



## **ZOOARCHAEOGENETICS:** merging zooarchaeology and genetics to study animal populations

### **Teachers:**

Ana Elisabete Pires (CBA/INRB)  
Catarina Ginja (CBA/INRB)  
(and invited speakers)

**Calendar:** 18-22 June 2012

**Duration:** 30 hours

**Schedule:** 10h-12h and 14h-18h,  
everyday



### **Introduction:**

This course will describe the concepts and methodologies involved in the phylochronological analysis of ancient DNA recovered from archaeological specimens, with emphasis on animal populations .

Zooarchaeogenetics is an interdisciplinary and emerging field of research that makes use of state-of-the-art molecular biology methods.

A global perspective on ancient DNA challenges and methodologies will be provided. Students will be guided through the process of archaeogenetics research: from archaeological sampling to data analysis and its evolutionary interpretation.

In this course well known researchers will share their expertise and present seminars focused on their remarkable case studies.

### **Aims:**

- To understand concepts and methods employed in ancient DNA research
- To be aware of the enormous potential of ancient DNA research for a comprehensive understanding of evolutionary trajectories of animal species
- To recognize the challenges involved in ancient DNA analysis (eg. contamination, degradation, authentication and high-throughput data analysis)
- To provide the opportunity to discuss scientific questions together with experienced researchers in this field

## General plan:

18-22 June 2012	Monday	Tuesday	Wednesday	Thursday	Friday
	CBA	IGESPAR/INRB	CBA	CBA/Muge	CBA
10 – 11 am	Introduction to this course	Osteometrics/ Reference bone collection	Hands on (cont.) PCR&sequencing	Open Seminar (invited speaker) Subject: ancient DNA of cave bear and wolf-dog	Open Seminar (invited speaker) Subject: ancient DNA of humans and cattle
11 – 12am	Video projection of aDNA research	Osteometrics/ Reference bone collection			
14 – 18pm	Basic concepts on zooarcheogenetic Case studies on aDNA: (section of 3 major papers to be discussed along the week: -Animal breed improvement/genes under selection/aDNA sexing -Domestication: horse/wolf&dog/aurochs&cattle -Ancient genomes Humans (Neanderthal/Palae-eskimo)	Seminar by a zooarchaeologist – cattle improvement in the past – S. Davis (IGESPAR)  Hands on: Bone sub-Sampling Lab – aDNA extraction & PCR  Suggestion of a paper to read&discuss	Potentials of aDNA; Hypotheses and Discussion of scientific questions  Data analysis/software presentation: Pyrosequencing, 454 HiSeq, Galaxi  Suggestion of a paper to read&discuss	Visit to an excavation site guided by a zooarchaeologist (1h talk + 2h visit)  1h Talk (CBA/Uniarq Cleia Detry)  Suggestion of a paper to read&discuss  <i>Porto de honra (19-20pm)</i>	Overview  Discussion  Perspectives  Course evaluation

**Location:** Departamento de Biologia Animal (FCUL), room 2.2.19

### Specific needs (e.g. computers, lab):

Computers: 7 computers / no more than 4 students per PC (20 June, afternoon)

Lab for simulation of aDNA procedures (19 afternoon-20 morning June)

### Nº (min, max) students: 15-20

Minimal formation of students: Basic knowledge on molecular biology preferred, "Licenciatura" (bachelor) in Biology, Animal Science & related areas

### Fee

free for 1<sup>st</sup> year PhD students in the Doctoral programme in Biology (FCUL), Biodiversity, Genetics and Evolution (UL; UP) and Biology and Ecology of Global Changes (UL, UA); 150 € for Master students; 180 € for BTI, BI and PhD students; 200 € for Professional and postdocs.

### Deadline for applications: 15th April, 2012

Candidates should send a short CV and motivation letter **both** to Ana Elisabete Pires (elisabete.pires@inrb.pt) and Catarina Ginja (catarinaginja@gmail.com)