



Co-funded by
the European Union



SCAN ME !



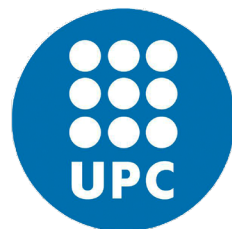
BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER

Special session for self-funded applicants



UNIVERSITÀ DI PISA



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



UNIWERSYTET ŚLĄSKI
W KATOWICACH



Université
de Lille

<http://master-biopham.eu>

2/4/2026

Frédéric Affouard

frederic.affouard@univ-lille.fr



Professor at University of Lille (France)
Physics Department – Faculty of Sciences and Technologies

Team leader “Therapeutical Molecular Materials”
laboratory <http://umet.univ-lille.fr>

Research activities on Pharmaceuticals:
Physical states (crystal/amorphous) & Transformations
Small molecules, polymers and proteins

Coordinator of several research projects with Industries
(AstraZeneca, Janssen Pharmaceutica, Servier, Roquette, +SMEs)

Coordinator MSCA Doctoral Network
Improving Drug Efficacy with next-generation
Amorphous materials and trained experts (IDEAS)
15 PhDs to be recruited from 2026



IDEAS
15 Doctoral Candidates (DCs)

- Full pipeline from scientific discovery to practical application:
 - Fundamental insights
 - Materials & Process innovation
 - Industrial translation
- Strong expertise in amorphous systems
- Training programme in physics, chemistry, materials, pharmacy & transferable skills
- High quality academic and industrial career
- Substantial economic benefit for the EU industry

Since 2020: Coordinator of the Erasmus Mundus Master BIOPHAM
Bio&Pharmaceutical Materials Science

Co-funded by the European Union

BIOPHAM → A worldwide unique training programme in materials science focusing on pharmaceuticals

**BIOPHAM 1st edition [2020-2026] : 4 cohorts recruited
86 students total from 33 different countries**

- « Programme countries » (EU members and 3rd countries associated to the Programme): France, Ireland, Italy, Spain, Turkey
- « Partner countries » (all other countries): Algeria, Egypt, Jordan, Syria, Bangladesh, China, Philippines, India, Indonesia, Kazakhstan, Pakistan, Mongolia, Cameroon, Ghana, Nigeria, Uganda, Brazil, Columbia, Costa Rica, Cuba, Ecuador, Mexico, Salvador, Venezuela, Georgia, Russia

BIOPHAM 2nd edition [2026-2031] :
4 new cohorts to be recruited
Including you maybe 😊



BIOPHAM JOINTLY OPERATED
BY 4 PARTNERS UNIVERSITIES



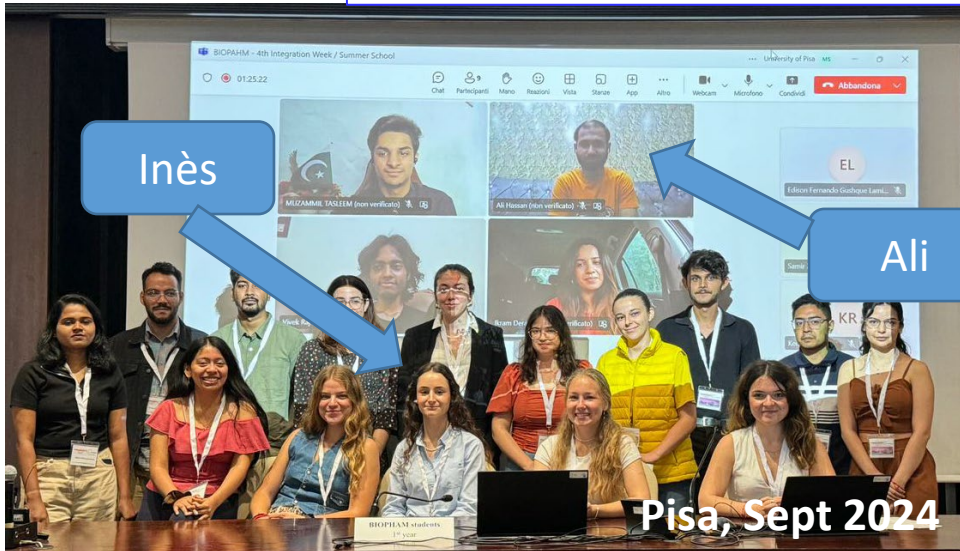


Pisa, Sept 2021



Pisa, Sept 2022

The BIOPHAM programme starts by an INTEGRATION WEEK



Pisa, Sept 2024



Pisa, Sept 2023

Lille, December 2021



Lille, December 2024



Lille, October 2021

It continues with
memorable moments

...

Have a look to
testimonies on the
BIOPHAM website 😊



Katowice, 2023



Pisa, September 2024

<https://www.master-biopham.eu/testimonies>

Cohort 1, Pisa, Sept. 2023



It concludes with a very emotional graduation ceremony

Cohort 1, Pisa, Sept. 2023



Cohort 2, Pisa, Sept 2024



GRADUATION CEREMONY COHORT 3

Barcelona, July 2025



GRADUATION CEREMONY COHORT 4 Lille (France) 24th July 2026

+ FINAL EVENT OF BIOPHAM 1st edition
All 86 students invited including Cohort 1,2,3 and 4

COHORT 4 [2024 – 2026]



In between the integration week, the memorable moments (parties, lunches, dinners, ...) and the graduation ceremony:

→ courses, seminars, practical sessions in lab., internships, master's thesis... and many exams

WHAT IS BIOPHAM EXACTLY ?



BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER

This is the important word !

BIOPHAM is basically a Master in **Materials Science**

(physics-chemistry of materials)

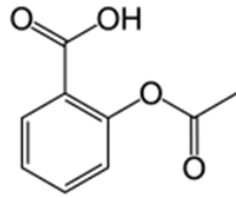
focusing on **pharmaceutical** and **biopharmaceutical** materials

BIOPHAM IS NOT a Master in: **Biology, Biochemistry, Biotechnology, Biomedical sciences, Pharmacy, Pharmaceutical sciences,...**
in which one may have some Materials science courses

Targeted students: Bachelor in Physics, Chemistry, Materials Science, Biomaterials, Nanosciences,...or related fields

Bringing a drug to market is a long and costly process...

New Chemical Entity (NCE)



Early stage development

Pre-clinical Phase

Clinical Phase

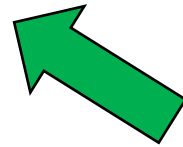
Regulatory Approval

Marketed product



MATERIALS SCIENCE MATTERS !!!!

solubility, physical states, crystal, amorphous, polymorphism, glass, stability, metastability, unstability, structure, dynamics, mechanical properties
→ Applications on small molecules, polymers, proteins



It is better to identify "problems" at start
Than after 10 years of development and
after spending 2 billions \$ 😞

Pharmaceutical companies have understood it and are supporting
BIOPHAM

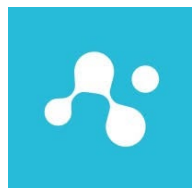


BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER

21 large and small partners companies
are BIOPHAM associated partners

Specialized seminars & lectures
Work placements – Short & Long internships



AKERN Italy



Farmigea Italy



Servier France



ALMIRALL Spain



UCB Pharma Belgium



Janssen Pharmaceutica Belgium



Xedev Belgium



Zentiva Czechia



Minakem France



Roquette France



IBI Italy



Lattice Medical France



MyBiotech Germany



Linari Engineering Italy



AstraZeneca Sweden



Spartha Medical France



BioZoon Germany



Physiolution Germany



Audio Technologies Italy



Lusochimica Italy



Cellbox Lab Latvia

A question : What is the training at the Master level of scientists working in R&D Pharma industries ?

- Associate Principal Scientist AstraZeneca
- Senior scientist AstraZeneca
- Head of Solid State Department Technologie at Servier
- Global Head Technical R&D at Novartis
- R&D scientist at Evotec
- R&D scientist at Johnson & Johnson
- Manager of the Functional Properties Analytical Laboratory R&D at Roquette
- Head of Section at Sanofi Solid State

**Master in Physics, Chemistry or
Material Sciences**
Not in Pharmacy!

**They just learn “pharmacy”
on the job !**

**Quote from a scientist (with a background in chemistry)
working in a big pharma company:**

***“Pharmaceutical development is far too serious to be left
only in the hands of pharmacists”***



BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER

**It exists many Masters in Materials Science & Masters in Pharmacy
→ No Master at the interface between Materials Science and Pharmacy !**

**BIOPHAM → A very unique specialized
Theoretical and Applied high level training**

**Survey of the existing
Masters worldwide:**

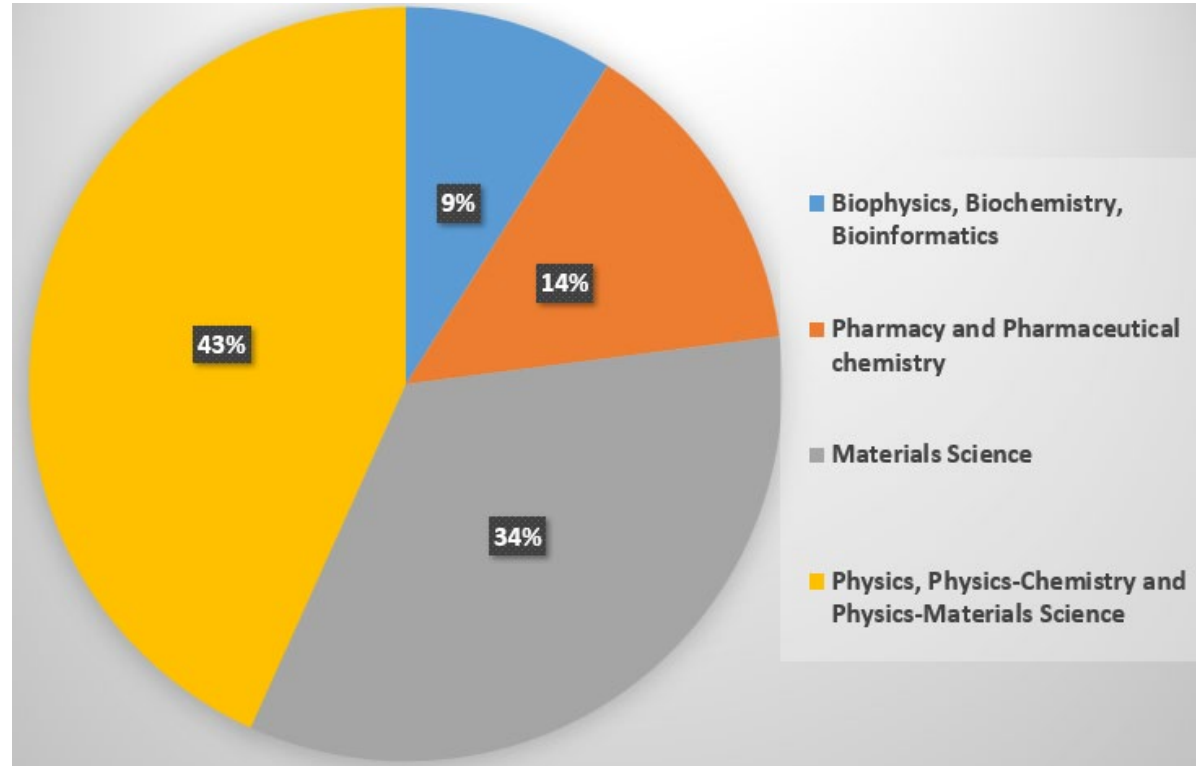
<https://eacea.ec.europa.eu/erasmus-plus/library/>

<https://www.findaMasters.com>

<https://www.Mastersportal.com>

...

Breakdown of the core fundamental and specialized courses offered in the BIOPHAM training programme

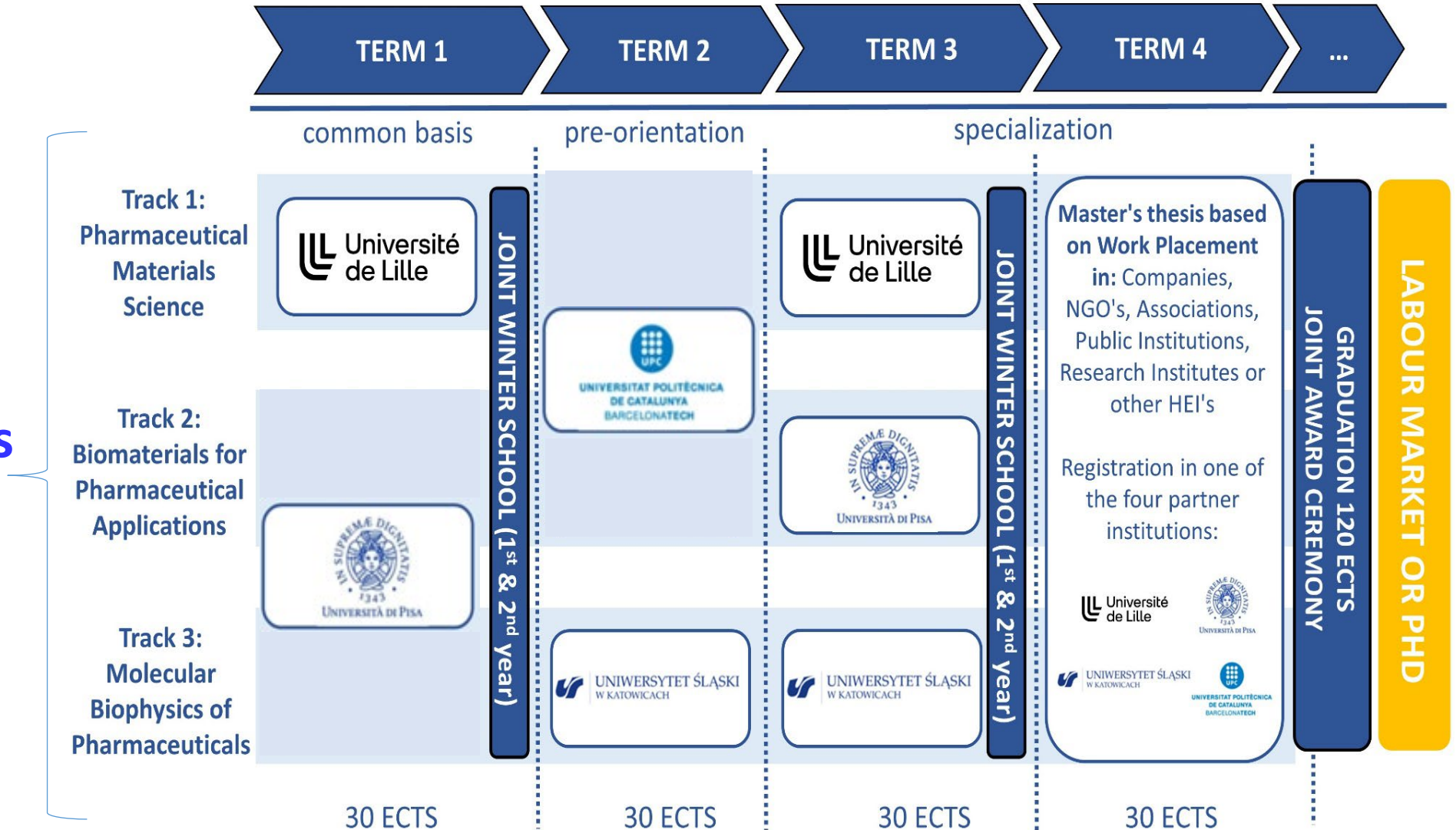


This breakdown does not relate to the type of studied systems (small molecules, polymers, proteins, hybrid systems) !

A course classified in “Physics” or “ Materials Science” can focus on proteins !



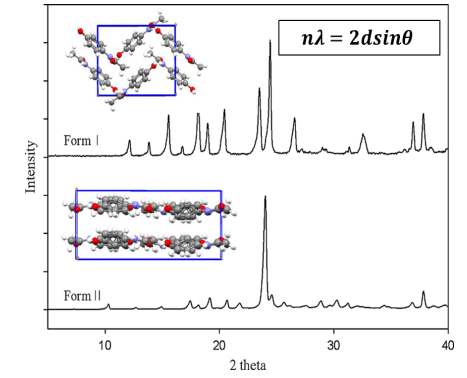
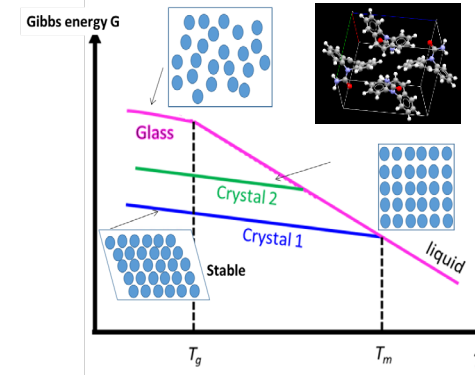
Mobility scheme 3 specialised Tracks



Track 1:
Pharmaceutical
Materials
Science



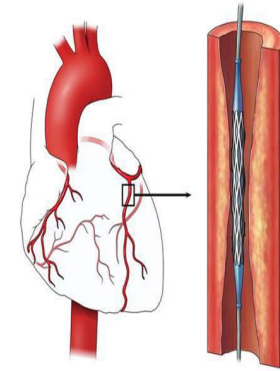
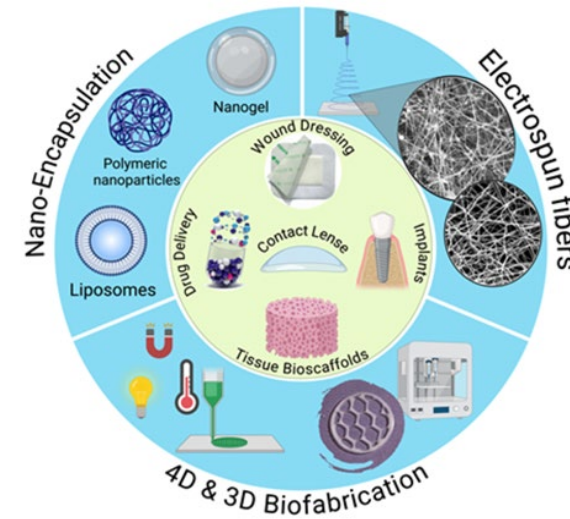
- **Specialized training focused on the core of “materials science”**
- Physical states (crystals and amorphous states) and Phase transformations (crystallization/melting, vitrification)
- Design of materials: quench/melt, milling, dehydration,...



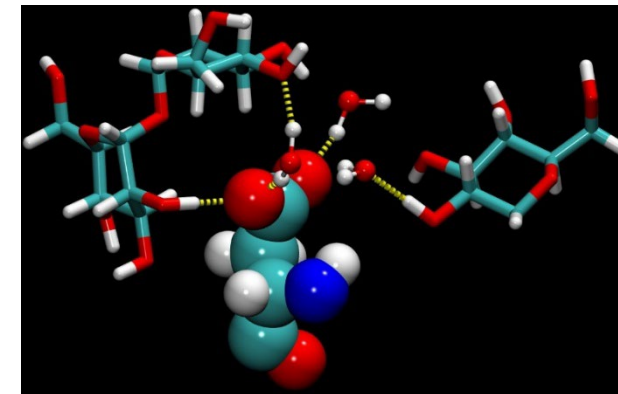
Track 2:
Biomaterials for
Pharmaceutical
Applications



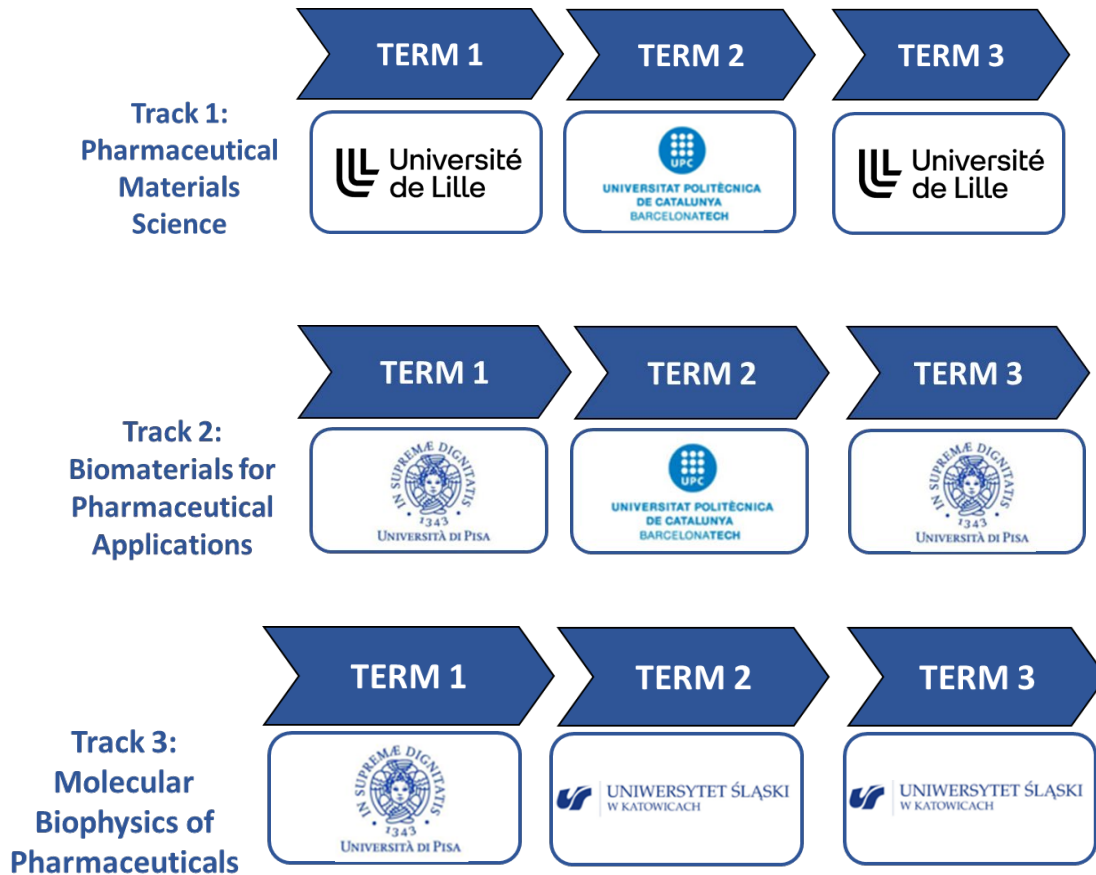
- **Specialized training on the fundamental principles of biomaterials**
- Advanced (bio)fabrication techniques (from macro-to-nanoscale),
- Understand the key properties of biomaterials and their relevance to drug delivery or regenerative medicine



Track 3:
Molecular
Biophysics of
Pharmaceuticals



- **Specialized training on biopharmaceuticals (peptides/proteins)**
- Structure, dynamics, and interactions
- Expertise on advanced techniques such as freeze-drying, spray-drying, supercritical fluid drying, and hot melt extrusion techniques.



- **Experimental techniques:**

Single & Powder X-ray diffraction (PXRD), thermal analyses (DSC, TGA, micro Cal), Raman, infrared and THz spectroscopies, optical microscopy, electron microscopies (TEM, SEM),...

+ Instruments available at large scale facilities (Synchrotron and Neutron sources)

- **Numerical techniques:**

Atomistic simulations : Molecular Dynamics, Stochastic dynamics, & Quantum DFT calculations,
Artificial Intelligence (Machine learning and data-driven techniques)



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<http://master-biopham.eu>

The list of courses and syllabi are available on the BIOPHAM website

Course catalogue

Track 1: Pharmaceutical Materials Science

TERM 1 – University of Lille (ULille) – France ▼
All courses are compulsory
<ul style="list-style-type: none">• Continuum mechanics – 3 ECTS• Introduction to Pharmaceutical Materials Science – 6 ECTS• Drug product development and pharmaceutical technology – 3 ECTS• AI and advanced computational methods in physics – 3 ECTS• Atomic scale modelling 1 - Classical methods – 3 ECTS• States of Matter and Materials Science Primers – 3 ECTS• Tutored trainings – 3 ECTS• Course from the Graduate Program – 3 ECTS• Foreign language (French or English) – 3 ECTS
Total: 30 ECTS
TERM 2 – Polytechnic University of Catalonia (UPC) – Spain >
TERM 3 – University of Lille (ULille) – France >

You will find details of the course content in the following [detailed syllabus](#).

Track 2: Biomaterials for pharmaceutical applications

TERM 1 – University of Pisa (UNIFI) – Italy >
TERM 2 – Polytechnic University of Catalonia (UPC) – Spain >
TERM 3 – University of Pisa (UNIFI) – Italy >

You will find details of the course content in the following [detailed syllabus](#).

Track 3: Molecular biophysics of pharmaceuticals

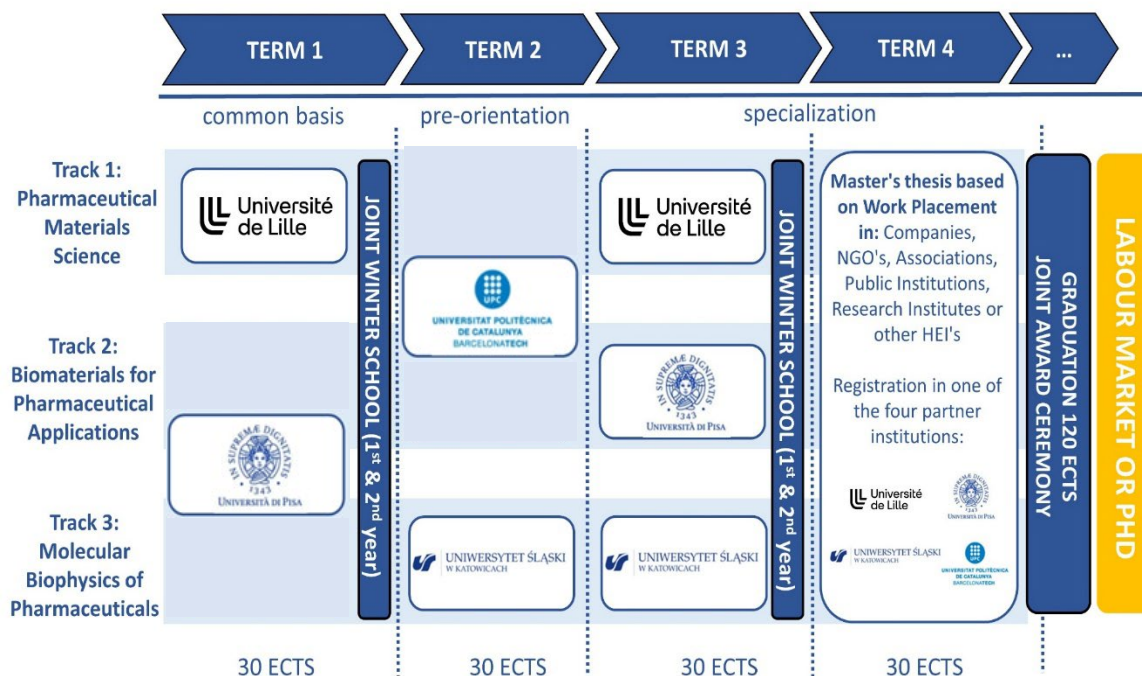
TERM 1 – University of Pisa (UNIFI) – Italy >
TERM 2 – University of Silesia in Katowice (USK) – Poland >
TERM 3 – University of Silesia in Katowice (USK) – Poland >

You will find details of the course content in the following [detailed syllabus](#).

BIOPHAM Master

→ 2 to 3 degrees 😊

Students obtain the degree from all visited universities (Term 1 to 4)



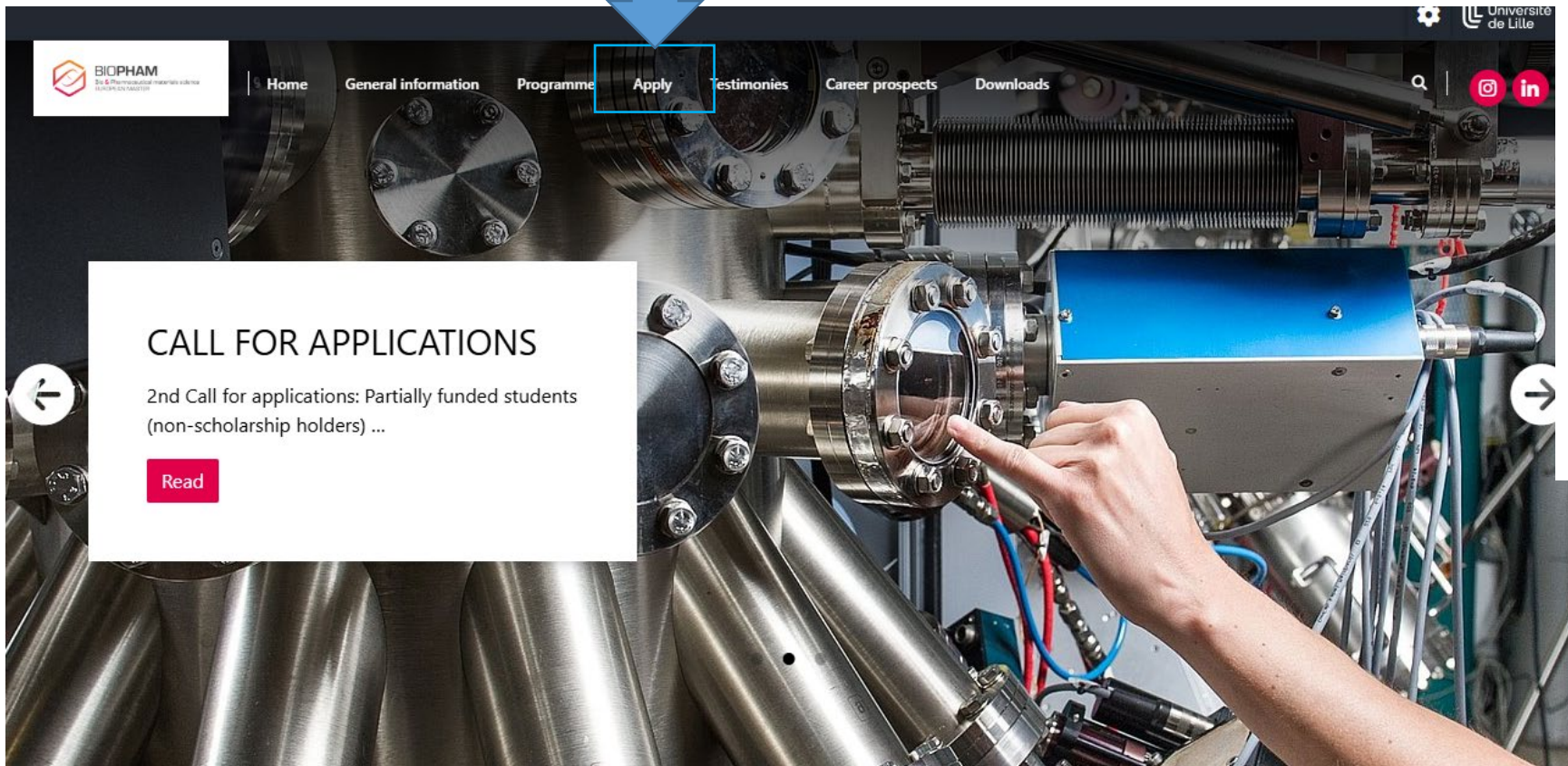
Name of institution	Title of degree awarded in English
University of Lille (ULille) FRANCE	Master in Fundamental Physics and Applications Track: Bio and Pharmaceutical Materials Science
University of Pisa (UNIFI) ITALY	Master Degree in Materials and Nanotechnology
University of Silesia in Katowice (USK) POLAND	Master (Field: "biophysics")
Universitat Politècnica de Catalunya (UPC) SPAIN	Erasmus Mundus Master in Bio and Pharmaceutical Materials Science (BIOPHAM)

+ **joint diploma supplement:** Providing detailed information about the student's academic programme and achievements

HOW TO APPLY TO BIOPHAM ?

<https://www.master-biopham.eu>

Click here !



SCAN ME !

IMPORTANT DATES

2nd Call for applications: non-scholarship holders

- **Opening: April 3rd 2026 (10:00 Brussels time)**
- **Deadline for electronic submission: May 3rd 2026 (23:59 Brussels time)**
- **Communication of the selection results: Mid-May 2026**
- **Start date of the Programme: 1st September 2026**

What support BIOPHAM can offer to non-scholarship holders ?

~~Self-funded~~ 😞 → Partially-funded 😊

You will benefit from the following support throughout the two years of the programme:

- **Tuition and Registration fee waiver** in all visited universities (University of Pisa, Polytechnic University of Catalunya, University of Silesia in Katowice or University of Lille)
- **Comprehensive health insurance which covers everything from the 1st euro**
- **Financial support** (travel and accommodation) to attend key events:
 - Winter school 1st year (Pisa, Italy, January 2027)
 - Winter school 2nd year (Lille, France, January 2028)
 - Graduation ceremony (Katowice, Poland, September 2028)
- **Additional support for special needs:** available upon request, for students with disabilities or sensory impairments: [€3,000 to €60,000] per student depending on the needs

Financial support for special needs : Contribution to cover the individual needs of students with disabilities

(e.g. long-term physical, mental, intellectual, or sensory impairments): assistance such as by third persons, adaptation of work environment, or additional travel/transportation costs...

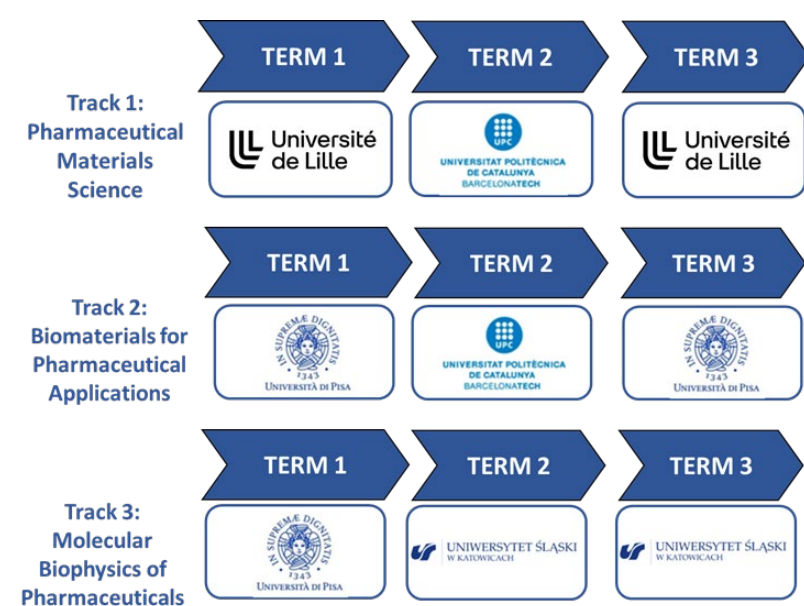
2 big advantages to join as partially-funded:

1) Your chances of being selected are much... much... higher than for Call 1 😊

CALL 1 (2026):

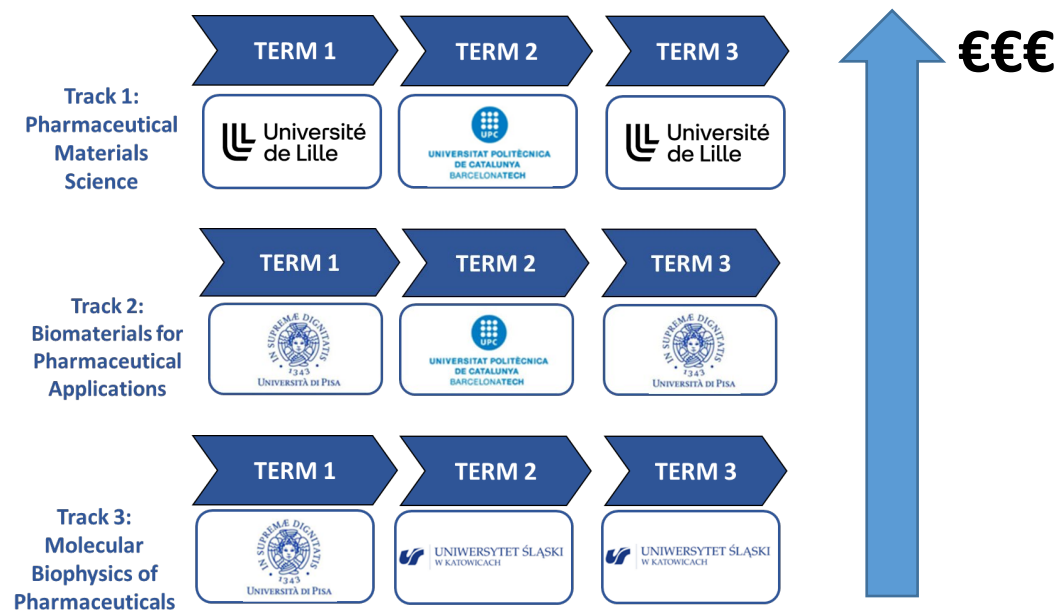
- Applications received: 496
- Main list: 15
- Reserve list: 14

2) You can choose your track freely 😊



How much it costs ?

	Cost of Living excluding rent	Rent (student-oriented room) suburb / outer-area room	Total
BARCELONA (Spain)	450 euros	550 euros	1000 euros /month
LILLE (France)	500 euros	450 euros	950 euros / month
PISA (Italy)	400 euros	350 euros	750 euros / month
KATOWICE (Poland)	350 euros	250 euros	600 euros / month



**JOIN US !
We are waiting
for you !**

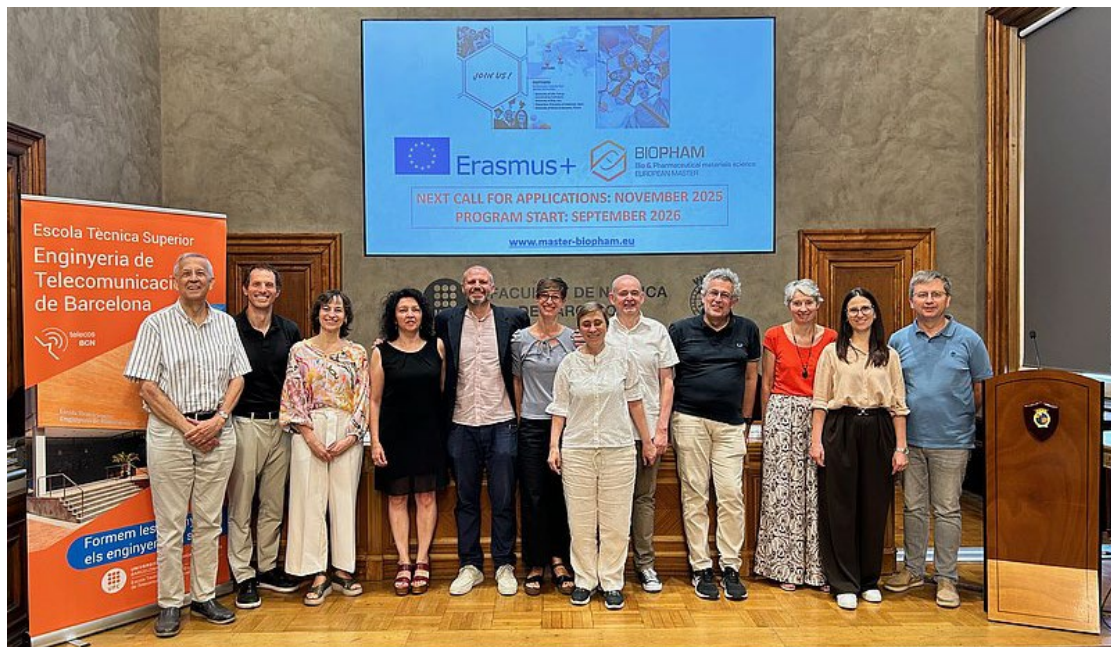


BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER



SCAN ME !



THANK YOU



BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER



UNIVERSITY OF
PISA



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



Politechnika
Śląska

“How to Survive Without the BIOPHAM Scholarship”

Speaker: Inés Pascual López

Student of BIOPHAM's 4th Cohort

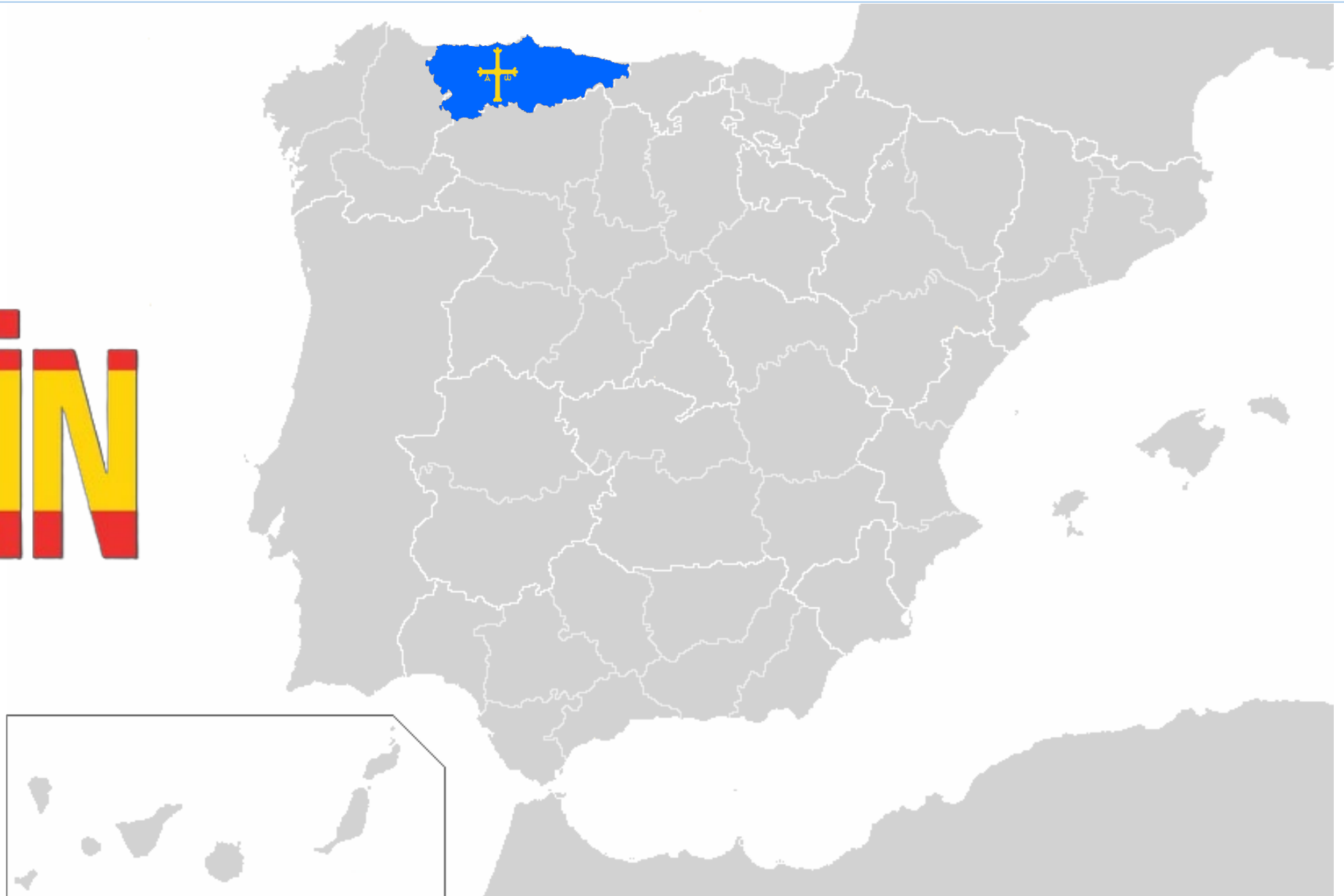
April 2nd, 2026

WHO AM I?

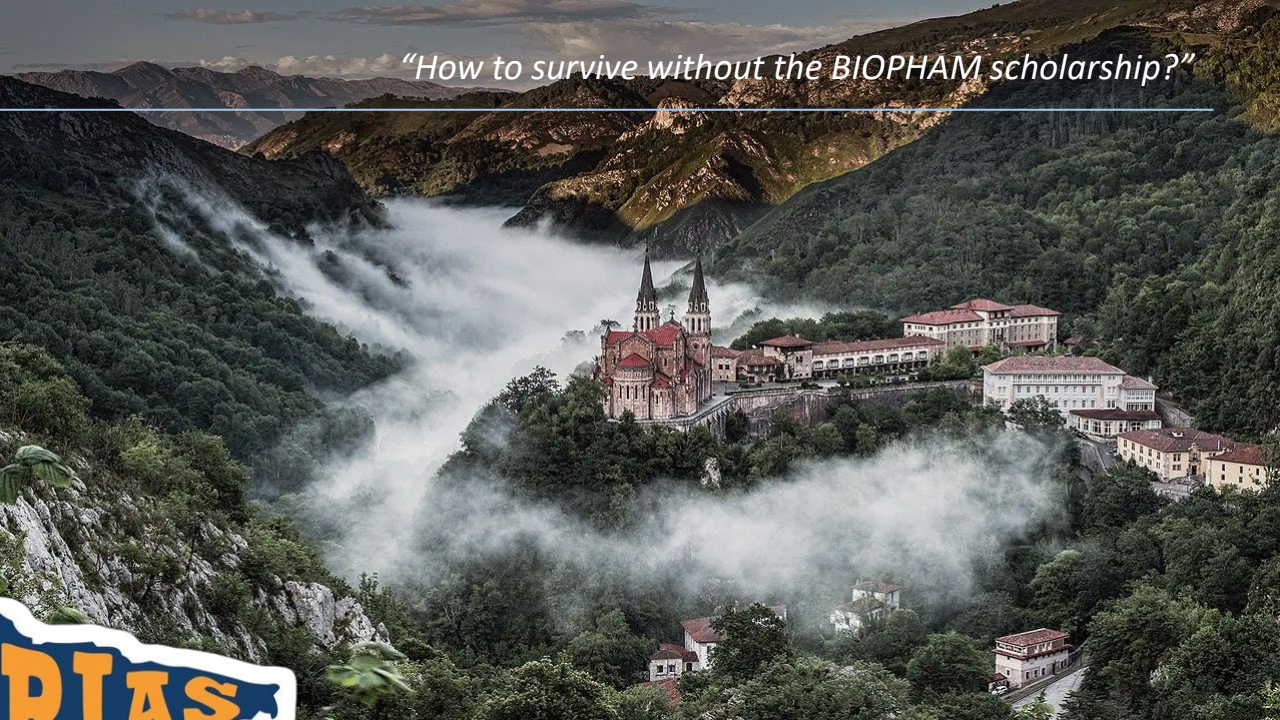
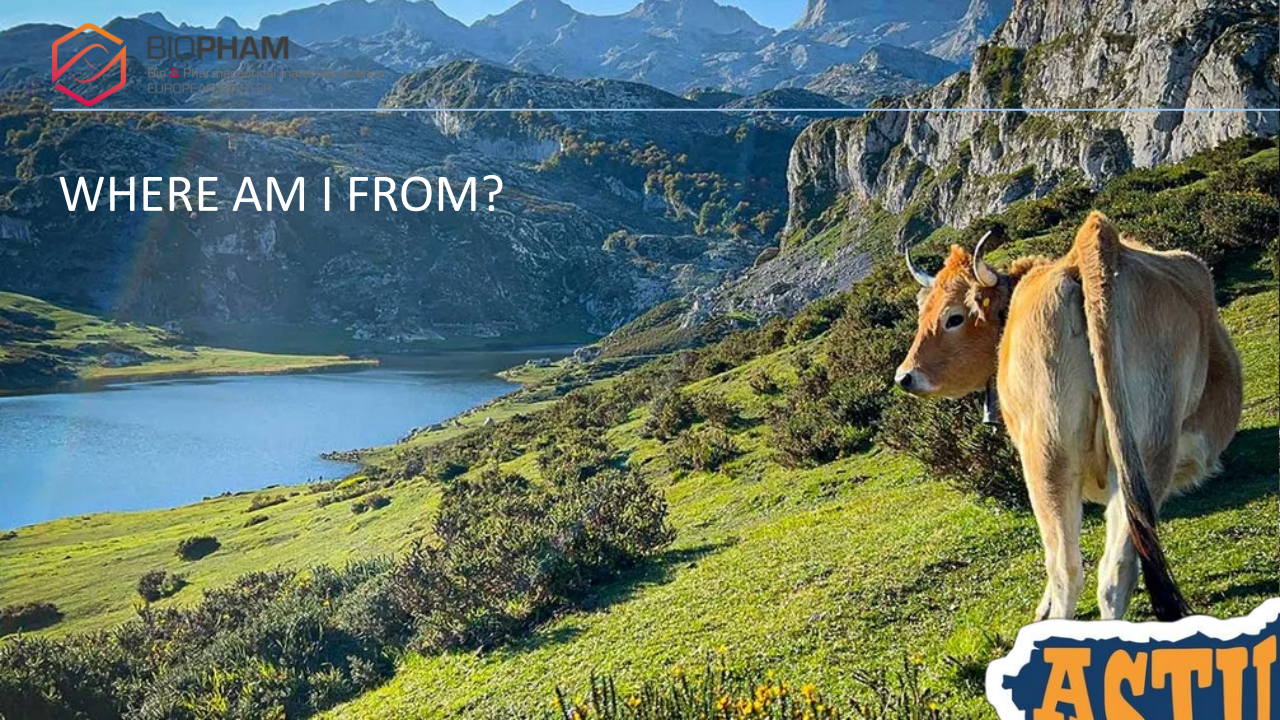


WHERE AM I FROM?





WHERE AM I FROM?



"How to survive without the BIOPHAM scholarship?"

ASTURIAS



WHERE AM I FROM?

"How to survive without the BIOPHAM scholarship?"

ASTURIAS



WHERE AM I FROM?



WHERE AM I FROM?

"How to survive without the BIOPHAM scholarship?"



MY ACADEMICAL BACKGROUND

Bachelor: Industrial Chemical Engineering (2019 – 2024)
University of Oviedo
Polytechnic School of Engineering of Gijon

MY ACADEMICAL BACKGROUND

Bachelor: Industrial Chemical Engineering (2019 – 2024)
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AND NOW WHAT?



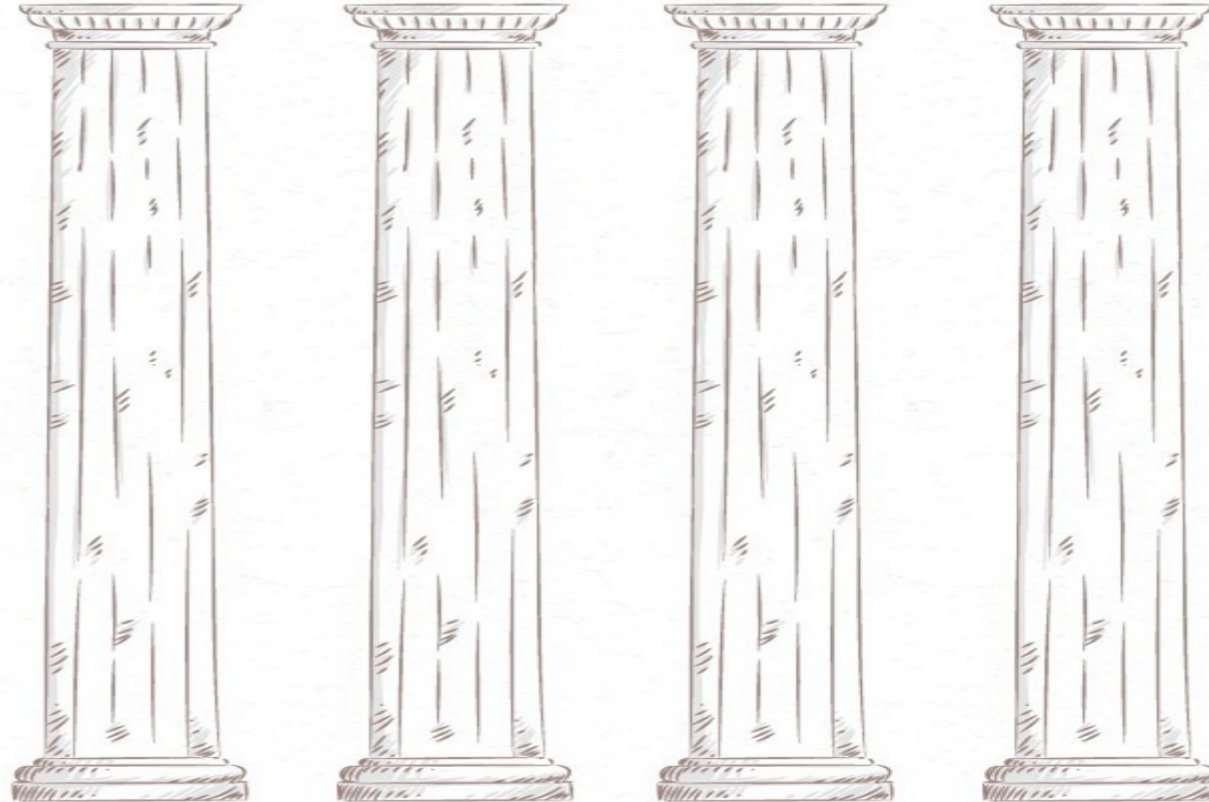
REASONS WHY I CHOOSE BIOPHAM



BIOPHAM



REASONS WHY I CHOOSE BIOPHAM



Intercultural
Experience

Different
Cities

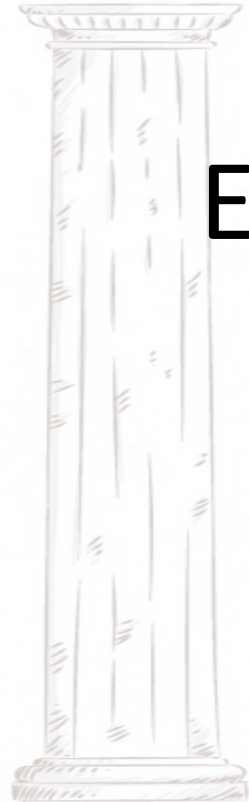
New Studies

Universities
Companies

REASONS WHY I CHOOSE BIOPHAM



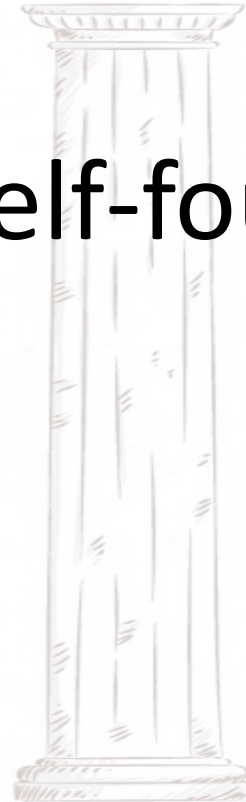
Even as self-founded?



Intercultural
Experience



Different
Cities



New Studies



Universities
Companies

REASONS WHY I CHOOSE BIOPHAM



Even as self-founded?

YES



Intercultural
Experience

Different
Cities

New Studies

Universities
Companies

REASONS WHY I CHOOSE BIOPHAM



Even as self-founded?

YES

WHY?

100% sure about studying abroad during the Master Degree

Living costs would be similar if joining the program or not

Travel costs can be reduced if booking tickets in advance

“Close” to my place anyways

Intercultural
Experience

Different
Cities

New Studies

Universities
Companies

MY BIOPHAM JOURNEY

**Pisa
(Italy)**



Semester 1



UNIVERSITY OF
PISA

**Barcelona
(Spain)**



Semester 2

Short Internship



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

**Katowice
(Poland)**



Semester 3



Politechnika
Śląska

**Cambridge
(England)**

Master's Thesis



UNIVERSITY OF
CAMBRIDGE

track → **“Advanced Experimental Characterization Techniques”**

option → **“Soft-matter & Pharmaceuticals”**

MY BIOPHAM JOURNEY – COURSES

Pisa
(Italy)



Barcelona
(Spain)



Katowice
(Poland)



Cambridge
(England)



**UNIVERSITY OF
PISA**

Laurea Magistrale in Materials and Nanotechnology

BIOFLUIDS AND MATERIALS INTERACTIONS

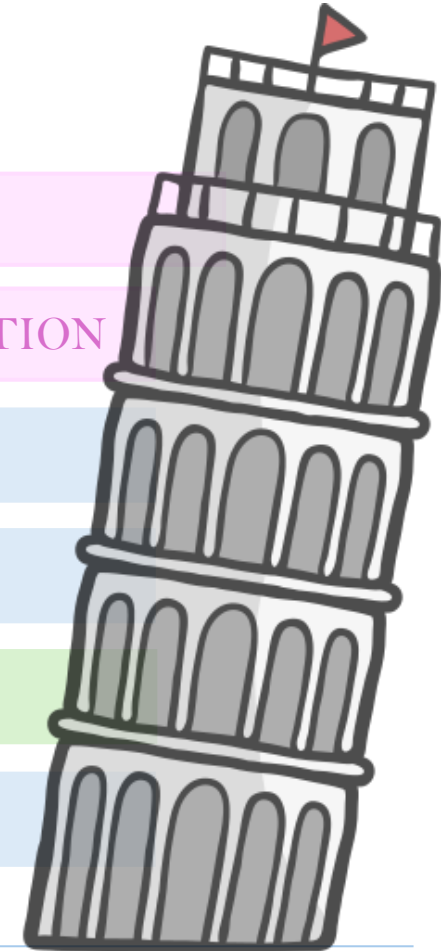
MANUFACTURING OF POLYMERS AND NANOCOMPOSITES FOR BIOMEDICAL APPLICATION

TRANSPORT PHENOMENA IN MATERIALS

POLYMER SCIENCE AND ENGINEERING

QUANTUM PHYSICS OF MATTER

DISORDERED AND OFF-EQUILIBRIUM SYSTEMS



MY BIOPHAM JOURNEY – COURSES

Pisa
(Italy)



Barcelona
(Spain)



Katowice
(Poland)



Cambridge
(England)



**UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH**

Engineering Physics Master's Degree

BIOPHYSICAL AND MATERIALS SCIENCE CHARACTERISATION

COMPLEXITY IN BIOLOGICAL SYSTEMS

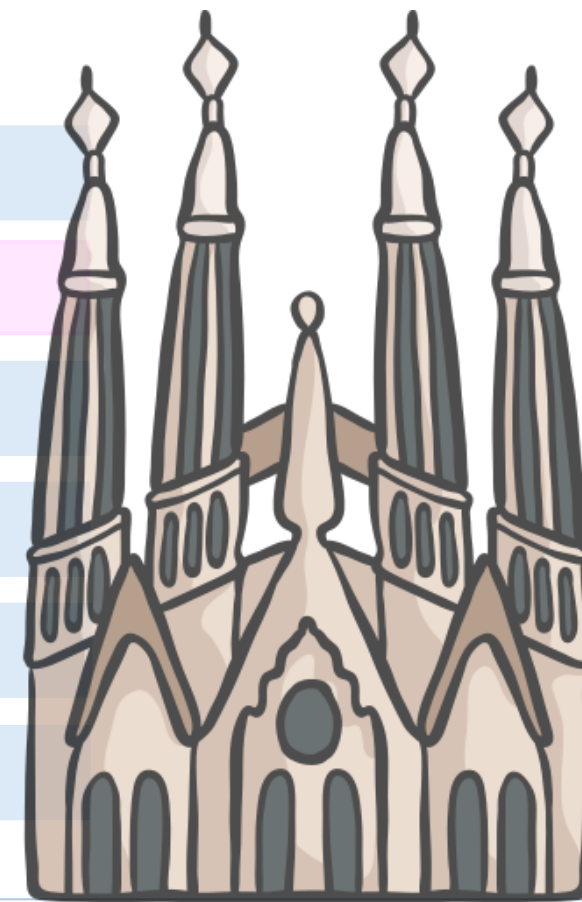
LARGE FACILITIES: SYNCHROTRON AND NEUTRON SOURCES

MATERIALS SCIENCE OF DRUGS

MOLECULAR AND SOFT CONDENSED MATTER

ROSETTA STONE LANGUAGE COURSE

+ Short Internship



MY BIOPHAM JOURNEY – COURSES

**Pisa
(Italy)**



**Barcelona
(Spain)**



**Katowice
(Poland)**



**Cambridge
(England)**



**Politechnika
Śląska**

Biophysics Master's Degree

“Soft-matter & Pharmaceuticals”

PROTECTION OF INTELLECTUAL PROPERTY, HEALTH AND SAFETY, ERGONOMICS

APPLICATION OF VIBRATIONAL SPECTROSCOPY IN THERAPEUTIC SUBSTANCE STUDIES

DRUG CHEMISTRY AND TECHNOLOGY OF DRUG FORMS

SELECTED ISSUES FROM BIOMATERIALS TOXICOLOGY

LANGUAGE COURSE: SCIENTIFIC ENGLISH

SUBJECT IN THE FIELD OF HUMANITIES: HISTORY OF PHYSICS

SPECIALIZED LABORATORY

PHARMACOLOGY AND PHARMACOGNOSY

MOLECULAR BIOPHYSICS

INTRODUCTION TO ENTREPRENEURSHIP



MY BIOPHAM JOURNEY – COURSES

Pisa
(Italy)



Barcelona
(Spain)



Katowice
(Poland)



Cambridge
(England)



**UNIVERSITY OF
CAMBRIDGE**

Master’s Thesis + Long Internship:

*“Measuring the Interfacial Tension of
Biomolecular Condensates using Microfluidics
at High Throughput”*



DIFFICULTIES AND HOW TO OVERCOME THEM



Academically



Financially

DIFFICULTIES AND HOW TO OVERCOME THEM



Academically

Do not procrastinate

Workload

Take advantage of continuous
assessment (UPC)

Doubts

Collaborate with the others

Ask the professors



Financially

DIFFICULTIES AND HOW TO OVERCOME THEM



Academically

Do not procrastinate

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Doubts

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Financially

Cook instead of eating outside

Do the groceries in cheap supermarkets/local stores

(1 large shop/week to save time)

Student discounts: public transport, gym, tourism activities...

Book flight tickets/accommodation in advance

DIFFICULTIES AND HOW TO OVERCOME THEM



Academically

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Where is my money going?

Student discounts: public transport, tourism

Book flight, accommodation in advance

DIFFICULTIES AND HOW TO OVERCOME THEM



Academically

Do not procrastinate

Workload

Take advantage of courses

Collaborate with the others

Doubts

Ask the professors



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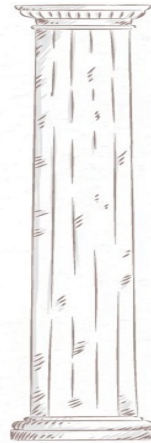
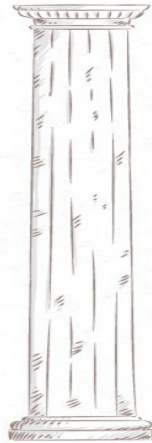
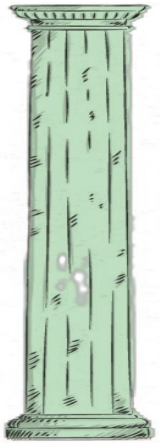
Student discounts: public transport, gym, tourism activities...

Book flight tickets/accommodation in advance

ORGANIZATION



BIOPHAM SO FAR



Intercultural Experience

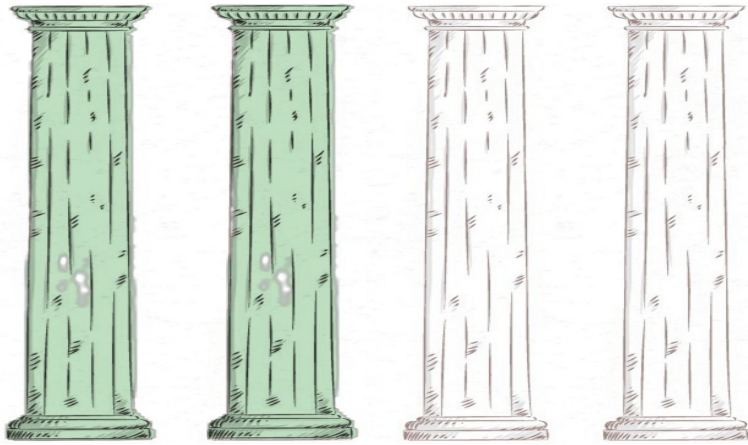
Different Cities

New Studies

Universities Companies



BIOPHAM SO FAR

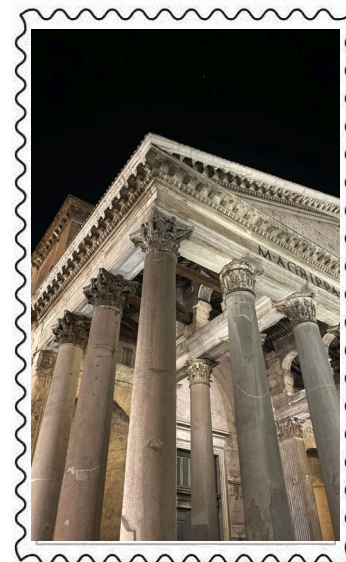


Intercultural Experience

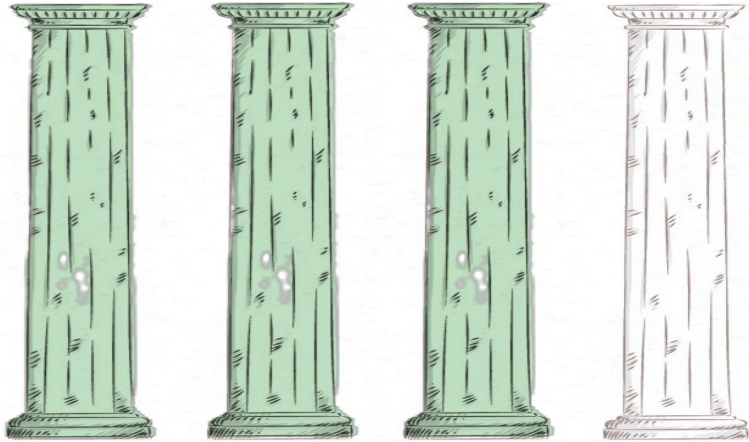
Different Cities

New Studies

Universities Companies



BIOPHAM SO FAR

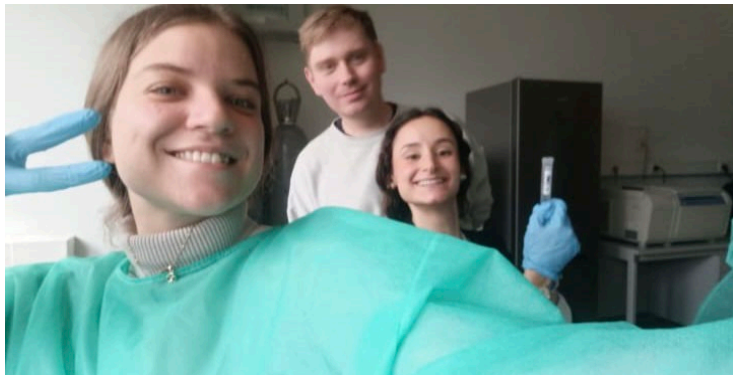
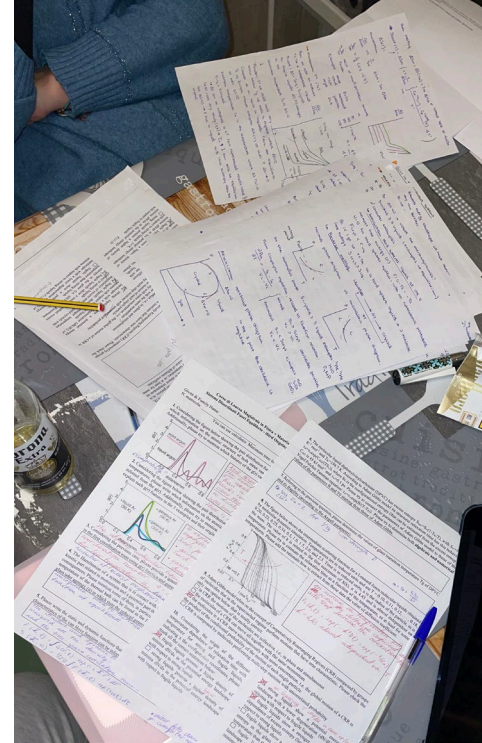


Intercultural Experience

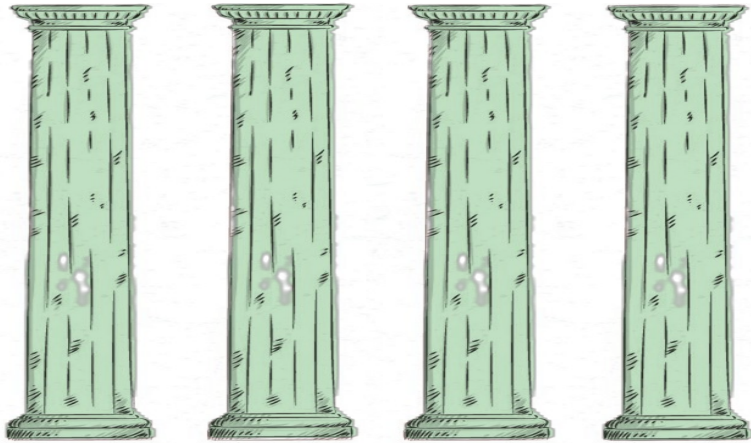
Different Cities

New Studies

Universities Companies



BIOPHAM SO FAR



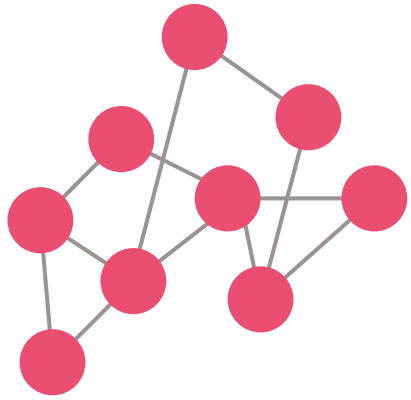
Intercultural Experience

Different Cities

New Studies

Universities Companies





BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER



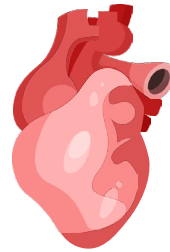
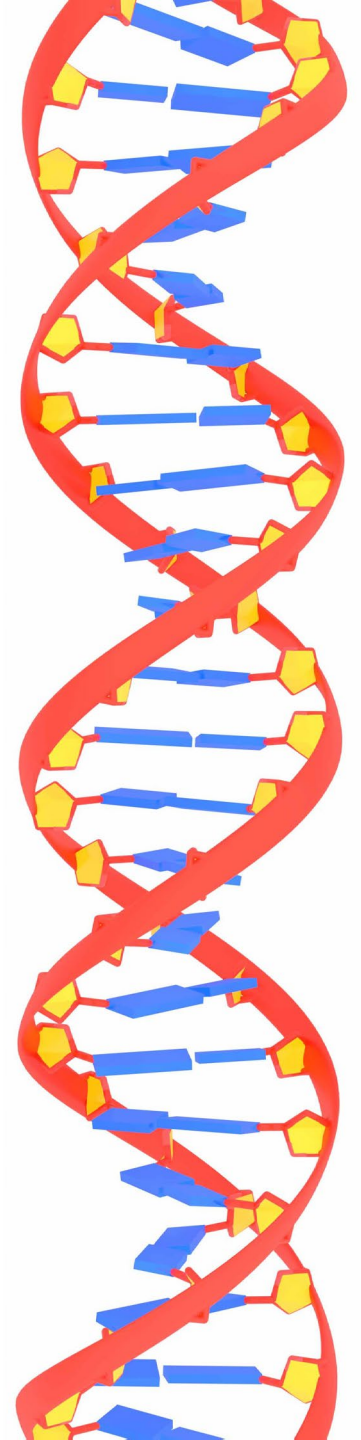
UNIVERSITY OF
PISA



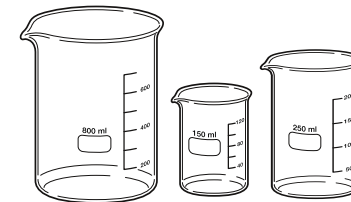
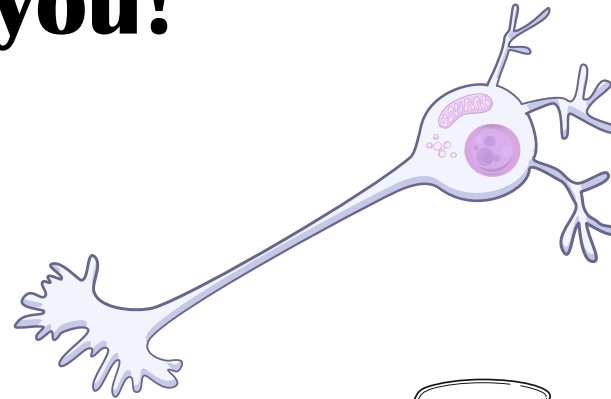
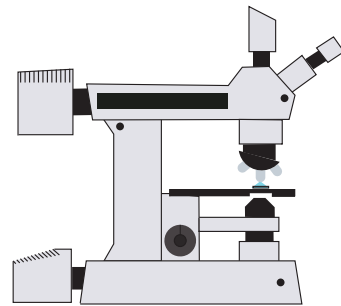
UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



Politechnika
Śląska



Thank you!





Erasmus+



BIOPHAM

Bio & Pharmaceutical materials science
EUROPEAN MASTER



UNIVERSITÀ DI PISA



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH



UNIWERSYTET ŚLĄSKI
W KATOWICACH



Université
de Lille

Engr. Ali HASSAN

→ Pakistani

Currently living in France, doing Master's Thesis, BIOPHAM student as part of Cohort 4 (2024–2026).

→  NUST Alumni

BE in Metallurgy & Materials Engineering (2020–2024) from the National University of Sciences & Technology.

→  Research & Leadership

Multiple internships in research and community welfare, plus management and leadership roles.



Why BIOPHAM?

- **Bachelor's Studies**
- **Joint Master's Degree (European Leading Universities)**
- **Erasmus Student Network (ESN)**
- **Partnership with big Pharma Companies**
- **Connections and Networking**

My BIOPHAM Journey



Semester 1



Semester 2



Short Internship



Semester 3 & 4

Courses

Sem 1: Materials and Nanotechnology 30 ECTS

1. Disordered and Off-equilibrium Systems
2. Quantum Physics of Matter
3. Polymer Science and Engineering
4. Transport Phenomenon in Materials
5. Biofluids and Materials Interactions
6. Manufacturing of Polymers and Nanocomposites for Biomedical Application

Sem 2: Engineering Physics 30 ECTS

1. Large Facilities: Synchrotron and Neutron Sources
2. Molecular and Soft Condensed Matter
3. Complexity in Biological Systems
4. Biophysical and Materials Science Characterisation
5. Materials Science Of Drugs
6. Rosetta Stone Language Course
7. BIOPHAM Short Internship

Courses

Sem 3: Applied and Fundamental Physics 30 ECTS

Condensed Matter & Pharmaceuticals Experimental Track

1. Thermodynamics and Phase Transformations
2. Dynamics in the Amorphous Systems
3. Physical State Manipulation, Characterization and Formulation of Pharmaceuticals
4. Introduction to Drug Product Development and Pharmaceutical Technology
5. Advanced Characterization Methods (I+II)
6. Scientific Writing & Communication
7. French Foreign Language
8. Project Design Management

Sem 4: Master's Thesis 30 ECTS

University of Lille



Grants and Funding

- 1. Erasmus+ Mobility Grant (€ 1554 for one semester)**
EU-funded supporting student mobility across different countries.
- 2. Graduate Programme Mobility Grant ULille (€ 1500 for 8 weeks)**
Mobility grant for internship
- 3. Graduate Programme Fellowship ULille (€ 8500 for one year)**
For M2 BIOPHAM – academic year 25-26
- 4. CNRS Internship Gratification (€ 600 – 700 / month for 5-6 months)**
Paid internship compensation for completing research placements at CNRS-affiliated laboratories in France.

Living Costs



Pisa €700 – €800 / month

Affordable Italian city with a strong student community. Rent is reasonable; food costs are moderate.



Lille ~ €700 / month

Most affordable, thanks to French social support systems like **CAF** (housing allowance) and **CROUS** (subsidized student housing & meals).

Barcelona ~€1,000 / month

The most expensive of the three cities. Higher rent and cost of living, but friendly environment.



What I Enjoy Most?



Travelling (more than 15 flights in 1.5 year)



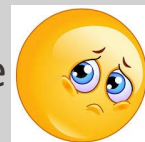
Cultural Diversity (New friends)



Different Systems (Education, transportation etc.)

& much more.....

Will miss BIOPHAM after graduating, for sure







[LinkedIn](#)

Engr. Ali Hassan
ali.hassan338640@gmail.com

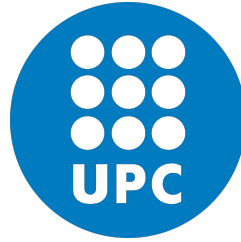


Thank you

Good Luck All...



BIOPHAM



LL Université
de Lille

Noëlle Haddad

A brief story of my BioPHAM journey

Who am I ?

I am Noëlle, french with lebanese origins.

I am from Paris where I studied until my 20s.

Self-funded from cohort 2 of BioPHAM (2022-2024).

I now work in bioinformatics since 2025.



www.linkedin.com/in/noelle-haddad



noellehaddad24@gmail.com

My academic track



“Prépa”
Preparatory class

2 years intensive program for admission in french school of engineering



Ecole Centrale Nantes

Year 1 = General Engineering
Year 2 = Computer Science for Biology and Health Care



Sabbatical

Gaining work experience outside of academic track + searching for masters



BioPHAM

Pisa, Barcelona, **Lille**
Simulation Track



Bioinformatics Engineer

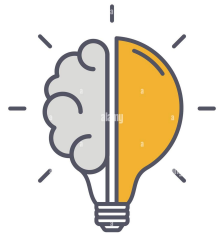
Development and maintenance of microbial genomic platform
[Mage MicroScope](#)



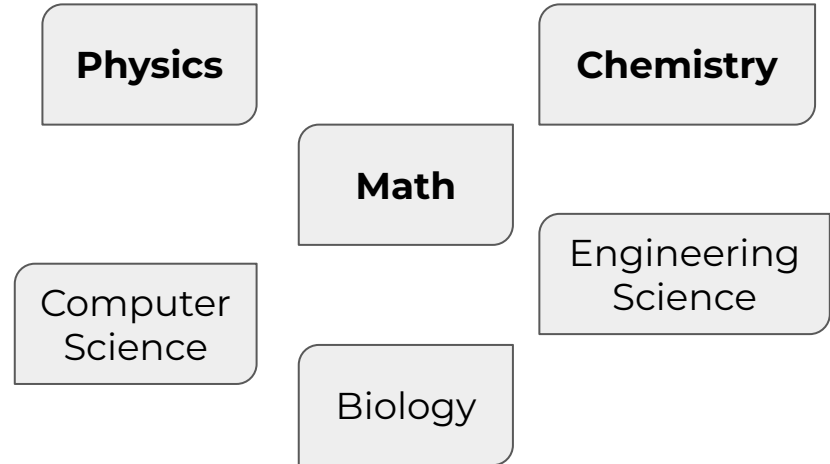
What did I study before BioPHAM?

What was really helpful ?

- **Work Methodology**
- **Math/Physics**
- and **curiosity...**



Small tip...



What did I study during BioPHAM?

“modelling and simulation” track

Semester 1 : Pisa	Semester 2 : Barcelona	Semester 3 : Lille
<ul style="list-style-type: none">● Disordered and off-equilibrium systems● Polymer science and engineering● Mechanical Behaviour of Materials● Quantum physics of matter● Computational materials science	<ul style="list-style-type: none">● Molecular and soft condensed matter● Large facilities: synchrotron and neutron sources● Biophysical and materials science characterisation● Biopham Short Internship● Machine learning with neural networks	<ul style="list-style-type: none">● Advanced thermodynamics and phase transformations● Molecular mobility and amorphous state of matter● Health Entrepreneurship Programme● Atomic scale modeling

Short Internship



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**UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH**

Modeling the competition between season respiratory infectious diseases

Students: Noëlle HADDAD

Tutor: Sergio ALONSO MUÑOZ

Department and Institution where project was carried out: **Departament de Física Universitat Polytècnica de Catalunya Non-Linear Physics and Out of Equilibrium Systems (NOLIN)**

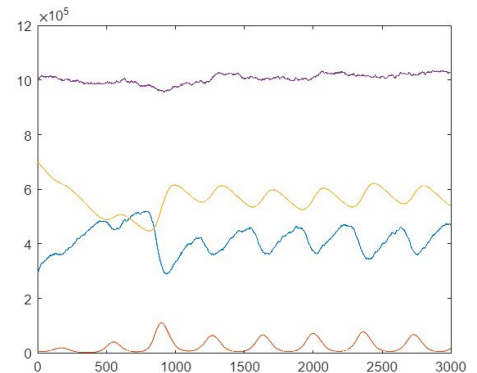
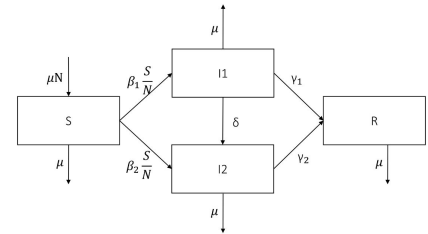
Place: **Castelldelfels, Spain**

Date: **From 18/04/23 to 30/05/23**

Abstract

Respiratory infectious diseases, such as influenza, respiratory syncytial virus (RSV), and others, exhibit a recurring pattern during the winter season. These epidemics do not occur simultaneously but follow a sequential order. This temporal arrangement could stem from variations in spreading velocity or from inter-virus competition within individuals. In this study, we propose the utilization of a compartmental mathematical model, specifically the Susceptible-Infectious-Recovered (SIR) model, to investigate both scenarios. The model is implemented using the R programming language. In first instance we conduct a study of the parameters influence on the disease spread. Secondly, this research introduces a modified version of the SIR model, tailored to encompass the competition dynamics between two distinct respiratory pathogens while also accounting for seasonality. Our objective is to adjust the model's parameters to accurately replicate the sequential infection peaks observed in the seasonal succession of two respiratory pathogens.

Double infection SIR model



Long Internship



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Comparative Analysis of Bacteriocin Detection Tools for Lesaffre Bacterial Genomic Collection Characterization

Master Thesis

Place:

Lesaffre International
101 rue de Menin, 59700 Marcq-en-Baroeul

- Benchmarking tools for prediction & identification of bacteriocin (sequence-matching based methods and machine learning based method).
- Creation of clear and informative visualizations of assay results to facilitate decision-making.
- Utilized cloud computing resources to launch parallelized analyses of large genomic datasets, optimizing processing times for high-throughput data.
- Development of a pipeline on Nextflow for identification of known bacteriocins and discovery of novel bacteriocins.
- Detailed documentation of pipelines and analyses to ensure reproducibility.

My job now



Maintain and improve the MicroScope microbial genome annotation platform, ensuring integration and updates of key bioinformatics tools.

Why did I choose BioPHAM? As a self-funded ?

- **Wide variety of topics** all linked to bio
- **Reknown european universities**
- Traveling, **living abroad**
- **International environment**



What difficulties have I encountered?

Housing: Secure accommodation early, especially in high-demand cities like Pisa.

High cost: Ensure sufficient funds before starting.

Scholarships: French/EU options (e.g., Erasmus), but administrative delays may limit eligibility.

Work restrictions: Small side jobs are difficult to find abroad and unreliable + language barrier . Online tutoring is a safe, flexible alternative. ([italki](#))

What did you enjoy in BioPHAM ?

All the reasons that made me choose BioPHAM:

- **Wide variety of topics** all linked to bio
- **Reknown european universities**
- Travel, **living abroad**
- **International environment**

Plus:

- People: students, researchers, teachers
- Academic world
- Fluency I gained in English
- Scientific knowledge (in thermodynamics, condensed material, large facilities etc...)

Thank you BioPHAM :)

