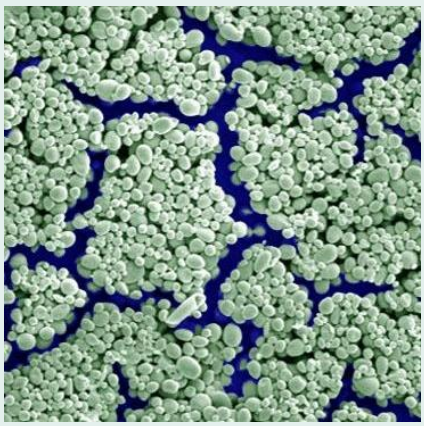
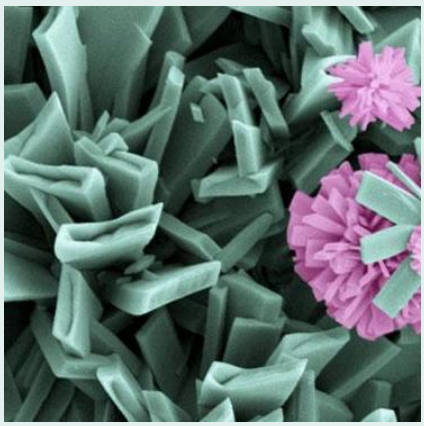
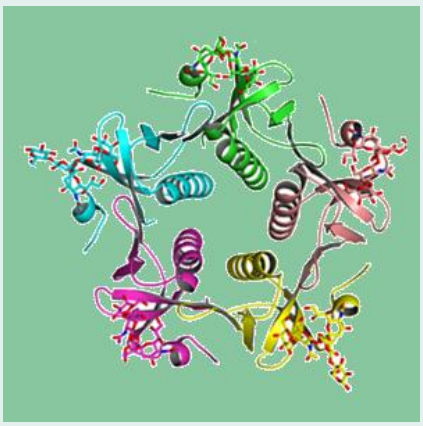
CERMAV

2019-2024

October 2025

EDITORIAL

CERMAV, a CNRS research unit (UPR 5301), will celebrate its 60th anniversary in 2026. For more than half a century, the laboratory has kept pace with societal changes by renewing and enriching its scientific themes. With historical fundamental research focused on cellulose and lignin, then on economically important plant polysaccharides, CERMAV's themes now address various fields of glycoscience, including the synthesis or bioproduction of biologically active oligosaccharides, studies devoted to proteins involved in the processes of synthesis, degradation, modification, or recognition of sugars, the use of biomass as a source of renewable materials, neo-glycopolymers, materials for energy or health, bio-inspired materials, and more.

CERMAV is one of Europe's leading research institutes in glycosciences and covers a wide range of topics, from structural biology to materials science, biochemistry, fine chemistry, and the physico-chemistry of polymers. Currently structured into five research teams, its scientific activity covers three major themes of significant societal importance: sugars and health, biomass recovery, and materials for advanced technologies.

The fields of application for this research are extremely varied, ranging from human, animal, and plant health to the design of bio-based materials for energy, organic electronics, and new packaging.

Well integrated into the Grenoble research ecosystem, CERMAV is a member of the Grenoble Institute of Molecular Chemistry (ICMG, UAR 2607) alongside the Department of Molecular Chemistry (DCM, UMR 5250) and the Department of Molecular Pharmacochemistry (DPM, UMR 5063), with which it shares a range of equipment (NMR, electron and near-field microscopy, mass spectrometry, etc.). It maintains a strong partnership with the University of Grenoble Alpes (UGA) through various Idex programs, including the transdisciplinary Glyco@Alps program, as well as through the strong involvement of its teacher-researchers in various university bodies. It is also heavily involved in Carnot PolyNat projects for aspects of bio-based materials, Labex Arcane (bio-inspired and bio-targeted chemistry), MateriAlps (materials science), and Gimed (medical devices). It maintains close relationships with major instruments in Grenoble (ESRF, ILL, etc.), major European glycoscience institutes (KTH, MPI Potsdam, biomaGUNE, etc.), and numerous international universities (University of Cambridge, University of Geneva, University of Tokyo, etc.).

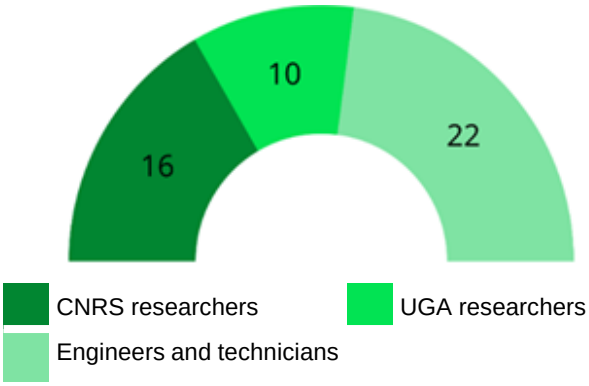
Highly involved in promoting its fundamental research, which is one of the missions of the CNRS, the laboratory has participated in the launch of three start-ups (including two since 2020) in the field of bio-production of oligosaccharides for health applications, and bio-based additives for reinforcing cellulosic materials. Finally, the unit is committed to making a significant contribution to training through research in order to prepare students and young researchers for the professional world, whether industrial or academic.

Cermav

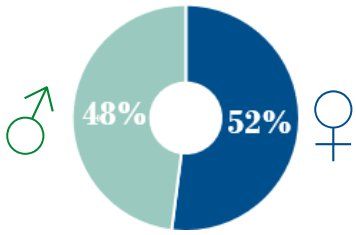
CONTENTS

A laboratory with around 100 employees including 50 permanent staff

48 permanent staff

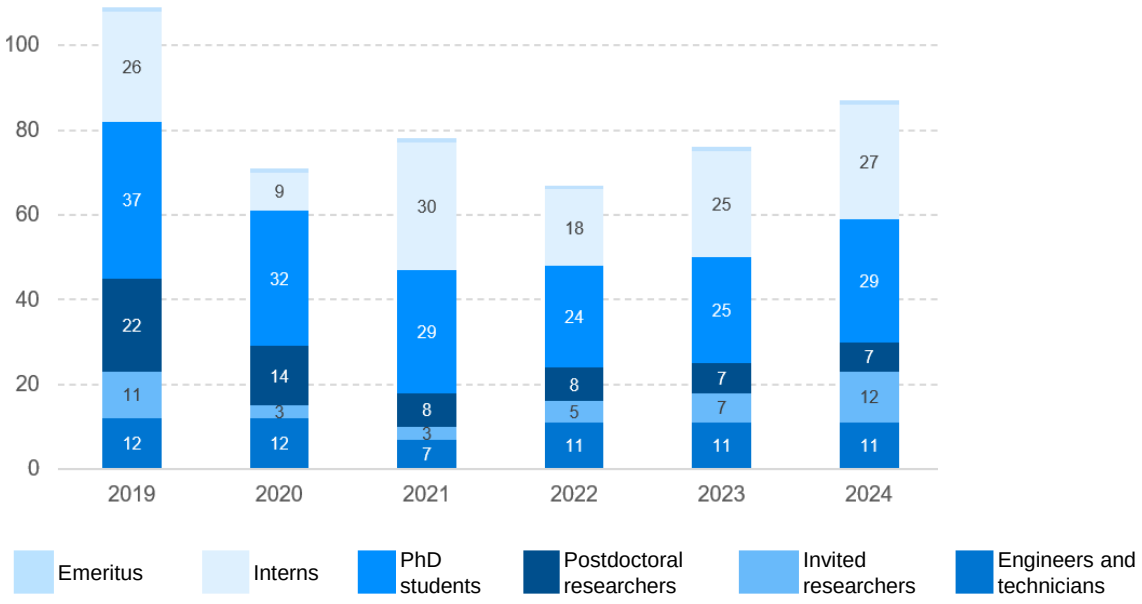


Gender distribution of staff



Which welcomes every year interns, PhD students, researchers from french or foreign univiersities.

80 non-permanent staff on average each year



Key facts

A high-quality scientific research over the last 6 years

65
Scientific articles per year

59
Conferences per year
(excl. Covid 2020-2021)

1 to 2
Published patent families per year

7
Defended thesis per year

Données en moyenne par an sur la période 2019-2024

Numerous collaborative research projects (2019-2024 period)

ANR

36 projects incl.
17 in coordination

20 on-going projects incl.
9 in coordination

Horizon Europe

8 projects incl.
2 in coordination

2 on-going projects incl.
0 in coordination

Carnot Polynat

26 projects incl.
13 in coordination

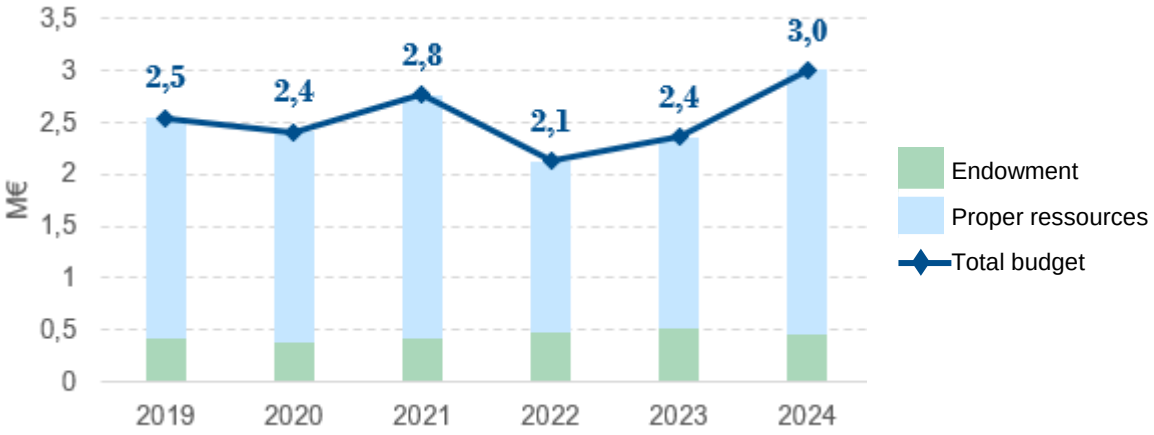
Industrials

16 contracts
1 joint lab

International

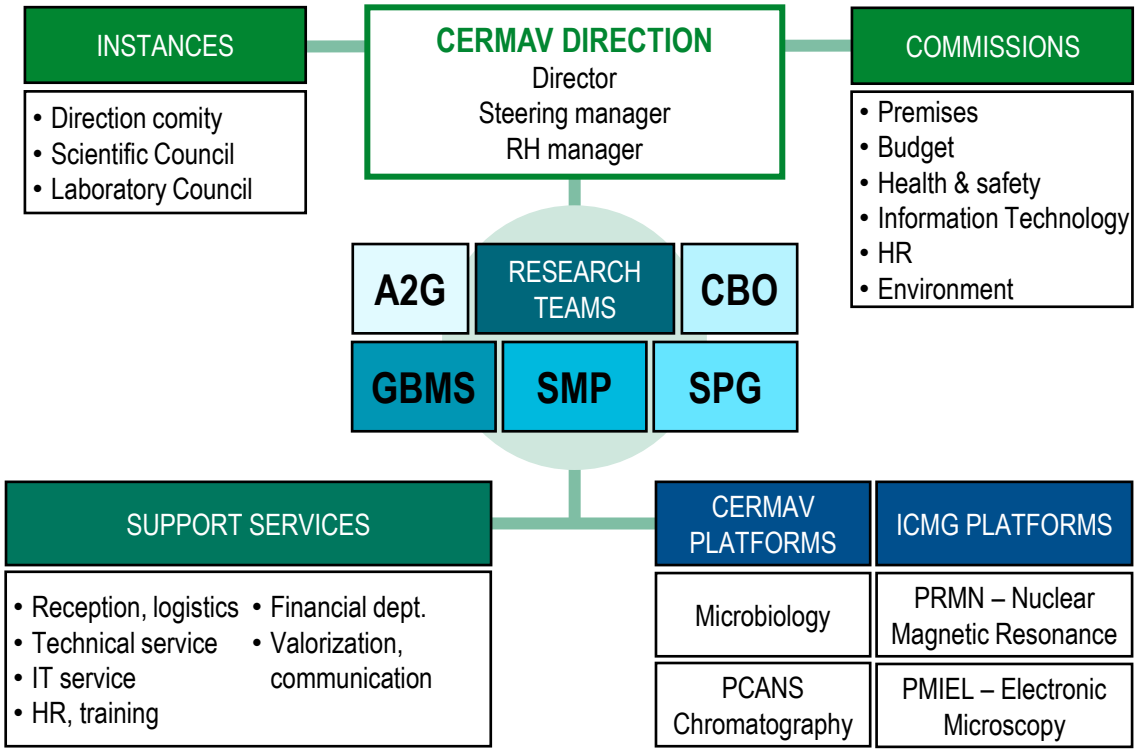
22 projects
1 joint lab with NTU (TW)

An annual budget between 2 and 3M€ (excluding wages)



Governance and organization

CERMAV organizational chart



CERMAV staff as of 31/12/2024

DIRECTION
Directeur **: L. Heux**
Pilotage : C. Speziani Millet
Assistante direction : I. Caldara
Chargée missions : C. Coutard (CDD)

IT service
R. Baptiste F. Lacombe

HR, training
I. Caldara

Reception, logistics
M. Broué F. Rivoire (CDD)

Valorization, communication
C. Speziani Millet

Technical service
P. Perez L. Chausse

Microbiology
E. Richard

Financial department
S. Coindet K. De Palo
M. Cuchet A. Dupuy (CDD)

CBO - Chemistry and Biotechnology of Oligosaccharides
S. Fort S. Cottaz
B. Priem S. Pradeau
S. Armand

SMP – Structure and modification of polysaccharides
R. Auzely A. Szarpak R. Michel

Chromatography
L. Buon C. Billet (CDD)
E. Bayma-Pecit

PRMN - I. Jeacomine

PMIEL - C. Lancelon-Pin

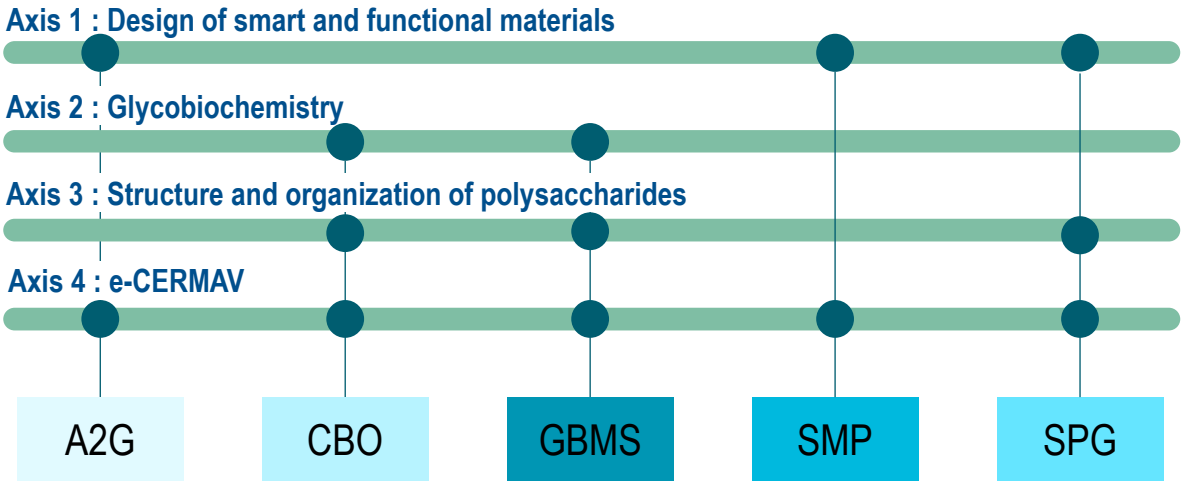
GBMS - Structural and molecular glycobiology
A. Varrot M. Couturier
C. Breton S. Drouillard
W. Helbert A. Imberty
V. Chazalet E. Gillon
M. Touvrey-Loiodice S. Perez (Em)

SPG - Structure and properties of glycomaterials
B. Jean Y. Nishiyama
J.P.C Fernandes S. Boisseau
J-L Putaux L. Heux
M. Fumagalli F. Dahlem
M. Michaud P. Chaud
P. Sailler

A2G - Self-Assembly of Glycopolymers
R. Borsali S. Halila
I. Otsuka C. Travelet

Scientific topics

4 common themes of research



Axis 1 : Design of smart and functional materials

Research on functionalization and coupling of oligo- and polysaccharides for self-assembling of gels, nano-objects, liquid crystals, stimuli-responsive systems and biomimetic smart materials with designed functionnalities.

Axis 2 : Glycobiochemistry

Investigating the biosynthesis, synthesis, and biodegradation of oligo- and polysaccharides and recognition by receptors, production and biophysical characterization of enzymes, lectins and their interactions with substrate

Axis 3 : Structure and organization of polysaccharides

Characterization of the polysaccharide structures at different levels (primary structure, 3D structure, architecture) and the valorization of biomass by production and process of new biomaterials

Axis 4 : e-CERMAV

Internal sharing of information and databases in the unit (data management, new intranet, etc.) and external communication through new web sites, databases for glycosciences, e-chapters and social media

Main research topics

- Preparation of glycoconjugates or glycopolymers with varied architectures, using direct and selective chemistry, for the study of their self-assembly in solution (glyconanoparticles, supramolecular hydrogels) or in the solid state (nanostructured thin glycofilms, electrospun glycofibers).
- Electrospinning of functional polysaccharide derivatives
- Self-assembly of carbohydrate-based block copolymers

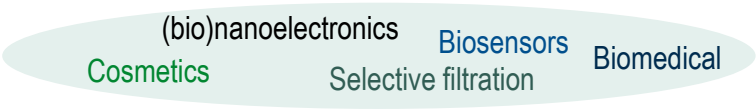
Challenges

- Developing an alternative manufacturing technology for nanoscale systems using carbohydrates, which are a sustainable source of materials.

Awards

- Academic prize Cosmetic Victories - 2022 - Sami Halila
- International Award from the Society of Polymer Science, Japan (SPSJ) - 2020 - Redouane Borsali

Application markets



On-going projects

Project's name	*Partners*	*Scope of the project*
Green Material Institute France Taiwan (IRP)	NTU	Self-assembly of well-controlled glycopolymer architectures for use in bioelectronic devices
ChiralCell (ANR) 2023-2027 Coord.	LIPHY	Efficient chiral separation using electrospun cellulosic membranes
SugarColors (ANR) 2023-2027 Coord.	LTM	Novel Structural Color Materials from Self-Assembly of Biosourced Brush-like Copolymers

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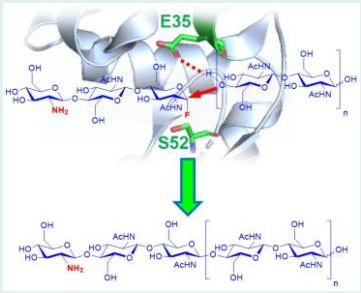
CBO team

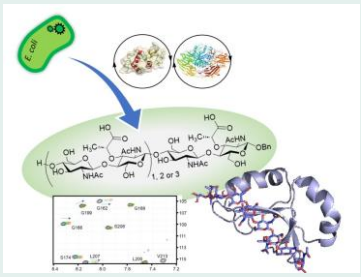
Chemistry and Biotechnology of Oligosaccharides

Main research topics

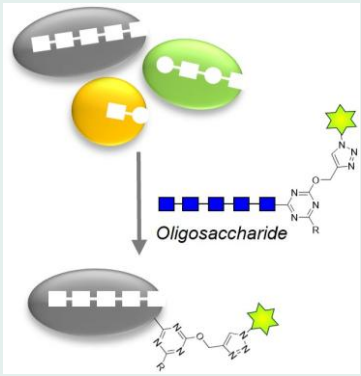
- Production of glycans and glycoconjugates with the aim of enabling the study of their biological functions, providing solutions to social expectations in the fields of human and animal health (drugs, diagnostics, food), or agriculture (plant protection and growth)
- Biocatalysis using glycoside hydrolases, transglycosylases, and glycosyltransferases
- Metabolic engineering of microorganisms
- Glycochemistry and click chemistry



Enzymatic synthesis of biologically active oligosaccharides



Synthetic biology for the study of bacterial cell walls



Chemical synthesis of protein marker glycoconjugates

Challenges

- Development of atom-efficient and environmentally friendly biotechnology processes

Awards

- National I-PhD Innovation (Glycoflu) - 2020 - Emeline Richard

Application markets

Human health · Medicine · Diagnosis · Agriculture · Animal health

On-going projects

Project's name	*Partners*	*Scope of the project*
PFUT (ANR) 2024-2028	IBS (coord.)	Peptidoglycan Fragments to Understand Transpeptidases
LABEL (ANR) 2023-2026	INSA Toulouse (coord.) INRAE	Design of molecular assemblies to assess glycosylation role on hemicellulases activity
MOCALOST (ANR) 2024-2027	CRI (coord.) LCBPT	Molecular probes for the characterisation of lysosomal oligosaccharide transport

LECTINS

Main research topics

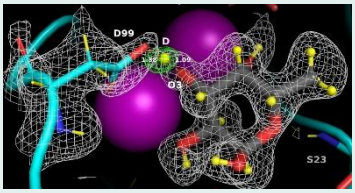
- Identify and characterize a diverse panel of lectins
- Characterize lectin/glycan interactions at the atomic scale
- Synthetic glycobiology
- Glycobioinformatics

Challenges

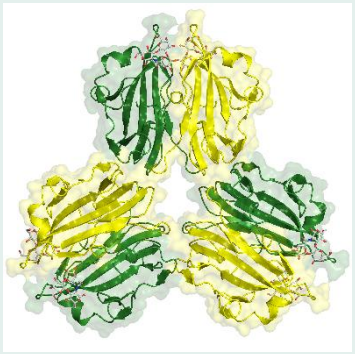
- Understanding the glycocode
- Acquiring fundamental knowledge of 3D and quaternary structures, multivalency, and lectin recognition mechanisms
- Design and characterization of anti-infectious glycocompounds
- Design and/or production of artificial lectins
- Developing recombinant molecular tools

On-going projects

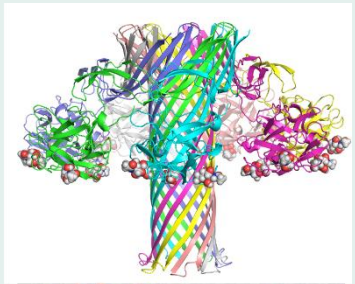
Project's name	*Partners*	*Scope of the project*
GlycoNoVi Horizon Europe 2023-2026	UniFi (coord) Glycom AS …	Understanding the Role of Glycans in Human Norovirus Infection: a Key to Unlock New Therapies
WITT (ANR) 2023-2026	INRAE (coord)	Unravelling CRK mechanisms in wheat resIstance to *Zymoseptoria Tritici*

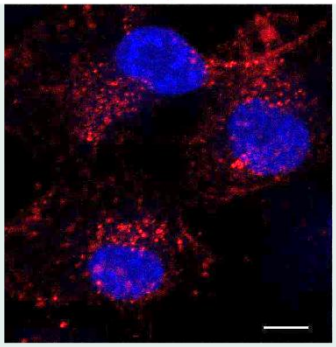


Neutron structure of LecB in complex with deuterated fucose



Structure of CMA1 representing a new family of fucose lectins





SaroL-1-Cy5, 5µg/mL, 30'
H1299 (Gb3+), DAPI

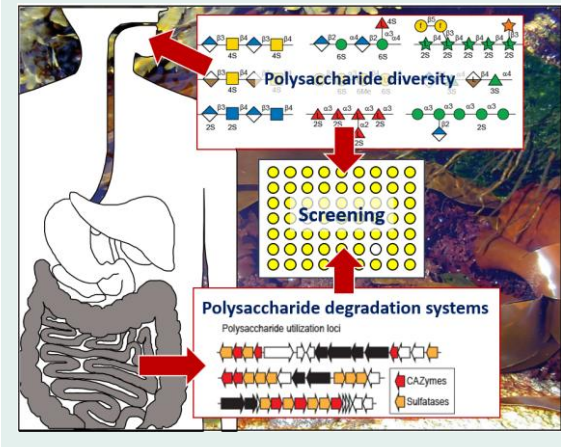
ENZYMES

Main research topics

- Biosynthesis of galactolipids
- Functional screening of glycoside hydrolases, polysaccharide lyases, and sulfatases
- Enzymatic and structural characterization of CAZymes
- Collection of oligo- and polysaccharides

Challenges

- Exploration of the functional and structural diversity of enzymes involved in the degradation and modification of polysaccharides in terrestrial and marine plants
- Characterization of CAZomes in environmental microbial and fungal populations (e.g., human microbiota)



On-going projects

Project's name	*Partners*	*Scope of the project*
S-PLORE (ANR) 2023-2026	MMSB	Functional and molecular exploration of the carbohydrate sulfatases diversity
CAZyMYC (ANR) 2023-2026	BBF AFMB	Host glycan breakdown by fungal CAZymes from the human gut MYCrobiota

Awards

- International award "Miguel Catalán - Paul Sabatier", French Society of Chemistry and the Royal Spanish Society of Chemistry - 2020 – Anne Imberty
- Rosalind Kornfeld Award For Lifetime Achievement in Glycobiology – 2022 – Anne Imberty
- Erwin Felix Lewy Bertaut Award, European Association of Cristallography – 2022 – Lukáš Gajdos

Application markets

Biotechnologies · Anti-infectives · Biomedical · Glycoprofiling

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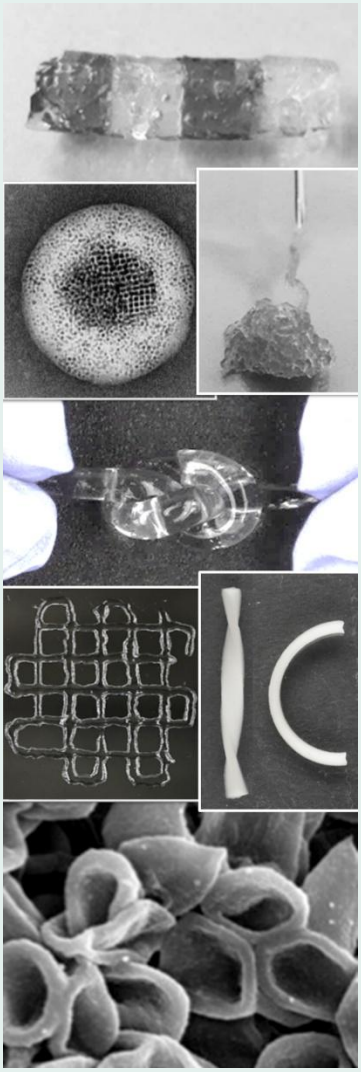
SMP team

Structure and modification of polysaccharides

Main research topics

- Chemistry and physical chemistry of polysaccharides
- Development of methods for the chemical modification of polysaccharides
- Exploitation of new properties to design functional and stimulable biomaterials for healthcare applications
  - Injectable or printable dynamic covalent hydrogels
  - Functional hydrogels (stretchable, deformable, conductive)
  - Self-assembled polysaccharide nanoparticles for therapeutic applications



Challenges

- Developing functional, stimulable biomaterials derived from renewable resources that are biocompatible and biodegradable for advanced healthcare applications.

Awards

- Award i-LAB, 2020, Rachel Auzély

Application markets

Health
Environment
Cosmetics
Artificial tissues

On-going projects

Project's name	*Partners*	*Scope of the project*
PolyMorphink (ANR) 2022-2026	-	Composite Polysaccharide Hydrogels for the 3D-printing of Shape-Morphing Biomaterials
UtHeal (ANR) 2024-2027 Coord.	GIN DCM	Ultrasound-triggered disruption and self-healing of hydrogels for on-demand and repeated cargo release

STRUCTURE

Main research topics

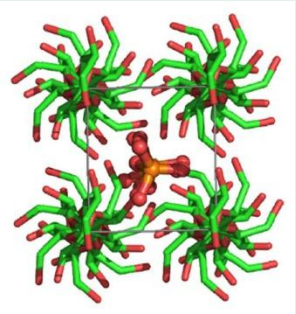
- Determination of the crystal structures of polysaccharides
- Multi-scale structural analysis of biomass and bio-based materials
- Atomistic modeling of polysaccharide systems

Challenges

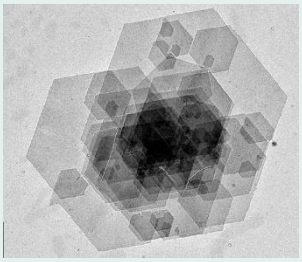
- Understanding the molecular interactions of polysaccharides
- Predicting the behavior of polysaccharides in different environments

On-going projects

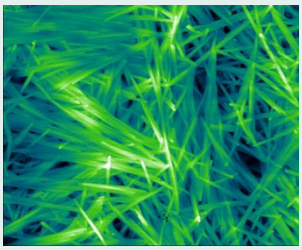
Project's name	*Partners*	*Scope of the project*
FiberBond (ANR) 2024-2028	LGP2 (coord) CTP, LaMCoS	Cellulosic fibre mats with improved fibre bonds towards lighter, stronger and stretchable bio-based materials
INSPIRE (ANR) 2024-2027	ISM2 (coord.)	Bioinspired catalysts for biomass valorization



Molecular modelling of v-amylose



Crystals of v-amylose



Cellulose NanoCrystals (CNC)

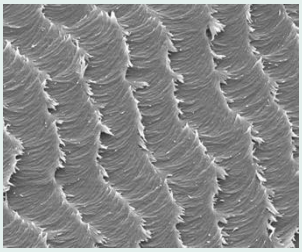
Awards

- Award i-lab and i-PhD 2020 – Julien Leguy
- Anselme Payen Award 2021 - Yoshiharu Nishiyama
- 2024 Cellulose Society of Japan Award– Yoshiharu Nishiyama
- Hayashi Jisuke Memorial Prize 2024 – Yu Ogawa

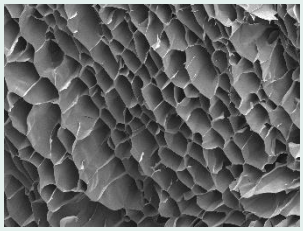
MATERIALS & PROCESSES

Main research topics

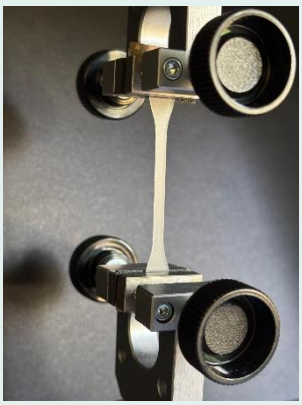
- Development of materials for packaging and energy
- Design of materials based on bio-nano-colloids (nanocrystals and cellulose nanofibers)
- Manufacturing through self-assembly, enabling the reproduction of the high level of organization found in living materials
- Optimization of chemical modification processes for crystalline polysaccharides, in line with the principles of green chemistry



CNC cholesteric organization



Cellulosic template material



Uniaxial tensile test

Challenges

- Reduced dependence on non-renewable resources
- Reduced carbon footprint of plastics
- Development of processes that adapt to the diversity of biomass and consume less water and energy

On-going projects

Project's name	*Partners*	*Scope of the project*
ionMcell (ANR) 2024-2027, coord.	FCBA, CTP, SyMMES	High performance functionalized cellulose membranes for Fuel Cell
CELLOSMO (ANR) 2025-2028 Coord.	Sweetch energy, UCBL, SyMMES	Design of nanocellulose ionic membranes to harvest osmotic energy

Application markets

Packaging

Specialty chemistry

Energy systems

Composite materials

Technical platforms

Of ICMG hosted at CERMAV

The ICMG's technical facilities are open to ICMG researchers and also to external users (academic or private laboratories) as service provision.

PMIEL – Electronic microscopy

- Activities: multi-scale analysis panel
  - Morphological and structural study of polysaccharides, glyco-objects, natural or synthetic polymers, and colloids;
  - Study of the organization of living matter: cellular ultrastructure, plant fibers, imaging of saccharide components of organelles, plant walls, and the extracellular matrix
- Equipment: two electron microscopes, transmission (conventional imaging, low dose, cryomicroscopy, electron diffraction) and scanning (high vacuum, variable pressure, “environmental” mode)

PRMN

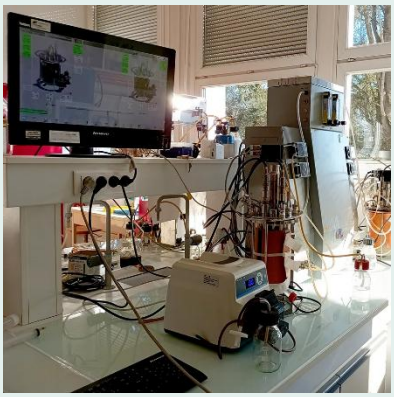
- Activities
  - Structural analysis of oligo- and polysaccharides
  - Solid-state structural analysis: cellulose, starch, chitin, etc.
  - Investigation of the physicochemistry of assemblies in solution
  - Characterization of hydrogels
- Equipment: The platform has five NMR spectrometers located at three different sites (CERMAV, DCM, and DPM), two of which are at CERMAV:
  - a 400 MHz spectrometer with a two-channel liquid probe and sample changer for routine analyses
  - a 400 MHz spectrometer equipped with a two-channel liquid probe, a 4 mm CP-MAS solid probe for solid samples, and a 4 mm HR-MAS probe for soft media. A cold air generator regulates the air supply down to -40°C.

PCANS - CHROMATOGRAPHY

- PCANS: Chromatography and Sugar Analysis Platform
- Activities: characterization, structural analysis, and purification of glycans
- Equipment:
  - 10 liquid chromatography systems: ultra-high pressure, ion chromatography, size exclusion chromatography, low pressure chromatography
  - 2 gas chromatography systems
- Technical and methodological support for the five CERMAV research teams
- Open to the scientific community (industry, public research laboratories) through collaborative programs or services

MICROBIOLOGY

- Activities: High-density cell culture of microorganisms in bioreactors with expertise focused on the production of oligosaccharides and polysaccharides through metabolic engineering of Escherichia coli strains.
- Equipment:
  - 6 bioreactors (500 mL – 3 L – 7 L)
  - Molecular biology: PCR machine, electrophoresis system, incubators
  - Microbiology: laminar flow hood, autoclave
- Open to the scientific community (industry, public research laboratories) through collaborative programs or services



MATERIALS' CHARACTERIZATION

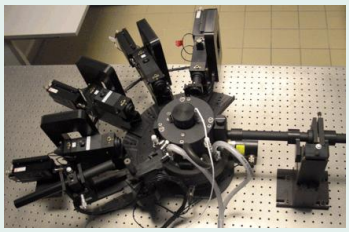
- Sample preparation and implementation: centrifuges, freeze dryers, modular internal laboratory mixer
- Material shaping: 3D printer, heating press
- Characterization of the thermomechanical properties of single-component or (nano)composite materials, as well as characterization of the morphology of porous materials:
  - Tensile tests: modules, elongation, rupture, multi-fragmentation
  - DMA: E' and E modules at different frequencies, Tg, elongation
  - DSC: melting, crystallization, Tg
  - TGA: mass loss and degradation
  - Specific surface area measurement (nitrogen adsorption/desorption, BET analysis)
- X-ray diffraction

RHEOLOGY

- Analysis of the gelation properties of modified polysaccharides (stress-controlled rheometers)
- Study of the properties of hydrogels and hydrogel-coated materials (texturometer)
- Analysis of the thermal properties of hydrogels in aqueous solution, their interface properties, and their viscosity (DSC, drop tensiometer, capillary and rotary viscometers)
- Observation of the structures and organization of polysaccharide biomaterials (fluorescence microscope)

RADIATION SCATTERING

- Characterization of nano-organized self-assemblies (particles, micelles, vesicles, films, etc.) based on glycopolymers
- Equipment: goniometer, ultra-sensitive video camera system for in situ visualization of nanoparticles in a liquid, refractometer for measuring refractive index and refractive index increment



STRUCTURAL GLYCOBIOCHEMISTRY

- Molecular biology: gene cloning or isolation, expression of recombinant proteins in *Escherichia coli*, *Pichia pastoris*, or insect cells (thermocyclers, thermal chambers, temperature-controlled shaking incubators, microbiological safety cabinets)
- Biochemistry: obtaining samples of soluble and homodisperse proteins (cell crushers, sonicators, QRT-PCR, electrophoresis)
- Biophysical characterization of protein-ligand interactions: determination of specificity, affinity, thermodynamics, kinetics, and 3D structure of proteins in complex with the ligand (microcalorimeter, RPS analysis, fluorescence anisotropy, protein crystallization equipment)

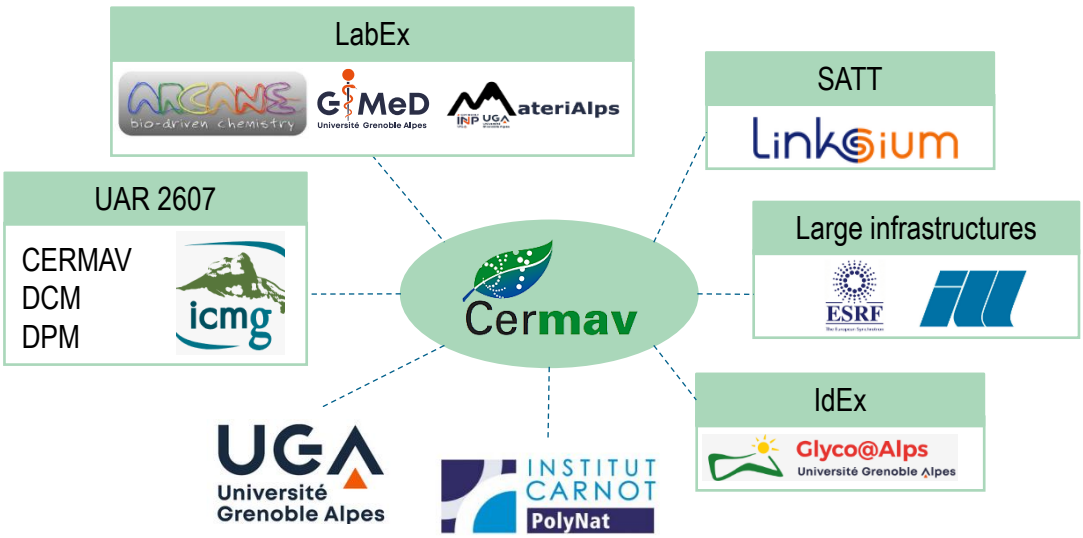
SPECTROSCOPY

- Self-service spectroscopy platform for CERMAV staff:
- Equipment:
  - UV/visible and UV/visible/IR spectrophotometers,
  - Spectrofluorimeters
  - FTIR (Fourier Transform Infrared) spectrometer
  - Polarimeter

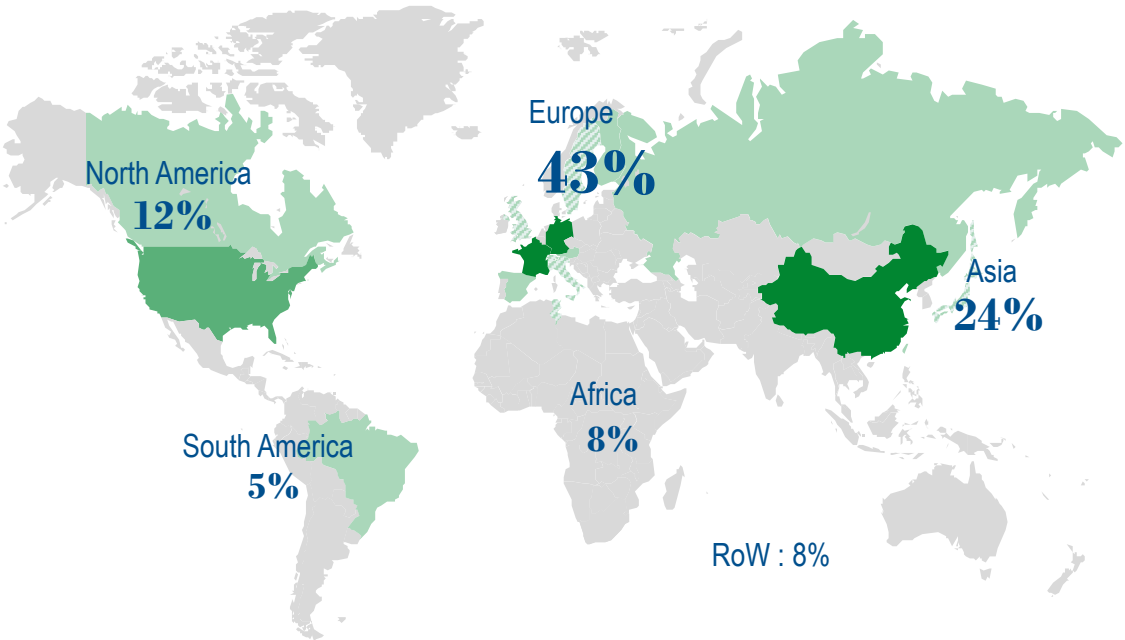
Scientific influence

From local to international

A strong local involvment



And an international visibility thanks to numerous collaborations



Number of publications with international entities, 2019-2024

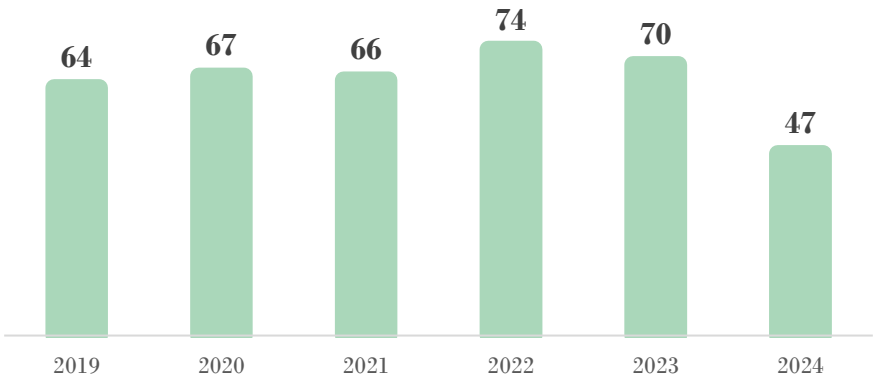
10 20 30 40

70% Percentage of publications in the period 2019-2024 with at least one co-author outside France

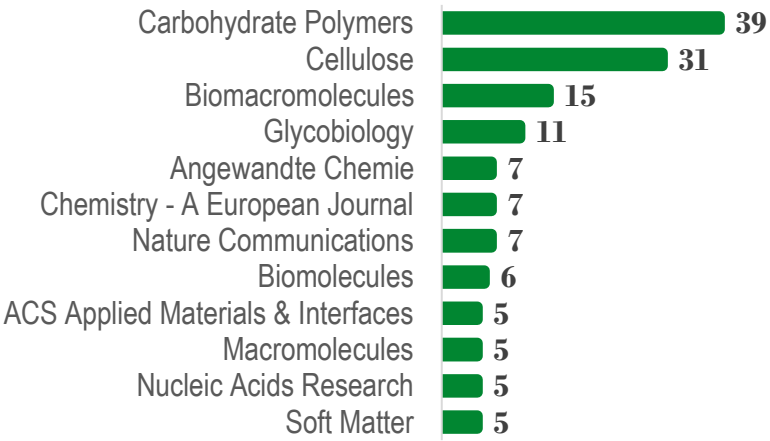
Scientific influence

High-quality publications

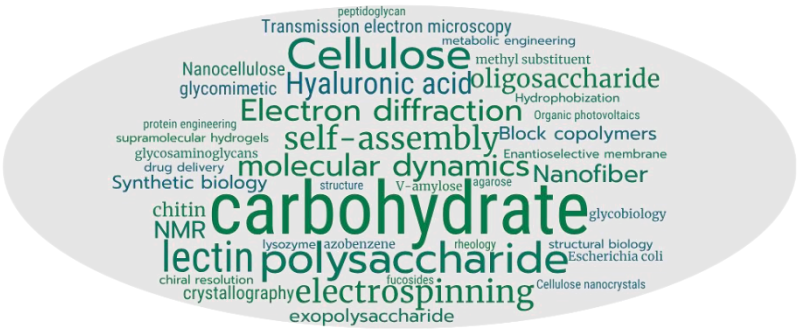
- 388 scientific articles published between 2019 and 2024, 70% of which are the result of collaboration with international partners



- In specialized recognized journals



- On CERMAV main research topics



Analysis of CERMAV publications' keywords (author keywords from WoS)

Research valorization

From patent filing

10 Patents' families published between 2019 and 2024

49 Patents

Extensions' countries:

To start-ups creation

Mission: development of a new class of sugar-based anti-infective biotherapies designed to mimic the natural receptors of pathogens

In 2024: accommodation at CERMAV, 4 people, 1 CIFRE thesis in progress

AiS biotech — 2023

Mission: developing bio-based additives to improve the performance of cellulosic materials and give them new properties

In 2024: partly hosted by CERMAV, 16 people, 1 CIFRE thesis in progress, a joint laboratory with CERMAV

FunCell — 2020

One of which has become a locally based SME

Mission: design and production of complex sugars, R&D services in glycosciences, human, animal, and plant health

Location: Crolles

ELICITYL — 2002

Significant involvment with UGA students

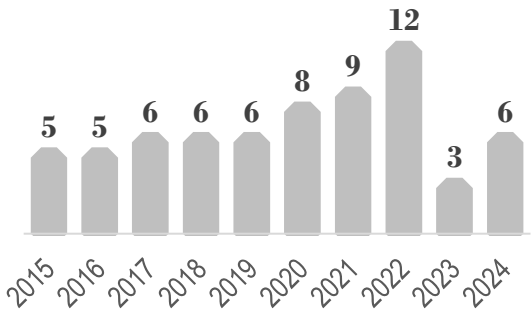
- 10 research professors at CERMAV
- 4 heads of programs at UGA, in Bachelor's and Master's degree

  - Bachelor of Biochemistry
  - Master of Nanochemistry
  - Master of Chemistry – route Polymers for Advanced Technologies
  - Master of Process and Bio-process Engineering- route Formulation Process Engineering

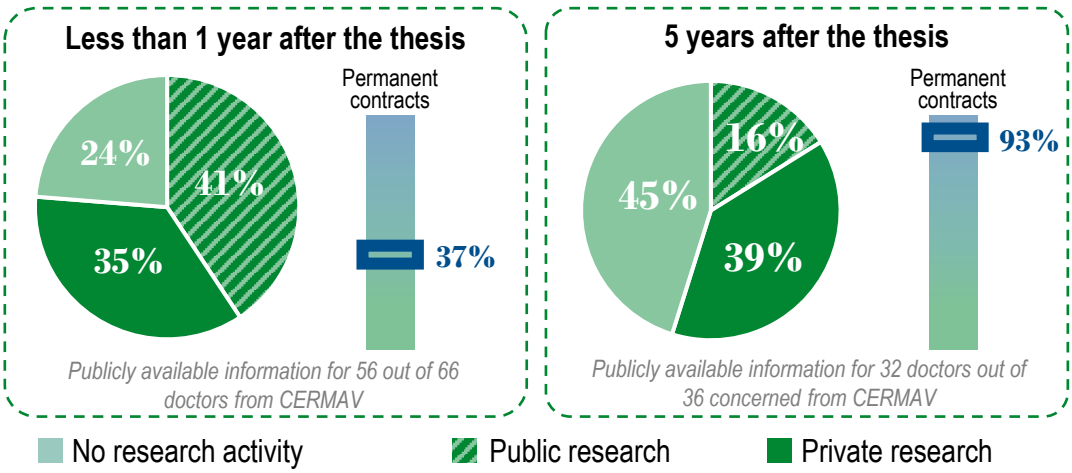
- Multiple responsibilities within the UGA bodies

And at CERMAV with PhD students

- Around 6 thesis defended each year, since 10 years



The future of PhD students (2015-2024) - from Linkedin



Support services

Technical service

- CERMAV has 3,500 m² of premises, including 1,500 m² of laboratories and 45 fume hoods in operation.
- The missions of the technical service are:
  - Building maintenance work (painting, plumbing, electrical work, air conditioning, etc.)
  - Laboratory layout design
  - Preventive maintenance and breakdown management for non-scientific equipment.

IT service

- The IT department manages internal technical projects, working with other departments in the laboratory on organizational aspects (personnel management tools, scientific production) and scientific aspects (NMR or mass spectrometry analyses, equipment management).
- The department is also responsible for administering CERMAV's IT systems and networks.

Financial service

- The financial and accounting department is responsible for preparing, implementing, executing, and monitoring the laboratory's budget.
- It handles all of the unit's expenses, including travel expenses (missions) and, in particular, funding related to the contractual activities of the research teams and platforms.

HR service

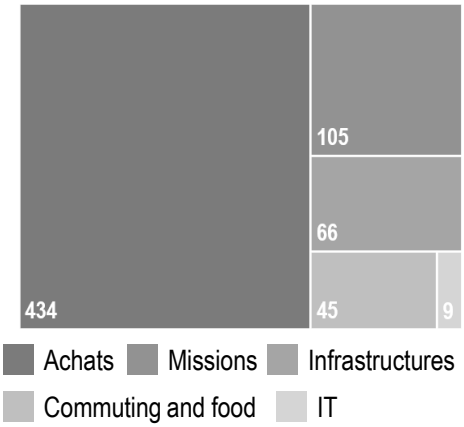
- Recruitment and career development for permanent and non-permanent staff (contract workers, doctoral students, interns, guests).
- Training follow-up.

Valorization, communication, steering

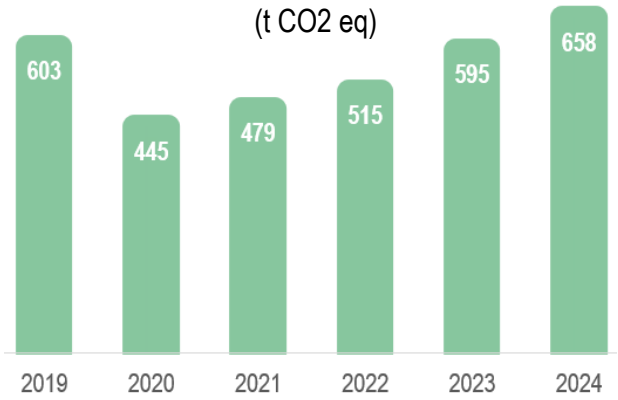
- Organization and facilitation of Unit bodies (committees, commissions, and councils) and working groups
- Development and maintenance of Unit dashboards and indicators
- Management of cross-functional initiatives: continuous improvement process, internal and external communication tools, environmental and societal responsability, quality of life at work

Implementation of annual monitoring of greenhouse gas emissions using the Labos1Point5 tool

Breakdown of GHG emissions by category in 2024 (t CO2 eq)



Trends in GHG emissions since 2019 (t CO2 eq)



CERMAV's contribution to the UN Sustainable Development Goals

Direct impact of CERMAV's research activities

Indirect impact of CERMAV's research activities

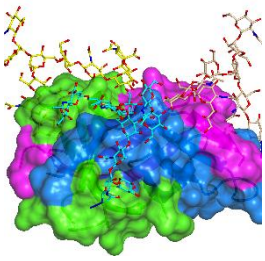
Impact of CERMAV's operating mode

Main scientific publications

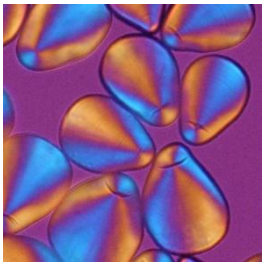
2019-2024

- ***Electrospun Cellulosic Membranes toward Efficient Chiral Resolutions via Enantioselective Permeation*** - I. Otsuka, K. Pandey, H. Ahmadi-Nohadani, S. Nono-Tagne, ACS Macro Lett. 2021, 10, 921−925, https://pubs.acs.org/doi/10.1021/acsmacrolett.1c00349
- ***Size-controlled synthesis of β(1→4)-GlcNAc oligosaccharides using an endo-glycosynthase*** – A. Rousseau, S. Armand, S. Cottaz, S. Fort – Chemistry Europe. 2021 - https://chemistry-europe.onlinelibrary.wiley.com/doi/10.1002/chem.202103212
- ***Functional exploration of the glycoside hydrolase family GH113*** - Couturier M, Touvrey-Loiodice M, Terrapon N, Drula E, Buon L, Chirat C, Henrissat B, Helbert W. PLoS One. 2022 Apr 22;17(4) - https://doi.org/10.1371/journal.pone.0267509
- ***Targeting a Multidrug-Resistant Pathogen : First Generation Antagonists of Burkholderia cenocepacia's BC2L-C Lectin***. Bermeo, R., Lal, K., Ruggeri, D., Lanaro, D., Mazzotta, S., Vasile, F., Imberty, A., Belvisi, L., Varrot, A., & Bernardi, A. (2022). ACS Chemical Biology, 17(10), 2899-2910. https://doi.org/10.1021/acschembio.2c00532
- ***Hyaluronic acid single-network hydrogel with high stretchable and elastic properties***, A. Szarpak and R. Auzély-Velty, Carbohydrate Polymers 2023, 320, 121212 - https://www.sciencedirect.com/science/article/abs/pii/S014486172300677X?via%3Dihub
- ***A self-healing radiopaque hyaluronic acid hydrogel as a new injectable biomaterial for precision medicine in osteoarthritis*** - M. Said, C. Tavakoli, C. Dumot, K. Toupet, C. Olivier, A. Gilles, Y. C. Dong, N. Collomb, C. Auxenfans, A. Moisan, B. Favier, B. Chovelon, E. L. Barbier, D. P. Cormode, E. Brun, H. Elleaume, M. Wiart, O. Detante, C. Rome, D. Noël, R. Auzély-Velty, Theranostics 2025; 15(9):4054-4073 https://www.thno.org/v15p4054.htm
- ***Interface chemical mapping of sulfonated cellulose nanocrystal/sPEEK nanocomposites*** - J. P. Cosas Fernandes, O.Hamzah, M. Gondrexon, P. O'Reilly, H. Mendil-Jakani, V. Mareau, L. Gonon, B. Jean, J-L Putaux, L. Heux, Y. Nishiyama, F. Dahlem Materials Today Communications 2025, 48, 113541 https://doi.org/10.1016/j.mtcomm.2025.113541
- ***Structural Anisotropy Governs the Kink Formation in Cellulose Nanocrystals***, J.-H. Lim, Y. Jing, S. Park, Y. Nishiyama, M. Veron, E. Rauch, Y. Ogawa - J. Phys. Chem. Lett. 2023, 14(16), 3961–3969 - https://doi.org/10.1021/acs.jpclett.3c00289

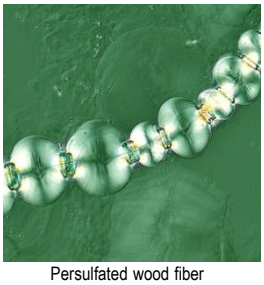
Plus de publications sur le site du CERMAV https://cermav.cnrs.fr/publications-theses-et-brevets/
Texte intégral des publications et des thèses sur HAL : https://cnrs.hal.science/CERMAV//



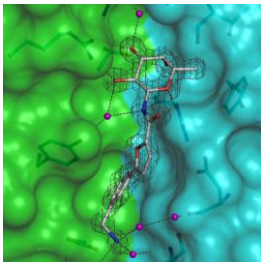
Crystallographic structure of the trimeric mini-lectin PhosL in a complex with a complex bi-antennae N-glycan



Tulip starch grains



Persulfated wood fiber swollen in water



Zoom on interactions between BC2L-C-nt and a glycomimetic. Electronic density represented as a mesh and colored according to the protomer.PDB-ID =8BRO

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