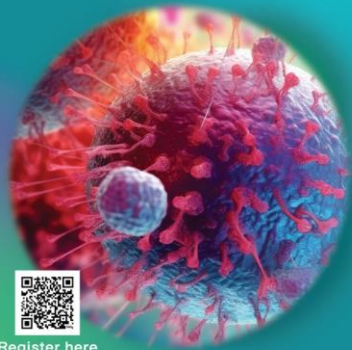
- Advanced Permanent Magnets: Developing alternatives to rare-earth magnets, including enhanced nanostructured ferrites for electro-mobility and novel manganese-based nanostructures.
- Smart Bioinspired Functional Surfaces: Creating surfaces that reduce energy usage and environmental impact using scalable, cost-effective nanofabrication technologies.

**IMDEA Nanociencia** aims to close the performance gap between existing materials and future requirements by exploring innovative solutions such as improved ferrites, L10-MnAlC, and L10-FeNi phase magnets inspired by meteorites. Additionally, the institute leverages additive manufacturing and 4D printing to produce highly efficient devices while minimizing CRM usage.

The institute collaborates closely with other research programs within **IMDEA Nanociencia**, promoting an interdisciplinary approach to achieve the *European Green Deal* objectives of sustainability and reduced CO<sub>2</sub> emissions.

Operating in a purpose-built 10,000-m<sup>2</sup> facility with over sixty labs, **IMDEA Nanociencia** boasts advanced capabilities in nanofabrication, soft lithography, and molecular patterning. These competencies support the development of innovative materials and technologies inspired by natural structures.





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*INMA - CSIC/University of Zaragoza  
(Institute of Nanoscience and Materials of Aragón)  
& CIBER-BBN*



**INMA**  
INSTITUTO DE NANOCIENCIA  
Y MATERIALES DE ARAGÓN

**ciber** | **BBN**

**Prof. Jesús Martínez de la Fuente**  
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<https://www.ciber-bbn.es/en>

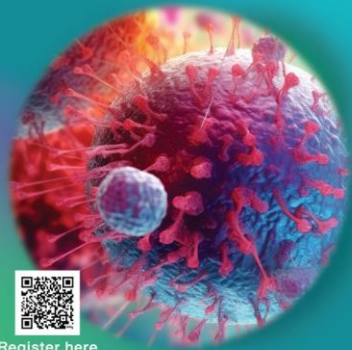
The *Instituto de Nanociencia y Materiales de Aragón* (INMA) is a joint research center established by the *Higher Council for Scientific Research* (CSIC) and the *University of Zaragoza* (UNIZAR). INMA is dedicated to advancing nanoscience, nanotechnology and materials science through a collaborative and interdisciplinary approach. Its primary objectives include:

- Advancing Research and Development: Contributing to the progress of nanoscience and materials science, with a focus on international projection.
- Quality and Multidisciplinary Research: Conducting high-quality research to address societal challenges.
- Collaboration and Competitiveness: Working with public administrations and the productive sector to disseminate knowledge and transfer results, enhancing societal living conditions.
- Scientific Culture: Promoting scientific awareness by disseminating activities to the public.
- Impact on Education: Ensuring research influences university teaching and vice versa.

*CIBER Consortium* is a Spanish public research center, with an interdisciplinary and multi-institutional nature, that integrates the most outstanding research groups in biomedicine in Spain. CIBER, which depends on both the *Ministry of Science, Innovation and Universities*, and the *Ministry of Health*, is currently the largest biomedical research center in Spain. Scientific activity within CIBER-BBN is aimed at the development of prevention, diagnosis and monitoring systems as well as technologies related to specific therapies such as regenerative medicine and nanotherapies.

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## Harnessing the Potential of Nanotechnology in Future Health, Personalized Medicine and Wellbeing

### Vall d'Hebron Research Institute



**Dr. Eva Baldrich**  
*Diagnostic Nanotools Group (DINA)*  
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Website: <https://vhir.vallhebron.com/en>

The **Vall d'Hebron Research Institute** (VHIR) is a public sector institution dedicated to promoting and developing biomedical research, innovation, and teaching at *Vall d'Hebron University Hospital* in Barcelona. It is the largest hospital of the *Catalan Institute of Health* (ICS) and a key player in biomedical research.

VHIR is part of the *Accredited Institute of Campus Vall d'Hebron*, alongside *Vall d'Hebron University Hospital* and the *Vall d'Hebron Institute of Oncology* (VHIO). It is supported by the *Catalan Department of Health*, the *Catalan Department of Economy and Knowledge*, the *Bank of Blood and Tissues*, and the *Autonomous University of Barcelona* (UAB).

Since its establishment in 1994, VHIR has been working to find solutions to societal health problems and disseminate them globally. With a team of over 1,300 people (including more than 1,200 researchers), VHIR aims to be recognized as a leading European institute in clinical and translational research.

VHIR conducts a broad spectrum of research, including:

- Basic Research: Understanding fundamental biological processes to develop new treatments.
- Translational Research: Bridging the gap between laboratory discoveries and clinical applications.
- Clinical Research: Conducting clinical trials and studies to directly benefit patients.

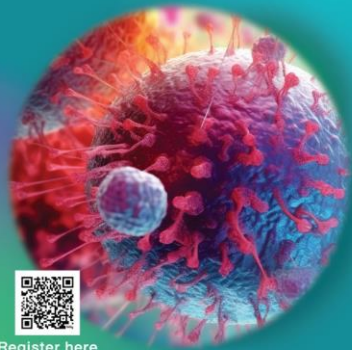
The institute's proximity to *Vall d'Hebron University Hospital* ensures seamless integration between research and patient care, making it a world reference for clinical trials. Industry leaders recognize the institute's excellence, contributing to its status as a global leader in biomedical research.

VHIR aims to advance knowledge with a significant biomedical impact, enhance the translation of research findings to improve public health, and promote innovation and technology transfer.

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## Harnessing the Potential of Nanotechnology in Future Health, Personalized Medicine and Wellbeing

### 4. Spanish Companies

BioKeralty



**Ms. Oihane Ibarrola**

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Previously known as *Organización Sanitas Internacional*, **Keralty** is a health value group with over 40 years of experience. It comprises health insurance companies, healthcare service providers, and an extensive hospital and care network. Additionally, Keralty includes educational institutions and socially-focused enterprises, enhancing its health offerings to the market.

Keralty's mission is to contribute to the development of countries through technological, social, and organizational innovation and integrated healthcare. The aim is to improve the well-being of individuals throughout their lives while generating employment, wealth, and quality of life in the communities where it operates, promoting regional development.

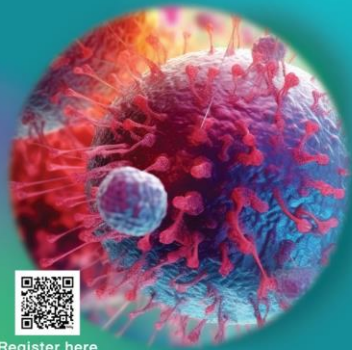
With more than 3 million members, over 13,000 affiliated doctors, and operations in more than 7 countries, Keralty focuses on maintaining the health of its users, identifying and managing risks and diseases. The group is recognized for its comprehensive health services, known for its human, scientific, technical, and ethical approach.

**BioKeralty Research Institute** is Keralty's R&D unit, aligned with the Keralty Health Model. Located in the Basque Country (Spain), BioKeralty bridges the *European Research Area* (ERA) and the practical, social, and community realities of Keralty's operational countries. Its key research areas include chronic diseases, regenerative medicine, cancer, personalized medicine, digital health, health value, social and community health dimensions.

Since its inception in 2009, BioKeralty has embraced open innovation, working in collaboration with global partners to share and generate knowledge and technology. This cooperative spirit has made BioKeralty a European leader in various research and development areas, with notable achievements in programs like *Horizon 2020*.

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### Curapath



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Product & Project Manager  
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Website: <https://curapath.com>

**Curapath** is a Contract Development and Manufacturing Organization (CDMO) specializing in novel drug delivery systems (DDS). With a decade of experience, *Curapath* excels in the formulation and manufacturing of Lipid Nanoparticles (LNP) and Polymer Nanoparticles (PNP), providing comprehensive support from development to Investigational New Drug (IND) applications.

*Curapath* stands out for its analytical and technical expertise in the custom design, development, and end-to-end Good Manufacturing Practice (GMP) manufacturing of polymer and lipid-based DDS. These services support a wide range of therapeutic applications, including cell therapy, gene therapy, and vaccine delivery.

#### Key Capabilities:

- Lipid and Polymer Nanoparticles: Expert formulation and manufacturing of LNPs and PNPs for effective drug delivery.
- GMP Manufacturing: Comprehensive GMP manufacturing services for both Drug Substance and Drug Product, ensuring quality and compliance for clinical trial materials.
- Technical Support: Unmatched technical support throughout the therapeutic development process, from preclinical development to commercial-scale manufacturing.

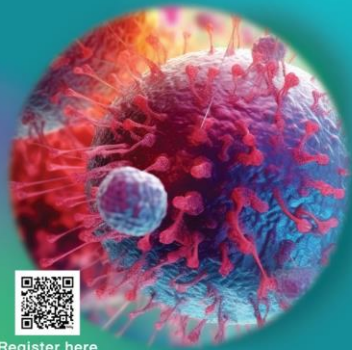
*Curapath* has a proven track record in developing stealth shielding polymers, functional polymer & lipid excipients, linkers for bioconjugation, and API polymers. These innovations are crucial for enhancing the delivery and efficacy of therapeutics.

*Curapath* supports all stages of drug development, including:

- Proof-of-Concept: Initial formulation and feasibility studies.
- Preclinical Development: Optimizing drug delivery systems for efficacy and safety.
- Clinical Trials: Manufacturing clinical trial materials under GMP conditions.
- Commercial-Scale Manufacturing: Scaling up production to meet market demands.

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DIVERSA



# DIVERSA

**Ms. María de la Fuente**

CEO/CSO

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Website: [www.diversatechnologies.com](http://www.diversatechnologies.com)

**DIVERSA** specializes in advanced drug delivery systems (DDS) based on lipid nanoemulsions. This technology facilitates the safe and effective intracellular delivery of complex macromolecules (peptides, proteins, and nucleic acids) and hydrophobic small molecules. The platform is supported by extensive, up-to-date intellectual property protection, and is fully scalable and compliant with regulatory standards.

**DIVERSA** aims to bridge the gap between molecular discovery and clinical application, creating new opportunities to enhance patients' quality of life.

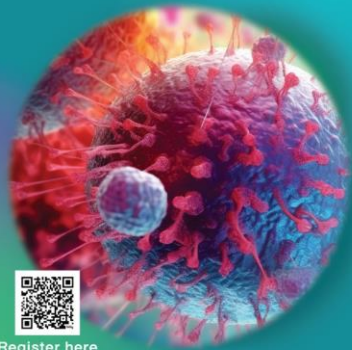
### Technology and Offerings:

- Lipid Nanoemulsions: DIVERSA's DDS enables efficient intracellular delivery, improving the bioavailability and therapeutic impact of various drugs.
- Product Formats:
  - Ready-to-Use Kits: Available for small molecule delivery, peptide delivery, and protein delivery.
  - Co-Development Agreements: For the development of optimized prototypes tailored to specific therapeutic needs.

**DIVERSA** is dedicated to advancing drug delivery technologies to ensure that innovative therapies can reach patients more effectively, ultimately improving health outcomes.

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### Nanoligent SL

# NANOLIGENT



**Ms. Monserrat Cano**

CEO

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**Nanoligent** is a biotech company, a spin-off from the *Universitat Autònoma de Barcelona* (UAB) and the *Institut de Recerca de l'Hospital de la Santa Creu i Sant Pau*. The company pioneers a revolutionary approach to drug design and development through cutting-edge nanobiotechnology.

**Nanoligent's** innovative platform leverages advanced protein engineering to create targeted drug therapies with unmatched precision and safety. The core technology involves the design of protein conjugates organized as nanoparticles, which can precisely target specific biological systems. This ensures the medication reaches its intended destination with pinpoint accuracy. Its key features are:

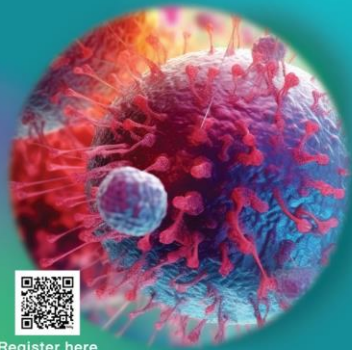
- Targeted Drug Delivery: *Nanoligent's* protein nanoparticles are designed to remain highly stable upon administration, resulting in long-lasting systemic circulation and site-specific drug delivery.
- Precision Medicine in Oncology: The platform is particularly transformative for oncology, offering a high therapeutic index while minimizing side effects. Specific ligands enable the selective targeting of affected cells, delivering the therapeutic cargo with exceptional accuracy.
- Humanized Scaffolds: These scaffolds prevent undesired immune responses, enhancing the safety and efficacy of treatments.

*Nanoligent* is dedicated to reducing systemic toxicity while enhancing treatment efficacy, with a potential to transform cancer therapy. The company focuses on developing safer, more effective therapeutic approaches that significantly improve patient outcomes.

*Nanoligent* aims to advance in the field of precision medicine by developing innovative nanobiotechnological solutions that offer targeted, safe, and effective treatments for cancer patients.

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### NANOMOL TECHNOLOGIES



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CEO and Co-Founder

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**NANOMOL TECHNOLOGIES** is a science and innovation-driven company that offers advanced solutions for processing, structuring and characterizing active molecules at the micro and nanoscale. The company serves pharmaceutical, biotech, and cosmetic industries, aiming to create revolutionary nanomedicines and drug delivery systems with exceptional therapeutic efficacy and patient compliance. **NANOMOL TECHNOLOGIES** is dedicated to generating innovative nanomedicines and drug delivery systems to enhance therapeutic outcomes and improve patient compliance.

Founded in late 2010 in the *UAB Research Park*, **NANOMOL TECHNOLOGIES** is a spin-off from the Nanomol research group at the *Materials Science Institute of Barcelona (ICMAB-CSIC)* and the *Networking Center on Biomedical Research (CIBER-BBN)*. It is part of the *TECNIO* network, established by the Catalan Agency *ACC1Ó* to connect leading Catalan research groups focused on applied research and technology transfer.

For over fifteen years, **NANOMOL TECHNOLOGIES** has developed and applied novel technologies utilizing compressed and supercritical fluids to create micro and nanoparticulate materials in a single process step. These green solvents are proposed as alternatives in various manufacturing processes, enabling the production of high-value materials in forms such as powders, dispersions, or emulsions.

The use of compressed and supercritical fluids addresses common pharmaceutical development challenges, including:

- **Low Selectivity and High Toxicity:** Improving the selectivity and reducing the toxicity of active molecules.
- **High Dosage Requirements:** Enhancing the efficiency of drug delivery to reduce dosage rates.
- **Bioavailability and Penetration:** Increasing the bioavailability of therapeutic molecules and their ability to penetrate biological membranes.

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