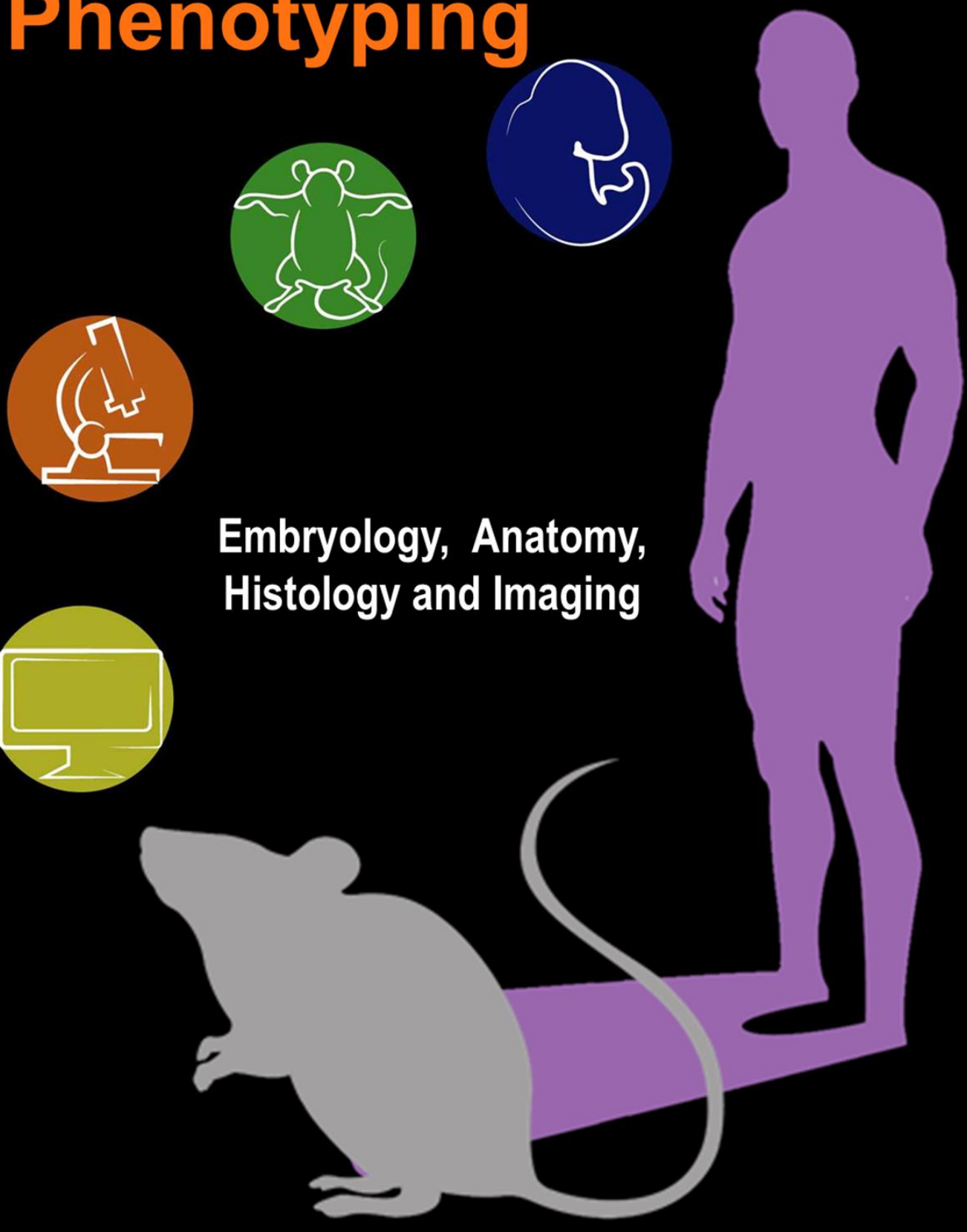
Morphological Mouse Phenotyping



Embryology, Anatomy, Histology and Imaging

BARCELONA, July 4th – 12th 2022

In July 4th-12th, 2022, the fourth course on **Mouse Embryology, Anatomy, Histology, and Anatomical Basis of Imaging** will take place in a dual delivery mode: **face-to-face** in the Veterinary School at the Universitat Autònoma de Barcelona (www.uab.cat); and **on-line.** The aim is to provide graduate, master, PhD and postdoc students with basic and expert knowledge to phenotype morphologically mouse models of human diseases. At this course, expert mouse embryologists, anatomists, pathologists and researchers from Europe and the US will give lectures and discuss with the participants different aspects of mouse morphological phenotyping.

"Hands on" teaching is a very important phase for learning morphological sciences. Lectures will be followed by practical sessions in which participants will dissect specifically the different organs of the mouse body and will work with bone specimens, radiographs, and images from TEM, micro-CT and MRI. For histological teaching digital slides will be used.

On-line participants will follow the classroom lectures in streaming and will have access to recorded videos from the dissections.

There is a fee (150 €) for face-to-face students. For on-line students it is free. Participants have to organize travel and accommodation themselves and cover the corresponding expenses. Interested participants should apply with CV and letter of motivation to victor.nacher@uab.es. Deadline for applications is June 31st, 2022.

Monday, July 4th

9-10 Welcome address and introductory remarks
J. Ruberte and G. Gràcia

10-11 Overview of mouse genetic nomenclature
J. Sundberg

11-12 Mouse phenotyping and research reproducibility
C. Brayton

12-13 General concepts in morphological mouse phenotyping. Directional terms and planes of the mouse body
J. Ruberte

Lunch break

14-15 Development of extraembryonic lineages. The placenta
O. Wendling

15-16 Collection and fixation of mouse embryos and placentas
O. Wendling

16-17 Determining the window of lethality of mutant mice *in utero*
O. Wendling

Tuesday, July 5th

9-10 Introduction to mouse development: segmentation, gastrulation, the embryonic period, and the foetal period
H. Jacobs

10-11 Bone Ontogeny. Skeletal Nomenclature. Bone histology, immunohistochemistry and ultrastructure. Strain, gender and age differences
J. Ruberte

11-13 Skeleton of thoracic limb: scapula, clavicle, humerus, ulna, carpal, metacarpal, and digital bones. Identification of main anatomical features in isolated bones, X-ray and microCT images
L. Mendes-Jorge

Lunch break

14-16 Skeleton of pelvic limb: coxal, femur, tibia, fibula, tarsal, and metatarsal bones. Identification of main anatomical features in isolated bones, X-ray and microCT images
M. Navarro

16-18 Skeleton of the trunk: vertebral column, ribs and sternum. Identification of main anatomical features in isolated bones, X-ray and microCT images
V. Nacher

Wednesday, July 6th

9-11 Skeleton of the head: skull and mandible. Identification of main anatomical features in isolated bones, X-ray and microCT images
J. Ruberte

11-12 Arthrology: shoulder, elbow, hip, and stifle joints.
Myology: types of muscles, histology, histochemistry, immunohistochemistry and ultrastructure
M. Navarro

12-13 Anatomy and histology of limb nerves
H. Jacobs

Lunch break

14-15 Myology of limbs
H. Jacobs

15-17 Dissection of main muscular groups and peripheral nerves
H. Jacobs

Thursday, July 7th

9-10 Anatomical basis of cardiovascular development
J. Ruberte

10-11 Heart: topography, structure and vascularization
J. Ruberte

11-12 Blood: cellular morphology and clinical analysis
E. José-Cunilleras

12-13 Localization, disposition and topography of main vessel trunks. Identification by X-ray angiography, CT and MRI
M. Navarro

Lunch break

14-15 Structure of blood and lymphatic vessels. Components of the vascular wall
J. Ruberte

15-17 Topography and histology of lymphatic nodes. On-line demonstration of lymphatic nodes and thoracic duct by Evan's blue injection and lipid ingesta
J. Ruberte and J. Pampalona

17-18 Histology of thymus and spleen: pathological findings of the lymphoid and hematopoietic system
J. Calzada-Wack

Friday, July 8th

9-10 Anatomical basis of gastropulmonar development
J. Ruberte

10-11 Respiratory apparatus: nasal cavities, larynx, trachea and lungs. Anatomy and Imaging
M. Navarro

11-12 Dissection of the thorax
M. Navarro

12-13 Oral cavity, pharynx, esophagus, and stomach. Anatomy and Imaging
V. Nacher

Lunch break

14-15 Imaging teeth. Mouse models to study tooth diseases
J. Prochazka

15-16 Intestine and liver. Anatomy and Imaging
L. d'Angelo

16-17 Anatomical basis of urogenital development
M. Mark

17-18 Urinary organs. Anatomy, histology, and imaging
L. d'Angelo

Monday, July 11th

9-10 Male and female genital organs. Anatomy, histology, and imaging
A. Carretero

10-12 Dissection of male and female abdominal and pelvic cavities
Carretero and L. Mendes-Jorge

12-13 The fat organ. Morphology, physiology and imaging
J. Rozman

Lunch break

14-15 Pancreas. Anatomy, histology and imaging
V. Nacher

15-16 Thyroid, parathyroid and adrenal glands
V. Nacher

16-17 Eye and related structures: Anatomy and imaging
J. Ruberte

17-18 Vestibulocochlear organ. Anatomy and imaging
M. Navarro

18-19 Ear phenotyping
S. Murillo

Tuesday, July 12th

9-10 Basic developmental concepts and general morphology of the central nervous system
L. Puelles

10-11 Spinal cord and rhombencephalon. Anatomy and imaging Cerebellum and mesencepahlon. Anatomy and imaging
J. Ruberte

11-13 Diencephalon, hypothalamus, and telencephalon
L. Puelles

Lunch break

14-15 Hypophysis and pineal gland. Encephalic ventricles and brain vascularization
J. Ruberte

15-16 Histology of skin, hair and nail
J. Sundberg

16-17 Mouse models to study skin diseases
J. Sundberg

17-17:30 **Course Evaluation and Concluding Remarks**

List of speakers

SPEAKER	INSTITUTION
Brayton, Cory	Johns Hopkins University
Calzada-Wack, Julia	GMC German Mouse Clinic
Carretero, Ana	UAB Universitat Autònoma de Barcelona
d'Angelo, Livia	Università degli Studi di Napoli Federico II
Gràcia, Guillem	UAB Universitat Autònoma de Barcelona
Jacobs, Hugues	CS
José Cunilleras, Eduard	UAB Universitat Autònoma de Barcelona
Mark, Manuel	CS
Mendes-Jorge, Luísa	U Lisboa | Universidade de Lisboa
Murillo, Silvia	ciberer isciii

Nacher, Víctor	UAB Universitat Autònoma de Barcelona
Navarro, Marc	UAB Universitat Autònoma de Barcelona
Pampalona, Judit	UAB Universitat Autònoma de Barcelona
Prochazka, Jan	Czech Centre for Phenogenomics hosted by the Institute of Molecular Genetics of the ASCR, v. v. i.
Puelles, Luis	UNIVERSIDAD DE MURCIA
Rozman, Jan	Czech Centre for Phenogenomics hosted by the Institute of Molecular Genetics of the ASCR, v. v. i.
Ruberte, Jesús	UAB Universitat Autònoma de Barcelona
Sundberg, John	The Jackson Laboratory / VANDERBILT UNIVERSITY
Wendling, Olivia	iCS

This course is sponsored by:

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mouse disease models

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