INTERDISCIPLINARY
RESEARCH INSTITUTE
OF GRENOBLE

Platform BIOMade

BIOhybrid MAterial Design Engineering

Based on strong expertise in biomolecule synthesis and labeling, the BIOMade platform gathers all the necessary techniques for the biochemical and chemical engineering of nucleic acids: DNA, RNA, their modifications and structural analogues, origami.

BIOMade responds to a wide range of demands from the scientific community: synthesis of modified DNA fragments, functionalization, purification, characterization and self-assembly within nanostructures/biohybrid nanomaterials.

Beyond their applications in the health technology field (biosensors, diagnostic and therapeutic tools, imaging agents, vectorization), these innovative biohybrid nanomaterials can be integrated into new technological fields such as micro & nanoelectronics, photonics, plasmonics and catalysis.

EXPERTISES

- **Synthesis, purification and characterization of nucleic acids**
  modifications, lesions, structural analogues
- **(Bio)Conjugation and functionalization**
  by fluorescent dyes, grafting of organic or biological molecules, metallation/metallization
- **Immobilization**
  development of biosensors / bioassays on micro & nanoparticles, on slides, prisms...
- **Assembling**
  biomolecular self-assembly, 2D/3D bioinspired nanoarchitecture

Focus

The BIOMade platform benefits from the proximity of the nanocharacterization means of the Upstream Technological Platform (PTA) and the Nanocharacterization Platform (PFNC) on the Minatec campus.

Created as part of the MINATEC-LABS initiative, it has received support from the Auvergne Rhône Alpes Region (CPER funding), the CEA Nanosciences program and the CEA's Phare A3DN project.

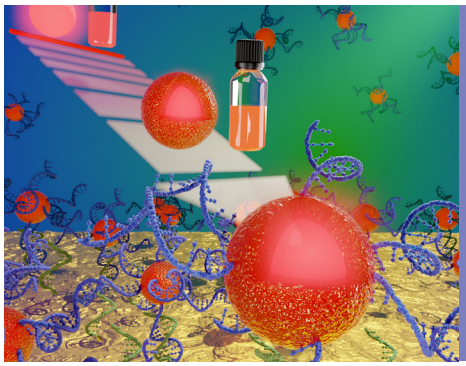
> The achieved methodological developments allow us to offer an expert service to the academic and industrial in the framework of collaborations or services.

TECHNIQUES AND TOOLS

- **3 multi-column, multi-scale DNA synthesizers**
- **3 HPLC devices** equipped with fluorescence or U.V. detectors (Diode Array Detector) or mass detector
- **MALDI-ToF mass spectrometer**
- **Analytical and preparative electrophoresis equipment**
- **U.V /visible / fluorescence cuvette or micro volume spectrophotometer**
- **Dynamic light scattering instrument:** particule size and zeta potentiel measurement

SERVICES

- **Customized advice** to elaborate the most appropriate strategy
- **Dedicated technical assistance** for sample preparation, synthesis and analyses
- **Complete coverage** of the service
- **Reporting of results** with support for their interpretation and valorization
- **Analyses in three formats:** collaboration, paid-for services and collaborative paid-for service



Highlights

Biosensors 2021

Melting Curve Analysis of Aptachains: Adenosine Detection with Internal Calibration

Frontiers in Cell & Developmental Biology 2020

The *Arabidopsis thaliana* Poly(ADP-Ribose) polymerases 1 & 2 modify DNA by ADP-Ribosylating terminal phosphate residues

ACS Applied Mater Interfaces 2020

Aqueous synthesis of DNA-functionalized Near-Infrared AgInS2/ZnS core/shell quantum dots

Organic & Biomolecular Chemistry 2017

Self-assembly of porphyrin–DNA hybrids into large flat nanostructures

ACS Nano 2016

DNA origami mask for Sub-Ten-Nanometer lithography

irig.cea.fr

Interdisciplinary Research Institute of Grenoble

CEA-Grenoble
17 avenue des Martyrs
38054 Grenoble cedex 9

TO DEVELOP YOUR PROJECT

https://www.symmes.fr/Pages/CREAB/Biomade.aspx

SCIENTIFIC DIRECTOR
Didier Gasparutto / +33 4 38 78 45 48 **/** didier.gasparutto@cea.fr

PLATFORM TECHNICAL MANAGER
Christine Saint-Pierre / +33 4 38 78 68 89 **/** christine.saint-pierre@cea.fr

JANUARY 2022 | conception : supernova-design.fr | photos credits : CEA / IRIG