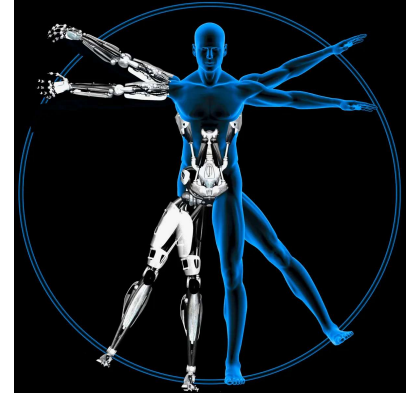




TC4: Integrative Physiopathology (HAV919V)

Credits : 5

Stefan Matecki & Florence Perrin



Objectives: Biological mechanisms involved from the cell to the body in chronic diseases of the XXI century. Challenges and future therapeutic developments.

Bionic: artificial materials and methods to produce activity/movement in a human

<https://masterbs.edu.umontpellier.fr/>

Registration: Julie Mares

Parcours / semestre 9 / TC4

julie.mares@umontpellier.fr

Stefan Matecki :
stephan.matecki@umontpellier.fr

Florence Perrin :
florence.perrin@umontpellier.fr

Planning
Names

[Florence Perrin](#)

[Stephan Matecki](#)

Crédits : 5 ECTS



TC4_2023_Planning - VND.OPENXMLFORMATS-
OFFICEDOCUMENT.WORDPROCESSINGML.DOCUMENT 20 Ko

Intervenants

S. Matecki

A. Meli

Y. Gerber

O. Jonquet

A. Kheddar

Courses in English and/or French

Courses by speakers in basic and clinical research

Tuesdays PM (13:15-16:30) & Fridays AM (8:00-11:15)

Starts Tuesday 12th of September, ends Friday 10th of October

Exams : 100 % written

Program

- Part 1: common features of chronic diseases of the XXI century, oxidative stress, ethics. (6 hrs)

Introduction: chronic diseases

Pr. L. Visier, Professor in Sociology, Faculty of Medicine, UM

Image 1	Image 2	Image 3	Image 4	Image 5
Image 1 (circled)	Image 2	Image 3 (circled)	Image 4	Image 5
Image 6 (circled)	Image 7	Image 8	Image 9	Image 10
Image 11 (circled)	Image 12	Image 13	Image 14	Image 15
Image 16	Image 17	Image 18	Image 19	Image 20

Program

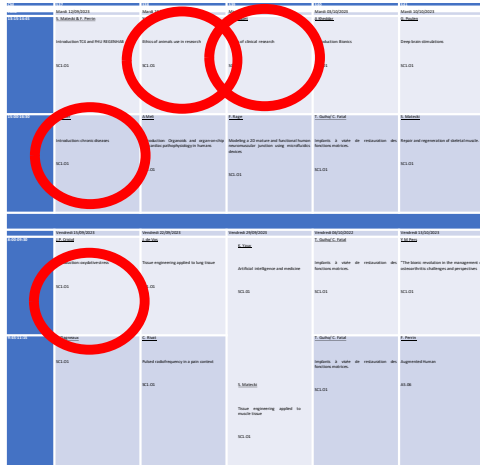
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Introduction: chronic diseases

Pr. L. Visier, Professor in Sociology, Faculty of Medicine, UM

Introduction: oxydative stress

Pr. JP Cristol, Professor in Medicine, Biochemistry, Faculty of Medicine, UM



The image shows a grid of small thumbnail images, likely a course schedule or program overview. The grid is organized into rows and columns. Several cells in the grid are circled in red, indicating specific points of interest or focus. The thumbnails are too small to read, but they appear to contain text and possibly small graphics or icons. The red circles are located in the first two rows of the grid, specifically in the second and third columns of the first row, and the first column of the second row. There are also red circles in the first column of the third and fourth rows.

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Introduction: chronic diseases

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Introduction: oxydative stress

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Ethics of animals use in research

Dr. Y Gerber, Dr. in Neuroscience, Faculty of Science, UM

Program

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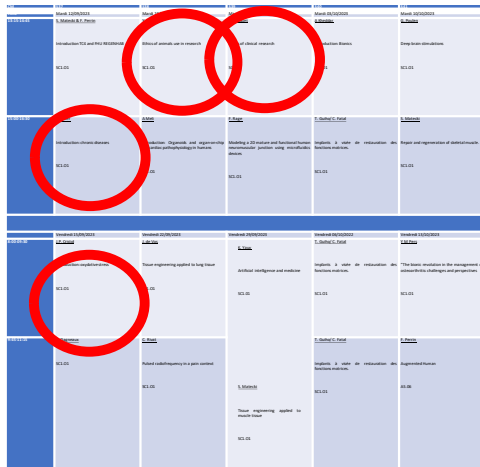
Pr. JP Cristol, Professor in Medicine, Biochemistry, Faculty of Medicine, UM

Ethics of animals use in research

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Ethics of clinical research

Pr. O. Jonquet, Professor in Medicine, Faculty of Medicine, UM



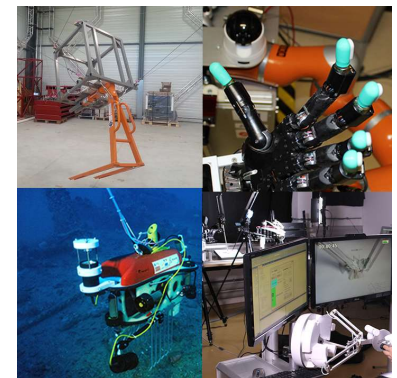
Program

Part 2: general introduction on bionics and organoids. (3 hrs)

Introduction: Bionics

Dr. A Kheddar, Robotics Department

Laboratoire d'Informatique, de Robotique et de
Microélectronique de Montpellier (**LIRMM**)



Week	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Introduction to Robotics	Robotics in Industry	Robotics in Service	Robotics in Health	Robotics in Agriculture
Week 2	Robotics in Manufacturing	Robotics in Logistics	Robotics in Healthcare	Robotics in Education	Robotics in Entertainment
Week 3	Robotics in Space	Robotics in Underwater	Robotics in Disaster Relief	Robotics in Environmental Monitoring	Robotics in Archaeology
Week 4	Robotics in Agriculture	Robotics in Forestry	Robotics in Mining	Robotics in Construction	Robotics in Infrastructure
Week 5	Robotics in Transportation	Robotics in Aviation	Robotics in Maritime	Robotics in Space Exploration	Robotics in Planetary Science

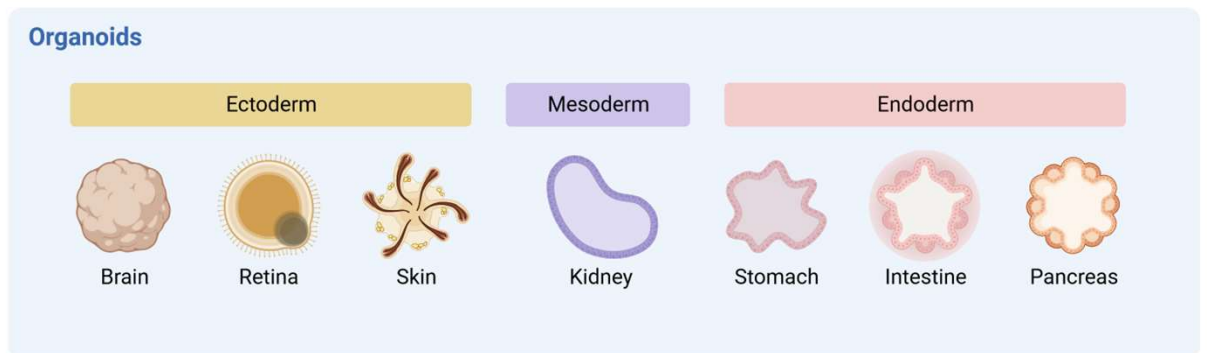
Program

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Week	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 2	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 3	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 4	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 5	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 6	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 7	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 8	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 9	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 10	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 11	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course
Week 12	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course	Introduction to the course

Introduction: Organoids and organ-on-chip for cardiac pathophysiology in humans

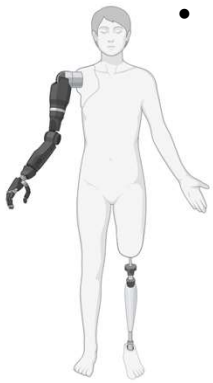
Dr. A. Meli, INSERM, Head of the organoid platform at Biocampus



Program

- Part 3: bionic and organoids in biological systems (cardiac, nervous, muscular, respiratory, osteo-articular), artificial intelligence. (18 hrs).

- Electrical stimulations
- Prothesis
- Exoskeleton
- Organoids



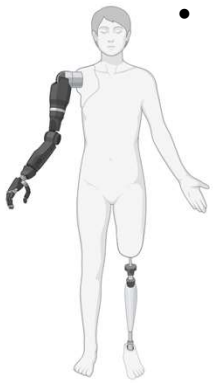
The augmented knee: Myth or reality ?

Pr. L. Dagneaux, Professor in Medicine,
orthopedic surgery, Faculty of Medicine, UM

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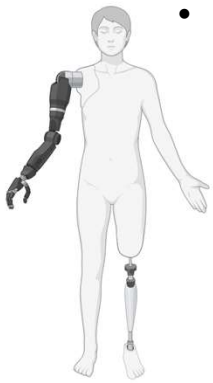
Tissue engineering applied to lung tissue

Pr. J. de Vos, Professor in Medicine.
Cell therapy, Faculty of Medicine, IRMB, UM

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orthopedic surgery, Faculty of Medicine, UM

Tissue engineering applied to lung tissue

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Cell therapy, Faculty of Medicine, IRMB, UM

Pulsed radiofrequency in a pain context

Dr. C. Rivat, Dr. in Neuroscience, Faculty of Science, UM

Program

- Part 3: bionic and organoids in biological systems (cardiac, nervous, muscular, respiratory, osteo-articular), artificial intelligence.

Modeling a 2D mature and functional human neuromuscular junction using microfluidics devices

Dr. F. Rage, Institut de Génétique Moléculaire de Montpellier, UM.

Program

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Pr. S. Matecki, Professor in Medicine, Pediatric Functional Investigation, PhyMedExp, Faculty of Medicine, UM

Program

- Part 3: bionic and organoids in biological systems (cardiac, nervous, muscular, respiratory, osteo-articular), artificial intelligence.

Implants to restore motor function

Dr. T. Guiho, LIRMM, UM.

Program

- Part 3: bionic and organoids in biological systems (cardiac, nervous, muscular, respiratory, osteo-articular), artificial intelligence.

Implants to restore motor function

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Deep brain stimulations

Dr. G. Poulen, Faculty of Medicine, Neurosurgery, UM

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The bionic revolution in the management of osteoarthritis: challenges and perspectives

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Augmented human

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FHU REGNEHAB : Meeting Friday 1st of December