# [ONLINE] PATC: Introduction to HPC for Life Scientists

## Objectives

**Objectives:** High-performance computing (HPC) is a fundamental technology used to solve a wide range of scientific research problems. Many important challenges in science such as protein folding, drug discovery, and tumour evolution, all depend on simulations, models and analyses run on HPC facilities to make progress.

This course introduces HPC to life science researchers, focusing on the aspects that are most important for those new to this technology to understand. It will help you judge how HPC can best benefit your research, and equip you to go on to successfully and efficiently make use of HPC facilities in future. The course will cover basic concepts in HPC hardware, software, user environments, filesystems, and programming models. It also provides an opportunity to gain hands-on practical experience and assistance using an HPC system (MARENOSTRUM) through examples drawn from the life sciences, such as biomolecular simulation.

The course is organised and funded by PerMedCoE - the HPC/Exascale Centre of Excellence in Personalised Medicine, and BioExcel - the Centre of Excellence for Computational Biomolecular Research (http://bioexcel.eu), using MareNostrum, part of the Spanish supercomputing network (https://www.bsc.es/marenostrum/marenostrum).

## Requirements

**Prerequisites:** Familiarity with basic Linux commands (at the level of being able to navigate a file system) is recommended. You may find a Linux online course such as https://swcarpentry.github.io/shell-novice/ useful if you are less familiar with Linux.

No programming skills or previous HPC experience is required.

Please download and carefully read the following **instructions** regarding the logistics participants enrolling online PATC at BSC are expected to follow.

## Learning Outcomes

On completion of the course, we expect that attendees will be able to:

Explain the drivers and motivation to use HPC
Describe the European HPC landscape and HPC facilities available to researchers
Identify HPC hardware - Building blocks and architectures
Define Parallel computing - Programming models and implementations
Use HPC systems

- Access
- Batch schedulers & resource allocation
- Running jobs
- Dealing with errors
- Compiling code
- Using libraries
- Performance

## Academic Staff

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Course convenors: Daniel Thomas López (EMBL-EBI, PerMedCoE), Marta Lloret Llinares (EMBL-EBI, PerMedCoE)

Lecturers: Arno Proeme (EPCC, BioExcel), Julien Sindt (EPCC), Francisco Javier Conejero (BSC, PerMedCoE), Miguel Vazquez (BSC, PerMedCoE), Jose Carbonell (BSC, PerMedCoE), David Vicente (BSC, PerMedCoE)

## Materials

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## Further information

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**All PATC Courses at BSC do not charge fees.**

In the context of virtual meetings, the Organiser may facilitate live webstreaming and audio recording. You have the option to opt out of inclusion in recordings by contacting our Education&Training team.

CONTACT US for further details about MSc, PhD, Post Doc studies, exchanges and collaboration in education and training with BSC.
For further details about Postgraduate Studies in UPC - Barcelona School of Informatics (FiB), visit the website

**Sponsors:** BSC and PRACE 6IP project are funding the PATC @ BSC training events.
If you want to learn more about PRACE Project, visit the website.

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