

News



ERC Advanced Grant for Mateo Valero

The ERC has awarded an Advanced Grant in the category of physical sciences to the director of the BSC for his project 'RoMoL: Riding on Moore's law'.

[More information on page 3](#)



BSC, key for the Human Brain Project

The European Commission has given the go-ahead for the Human Brain Project, the project to simulate the human brain, with the participation of the BSC.

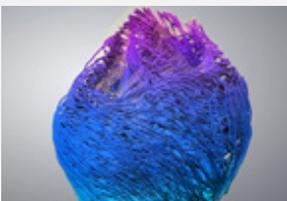
[More information on page 3](#)



Consolider: Supercomputing and e-Science

Here you have the presentation video for this project. Its main goal is to advance in the field of applied supercomputing through several areas of science.

[More information on page 4](#)



Alya Red, best scientific video

"Alya Red, a computational heart" wins the International Science Visualization challenge promoted by the NSF and the Science magazine.

[More information on page 4](#)

Spotlight on...

First birthday of Severo Ochoa at BSC

For the first year of activities of BSC's Severo Ochoa programme, staff met for a one day retreat to discuss the latest results and future challenges. Ten new pre- and postdoctoral researchers have joined the BSC since the beginning of the project to boost the implementation of the research programme.



[More information on page 5](#)

Directors' View



At BSC, we have two fundamental objectives: to provide Spanish and European researchers with an excellent supercomputing service, and to conduct high-quality research.

[More information on page 2](#)

Events and Training



Apr 17 PATC Systems Workshop: Programming Machine
17 April, 2013, Barcelona

Apr 22 Translational and integrative Bioinformatics Postgraduate course
22 April, 2013, Barcelona

[More events on page 4](#)

Inside BSC



In this issue:

- BSC-"La Caixa" International Doctoral Grants Programme
- Severo Ochoa Mobility Grants
- Annual Meeting Photos
- 2013 working calendar
- Newcomers
- Vacancies & Fellowships

Directors' View



At BSC, we have two fundamental objectives: to provide Spanish and European researchers with an excellent supercomputing service, and to conduct high-quality research. The aim is to ensure not only that our ideas translate into good articles in the best publications and at the best conferences, but also to ensure that they can be used to continue our collaboration with leading companies in the sector and so that BSC researchers can create their own business initiatives in an entrepreneurial spirit. As we have always said, good research is research that creates wealth around us. It is on this end that we will continue to focus our activities.

When it comes to providing researchers with a good supercomputing service, we are most satisfied with and extend our thanks to our sponsors (the Ministry for the Economy and Competitiveness in Madrid, the Regional Ministry for the Economy and Knowledge, and the UPC), who have provided the resources required to acquire MareNostrum III. MareNostrum III is a powerful machine, the most recent version of which has a calculation speed of 1 petaflop and a main memory of close to 100 terabytes, which is more than enough for Spanish researchers to continue improving their research. It should be remembered that since 2005, our supercomputers have been used in more than 2,500 Spanish projects of the highest scientific standards. With our own funds, we have acquired another machine with close to 100 teraflops based on Intel vectorial technology. With these two Nvidia accelerator-based acquisitions and the acquisition of MinoTauro last year, the BSC has become a unique international centre of excellence where the heterogeneous resources available allow researchers to not only implement their applications on homogeneous machines such as MareNostrum III, but also to adapt their applications to the two current accelerator-based alternatives available worldwide.

Despite current pressures on the finances of government departments, in particular those of our partners (the central government and the Generalitat), we have just been awarded the contract for the next phase of the construction of the new building for the centre. This phase, which is expected to last 8 months, will consist of erecting the structure, the construction of the floors and the roof. This represents another (albeit not the last) step towards a common area in which to carry out our work under the best possible conditions. The construction of the building is one of the strategic initiatives approved in our consortium's Activities and Projects Plan.

In keeping with our scientific philosophy, we continue to conduct frontier research. This is confirmed in a number of data: recently, we beat a field of 200 other finalists to win the prize for the world's best scientific video, awarded by the National Science Foundation and Science magazine. The video, "Alya Red: A Computational Heart," shows not only that our research in the field of biomechanical simulators is up there with the world's best, but also that we can explain to the general public how we invest the public funding assigned to us in a clear and informative manner. Thus, it is very good news in both senses. On the other hand, our research into programming models has recently served to ensure their inclusion in the world programming standard called OpenMP, and which is a programming language used in all supercomputing centres worldwide. This allows us to remain at the forefront of the difficult field that is the programming of current and future supercomputers.

More than 40% of our research budget comes from competitive funds provided by European research programs. It is good to know that the EU will provide significant resources to Horizon 2020 program to promote European research and competitiveness. At BSC, we have just been awarded the ERC's Advanced Grant project, "RoMoL: Riding on Moore's Law," with very good finance for 5 years. The objective of this project is the optimal design of multicore chips and future supercomputers. In addition, BSC shall contribute its programming models to the Human Brain Project (HBP), a flagship project that will provide us with a stable source of finance in these areas for the next 10 years. Since 2005, the BSC has participated in 65 European projects, and acted as coordinator in 12 of them. Without doubt, these results confirm BSC's status as the leading Spanish centre for research in attaining European funding in terms of the number of research doctors.

As a result of our collaboration with leading companies in areas of strategic importance to BSC, we are able to obtain close to 40% of funds we allocate to research. We are thankful to companies such as Repsol, Microsoft, Intel, and Nvidia for continuing to increase their collaboration with BSC through joint research centres, and for the fact that we have signed a collaboration agreement with IBM for the next three years. We are waiting for approval for the legal framework so that BSC can establish its first spin-offs in the design of low-cost, low energy consumption, high-performance computers and in the design of new pharmaceutical products.

In our opinion, all previous data reveal that in very difficult times such as those we are experiencing at present, research is the surest way to emerge from a crisis. We are convinced that with hope, effort, and work well done – qualities that characterise everyone at BSC - we will continue to contribute to better science and the creation of wealth and employment opportunities around us.

Mateo Valero, the BSC director

News

Mateo Valero honoured with ERC Advanced Grant



El Periódico News and ERC logo

The [European Research Council](#) (ERC) has awarded an Advanced Grant in the category of physical sciences to Mateo Valero, the director of the BSC for his project **'RoMoL: Riding on Moore's law'**. Valero is one of the 302 senior researchers who have received this prestigious grant in 2013. The grant awarded to Mateo Valero amounts to 2.3 million Euros.

The project **'RoMoL: Riding on Moore's law'** intends to start a new line in designing supercomputers, based on co-designing architecture and the software execution environment to overcome the current deadlock in the efficiency obtained in computing systems.

The project lead by Mateo Valero suggests a totally new way of conceiving computers with parallel architectures, where the level of abstraction offered to the programmer is increased, meaning the programmer will have to think in terms of tasks rather than low level instructions. The system's software will be in charge of mapping the computational demands (tasks) with the physical resources of the system (cores, memory). Some fundamental elements for this architecture will be processors and vector techniques since they are highly efficient energy-wise. The project defines (proves) the need to design the architecture and the software system together, so the result of this collaboration is optimising the efficiency and productivity of computer systems.

[Read BSC Press Release](#) | [Read ERC Press Release](#)

BSC, key for the development of the Human Brain Project



Picture from Ferran Nadeu published at El Periódico

The European Commission (EC) has given the go-ahead for the [Human Brain Project \(HBP\)](#), the project to simulate the human brain, with the [participation of the BSC](#). The Human Brain Project thus becomes one of the European flagship projects, receiving major financing from the EC.

The goal of the Human Brain Project, lead by Dr. Henry Markram, from the École Polytechnique Fédérale de Lausanne, is to simulate the human brain through supercomputing. The aim is to obtain useful knowledge to a range of scientific fields such as neuroscience, medicine and designing new information technologies.

BSC will collaborate in two ways: first, scientists from the centre will carry out research in programming models to allow these simulations to be developed efficiently and, secondly the centre will contribute the MareNostrum supercomputer for molecular simulations to be developed efficiently.

The researchers from BSC participating in the project are the director of the Department of Computing Science, Jesús Labarta (lead researcher); the director of the Operations Department and the person in charge of MareNostrum, Sergi Girona; as well as Rosa Maria Badia, Álex Ramírez and Javier Bartolomé.

[Read Press Release](#)

News



Video Consolider

Consolider: Supercomputing and e-Science

Here you have the presentation video for the project **Consolider: Supercomputación y e-Ciencia** (Supercomputing and e-Science) which is part of the **Consolider – Ingenio 2010** programme aiming at achieving research excellence by increasing cooperation between researchers and training large research groups. The project **Consolider: Supercomputación y e-Ciencia** started in 2008 and will end this year. Its main goal is to advance in the field of applied supercomputing through several areas of science. Coordinated by the BSC, this project intends to boost cooperation between 21 Spanish research groups, broaden the culture of supercomputing in Spain and also have a say in the design and efficient use of present and future supercomputers.

[BSC news website](#) | [Video](#)

“Alya Red, a computational heart” wins the International Science Visualization challenge

The visualization team from the BSC won in the category visualization videos with ‘Alya Red: a computational heart’ which explains the center’s project to simulate a human heart. The recognition is promoted by the **National Science Foundation** (NSF) and the **Science** magazine and the prize is the publishing of a report on the winning projects in the magazine’s February issue.

The news about this award has had a big impact in the media and especially in social media. Congratulations to the visualization team!

[Read article](#) | [Read Press Release](#) | [Video in Spanish](#)



Alya red: a computational heart (Video in English)

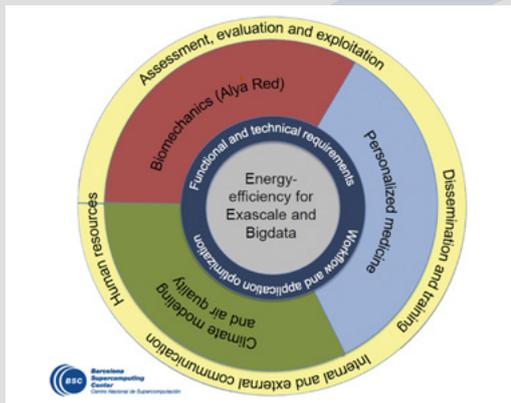
Calendar of Events and Training

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|--|---|
| <p>Mar 14 PATC Course: Simulation Environments for Life Sciences
14 March, 2013, Barcelona</p> <p>Apr 17 PATC Systems Workshop: Programming Machine
17 April, 2013, Barcelona</p> <p>Apr 22 Translational and integrative Bioinformatics Postgraduate course
22 April, 2013, Barcelona</p> <p>May 13 PATC Course: Performance Analysis and Tools
13 May, 2013, Barcelona</p> <p>May 15 PATC Course: Heterogeneous Programming on GPUs with MPI + OmpSs
15 May, 2013, Barcelona</p> <p>May 17 PATC Course: Programming ARM based prototypes
17 May, 2013, Barcelona</p> | <p>Jun 3 PATC Course: Introduction to CUDA Programming
3 June, 2013, Barcelona</p> <p>Jun 3 Distributed Multiscale Computing
3 June, 2013, Barcelona</p> <p>Jun 5 International Conference on Computational Science
5 June, 2013, Barcelona</p> <p>Jun 17 ISC 2013
17 June, 2013, Leipzig</p> <p>Jul 1 Summer of HPC
1 July, 2013, Barcelona</p> <p>Jul 8 PUMPS Summer School
8 July, 2013, Barcelona</p> |
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Spotlight on...

First birthday of Severo Ochoa at BSC

For the first year of activities of BSC's Severo Ochoa programme, staff met for a one day retreat to discuss the latest results and future challenges. Ten new pre- and postdoctoral researchers have joined the BSC since the beginning of the project to boost the implementation of the research programme.



The SO project aims to consolidate the BSC as a world leader in High Performance Computing research: exascale supercomputers will be crucial in the performance of numerical simulation necessary for solving major societal problems (like the pollution of the environment, or unresolved human health issues). For this, specific computational requirements must go together with new requirements in terms of data management and storage, so called Big Data, and they all must be developed under the energy-efficiency umbrella.

The SO program consists of an ambitious project actively involving all BSC research departments, as well as a plan to consolidate best practices in support services, based on the recognition that efficient management of human resources, training and communication are key elements for promoting outstanding results in research.

A picture is worth a thousand words: the graphic above summarizes the BSC's SO project. The development of novel models in three Application domains (Personalized Medicine, Multi-scale air quality climate modelling and Computational Biomechanics) rotates around novel components in the hardware and software stacks to achieve Exascale (Programming Models, Big Data storage, Big Data resource Management and energy-efficient architectures). They all benefit from the support provided by a clear Human Resources policy, efficient management and well-structured communications and training activities.

In addition to the progress in research, the BSC education and training strategy was presented at the retreat, followed by a presentation of the work of BSC for obtaining the EU's Excellence in HR badge. The retreat closed with a talk on the researchers' role in society. According a recent FECYT survey, public's perception of scientists is quite positive and it demonstrates once again the importance for all BSC researchers to keep the BSC communication area promptly informed of what they do: raising awareness among the citizens is one of the ultimate goals of the Severo Ochoa Excellence Centres.

A first result of the retreat is represented by the SO cafes: pre and post docs meet in brief informal gatherings where they discuss their work in the project around a cup of coffee.

The retreat has been judged very positively by the participants and we are all keen to attend the next one, with more and new results and ideas!

[More information here](#)

You can find the retreat's presentations on the BSC share, in the following folders: *Communications\Presentations\Proyectos Especiales\Severo Ochoa*



A 40-strong BSC Severo Ochoa team during the one-day retreat on January 24 at the IEC (Institut Estudis Catalans), in Barcelona. The retreat was organised to present the results of the project so far and plan for the future. BSC Directors participated at the event too.

Inside BSC

Newcomers

We would like to welcome new staff who have joined the centre in the last few months:



**CESARE
CUGNASCO**
Research Support
Engineer
Computer Sciences Dpt.



ALVARO VILLALBA
Postdoctoral
Researcher
Computer Sciences Dpt.



CARLOS DIAZ
Research Support
Engineer
Computer Sciences Dpt.



EVA CASONI
Postdoctoral
Researcher
CASE Dpt.



**STELUTA
IORDACHE**
Postdoctoral
Researcher
Computer Sciences Dpt.



SERGIO MENDOZA
Research Support
Engineer
Computer Sciences Dpt.



JORGE CORTES
Research Support
Engineer
Life Sciences Dpt.



**GEORGIOS
PASSAS**
Postdoctoral
Researcher
Computer Sciences Dpt.

FELLOWSHIPS



**MLADEN
SLIJEPCEVIC**
Research Fellowship
Computer Sciences Dpt.



DAVID GONZALEZ
Research Fellowship
Computer Sciences Dpt.



**BENJAMIN
HERNANDEZ**
CONACYT Postdoctoral
Research Fellowship
Computer Sciences Dpt.



DANIEL RUIZ
Research Fellowship
Computer Sciences Dpt.



SERGI SISO
Research Fellowship
Computer Sciences Dpt.



ALEX MARTI
Marie Curie PhD
Research Fellowship
CASE Dpt.



MIGUEL ZAVALA
Marie Curie PhD
Research Fellowship
CASE Dpt.

DANIEL MIRA

**BSC Senior Researcher, Smarter
City Initiative**



The Marie Curie Fellowships are European research grants available to researchers regardless of their nationality and research area. This program promotes excellence and innovation in Europe.

The last Marie Curie Fellowship who joined BSC is Daniel Mira, an experienced researcher in Numerical Combustion.

BSC-“La Caixa” International Doctoral Grants Programme

Last January, the 1st BSC-“La Caixa” edition of grants to include doctoral students was published and disseminated in several media. We have received a total of 161 applicants interested in participating for this edition. As of next term, the selection process will begin, concluding during the month of September, when the 5 best candidates will be chosen. These candidates will join the research teams with high-level researchers in the different areas of knowledge in the centre.

The training programme will have a maximum duration of 4 years to complete a doctoral thesis. Grants may be renewed annually for 2 + 2 years. During the first 2 years scholars will receive a grant and then, after this initial period, each case will be studied for a further extension of a maximum of two years more through a work contract.

Severo Ochoa Mobility Grants

Every year the Severo Ochoa program at BSC will provide financial support for outgoing and incoming mobility of researchers of up to a maximum of € 3000 per person. Applications deadline is 31st of March 2013 for mobility actions to take place in the period April – December 2013. More information [here](#)

Annual Meeting 2012 Photos



Annual Meeting photos are available. Please find them, on the BSCCNS share, Communications folder, Photos folder. Enjoy it!

2013 working calendar

We would like to remind you that you can find the 2013 working calendar in your “Personnel corner” section on the centre’s intranet: <https://intranet.bsc.es/en/vacations>. You will find it in the vacations application where you may also download it in pdf format with the winning photographs from the contest.

Vacancies & Fellowships

If you know someone who wants to join the BSC team, he/she can submit a CV to one of our current vacancies or fellowships’ calls: <http://www.bsc.es/vacancies-fellowships>. For further information contact rrhh@bsc.es.

Your participation is welcome!

If you have any suggestions for a new section or topic, please contact us on newsletter@bsc.es.