Programes de Ciència de Fundació Catalunya La Pedrera

Fem possible que joves amb talent accedeixin a la recerca científica en entorns reals, de forma pràctica i abans de la universitat, per orientar el seu futur acadèmic i professional, i impulsar les vocacions científiques.

Ho fem a través d'un ecosistema i en col·laboració amb hospitals i centres de recerca de referència.

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Fundació Catalunya La Pedrera

La nostra raó de ser: les persones

La Fundació Catalunya La Pedrera serveix a la societat construint un futur millor i més just. Per això, ofereix oportunitats a les persones; impulsa el talent, la creació i l'educació; fomenta habits d'alimentació saludables, i conserva i comparteix el patrimoni natural i cultural.



Science Fellows

PROTEIN CAGES

Designing Symmetric Assemblies in the Age of AI



18:00 h

18 de setembre de 2026

Auditori - La Pedrera

Fundació Catalunya La Pedrera

Designing Symmetric Assemblies in the Age of AI

Proteins are the molecular machines that make life possible, copying DNA, sensing light, carrying oxygen and building cells. Scientists can now design proteins that never existed in nature and make them fold and assemble as intended. Among the most remarkable creations are designed protein cages: hollow, symmetric shells built from engineered subunits. Pioneered by Todd Yeates' lab at UCLA, these cages are used in cryo-EM, drug delivery and vaccines. AI is now transforming protein design, opening new possibilities for cancer therapies, enzymes, synthetic organelles and a future where biology can be designed, not just discovered.



Dr. Todd Yeates

Todd Yeates is an Distinguished Professor Emeritus of Chemistry and Biochemistry at the University of California, Los Angeles (UCLA) and founder of the startup AvimerBio. He earned his PhD at UCLA and conducted postdoctoral research at The Scripps Research Institute on poliovirus structure. He joined UCLA's faculty in 1990, contributing to structural and computational biology. In 2001, Yeates pioneered designed protein cages, laying the foundation for highly symmetric protein assemblies that are now a major area of scientific interest.



Dr. Roger Castells-Graells

Is a Junior Group Leader and leads the Biomolecular Design and Structural Nanomedicine Lab at the Spanish National Cancer Research Centre (CNIO) in Madrid. He received the "Joves i Ciència" fellowship in 2009, Biotechnology graduate (UAB); PhD 2019 at the John Innes Centre (UK) on viral nanomachine structures, followed by postdoctoral work at UCLA designing protein cages for cryo-EM imaging. Since joining CNIO's faculty in 2025, his group combines protein design, AI and cryo-EM to build molecular nanomachines as new tools and therapies for cancer and other diseases.



Dra. Sílvia Osuna Olivera

Received her PhD in 2010 from the University of Girona (UdG) at the Institut de Química Computacional (IQC). In 2010, she moved to the group of Prof. Houk at the University of California, Los Angeles (UCLA). Since then, Sílvia has worked in computational design of enzymes of medical and pharmaceutical interest. Sílvia has authored over 120 research publications and holds numerous prestigious awards. Her research is supported by competitive European and national funding, including two ERC grants and a Spanish MINECO project.