

Biomedical Sciences Specialisation Inflammation and Pathophysiology



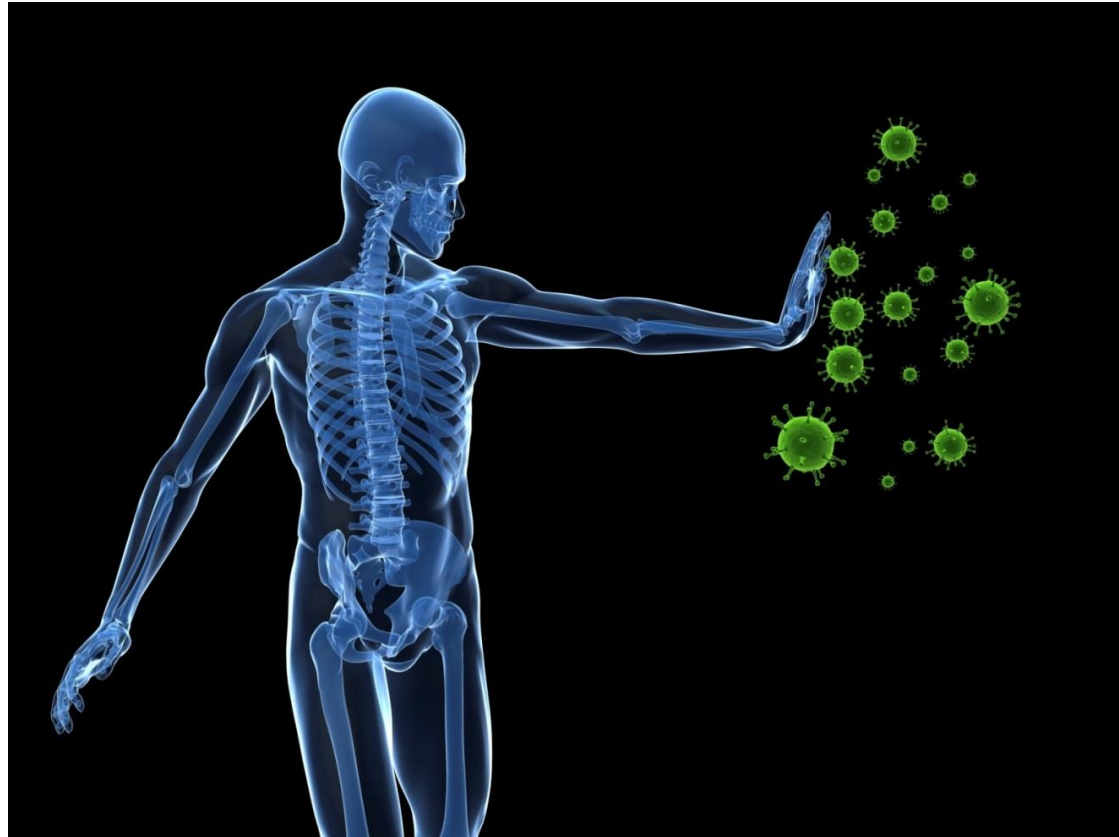
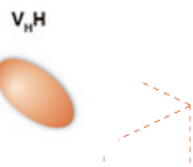
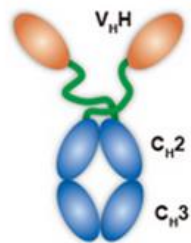
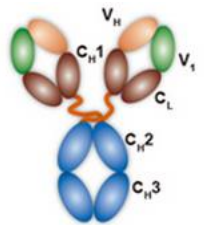
Our goal in this specialization:

To understand path·o·phys·i·ol·o·gy:

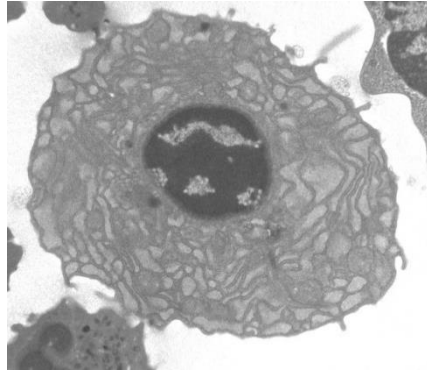
The study of structural and functional changes in tissue and organs that lead to disease.

To evaluate different types of therapies, vaccination and immune system effector functions

To engineer the immune system, Treatment of disease



Specialisation Inflammation and Pathophysiology

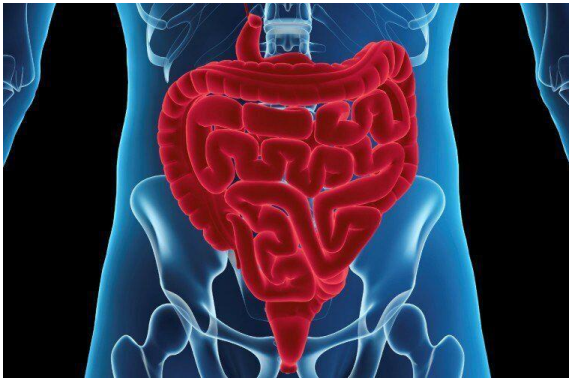


What this specialisation prepares students for:

- Learn techniques for the study of molecules, cells and organisms
- Clinically relevant understanding of different mechanisms of disease
- Target immunological threads
- Create new therapeutic strategies
- Prepare you for working in academy and industry

Specialisation Inflammation and Pathophysiology

Learn pathophysiology of relevant organs:



Block 1201

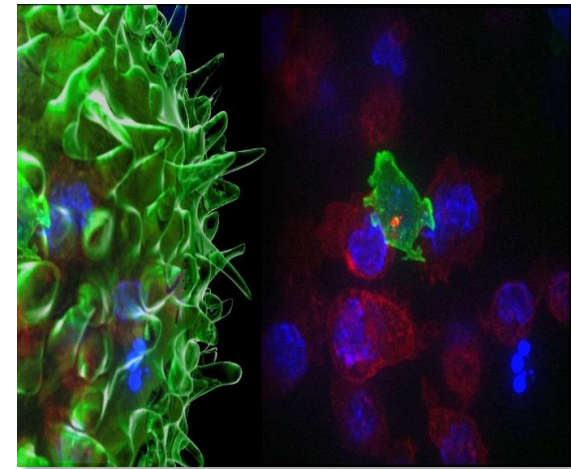
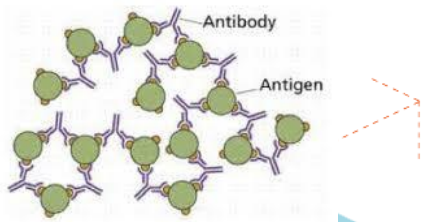
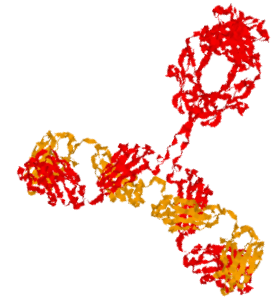
Inflammation and Pathophysiology

- Learn sterile inflammation and other pathological threats leading to degeneration
- Understand hypersensitivity disorders
- Explain immunity to tumors
- Appraise immunity to microbes
- Assess microbiome in inflammation

Block 1202 Inflammation and Pathophysiology

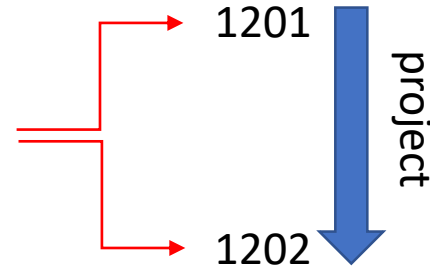
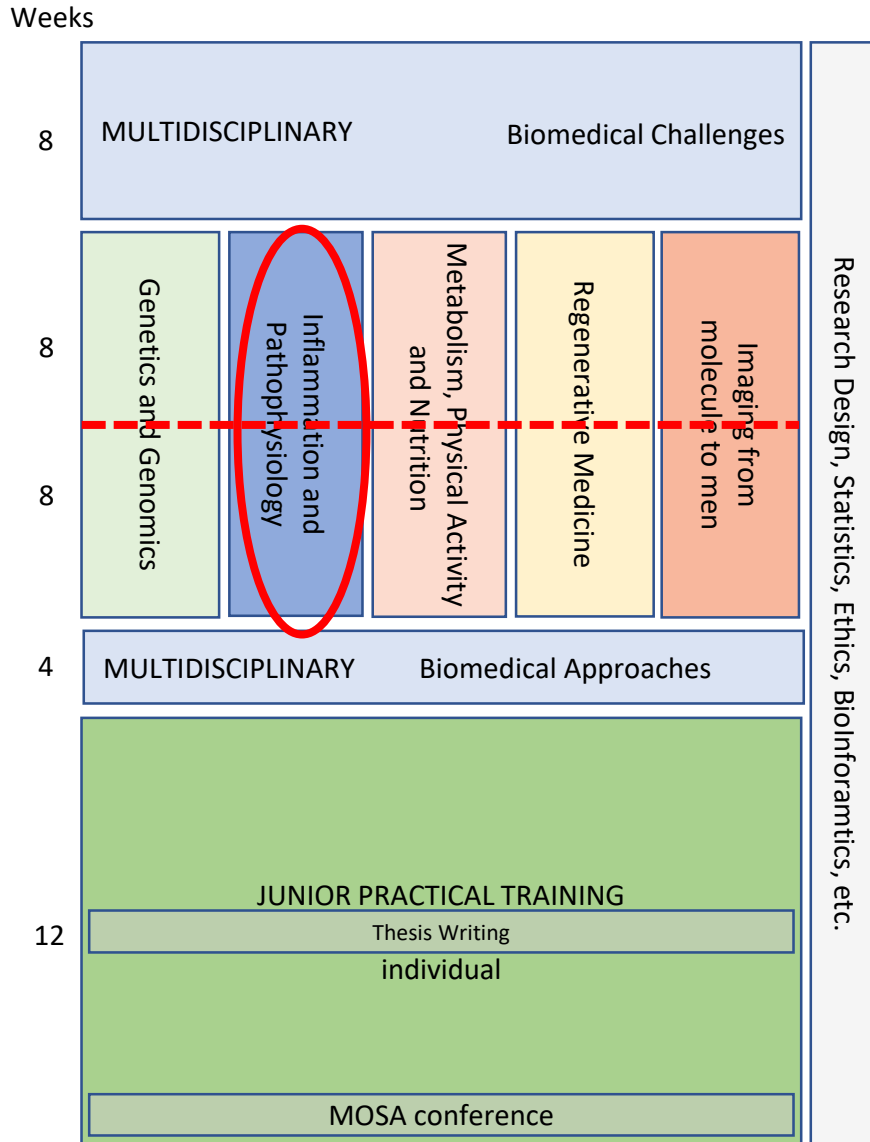
“Engineering the immune system, Treatment of disease”

- Understand and design **antibody engineering**
- Understand and design **cell therapy**
- Evaluate and design **vaccination**
- Discuss **organ transplantantion**
- Appraise **gene-therapy** techniques
- Asses the potential of **microbiome targeting**



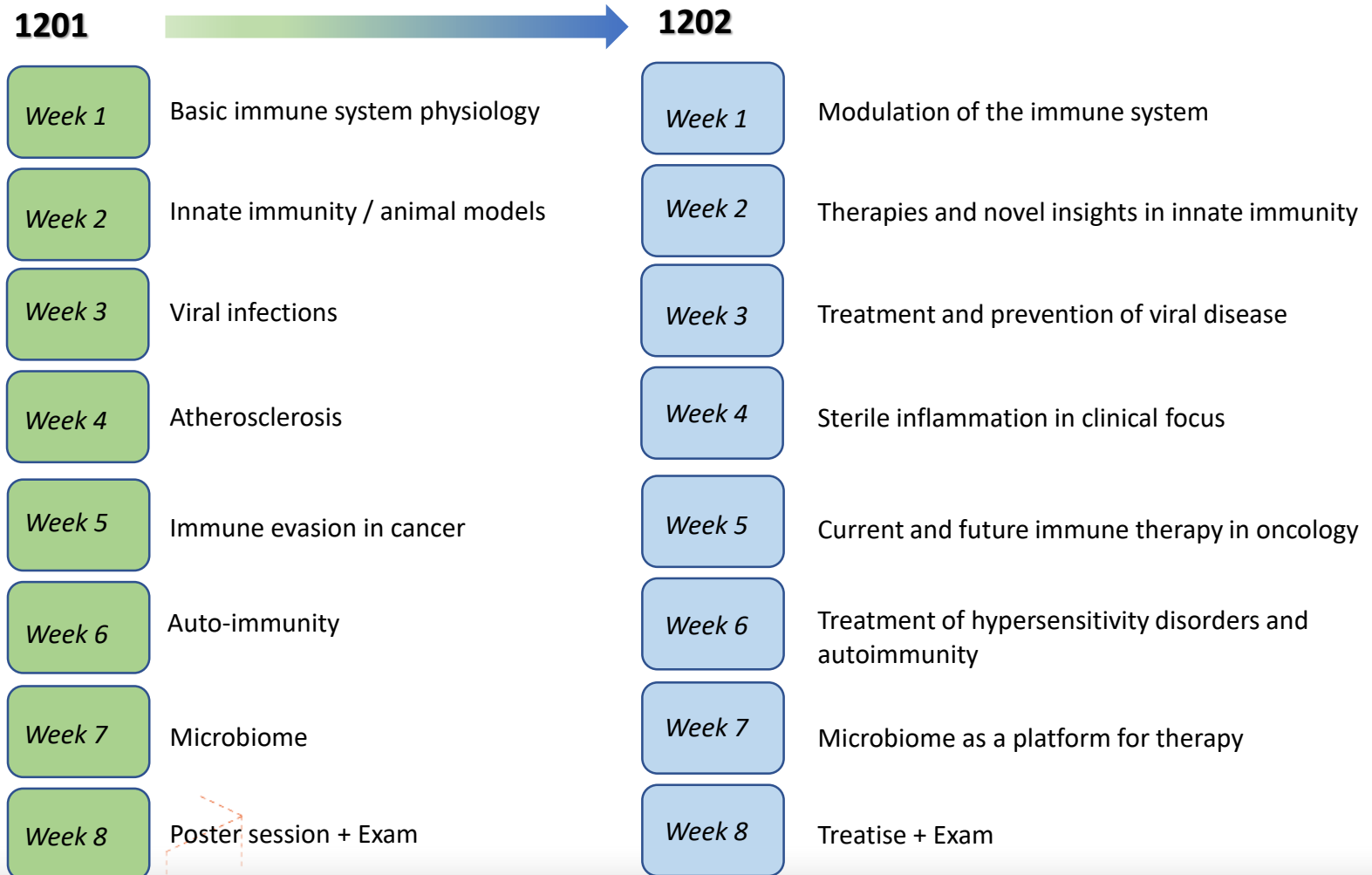
YEAR 1

Go the extra mile



7 themes

The themes in block 1202 are planned in parallel to those in 1201:





- **Understand pathophysiology**
- **Modify immune system**
- **Develop novel therapies**



INFLAMMATION & PATHOPHYSIOLOGY

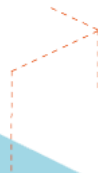


Jan Gaede, 2nd year Biomedical Sciences Master's student

Why did I decide for IP?

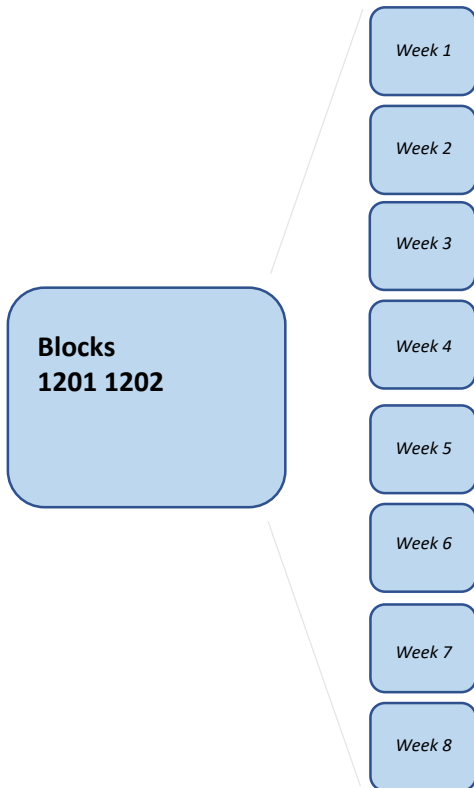
- Engineering background
- Immune system
- Cancer, Neuro, Autoimmunity, Infectious diseases..

My experience

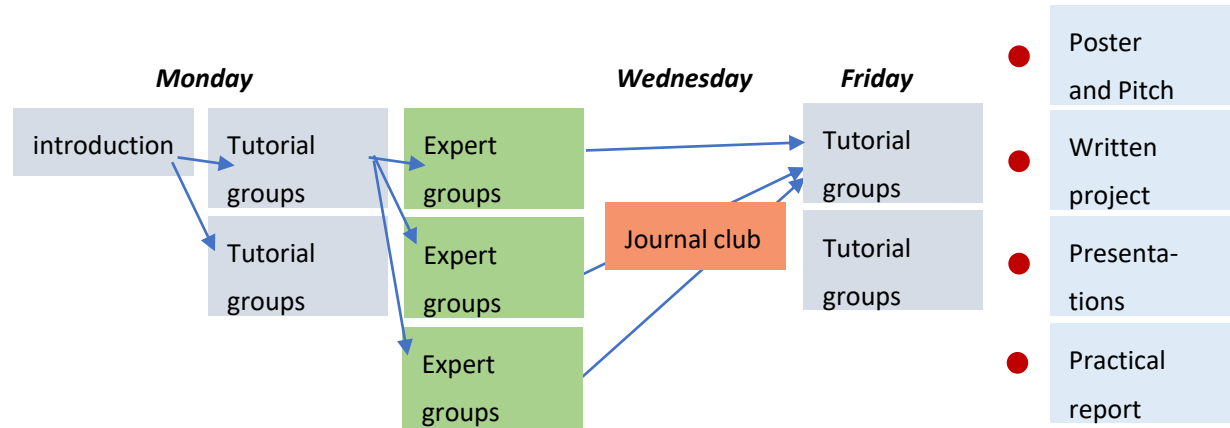
- Experts for their topics → tutors
 - Reading, Writing, Presenting, Discussing
 - Teamwork
 - Context
 - Independence → Master's Course
- 

Overview block: organisation

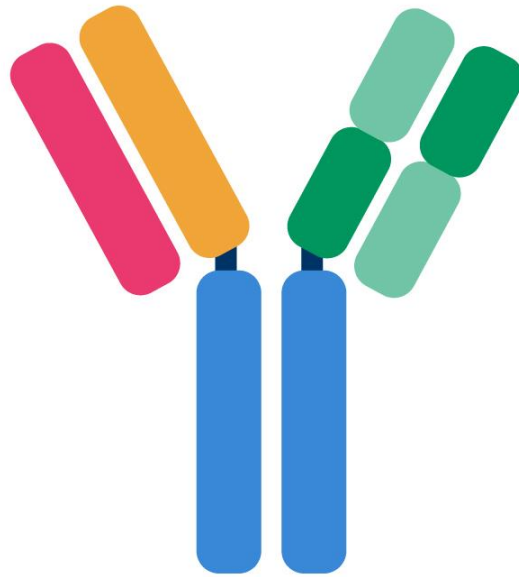
7 themes



A typical week



QUESTIONS?



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Raphi is one of the friendliest and funniest guys I know. Furthermore he's really handsome and very ... [See More](#)
October 3, 2017

★★★★★
October 4, 2017

★★★★★
October 4, 2017

Do you recommend Raphael Bednarsky, Biomedical Sciences Master's student?

Yes **No**

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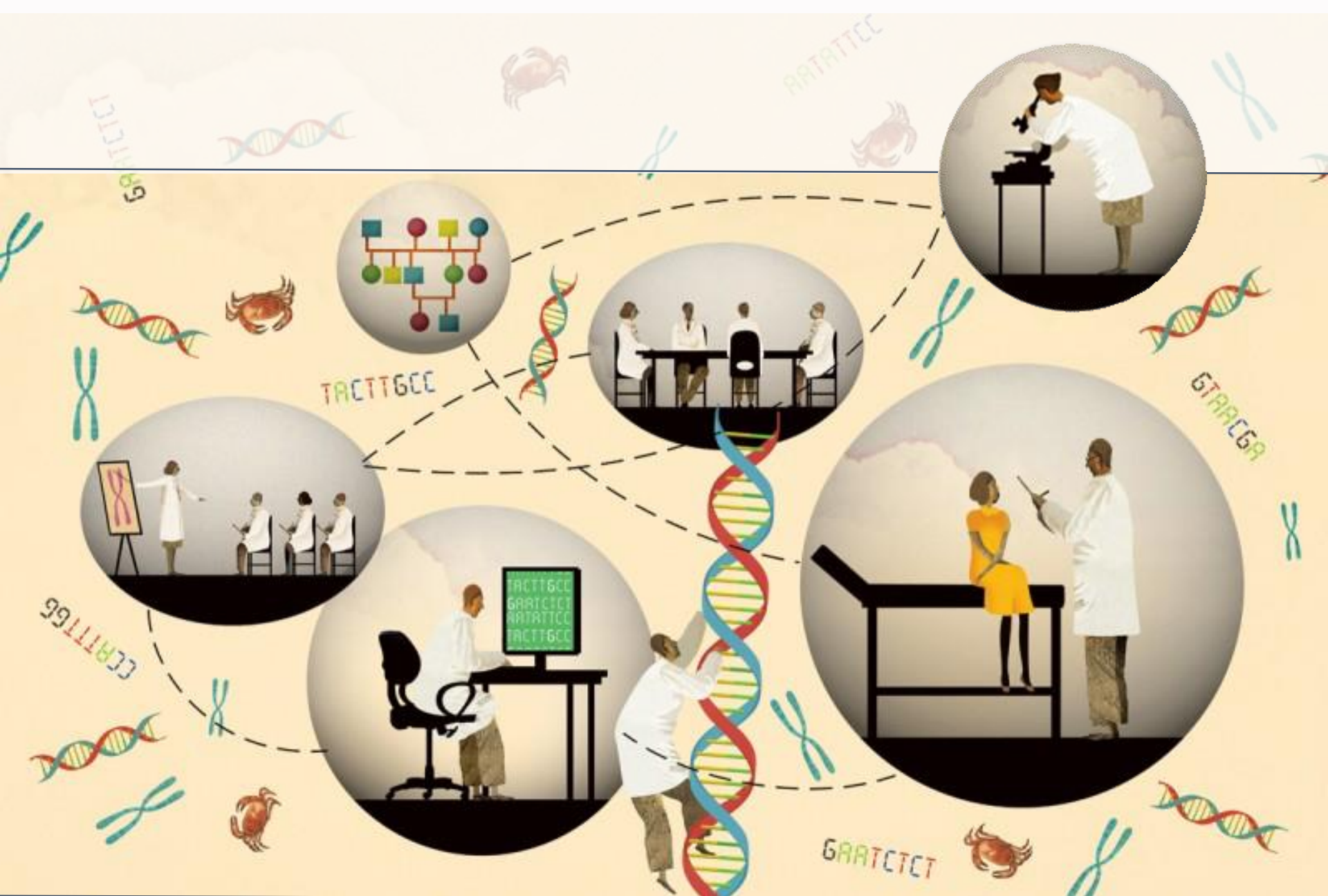
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Your team

module coordinators



Prof. Dr. Edwin Mariman
E. e.mariman@maastrichtuniversity.nl
T. ++31-43-388-2896



Prof. Dr. Ernst-Jan Speel
E. ernstjan.speel@mumc.nl
T. ++31-43-387-4614

co-coordinators

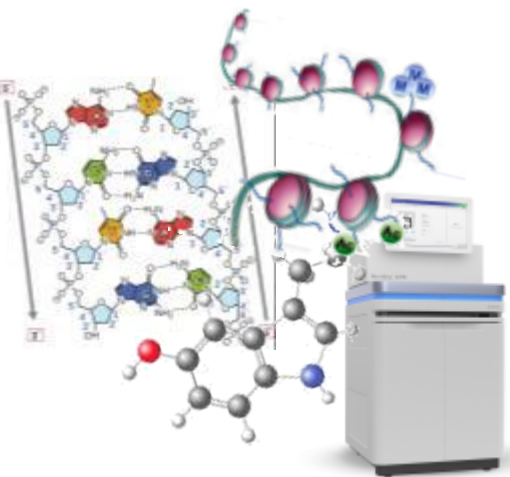


Dr. Lars Eijssen
E. l.eijssen@maastrichtuniversity.nl
T. ++31-43-388-1187

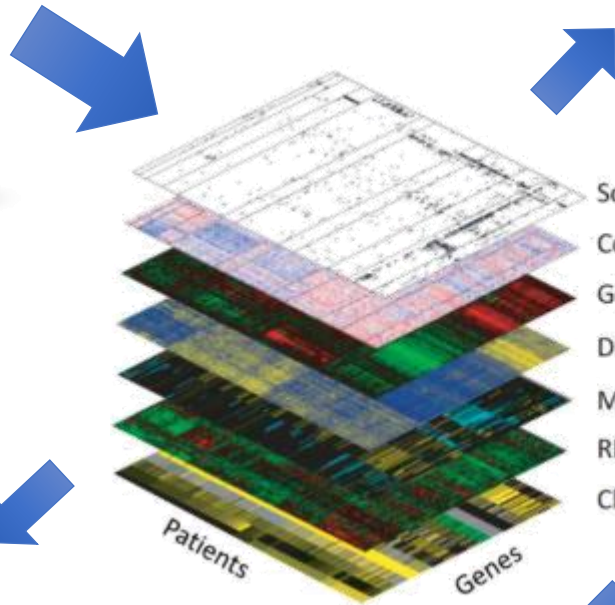


Dr. Jo Vanoevelen
E. j.vanoevelen@maastrichtuniversity.nl
T. ++31-43-387-2982

Measurements and Technologies



Model Systems



- Somatic mutations
- Copy number
- Gene expression
- DNA methylation
- MicroRNA
- RPPA
- Clinical data

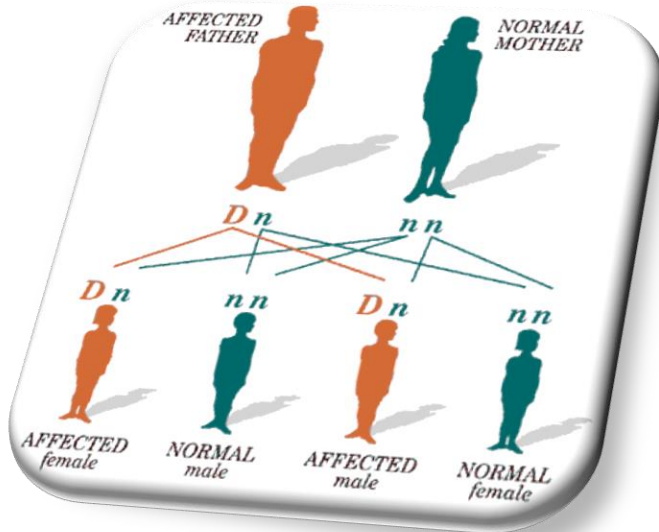


Toxins, Nutrients, Forensics

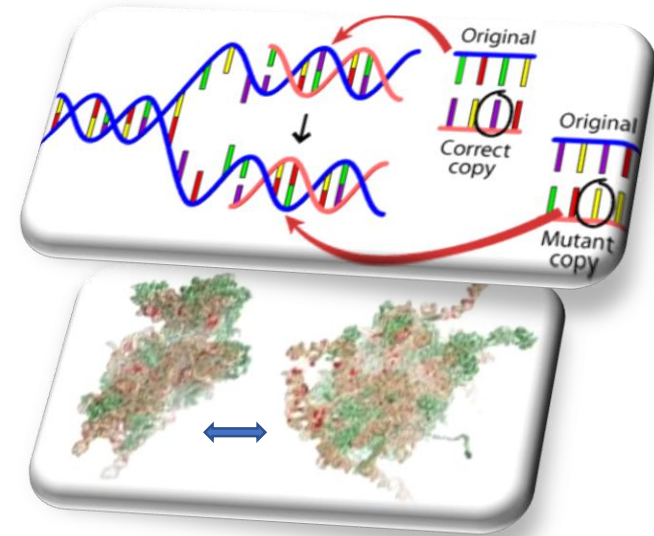


Clinical Genetics & Genomics

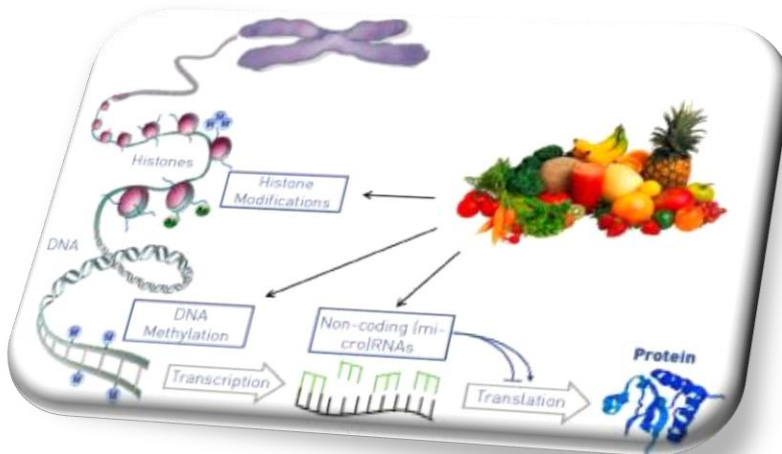
HEREDITARY FACTORS



GENETIC VARIANCE / GENE EXPRESSION



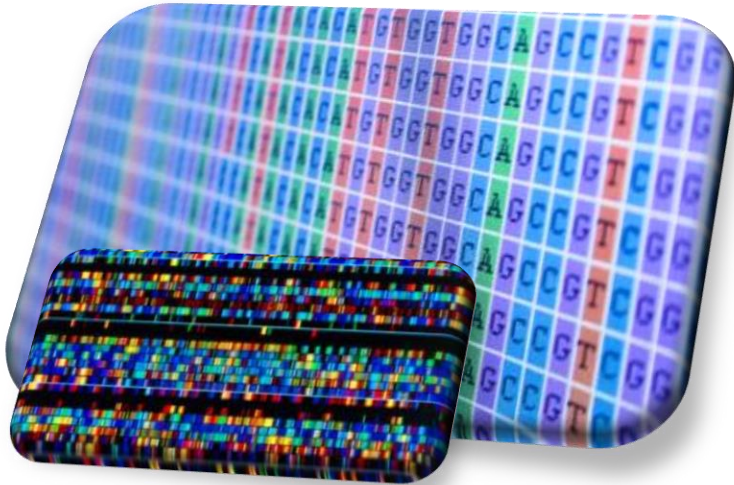
ENVIRONMENTAL INFLUENCES



COMPLEX GENE-ENVIRONMENT INTERACTIONS



HIGH-THROUGHPUT MEASUREMENTS



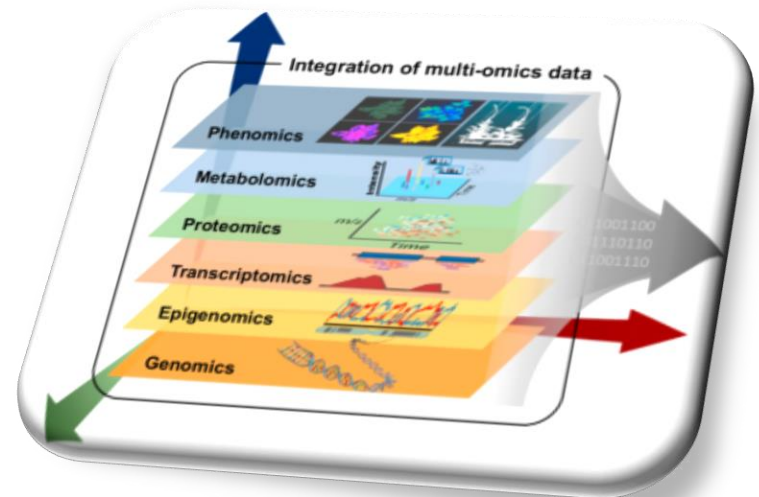
DATA ANALYSIS



LEGAL AND ETHICAL ASPECTS



SYSTEMS BIOLOGY



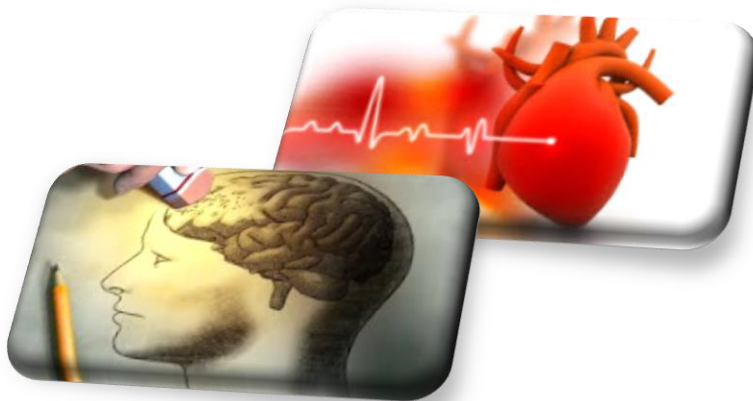
MODEL SYSTEMS



FORENSICS



CARDIOGENETICS & NEURODEGENERATIVE



CANCER GENETICS


THE BRCA GENE TEST
Angelina Jolie (in pic) underwent the BRCA gene test, a blood test that uses DNA analysis to identify harmful changes (mutations) in either one of the two breast cancer susceptibility genes — BRCA1 and BRCA2.

Genetic tests can check for BRCA1 and BRCA2 mutations in people with a family history of cancer.

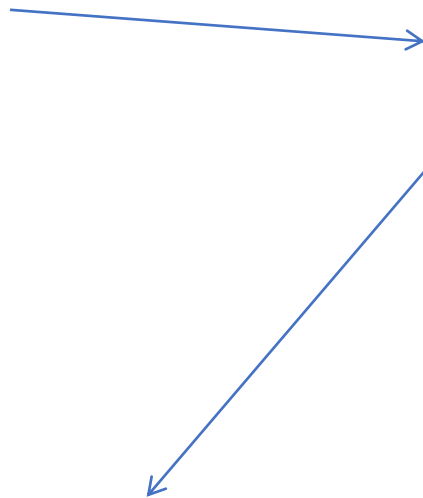
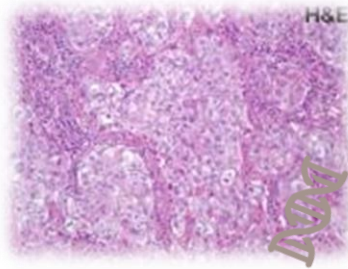
Women who have inherited mutations in these genes face a much higher risk of developing breast and ovarian cancer.

IN NUMBERS
1.5 lakh Indian women who are diagnosed with breast or ovarian cancer every year; 5-10% (10,000) may have familial cancer and may benefit from BRCA1/BRCA2 gene test after genetic counselling.

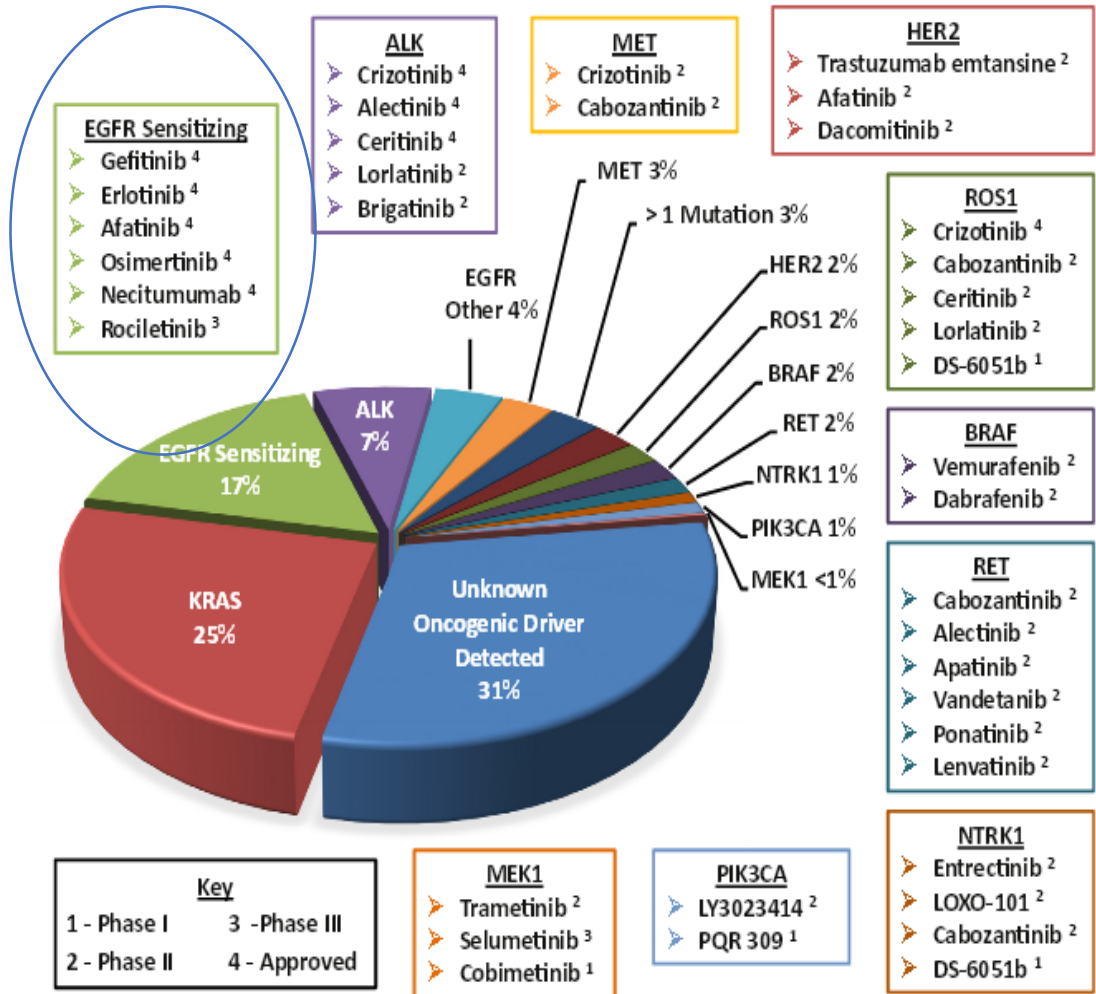
46,661 ovarian cancer cases projected by National Cancer Registry Programme.



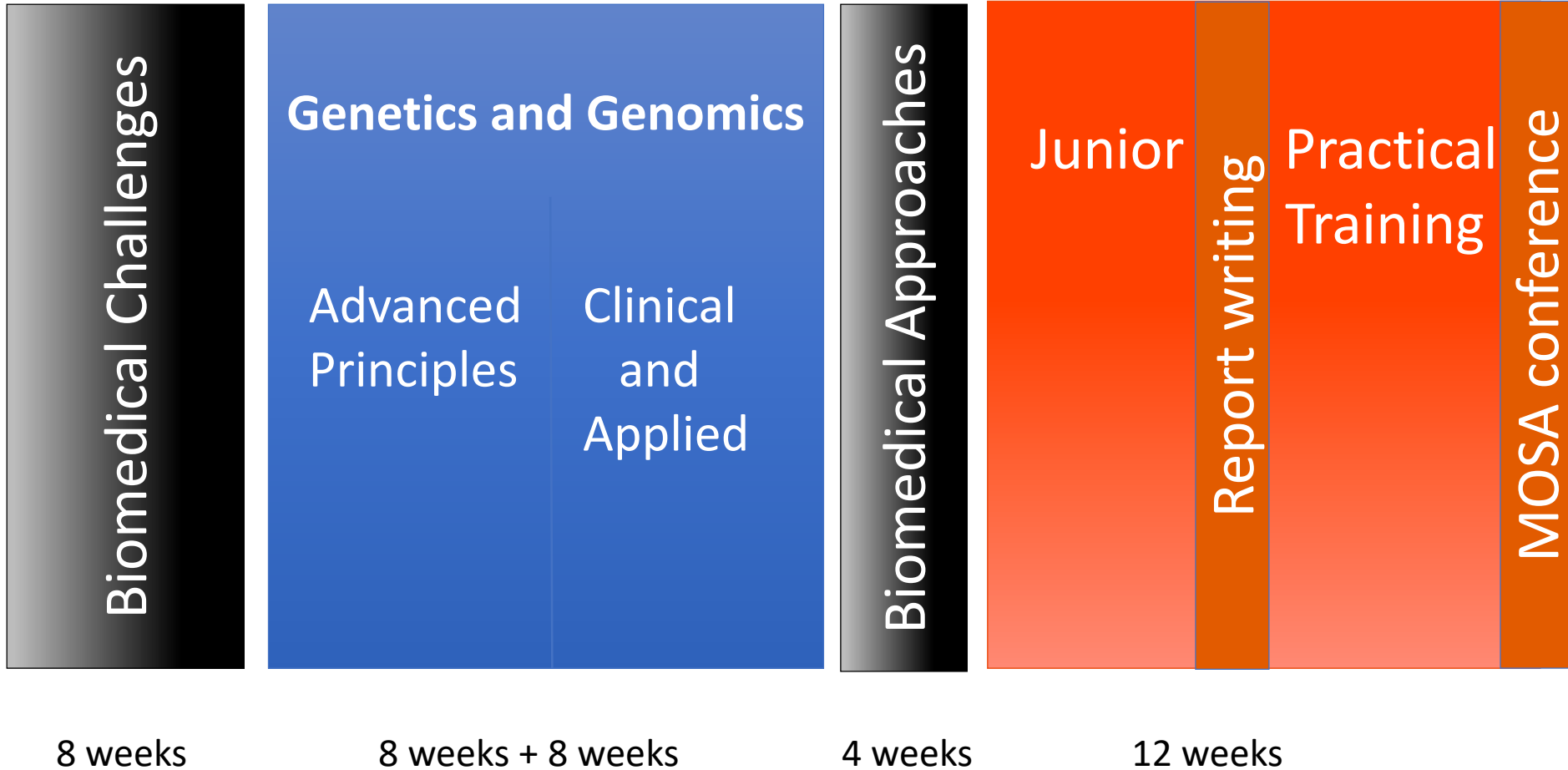
Personalised medicine in lung cancer



August 2013:
start first line erlotinib



Course outline Year 1



Student centered learning

Teaching activity

Tutorial Group

Journal Club

Expert Lecture

Computer Lab

Career-related Session

Expert-guided Discussion

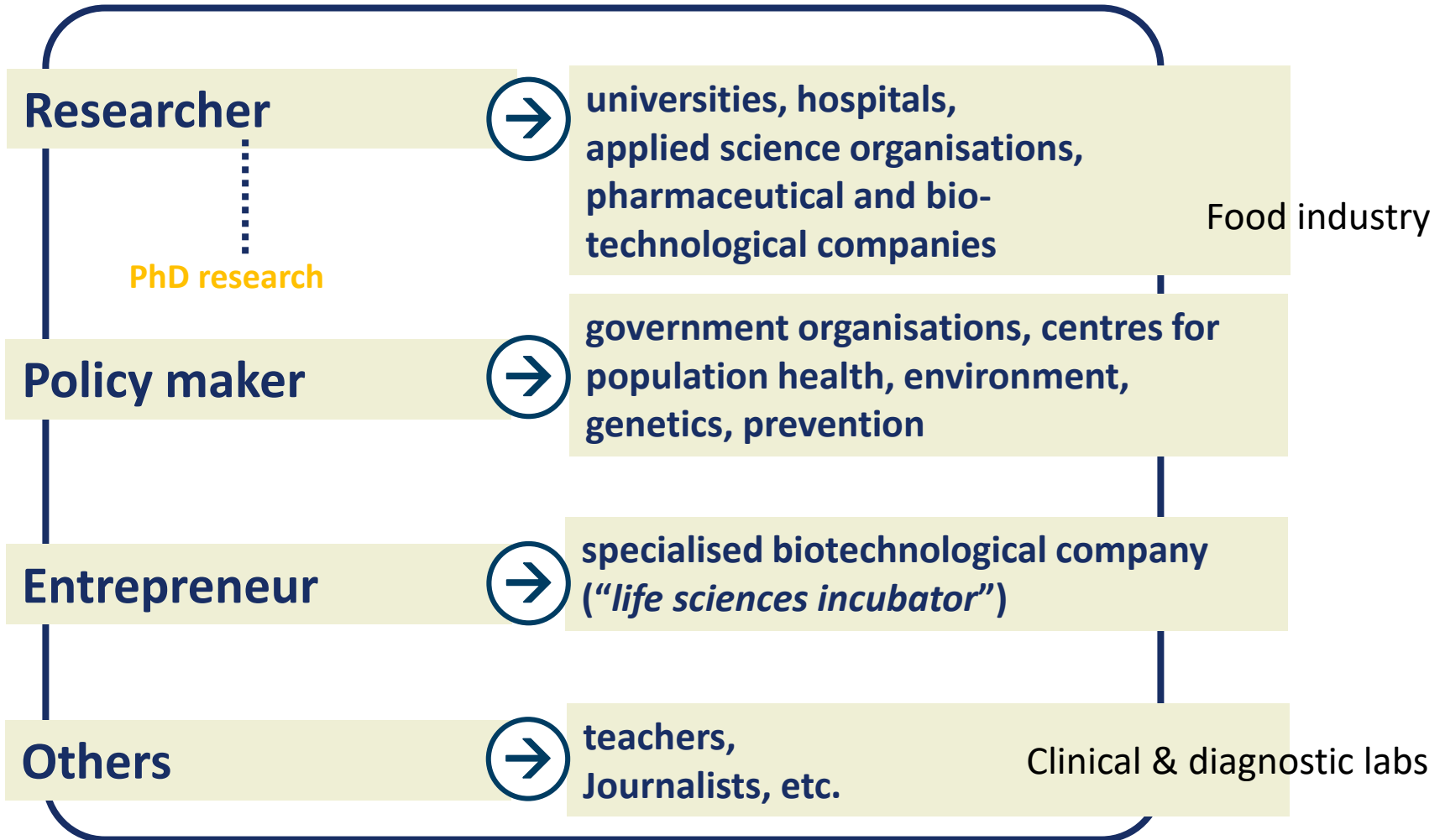
Site Visit

Essay

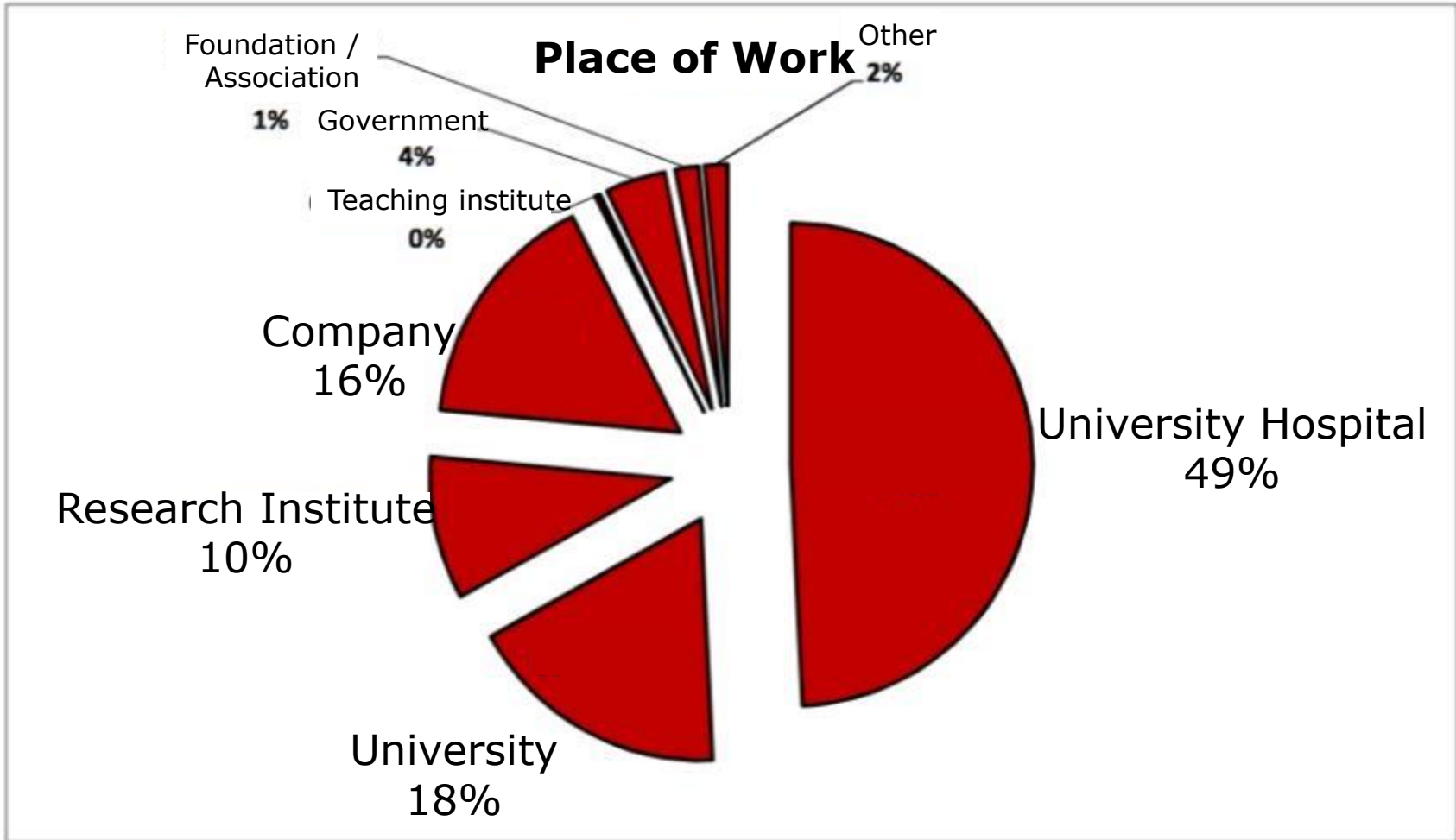
Research Project Writing



Career perspectives



• **Prospects on labour market are good-excellent !**



Questions?



Admissions



- **Relevant university domains are:**

Biology, Biomedical Sciences, Biomedical Technology, Biotechnology, Health Sciences (Biology and Health), Life Sciences, Medical Natural Sciences, Medicine, Molecular Life Sciences, University College (depending on courses followed)

- **Relevant non-university domains are:**

Biological and Medical Laboratory Research, Applied Sciences (Science & Life), Biometry, Biotechnology

- *Please visit the Admissions stand for more information*

