BIP Understanding complex diseases: genes, environment and phenotypes

Universitat de Barcelona in collaboration with:

Università di Bologna

Università degli Studi di Cagliari

Università di Pavia

Université de Bourgogne

École Pratique des Hautes Études
Université PSL

What is a Blended Intensive Programme BIP?

BIPs are **short, intensive courses** within the ERASMUS programme that *combine a virtual part with physical mobility* to offer students an international space to get to know a new Higher Education Institution through a short stay where they will approach highly topical subjects by working in transnational and transdisciplinary teams. During the BIP they will be trained in highly topical subjects by working in transnational and transdisciplinary teams.

Read more in:
https://wikis.ec.europa.eu/display/NAITDOC/Blended+Intensive+Programmes

Do you want to learn more about complex diseases?

We offer a BIP with multidisciplinary and international faculty in which we will combine a virtual training during the month of May 2024 with a one-week stay in Barcelona in June 2024.

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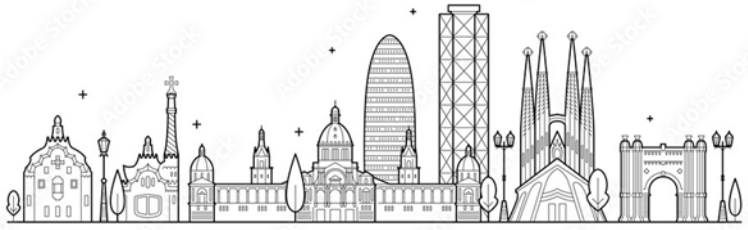

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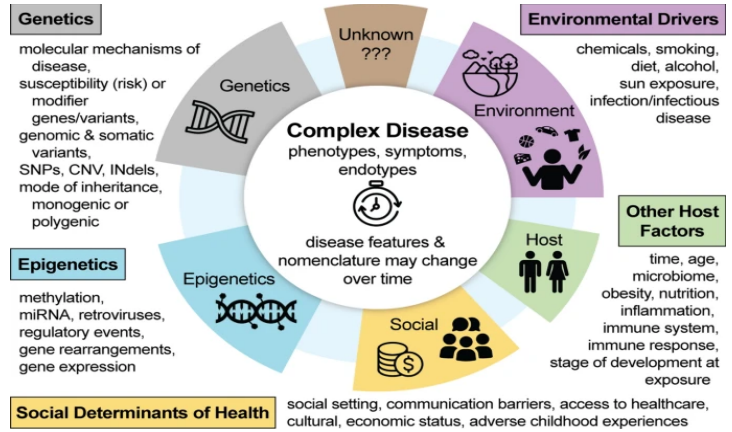
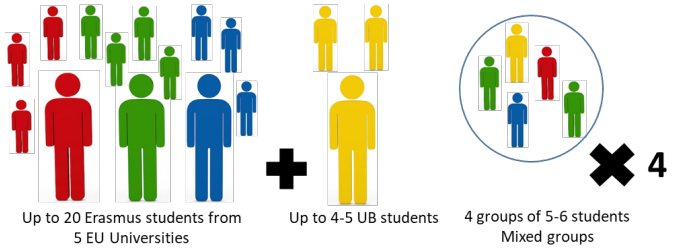
Complex diseases occur when genes (many and sometimes unknown), lifestyle and environment interact. Understanding and diagnosing them is a challenge for researchers and clinicians.

This course explores the **theoretical basis of complex diseases with a multidisciplinary view** through genetics (genotype), morphology (phenotype) and their interaction with the environment.

3 ECTS/75h: 30h of virtual/face-to-face learning (15h virtual + 15h face-to-face)
20h supervised work
25 hours of autonomous work/independent learning



FROM: Schriml, L.M., Lichenstein, R., Bisordi, K. *et al.* Modeling the enigma of complex disease etiology. *J Transl Med* **21**, 148 (2023)



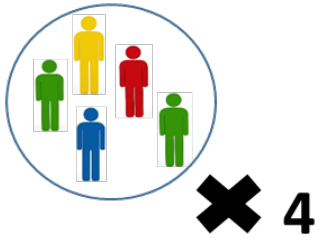
Students may come with different backgrounds in Life and Health sciences. The aim is to provide an integrated view of the current approach to complex diseases that is understandable for different backgrounds.

VIRTUAL Learning
3 weeks – 5-6 h per week in sessions of 2h

May 2024

15 h of virtual learning
2h of supervised work

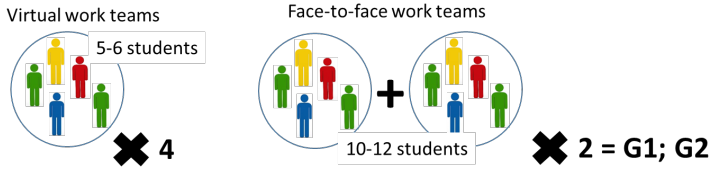
Supervised work 16 h



4 groups of 5-6 students
Mixed groups

ERASMUS STAY in University of Barcelona

5 days – June 2024
15 h of face-to-face learning
4 h of supervised work



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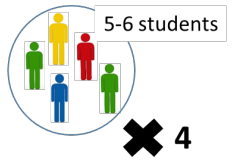
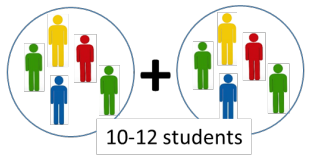
Contents of VIRTUAL LEARNING	Duration (15h)
Introduction to the BIP: Objectives, Organisation &Schedule, Teaching Staff, Evaluation	1
Definition of Complex Disease	1
Genetics: Human genome organisation, variation, adaptation, evolution, Genetic susceptibility (how we detect, how we study)	4
Morphology: Animal models, Morphometric Methods, 3D imaging, Multivariate, Behavioral traits	4
Environment: Risk factors, Methylation, Interaction	3
Integration/Prediction: Data Analysis, Heritability, Genetic Predictions, Genetics/Environment contribution	2
Closure: Summary, *Organisation of supervised work*	*2 (supervised work)*

Contents of SUPERVISED WORK	Duration (h)
Students work in small groups to prepare a POSTER to be defended during the practical stage in Barcelona. Approach to different complex diseases: Schizophrenia, Obesity, Aging, Anxiety, Depressive disorders, Intellectual disabilities; each group prepares a complex disease guided by one member of the teaching staff	14

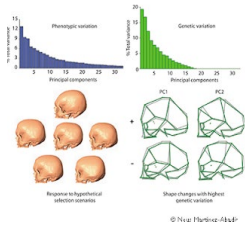
Virtual work teams



Face-to-face work teams



Morpho LAB



Geno LAB

Data Analysis/Integration/Prediction

Practical stage 15h 4h supervised work	**Monday 9 June 2024 3h** ***2h supervised work***	**Tuesday 10 June 3h** ***1h supervised work***	**Wednesday 11 June 3.5h**	**Thursday 12 June 3.5h** ***1h supervised work***	**Friday 13 2024 2h**
		Morpho Lab	**Geno Lab** DNA extraction+methods of DNA analysis	**Data Integration**	
Morning	Presentation and Mini-symposium by Academic staff. Understanding complex diseases through different approaches	G1 9.30-13h	G2 9.30-13h	G1/G2 9-13h	Poster presentation of students' team work
13-15 h	Welcome lunch	Lunch + supervised work	Lunch	Lunch + supervised work	Closure & Lunch
15-17h	*Supervision of students' team work*	G2 15-18.30h	G1 15-18.30h	Visit to CNAG facilities Centre Nacional Anàlisi Genòmica https://www.cnag.eu	