

# Company Profile

## EBERS Medical Technology



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[www.ebersmedical.com](http://www.ebersmedical.com)

## Presentation

EBERS is a young company aiming to bring into the market new innovative products for cell culture, particularly in the fields of regenerative medicine and tissue engineering. For such purposes, EBERS takes advantage of a wide experience in engineering labours, as well as of a multidisciplinary highly qualified team.

In summary, our main aims are

- To develop and commercialize scientific instruments for cell culture, and
- To give engineering consultancy support for the development of every kind of additional equipment which might be used in biomedical R+D.



## History

EBERS stems from the Group of Structural Mechanics and Materials Modelling (GEMM) of the University of Zaragoza, one of the most active Spanish research groups in the fields of biomedicine, biomedical engineering and computational simulation. Mechanical, electrical and biomedical engineers, mathematicians, physicists, biologists and medical doctors form nowadays the GEMM group, configuring a highly multidisciplinary research structure.

In 2008, researchers Víctor Alastrué and Pedro Moreo left academia to create a spin-off company that would commercialize GEMM's technology. In June 2009, after having developed a solid business plan and incorporating additional partners providing business experience and financial support, EBERS was established in Zaragoza (Spain) counting on the support of the spin-off programme of the University of Zaragoza. Since its inception, the company continues to maintain close scientific links with the GEMM group and has become the natural pathway to transform the group's findings into commercial products and services.

In 2010 EBERS launched the TEB1000 series of bioreactors, consisting in a family of cell culture automated systems specially conceived for developing adherent cell cultures under flow conditions and/or in 3D environments. In 2011 the company gains access to the main European markets and launches a new family of disposable culture chambers.

In spite of its short life, EBERS has been distinguished with multiple national and international awards recognizing its potential and innovative character, with prizes worth >125 k€. Some of the most relevant are:

- 2009 Entrepreneurship Award of the Everis Foundation
- 2010 IDEA Entrepreneur Contest of the Government of Aragón, Ibercaja and CAI
- Top 100 most innovative ideas of 2010, by Actualidad Económica
- First Prize at the 2010 Ibero-American Awards for Innovation and Entrepreneurship
- Young Entrepreneurs 2010 Awards by Bancaja
- XXI Entrepreneur Awards by La Caixa



## Moving to the future

EBERS is now half-way through its growth strategy, initiated after its establishment in 2009. This strategy aims to consolidate the growth of the company by means of the achievement of the following objectives:

- to increase and focus on the value we offer to our clients
- to gain access to the main markets worldwide, establishing stable and robust alliances with sales channels
- to increase operational excellence
- to deliver innovation thanks to a persistent and planned R+D strategy in collaboration with private and public partners

At the present time, EBERS has managed to break into the main European markets with the TEB 1000 family of cell culture flow bioreactors. The TEB 1000 system was designed considering the situation faced by most biomedical academic and industrial research groups across the world —our main customers— regarding laboratory equipment needs, which is given by:

- an increasing complexity of cell culture experiments and protocols, involving 3D substrates (scaffolds), cell seeding processes, non-invasive monitoring and regulation of mechanical stimulation
- a growing specificity of the particular requirements of every experiment, which turn out to be very different among researchers of even a single lab and, besides, tend to change in time faster and faster, impeding the use of closed and specific systems
- significant cuts in budget

EBERS meets this challenge with a determination to build more flexible and affordable technology solutions by:

- focusing on the architecture of our products, looking for modularity to guarantee versatility and permit progressive extension of functions and applications
- partnering with companies and research groups, bringing added value to the organization and accelerating the pace of innovation

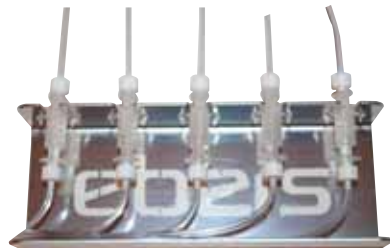
In the short term EBERS is working to:

- incorporate new functionalities into our bioreactors in the form of culture packages
- launch new product lines in the field of cell culture
- gain access to the most important markets worldwide by means of distribution agreements.

## Business

With main focus on 3D cell culture and tissue engineering, we serve research and scientific markets with advanced solutions for cell culture. In 2010 EBERS launched into the market the TEB1000, a new flow bioreactor system. Within this platform a bioreactor is composed of a Master Unit, common element providing basic control and regulation capabilities, and a Culture Package, where cells and substrate are held and thus adapts to particular requirements.

Although 3D cell culture and particularly tissue engineering constitute the most obvious applications of this system, the TEB1000 platform has a direct application in any culture that requires the flow of medium. Apart from the engineering of bone, cartilage or blood vessels, our customers use the system for drug testing with 3D models, cell adhesion experiments, long-term perfusion 2D experiments or simply to automatically renew the medium.



### Master Unit

The functions of a CO<sub>2</sub>/O<sub>2</sub> incubator and an advanced pumping system are integrated in a single element: the Master Unit.

The Master Unit is specifically designed to develop any type of cell culture under flow of medium, regulating temperature, atmosphere and flow conditions, including flow rate, direction, frequency and the possibility of entering user defined profiles from a simple user interface. At the same time, this unique architecture overcomes the limitations of home-made experimental setups (contamination, overheating, loss of useful volume), avoiding the need of introducing pumping systems in conventional incubators.

Straightforward and adaptable, our flow control system provides the ideal control platform for advanced cell cultures. The flow of medium can be used to improve mass transport and nutrient exchange, to seed cells on 3D constructs and to mechanically stimulate cells in a controlled manner in a number of applications, including, but not limited to, engineering of artificial tissues and organs, cell adhesion and 2D perfusion experiments.

### Cell Culture Package

The main function of the culture package is to accommodate in a chamber the substrates and/or cells to be used in the experiment. In addition to a cell culture chamber, the package can also include monitoring systems, special tubing, dampeners and other auxiliary elements.

We have a catalogue of disposable and reusable standard culture chambers, to be used in most common 3D cell culture applications. However, clients are encouraged to develop their own chambers or to acquire third party instruments, if suitable.

EBERS also provides a consultancy service aiming to help the researchers to create their most appropriate culture chamber, in case the standard EBERS packages do not cover their specific needs.

The TEB1000 platform has been developed with three big objectives in mind that make it unique within the market:

### Versatility

Versatility is an essential requisite for the user. Since all Culture Packages are interchangeable, the same Master Unit can work with an unlimited number of tissues, conditions and biomaterials. From scaffold seeding to multiple parallel constructs culture, TEB1000 has been designed to serve in every stage of complex tissue engineering cultures.

Furthermore, our clients continuously find new applications to TEB1000, which usually go beyond the field of tissue engineering. Nowadays, TEB1000 is being used in such varied experiments as cell adhesion assays, biocompatibility tests of metallic materials, cell co-culture on planar membranes and cell culture under shear stress. This is possible thanks to the use of customized packages developed by our engineers, designed by the own user or acquired to third-party companies.

### Simplicity

With an incessant increase of the complexity of cell culture experiments, life science researchers –particularly those devoted to tissue engineering– are forced to dedicate excessive time to solve the technological difficulties that arise in the their experiments, rather than concentrate on their scientific interests. Apart from reinventing the wheel, this entails a significant waste of time in a job of little scientific importance. EBERS goal is to release our customers from these tasks, offering simple, adaptable and ready-to-use solutions that allow them forget about the instrument and focus on the experiment.

Simplicity undoubtedly is a key element in the design of TEB1000 and has been taken into account to design the whole product, from the powerful control system, accessible through an intuitive touchscreen interface, up to the modular architecture, which allows the user to easily incorporate new culture or monitoring systems into the bioreactor.

### Affordability

Price is an important variable for our customers. Thanks to the design of our systems we are able to offer a technologically advanced product at an affordable cost. Modularity permits in addition to carry out experiments with single and multiple samples in parallel, to use the same Master Unit for very different applications and to extend its features in the future if the needs or research interests of the user change. With the TEB1000 bioreactor in a lab, our clients save significant sums of money, now and in the future.



## Facilities

EBERS is located on the CEEI Aragón Technology Park in Zaragoza, Spain. In addition, EBERS does also work with external partners that participate in some stages of the manufacturing process, all of which are also based in the city of Zaragoza.

Thanks to the spin-off nature of the company, EBERS has access to the facilities of the GEMM research group at the University of Zaragoza. These include fully equipped cell culture, histology and mechanical testing laboratories where a team of biologists, biochemists and engineers cooperate in the development and test of new products and applications.



## External support

EBERS is part of the Spin-Off Programme of the University of Zaragoza. Only innovative and technological projects arising from research groups of the University gain access to this initiative, which provides legal and intellectual property support to the company and allows EBERS to settle in the facilities of the University during the first years of operation.

Likewise, EBERS counts on the support of the everis Foundation after winning its 2009 Annual Entrepreneurship Award. Everis Foundation is a project of everis, a multinational consulting firm active in the sectors of Banking, Healthcare, Industry, Insurance, Media, Public Sector, Telecom and Utilities with a staff of over 4,000 professionals. One of the main objectives of the foundation is to promote the spirit of entrepreneurship in university and scientific spheres in Spain and to provide funding for business projects which are clearly innovative, viable and beneficial for society. The Entrepreneurship Award granted to EBERS includes financial support as well as business and strategic consulting at the first development stages of the company.

## The origin of our name

The name "EBERS" is due to the German Egyptologist Georg Ebers who, in winter of 1873–74, purchased an Egyptian papyrus at Luxor, nowadays known as the "Ebers Papyrus".

Such papyrus contains the most voluminous record of ancient Egyptian medicine known, including about 700 magical formulae and remedies. For the interested readers, the Ebers papyrus is nowadays stored in the library of the University of Leipzig (Germany).



## Key staff



**Pedro Moreo**  
CEO

Pedro Moreo, co-founder of EBERS, decided to create EBERS with his university colleague Víctor Alastrué after completing their PhD in 2008. They eventually founded the company in 2009, after incorporating additional partners in the project providing business experience and receiving the support of research group GEMM. From the company's inception, Pedro became responsible of sales/marketing, finance and business development. Apart from his academic and research background, Pedro has had responsibilities in the industrial sector in mechanical design and operations management.

Pedro holds a M.S. in Mechanical Engineering and received a European Ph.D. in Computational Mechanics from the University of Zaragoza, after visiting the universities of Oxford and Compiègne during his thesis. He has received several academic awards, including the 2005 the National Academic Excellence Award of the Spanish Ministry of Science and Technology, and has complemented his technical and scientific education with an Advanced Management Program of ESADE Business School.



**Víctor Alastrué**  
Scientific Director

Víctor Alastrué, co-founder of EBERS, has played a key role in the development of the TEB1000 concept of bioreactors, being the architect of the evolution of the prototypes available at the university labs into a commercial version of cell culture bioreactors. He is responsible for product engineering and design.

Víctor holds a M.S. in Mechanical Engineering and a European Ph.D. in Computational Mechanics from the University of Zaragoza. He also studied at the University of Siegen (Germany) and received the Special Prize for Best PhD Thesis from the University of Zaragoza. Víctor has multiple publications in peer reviewed journals, has authored various patents related to cell culture systems and has participated in several research projects receiving European as well as national, regional and private funding.



**Manuel Doblaré**  
Scientific Advisory  
Board Member

With more than 30 years experience of research in mechanical engineering, biomechanics and tissue engineering, Manuel Doblaré, Scientific Advisory Board Member, provides an outstanding scientific background to the team. He was the former director of the Aragón Institute of Engineering Research (I3A) and is currently a full professor at the University of Zaragoza and head of GEMM, a group of I3A focused on tissue engineering, biomechanics and mechanobiology research. Since its creation in 2006, Manuel has been the Scientific Director of the Spanish Networking Centre for Biomedical Research in Bioengineering, Nanomaterials and Nanomedicine (CIBER-BBN), consortium that brings together the vast majority of the Spanish top research groups in the field.

Manuel holds a M.S. in Mechanical Engineering and a Ph.D. in Computational Mechanics from the Polytechnic University of Madrid and has been a visiting professor in various universities across the world. He has more than 150 publications in international peer reviewed journals and has coauthored several patents in the field of tissue engineering.



**Fernando Lacaba**  
Business Advisory  
Board Member

Fernando Lacaba, Business Advisory Board Member, brings to the company a breadth of experience in management, marketing and innovation. He is currently a partner in charge of Financial Services Business Consulting, Global Risk Management and Quantitative Marketing Analysis Practices at everis, a multinational consulting firm. Prior to his work with everis, Fernando was Organization Director at Barclays Spain and Senior Manager at Andersen Consulting.

Fernando holds a M.S. in Chemical Engineering from Universidad Complutense in Madrid, a Program for Management Development and an Advanced Management Program, both from IESE Business School.



**Angel Sampietro**  
Scientific Advisory  
Board Member

Ángel Sampietro, Scientific Advisory Board Member, provides an invaluable and necessary clinical vision to the project. He has more than 20 years experience of clinical practice in dentistry and maxillo-facial surgery in the private sector, at his own dental practice, and in the Spanish national health system, currently holding a Medical Consultant post in the Department of Craniofacial Deformities at the University Hospital Miguel Servet in Zaragoza. Extremely active, he has also been involved in the academic world since 1996, when he obtained an assistant professorship position at the University of Valencia, moving to the University of Zaragoza in 2008, where he currently teaches and performs research in the fields of tissue engineering and the development of new biomaterials for dental applications.

Ángel graduated in Medicine and Surgery from the University of Zaragoza and holds a degree in Dentistry from the University of Valencia. He has received several awards for his clinical and experimental research.



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