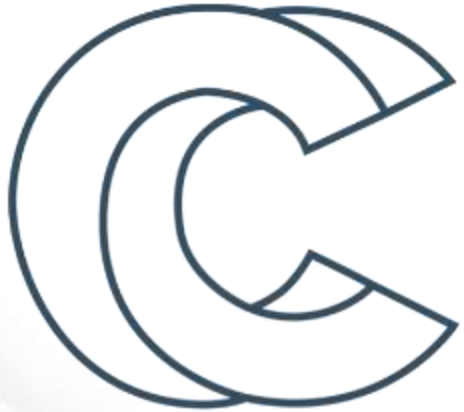

EURO Greece

EuroHPC
Joint Undertaking

EURO Greece

EuroCC@Greece

EuroCC@Greece & Our Training Events

https://eurocc-greece.gr/newsletter/
https://www.linkedin.com/company/eurocc-greece
https://www.youtube.com/@euroccgreece9501
https://x.com/EuroCC_Greece

What is a Competence Center?

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The overall objective of the Greek National Competence Center is to enable the efficient uptake of HPC technologies with the 3-fold goal to:

- advance competitiveness in **research**
- improve the effectiveness of **government** services and
- promote innovation in **industry**

NCC Services in a Nutshell

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Services

- Technological Support & Consulting
  - High-Performance Computing,
  - Artificial Intelligence, and
  - High-Performance Data Analytics
- Training and Skills Development
- Access to computational resources

https://eurocc-greece.gr/

Fields of Applications

- Artificial Intelligence
- Machine Learning
- Computer Vision
- Large Language Models
- Finite Elements Analyses
- Computational Fluid Dynamics
- Molecular Simulations
- Atmospheric & Oceanic Sciences

The Greek NCC Consortium

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The Greek National Competence Center “EuroCC@Greece”, is run by a consortium of 5 institutions, namely

1. National Infrastructures for Research and Technology (coordinator) - **GRNET**
2. National Center for Scientific Research - **Demokritos**
3. Institute of Communication and Computer Systems - **NTUA**
4. Aristotle University of Thessaloniki - **AUTH**
5. Foundation for Research and Technology Hellas - **FORTH**

grnet

DEMOKRITOS

ΑΡΙΣΤΟΤΕΛΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΟΝΙΚΗΣ

FORTH INSTITUTE OF COMPUTER SCIENCE

The European High Performance Computing Joint Undertaking (EuroHPC JU)

is a joint initiative between the EU, European countries and private partners to develop a World Class Supercomputing Ecosystem.

https://eurohpc-ju.europa.eu/index_en

BDV BIG DATA VALUE ASSOCIATION

QIC European Quantum Industry Consortium

ETP 4 HPC EUROPEAN TECHNOLOGY PLATFORM FOR HIGH PERFORMANCE COMPUTING

8 operational systems, all ranking among the world's most powerful supercomputers:

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1. LUMI in Finland
2. LEONARDO in Italy
3. MARENOSTRUM in Spain
4. VEGA in Slovenia
5. MELUXINA in Luxembourg
6. KAROLINA in Czechia
7. DEUCALION in Portugal
8. DISCOVERER in Bulgaria

Underway:

JUPITER in Germany

DAEDALUS in Greece

EURO
Greece

LUMI
FINLAND

LEONARDO
ITALY

MELUXINA
LUXEMBOURG

KAROLINA
CHECH REPUBLIC

DISCOVERER
BULGARIA

VEGA
SLOVENIA

DEUCALIO
PORTUGAL

MARENOSTRUM 5
SPAIN

How to apply for access to JU machines

EuroHPC Access Modes

EuroHPC JU Call for Proposals – Extreme Scale Access Mode
For applications with high-impact, high-gain innovative research

EuroHPC JU Call for Proposals – Regular Access Mode
The expected impact in the application's domain should justify the need for large allocations

EuroHPC JU Call for Proposals – AI and Data-Intensive Applications Access Mode
To support ethical artificial intelligence & machine learning

EuroHPC JU Call for Proposals – Development Access Modes
To develop, test and optimise applications

EuroHPC JU Call for Proposals – Benchmark Access Modes
To test or benchmark applications

https://eurohpc-ju.europa.eu/access-our-supercomputers/access-policy-and-faq_en
https://access.eurohpc-ju.europa.eu/

2025 Cut offs for EuroHPC Access Calls

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BENCHMARK ACCESS:

- 1st day of each month

DEVELOPMENT ACCESS:

- 1st day of each month

AI AND DATA INTENSIVE APPLICATIONS ACCESS:

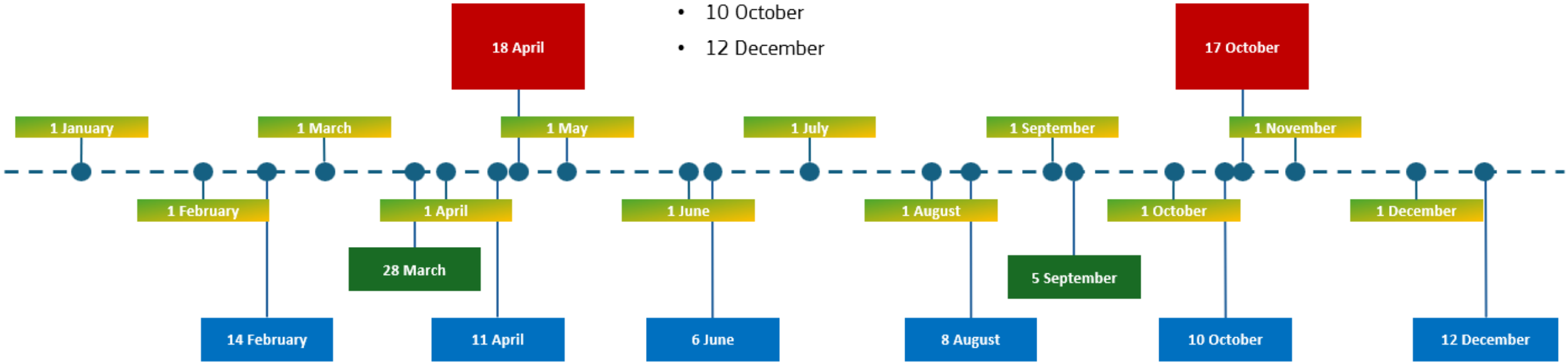
- 14 February
- 11 April
- 6 June
- 8 August
- 10 October
- 12 December

REGULAR ACCESS:

- 28 March
- 5 September

EXTREME SCALE ACCESS:

- 18 April
- 17 October



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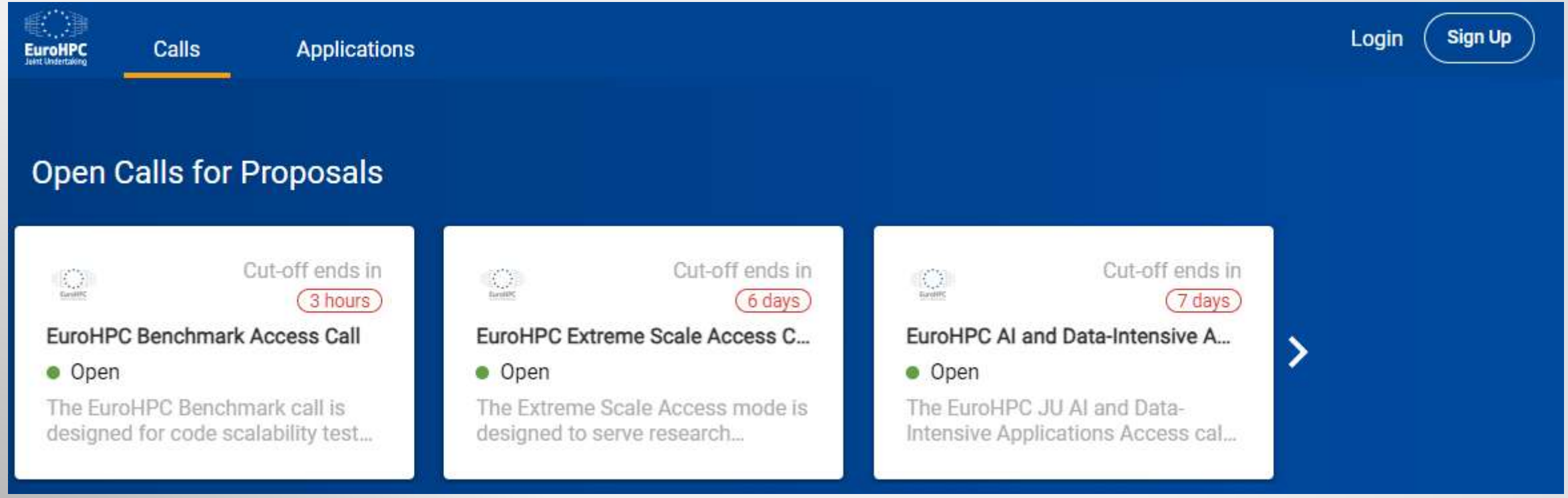

https://access.eurohpc-ju.europa.eu/

HPC Infrastructure in Greece: ARIS

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The ARIS infrastructure consists of a total of five computing system nodes based on Intel x86 architecture, interconnected into a single InfiniBand FDR14 network offering multiple options and processing architectures.

More specifically, the infrastructure consists of:

- **Thin Nodes: 426** IBM NeXtScale **nodes**, Intel Xeon E5-2680v2, **8,520 cores**.
- **Fat Nodes: 44** Dell PowerEdge R820, **4 Intel Xeon** E5-4650v2, **512 GB memory per node**.
- **GPU Nodes: 44** Dell PowerEdge R730, **2 Intel Xeon** E5-2660v3, 64 GB memory, **2 NVIDIA K40 GPUs per node**.
- **Xeon Phi Nodes: 18** Dell PowerEdge R730, **2 Intel Xeon** E5-2660v3, 64 GB memory, **2 Xeon Phi** 7120P co-processors **per node**.
- **ML Node: 1 server**, 2 Intel E5-2698v4, 512 GB memory, **8 NVIDIA V100 GPUs.**

HPC Infrastructure in Greece: DAEDALUS

EURO Greece

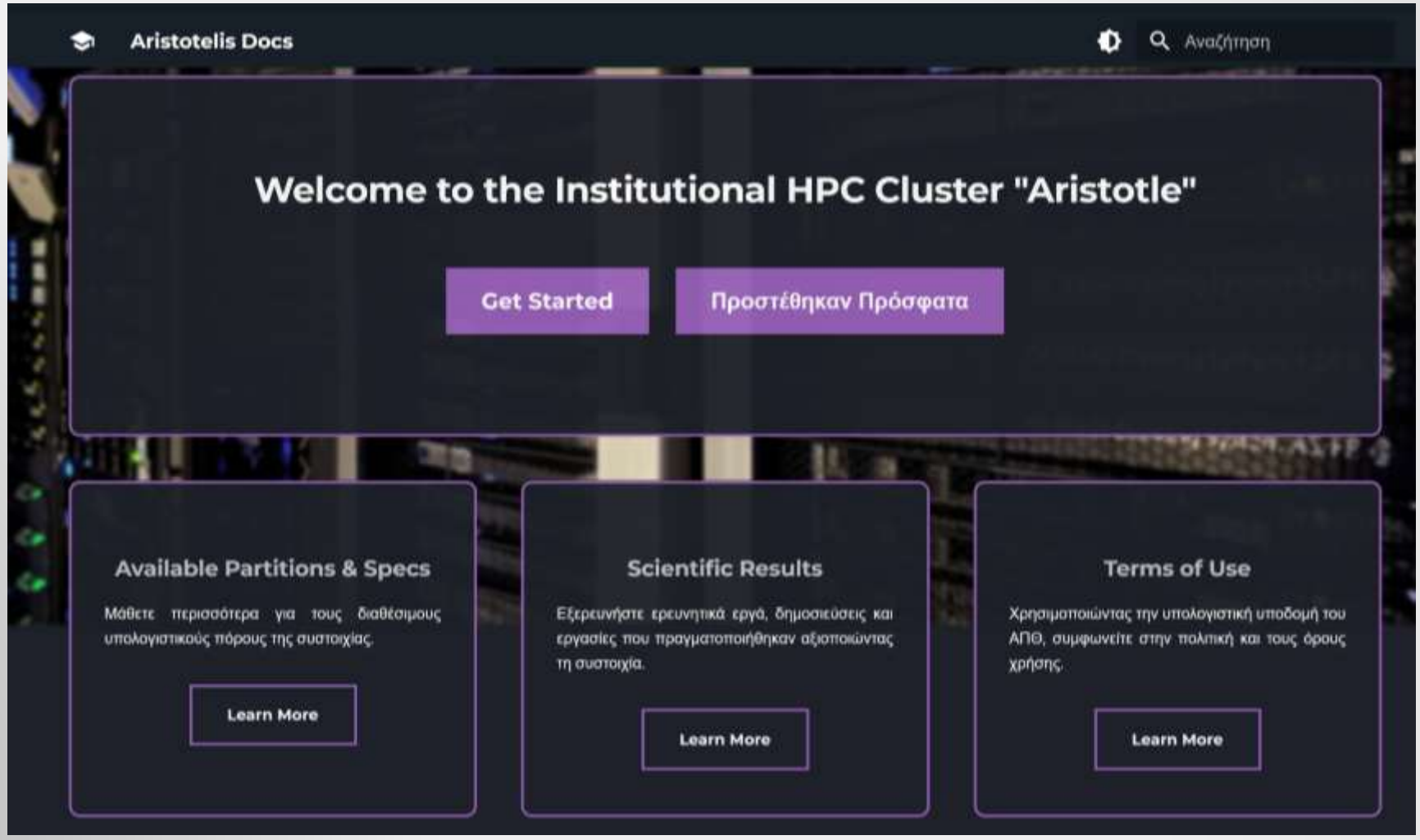
The way is open to building a EuroHPC world-class supercomputer in Greece

A hosting agreement has been signed between the **EuroHPC Joint Undertaking** and the National Infrastructures for Research and Technology (**GRNET**) in **Greece**, where **DAEDALUS**, a new **EuroHPC supercomputer**, will be located.

- The DAEDALUS supercomputer, with a total power of **89 PetaFlops**, will be the most powerful computing system in Greece and one of the leading systems in Europe.
  https://grnet.gr/en/2025/03/26/daedalus-dc-ylopoihsh-lavrio/
- **Lavrion** Technological and Cultural Park (TCPL)
  https://eurohpc-ju.europa.eu/way-open-building-eurohpc-world-class-supercomputer-greece-2022-11-28_en

HPC Infrastructure in Greece: Aristotle

EURO Greece



HPC Use Cases

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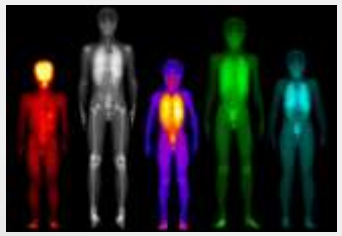
Publications – Greek supercomputer ARIS

- In **fluid dynamics**, HPC powers **deep learning models** for super-resolution imaging and **turbulent flow reconstruction**, along with complex **multi-phase flow simulations**.
- **Materials science** benefits from HPC-driven **machine learning** and **molecular dynamics**, refining interatomic potentials for **pharmaceuticals**, and investigating **polymer mechanics**.
- **Computational chemistry** leverages quantum mechanical calculations for **thermoelectric materials**, **electronic structures**, and **drug binding** studies.
- **Astrophysics** research utilizes HPC for **modeling neutron star** thermoelectric effects and pulsar equations.
- **Atmospheric and oceanic sciences** apply HPC to turbulence modeling in **air pollution studies**, **weather forecasting**, and **sea surface simulations**.
- Additionally, HPC enhances radiation modeling for space applications and **Monte Carlo-based dosimetry** calculations, underscoring its vital role in advancing interdisciplinary research.

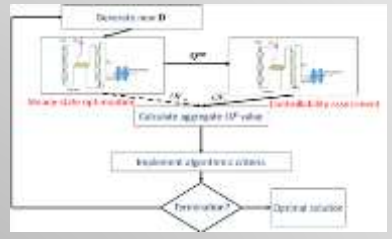
https://www.hpc.grnet.gr/en/publications/

Industry Success Stories



PediDose: A pediatric simulated dosimetry platform for clinical use

High-Performance Computing Enhances Treatment Precision in Breast Cancer



CCUPAR: Optimum Design of CO_2 Capture and Utilization Processes in Parallel Infrastructures

HiGh fidElity Modeling for small wINd Turbine (GEMINI)

https://eurocc-greece.gr/success-stories/

Our Training Events

EURO Greece

Our Training Events

EURO Greece

https://eurocc-greece.gr/events-2/

HPC Training Series - Course 14

EURO Greece

"Biosciences using High Performance Computing (HPC) Systems"

Agenda

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10:00 → 10:15	**Introduction to EuroCC & the training events** Speaker: Lena Kanellou (Senior Researcher, EuroCC@Greece/Institute of Computer Science of the Foundation for Research and Technology, Hellas (ICS-FORTH))	15m
10:15 → 10:45	**Introduction to AUTH's HPC infrastructure "Aristotelis" and short demo** Speaker: Alexandra Charampidou (HPC engineer, Aristotle University of Thessaloniki)	30m
10:45 → 11:15	**HPC in biomarker and drug target discovery** Speaker: Nikolaos Dovrolis (Senior Researcher, Department of Medicine, Democritus University of Thrace)	30m
11:15 → 11:30	**Break**	15m
11:30 → 12:00	**Scalable and Performant Applications for Biomolecular Research: Efficient use of HPC and Cloud** Speaker: Rossen Apostolov (Director of BioExcel, a Centre of Excellence for Computational Biomolecular Research)	30m
12:00 → 12:45	**Introduction to Population (epi-)Genomics- demo on Aristotelis HPC infrastructure** Speaker: Konstantinos Sagonas (Assistant Professor, School of Biology, Aristotle University of Thessaloniki)	45m
12:45 → 13:00	**Break**	15m
13:00 → 13:45	**Introduction to RNA-seq Analysis: Basic Concepts in Gene Expression- demo on Aristotelis HPC infrastructure** Speaker: Korina Karagianni (Ph.D. Candidate, School of Biology, Aristotle University of Thessaloniki)	45m
13:45 → 14:30	**Bespoke comparative genomics software architectures: a case-study for future HPC on Aristotelis** Speaker: Christos Ouzounis (Professor of Bioinformatics, School of Informatics, Aristotle University of Thessaloniki)	45m
14:30 → 14:45	**Questions / Open discussion**	15m

https://eurocc-greece.gr/newsletter/
https://www.linkedin.com/company/eurocc-greece
https://www.youtube.com/@euroccgreece9501
https://twitter.com/EuroCC_Greece

Co-funded by the European Union

Funded by the European Union. This work has received funding from the European High Performance Computing Joint Undertaking (JU) and Germany, Bulgaria, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, France, Netherlands, Belgium, Luxembourg, Slovakia, Norway, Türkiye, Republic of North Macedonia, Iceland, Montenegro, Serbia under grant agreement No 101101903.