



University of Minho  
School of Medicine

## LABORATORY ANIMAL SCIENCE

November 14<sup>th</sup> to 25<sup>th</sup>, 2022 ::: 18<sup>th</sup> Edition

### Week 1

| Date       | Start | End   | Theme                                                                                    | Faculty                                    | Room  |
|------------|-------|-------|------------------------------------------------------------------------------------------|--------------------------------------------|-------|
| 14-11-2022 | 09:00 | 09:30 | LAS Course Opening                                                                       | A. Miranda, M. Castelhana Carlos           | G2.02 |
|            | 09:30 | 10:30 | History of animal use, ethics and the 3Rs - Part I                                       | N. Franco                                  | G2.02 |
|            | 10:45 | 11:45 | History of animal use, ethics and the 3Rs - Part II                                      | N. Franco                                  | G2.02 |
|            | 12:00 | 13:00 | A case of unethical treatment of laboratory animals (video and discussion)               | M. Castelhana Carlos                       | G2.02 |
|            | 14:30 | 16:00 | Good welfare - Good Science: the influence of husbandry and care on experimental outcome | V. Baumans                                 | G2.02 |
|            | 16:30 | 17:45 | Basic biology of rodents                                                                 | A. Miranda                                 | G2.02 |
|            | 17:45 | 18:45 | Recognition of pain, suffering and distress                                              | A. Miranda                                 | G2.02 |
|            | 18:45 | 19:45 | Group tasks (introduction)                                                               | A. Miranda, M. Castelhana Carlos           | G2.02 |
| 15-11-2022 | 09:00 | 10:00 | Husbandry routines and animal welfare                                                    | M. Castelhana Carlos                       | G2.02 |
|            | 10:30 | 11:45 | Refinement of experimental procedures                                                    | V. Baumans                                 | G2.02 |
|            | 12:00 | 13:00 | Health status and animal facility barriers                                               | A. Miranda                                 | G2.02 |
|            | 15:00 | 16:00 | Human health hazards and safe practices in the animal facilities                         | S. Pereira                                 | G2.02 |
|            | 16:30 | 18:00 | Harm-benefit analysis, severity classification and culture of care                       | M. Castelhana Carlos, N. Franco            | G2.02 |
|            | 18:00 | 19:00 | Handling restraint and identification                                                    | M. Castelhana Carlos                       | G2.02 |
| 16-11-2022 | 09:00 | 10:15 | National Legislation                                                                     | A. P. Martins                              | G2.02 |
|            | 10:30 | 11:30 | National and international legal issues                                                  | A. P. Martins                              | G2.02 |
|            | 12:00 | 13:00 | Minimally invasive procedures - administration of substances (theory)                    | M. Castelhana Carlos                       | G2.02 |
|            | 14:00 | 16:30 | Handling and restraint (practical 1) [Class A]                                           | C. Cunha, M. Castelhana Carlos             | A1.08 |
|            |       |       | Humane methods of killing [Class B]                                                      | A. Miranda                                 | G2.02 |
|            | 17:00 | 19:30 | Humane methods of killing [Class A]                                                      | A. Miranda                                 | G2.02 |
|            |       |       | Handling and restraint (practical 1) [Class B]                                           | C. Cunha, M. Castelhana Carlos             | A1.08 |
| 17-11-2022 | 09:00 | 10:00 | Health monitoring and diseases of lab animals                                            | A. Miranda                                 | G2.02 |
|            | 10:30 | 12:00 | Breeding and management of genetically altered animals                                   | P. Maciel                                  | G2.02 |
|            | 13:00 | 15:30 | Project preparation - exercises [Class A]                                                |                                            | A2.06 |
|            | 13:00 | 13:30 | Demonstration (practical 2) [Class B]                                                    | A. Miranda, M. Castelhana Carlos           | A1.08 |
|            | 13:30 | 15:30 | Minimally invasive procedures: administration of substances (practical 2) [Class B]      | A. Miranda, C. Cunha, M. Castelhana Carlos | A1.08 |
|            | 15:45 | 16:45 | Minimally invasive procedures - sampling of biological fluids and tissues (theory)       | M. Castelhana Carlos                       | G2.02 |
|            | 17:00 | 17:30 | Demonstration (practical 2) [Class A]                                                    | A. Miranda, M. Castelhana Carlos           | A1.08 |
|            | 17:30 | 19:30 | Minimally invasive procedures: administration of substances (practical 2) [Class A]      | A. Miranda, C. Cunha, M. Castelhana Carlos | A1.08 |
|            | 17:00 | 19:30 | Project preparation - exercises [Class B]                                                |                                            | A2.06 |
| 18-11-2022 | 08:30 | 10:00 | Principles and techniques of Surgery and Microsurgery                                    | M. Castelhana Carlos                       | A2.09 |
|            | 10:00 | 12:30 | Project preparation / self-study                                                         |                                            | A2.09 |
|            | 13:30 | 16:00 | Minimally invasive procedures: sampling (practical 3) [Class A]                          | A. Miranda, C. Cunha, M. Castelhana Carlos | A1.08 |
|            |       |       | Project preparation - self-study [Class B]                                               |                                            | A2.05 |
|            | 16:30 | 19:00 | Project preparation - self-study [Class A]                                               |                                            | A2.05 |
|            |       |       | Minimally invasive procedures: sampling (practical 3) [Class B]                          | A. Miranda, C. Cunha, M. Castelhana Carlos | A1.08 |

## Week 2

| Date       | Start | End   | Theme                                          | Faculty                                      | Room  |
|------------|-------|-------|------------------------------------------------|----------------------------------------------|-------|
| 21-11-2022 | 09:00 | 10:30 | Anaesthesia for minor procedures in rodents    | A. Miranda                                   | G2.02 |
|            | 10:45 | 12:15 | GLP and the ARRIVE guidelines                  | A. Miranda                                   | G2.02 |
|            | 14:00 | 16:00 | Ethics, animal welfare and the 3Rs (level 2)   | N. Franco                                    | G2.02 |
|            | 16:15 | 17:15 | Welfare assessment                             | N. Franco                                    | G2.02 |
|            | 17:15 | 18:30 | Project preparation / self-study               |                                              | G2.02 |
| 22-11-2022 | 09:00 | 11:00 | Design of procedures and projects (level 1)    | H. Almeida, P. Costa                         | A2.08 |
|            | 11:15 | 13:00 | Design of procedures and projects (level 1)    | H. Almeida, P. Costa                         | A2.08 |
|            | 14:00 | 15:00 | Colony management and genetic drifting         | T. de La Cueva Bueno (Charles River)         | A0.03 |
|            | 15:30 | 16:00 | Introduction to QuizOne (preparation for exam) |                                              | A2.08 |
|            | 16:45 | 18:00 | Implementing the 3Rs and using alternatives    | M. Castelhana Carlos                         | G2.02 |
|            | 18:00 | 19:15 | Project preparation / self-study               |                                              | G2.02 |
| 23-11-2022 | 09:00 | 10:00 | Animal facilities Manual                       | M. Castelhana Carlos                         | G2.02 |
|            | 12:00 | 13:00 | Visit to the Central Animal Facility           | A. Miranda, M. Castelhana Carlos             |       |
|            | 14:00 | 16:30 | Study design and Statistics                    | H. Almeida, P. Costa                         | A2.08 |
|            | 16:30 | 18:00 | Project preparation / self-study               |                                              | G2.02 |
| 24-11-2022 | 09:00 | 12:00 | Project preparation / self-study               |                                              | G2.02 |
|            | 12:00 | 13:00 | Visit to the Central Animal Facility           | A. Miranda, M. Castelhana Carlos             |       |
|            | 16:30 | 18:30 | Examination                                    | A. Miranda, M. Castelhana Carlos             | A2.08 |
|            | 18:30 | 19:30 | Project preparation / self-study               |                                              | G2.02 |
| 25-12-2022 | 09:00 | 12:30 | Project preparation / self-study               |                                              | G2.02 |
|            | 13:30 | 17:00 | Project presentation and discussion            | A. Miranda, C. Nobrega, M. Castelhana Carlos | G2.02 |
|            | 17:00 | 17:30 | Course evaluation                              | A. Miranda, M. Castelhana Carlos             | G2.02 |

***For the students enrolled in the MSc and PhD programs of the School of Medicine the course includes  
4 additional weeks for practical training under supervision (March 13<sup>th</sup> to April 14<sup>th</sup> 2023).***