

Màj 03/07/2020

## UE 2.2. Current concepts in Diabetes and cardiovascular diseases

12 ECTS

Parcours « *Diabetes and Cardiovascular Diseases* »

### ST3 : Complication of obesity and type 2 diabetes: focus on pathophysiology of heart, vascular and fatty liver diseases

Contact : Annabelle Dupont ([annabelle.dupont@univ-lille.fr](mailto:annabelle.dupont@univ-lille.fr))

Obesity and diabetes can lead to long-term complications including atherosclerosis, fatty liver disease, nephropathy and heart failure. The aim of this seminar is to give an overview of the current state of knowledge regarding pathophysiological determinants and cellular/molecular mechanisms involved in the development and the progression of these serious complications. A large part of this seminar will be dedicated to methodologies and experimental and translational approaches which focus on the understanding of these mechanisms, the identification of new biomarkers and/or therapeutic targets of these conditions. The seminars will be constituted of lectures (including TED conference), analyses of articles, presentations by the students and discussion times with the students.

**Duration:** 4 days

#### Program

##### Day 1: Atherosclerosis

**9h-10h30:** Introduction to atherosclerosis (C Delhay)

Emphasis on clinical data

Basic on atherosclerosis pathogenesis

**10h45-11h45:** Vascular biology and physiopathology, extra-cellular matrices, endothelium functions and dysfunctions, angiogenesis (Invited speaker/A Dupont)

**11h45-12h45:** Environmental impact on atherogenesis

TED talk Circadian Rhythm and restitution by students

**13h45-14h45:** Circadian clock and shiftwork on atherogenesis (H Duez)

**14h45-16h45:** Plaque progression and complications in diabetic patients

Vascular and valvular calcification (M Rosa)

Intraplaque neovascularization in diabetic patients (B Pourcet)

Restitution by students of one of the two conferences to choose

**16h45-17h30:** Press review on chronopharmacology

Analyses and feedback

##### Day 2: Thrombogenesis

**9h-10h:** Hemostasis and thrombogenesis, general principles (S Susen)

**10h15-11h30:** Thrombogenesis regulation by flow (A Rauch)

**11h-45-12h30:** Discussion on various articles on thrombogenesis regulation, driven by the students (A Dupont)

##### Kidney and ageing

**13h30-14h30:** Mitochondria and ageing (S Lancel)

**14h35-15h20:** Exogenous glycation /food (F Teissier)

**15h25-16h10:** Endogenous glycation /diabetes-ageing (E Boulanger)

**16h15-17h00:** Kidney and glycation: translational perspectives (M Frimat)

##### Day 3: Heart

**9h00-9h45:** General basis on heart failure and post-myocardial infarction (N Lamblin/G Lemesle)

**9h50-10h35:** Chronobiology of the heart (D Montaigne)

**10h50-11h35:** Immunity and arrhythmia (S Ninni)

**11h40-12h25:** Signaling pathways involved in heart failure (E Dubois-Deruy)

**13h30-14h30:** 5 min talk of students on their research subject with 1 slide and questions by the other students

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**14h35-15h20:** Apoptosis pathway and cardiac contractile dysfunction (S Lancel)

**15h25-16h10:** Mechanisms of autophagy in heart failure (A Turkieh)

**16h15-17h00:** Biomarkers and biology system analysis applied to heart failure (C Bauters/F Pinet)

**17h00-18h00:** COVID-19 and heart (invited speaker)

**Day 4: Fatty Liver Diseases: NASH/NAFLD**

**9h00-10h00:** NASH/NAFLD in clinics: definition, epidemiology, risk factors, pathogenesis, diagnosis, treatments (G Lassailly)

**10h15-11h15:** Pathophysiological mechanisms of NASH/NAFLD. Recent advances in methodologies and approaches to study pathophysiological mechanisms involved in development and progression of NASH/NAFLD using animal and cellular models (J Haas)

**11h30-12h30:** Article presentation by a group of students (reverse classroom)

**14h00-15h00:** NASH/NAFLD and cardiovascular/heart diseases: What is the connection?

**15h15-16h15:** NASH/NAFLD diagnosis and treatment: Where are we now?

(Presentation of the PreciNASH consortium: the use of OMICS for identification of new biomarkers of diagnosis, clinico-biological model for the prediction of NASH, new therapeutic targets to treat NASH)

**16h30-17h30:** Invited conference

**Educational team :** Annabelle Dupont, Hélène Duez, Réjane Paumelle-Lestrelin, Florence Pinet, Benoit Pourcet, Sophie Susen, Antoine Rauch