



POLITÉCNICA



E.T.S. DE INGENIERÍA AGRONÓMICA,  
ALIMENTARIA Y DE BIOSISTEMAS

### Título de las prácticas (Title of the internship):

Genome-wide association analysis from whole genome sequencing in Spanish grapes

### Descripción de las funciones del alumno (Description of the student's tasks)

The rapid scientific progress in these genomic approaches is due to the decrease in genotyping costs by the development of next-generation sequencing platforms since 2007. High-throughput instruments are routinely used in laboratories in basic science applications, which has led to the democratization of genome-scale technologies, such as genomic predictions and genome-wide associating mapping studies (GWAS). Genome-wide associating mapping studies, which originated in human genetics have also become a routine in plant breeding. In this project, the student will work with sequencing data that was originally acquired within an international project aiming at generating the whole genome sequence of over 4K *Vitis* accessions, as well as proposing an alternative *Vitis sylvestris* reference genome. Here, we focused on 97 Spanish accessions, including 31 *vinifera* and 66 *sylvestris* accessions. We aim to perform GWAS, selective sweeps, diversity, phylogeny and genomic prediction analysis. The aim of this study is to publish a scientific publication in peer-reviewed journal.

**Requisitos (Prerequisites):** *(indicar titulación y curso) (give Grade and academic year); otros requisitos adicionales (idiomas, informática, otros conocimientos, etc) (other additional prerequisites (languages, informatics, other knowledge, etc))*

Master student with background on:

- R Programming and computational biology tools.
- Analysis and bioinformatic interpretation of different omics data set
- Statistical modelling
- English is mandatory.

### Proyecto formativo (Training Project)

Module External practices. The fundamental goal of the external practices is to guide the student in applying his previously acquired knowledge to real tasks in a group work environment the realistically represents the work conditions the students will encounter in their future roles. In this way, the student will be able to get familiar with a working environment (work schedule, responsibility, attitude, organization, etc), and with the adequate working methodology in professional reality, contrasting and applying the acquired academic knowledge.



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**Actividades a desarrollar en la práctica académica (Activities that will be performed in the academic internship):**

We offer a great research environment and cutting-edge facilities where the student will have the opportunity to develop skills in research skills, bioinformatics and statistics. The activities and functions are already summarizing in the student tasks descriptions. The goal of this project is to learn how to apply GS in a current breeding program. There will be a PhD possibility after this period.

- Read literature (papers, book) about genomic and quantitative genetic studies.
- Data mining of phenomics and genomics datasets.
- Perform explanatory analysis on the previous dataset.
- Apply statistical modelling.
- Evaluate the results
- Write the thesis report as a scientific publication.

<b>Nº de plazas:</b> (Nr. of places)	1
<b>¿El alumno tendrá trato habitual con menores?</b> (Has the student dealings with underage persons?)	No
<b>Fecha de inicio:</b> (Starting date)	The sooner the better but will depend on student availability.
<b>Fecha de fin:</b> (End date)	31-05-2021 can be extended depending on student.
<b>Horas semanales:</b>	25



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<b>(Weekly hours)</b>	
<b>Horario jornada laboral:</b> <b>(Working hours)</b>	To be determined by the student
<b>Importe Ayuda/Bolsa de estudio:</b> <b>(Amount of fellowship / remuneration)</b>	€/mes Option of UPM scholarship
<b>Tutor académico:</b> <b>(Academic tutor (UPM))</b> Email:	Julio Isidro Sánchez j.isidro@upm.es
<b>Departamento tutor académico:</b> <b>(Dept. of academic tutor)</b>	Biotecnología - Biología Vegetal
<b>Tutor empresa:</b> <b>(External tutor)</b>	Humberto Fanelli
<b>Email tutor empresa:</b> <b>(Email external tutor)</b>	h.fanelli@upm.es
<b>Departamento tutor empresa:</b> <b>(Dept. of external tutor)</b>	Biotecnología-Biología Vegetal
<b>Ubicación de la estancia de las practicas</b>	CENTRO DE BIOTECNOLOGÍA Y GENOMICA DE PLANTAS (CBGP)



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<b>(Location of the internship)</b>	
<b>ENTIDAD COLABORADORA:</b> <b>(Collaborating Entity)</b>	CENTRO DE BIOTECNOLOGÍA Y GENOMICA DE PLANTAS (CBGP)
<b>A cumplimentar por Oficina Prácticas ETSIAAB:</b> <b>Créditos a reconocer (Nº ECTS):</b>	

**Enviar por email a: OFICINA DE PRÁCTICAS ACADEMICAS EXTERNAS – ETSIAAB**  
secretaria.pei.etsiaab@upm.es – Secretarias: Visitación Pérez / Susana Pardo - Tfno: 913363686)