Insight into cardiovascular pathology research: a comprehensive molecular, physiological, clinical and practical approach (BMM9) Course 2014-2015

A. Lectures: 13 - 29 January (09:30- 12:15 h)

I. Form and function of the cardiovascular system (13- 15 January)

13 January (09.30 to 12.15 h)

José María Pérez-Pomares (Univ. Málaga). Third Floor Seminar Room

Group 1
09.30-10.45: Anatomy and Physiology of the Heart (I): Basic concepts of heart anatomy (i.e. pig heart dissection).

Group 2
11.00- 12.15: Anatomy and Physiology of the Heart (I): Basic concepts of heart anatomy (i.e. pig heart dissection).

José María Pérez-Pomares (Univ. Málaga). Third Floor Seminar Room

Borja Ruiz Mateos (Hosp. Clínico San Carlos). Second Floor Seminar Room

Group 2
09.30-10.45: Anatomy and Physiology of the Heart (II): Basic concepts in cardiac electrophysiology (in situ ECG, interpretation of normal ECG and basic anomalies) and basic concepts of heart mechanics (ejection fraction, ‘cardiac output’).

Group 1
11.00- 12.15: Anatomy and Physiology of the Heart (II): Basic concepts in cardiac electrophysiology (in situ ECG, interpretation of normal ECG and basic anomalies) and basic concepts of heart mechanics (ejection fraction, ‘cardiac output’).

14 January (09.30 to 12.15 h)

Ground Floor “Auditorium”

09.30-10.45: Developmental Biology of the heart I
Teacher: Antoon Moorman (Univ. Amsterdam)

11.00- 12.15: Developmental Biology of the heart II
Teacher: José Luís de la Pompa (CNIC)
15 January (09.30 to 12.15 h) Ground Floor “Auditorium”

09.30-10.45: Anatomy and Physiology of the vasculature: types of vessels, constitution of vessels. Physiology of vasculature: resistance, blood pressure, etc

Teacher: Rodrigo Fernández Jiménez (CNIC)

11.00- 12.15: Development of the vasculature: Vasculogenesis, angiogenesis and lymphangiogenesis.

Teacher: Rui Benedito (CNIC)

II. Pathology of the cardiovascular system (16-22 January)

16 January (09.30 to 12.30 h) Ground Floor “Auditorium”

09.30-11:00: Cardiovascular disease: present and future

Teacher: Valentín Fuster (CNIC)

11:15-12:30: Clinical Utility of Advanced Imaging and Mathematical Analysis of Complex Cardiac Arrhythmias

Teacher: David Filgueiras (CNIC)

19 January (09.30 to 12.15 h) Third Floor Seminar Room


11.00- 12.15: Ischemic cardiovascular disease (II): experimental approaches to myocardial infarction (imaging and pig as experimental animal model).

Teacher: Borja Ibáñez (CNIC)

20 January (09.30 to 12.15 h) Ground Floor “Auditorium”

09.30-10.45: Inflammation and cardiovascular disease.

Teacher: David Sancho (CNIC)

11.00- 12.15: Metabolic disorders: Basic and molecular concepts in obesity and diabetes.

Teacher: Guadalupe Sabio (CNIC)
II. New intercellular communication mechanisms in the immune response

21 January (09.30 to 12.15 h)  
Ground Floor “Auditorium”

09.30-10.45: New intercellular communication mechanisms in the immune response  
Teacher: Carolina Villarroja (CNIC)

11.00-12.15: Aging and cardiovascular disease: From the rarest to the most common  
Teacher: Vicente Andrés (CNIC)

22 January (09.30 to 12.15 h)  
Third Floor Seminar Room

09.30-10.15: Experimental models in cardiovascular research: Cardiac ischemia.  
Teacher: Enrique Lara-Pezzi (CNIC)

10.30-11.15: Experimental models in cardiovascular research: Vascular injury, hypertrophy and aneurysm.  
Teacher: Juan Miguel Redondo (CNIC)

11.30-12.15: Novel diagnosis and therapy for Myocarditis  
Teacher: Pilar Martín (CNIC)

III. Repair mechanisms in the cardiovascular system  
(23 January)

23 January (09.30 to 12.15 h)  
Ground Floor “Auditorium”

09.30-10.45: Neuroimmune mechanisms  
Teacher: Simón Méndez (CNIC)

11.00-12.15: Regeneration of the heart.  
Teacher: Nadia Mercader (CNIC)

IV. Population studies: genomics, epidemiology and clinical trials  
(26 -28 January)

26 January (09.30 to 11.00 h)  
Third Floor Seminar Room

Genomic approaches to cardiovascular disease: epigenetics and GWA.  
Teacher: José M. Ordovás (CNIC)
27 January (09.30 to 12.15 h)  [Third Floor Seminar Room]

09.30-10.45: Oral antiplatelet treatment in ACS: from bench to bedside
Teacher: Antonio Fernández-Ortiz (CNIC)

11.00-12.15: Research and Development in Medicine: The industry’s vision
Teacher: Savion Gropper (Boehringer Ingelheim Pharma GmbH & Co. KG)

28 January (09.30 to 12.15 h)  [Third Floor Seminar Room]

09.30-10.45: Design and interpretation of epidemiological studies: Framingham.
Teacher: Manuel Franco (Universidad de Alcalá de Henares)

10:30 – 11:15: PESA study: a case example at CNIC.
Teacher: José Luis Peñalvo (CNIC/Tufts University)

11:30-12:15: Clinical and Basic research meet in Epidemiology: Practical Examples
Teacher: Martín Laclaustra (CNIC)

V. Frontiers in Cardiovascular Research  
(29 January)

29 January (09.30 to 12.15 h)  [First Floor Seminar Room]

09.30-10.15: “Neuropathy of haematopoietic stem cell niche is essential for myeloproliferative neoplasms.”
Teacher: Simón Méndez (CNIC)

10.30-11.15: “Neutrophils scan for activated platelets to initiate inflammation”
Teacher: Andrés Hidalgo (CNIC)

11.30-12.15: “Long term benefit of early pre-reperfusion metoprolol administration in patients with acute myocardial infarction: results from the METOCARD-CNIC trial.”
Teacher: Borja Ibáñez (CNIC)
B. Student presentations: 02- 04 February (09:30- 12:30 h)

Moderators: Jesús Ruiz-Cabello, Enrique Lara and Martín Laclaustra (CNIC)

C. Practical Workshops: 05- 18 February (09:30-12:30 h)

05 February (09.30 to 12.30 h)  
(two groups)  
Group 1  
Bioinformatics and Biostatistics  
Teachers: Fátima S. Cabo, Carlos Torroja (CNIC)  

Group 2  
Bioinformatics and Biostatistics  
Teachers: Fátima S. Cabo, Carlos Torroja (CNIC)  

06 February (09.30 to 12.30 h)  
(one group)  
Communicating Science  
Teacher: Simon Bartlett (CNIC)  

09 February (09.30 to 12.30 h)  
9.30-10.30h (group 1 and 2) Jesús Ruiz Cabello (CNIC) “MRI”  

10.30 – 11:30 h (two groups)  
Group 1  
Cardiovascular Image: RM  
Teacher: Marina Benito (CNIC)  

Group 2  
Cardiovascular Image: PET  
Teacher: Coral Velasco (CNIC)  

11:45-12:30 h (two groups)  
Group 2  
Cardiovascular Image: RM  
Teacher: Marina Benito (CNIC)  

Group 1  
Cardiovascular Image: PET  
Teacher: Coral Velasco (CNIC)  

10 February (09.00 to 9.30 h) Groups 1,2 and 3  
Introduction Seminar Microscopy Unit  
Teacher Valeria Caiolfa (CNIC)
(9.30 to 12:30 h) (three groups)

**Group 1**
ES cell culture and differentiation  
Teacher: **Giovanna Giovinazzo** (CNIC) 1st Floor Seminar Room

**Group 2**
Advanced Confocal and Live Cell Microscopy  
Teachers: **Moreno Zamai, Veronica Labrador** (CNIC) 2nd Floor Seminar Room

**Group 3**
Model systems (II): mouse-transgenesis  
Teacher: **Luis Miguel Criado** (CNIC) 3rd Floor Seminar Room

11 February (09.30 to 12.30 h)

**9.30-10.30h (group 1 and 2)**  
Samuel España (CNIC) “PET”

**10.30 – 11:30 h (two groups)**

**Group 1**  
Cardiovascular Image: RM  
Teacher: **Marina Benito** (CNIC)

**Group 2**  
Cardiovascular Image: PET  
Teacher: **Coral Velasco** (CNIC)

**11:45-12:30 h (two groups)**

**Group 2**  
Cardiovascular Image: RM  
Teacher: **Marina Benito** (CNIC)

**Group 1**  
Cardiovascular Image: PET  
Teacher: **Coral Velasco** (CNIC)

12 February (09.30 to 12.30 h) (three groups)

**Group 1**
Model systems (II): mouse-transgenesis  
Teacher: **Jose Mª Fernández** (CNIC) 3rd Floor Seminar Room

**Group 2**
ES cell culture and differentiation  
Teacher: **Giovanna Giovinazzo** (CNIC) 1st Floor Seminar Room

**Group 3**
Advanced Confocal and live Cell Microscopy  
Teachers: **Elvira Arza, and Antonio Santos** (CNIC) 2nd Floor Seminar Room
13 February (09.30 to 12.30 h) (three groups)
Group 1
Advanced Confocal and live Cell Microscopy
Teachers: Veronica Labrador and Antonio Santos (CNIC) 2nd Floor Seminar Room

Group 2
Model systems (II): mouse-transgenesis
Teacher: Juan de Dios Hourcade (CNIC) 3rd Floor Seminar Room

Group 3
ES cell culture and differentiation
Teacher: Giovanna Giovinazzo (CNIC) 1st Floor Seminar Room

16 February (09.30 to 12.30 h)
(one group)
Proteomics
Teacher: Juan Antonio López (CNIC)

Genomics
Teacher: Ana Dopazo (CNIC)

17 February (09.30 to 12.30 h)
(one group)
Cell analysis techniques: Cytometry and High Content Screening
Teachers: María Montoya (CNIC)

18 February (09.30 to 12.30 h)
(two groups)
Group 1
Model systems (I): Zebrafish
Teachers: Nadia Mercader, Eduardo Díaz (CNIC)

Group 2
Model systems (I): Zebrafish
Teachers: Nadia Mercader, Eduardo Díaz (CNIC)