

# ANDALUSIAN CATALOGUE OF BIOTECH PROFILES



JUNTA DE ANDALUCÍA

Agencia Andaluza del Conocimiento  
CONSEJERÍA DE CONOCIMIENTO, INVESTIGACIÓN Y UNIVERSIDAD



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# Andalusian Catalogue of Biotech Profiles



The Andalusian Knowledge Agency appreciates the collaboration provided to edit this catalogue by the Andalusian Public Universities and their Technology Transfer Offices (OTRIs), the Andalusian Public Foundation Progress and Health, and the Agrifood Campus of International Excellence CeiA3.

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# 1. Introduction

On the occasion of Biospain 2018 event, organised in Andalusia, the present issue is produced by the **Andalusian Knowledge Agency (AAC)** with the objective of providing all Biospain 2018 participants with a unified and ordered compendium on the **technological offer in the field of biotechnology** currently present in the region.

This catalogue main recipients are entrepreneurs, research staff, public administrations, public and private research centres and institutions, investors, and all the professionals interested in this biotech offer.

The profiles information has been compiled by the Andalusian Knowledge Agency and provided by the **Technology Transfer Offices (OTRIs)** from the public Andalusian universities, the **Andalusian Public Foundation Progress and Health (FPS)** - a support entity which provides research and innovation services to the Andalusian Public Health System-, and by the **Agrifood Campus of International Excellence (ceiA3)** - a joint initiative by the universities of Almería, Cádiz, Huelva y Jaén, led by the University of Córdoba-.

The present catalogue includes **233 biotech profiles**. Its design and publication is just one more of the actions planned by CESEAND, the **Andalusian member of Enterprise Europe Network (EEN)**. CESEAND is the Andalusian node of the **EEN**, which supports internationalization, innovation and technology transfer in

SMEs around Europe.

## ENTERPRISE EUROPE NETWORK

The Enterprise Europe Network is the world's largest support network for small and medium-sized enterprises (SMEs) related to RDI, and it acts under the auspices of the European Union. The network is operating in more than 60 countries in Europe, America, Africa and Oceania, and it is structured in consortia providing their services at local or regional levels.

In addition, it should be noted, that the network connects with about **3.000 experts from more than 600 organisations** recognised for their excellence in entrepreneurial support to universities and research centres, public institutions, chambers of commerce, entrepreneurs associations and federations, etc.

These professional experts find a double advantage: first, they know the closest commercial environment and, on the other hand, they take the opportunity to identify contacts in order to set opportunities for entrepreneurship and cooperation worldwide.

In Andalusia, EEN is present through the consortium CESEAND, joined by four partners: the **Andalusian Agency for Innovation and Development (IDEA)**, the **Andalusian Knowledge Agency (AAC)**, the **Andalusian Confederation of Entrepreneurs (CEA)** and



the **Andalusian Council of Chambers of Commerce**.

**AAC is member of CESEAND since 2008** and its strategic objectives are thoroughly aligned with the aims defined in the network, specially with regards to knowledge transfer.

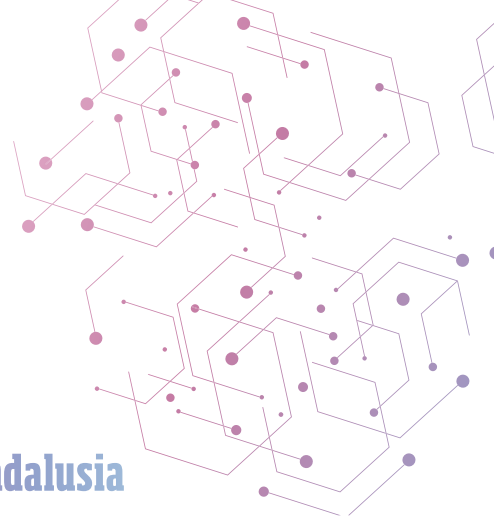
The Andalusian net different members' profiles provide a balanced activity concerning the provision of services. Such services are distributed mainly in three lines of action to favour the internationalisation of the enterprises innovative activities as well as their introduction in new markets; encouraging the adoption of innovations and knowledge transfer in its broadest sense, and finally, facilitating the access to European RDI funding.

Thanks to CESEAND, the AAC has supported a great majority of Andalusian enterprises for a decade with regards to the search of partners to set agreements for technological collaboration or the development of European projects, facilitating the participation of SMEs in research consortia. It also provides personalised counselling on every issue related to innovation, knowledge transfer, and

European RDI programmes, specially on the **H2020 European Framework Programme**.

The work of the network includes besides national and international events organisation on knowledge transfer, encouraging the SMEs participation.

**Biospain 2018** is the ideal event for the development of its activity, specially those actions focused on encouraging the participation of the Andalusian RDI institutions and the promotion of bilateral meetings for technological collaboration.



## 2. Biotechnological activity in Andalusia



Biotechnology<sup>1</sup> is defined as ‘the application of science and technology to living organisms as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services’.

Its meaning has evolved parallel to the scientific-technological progress and it currently encompasses scientific fields as molecular and cell biology, biochemistry, immunology, bioengineering and bioinformatics. This set of technologies provide a wide range of tools with applications in a variety of knowledge-based areas such as medicine, pharmacy, agriculture, nutrition, ICTs, chemistry and environment, among others.

Biotechnological activity is in the Key Enabling Technologies (KETs) group, those with a knowledge-based development, fast cycles drivers of innovation, high capital expenditure and a demand of high-skilled labour.

The field of medical biotechnology is taking up the majority of biotech applications leading to the development of many innovative techniques for preventing, diagnosing and treating diseases, experiencing a rapid growth rate, given the importance of human health in current societies.

<sup>1</sup> OCDE definition for Biotechnology.





In Andalusia, the boost of social well-being and health care through the regional health system -mainly public, free and universal- is a priority established by the 2014-2020 Andalusian Innovation Strategy, RIS3. Within this priority (Priority 5), biotechnology plays an essential role, as it is set in the established action lines.

One of them is focused in enhancing the regional biotech enterprises reaching the highest level of excellence, by undertaking advanced projects in the medical biotechnology field, as a strategy for achieving dimensions of competitive positioning in the development of innovative initiatives in search of high quality outcomes and services. Another action line concerns the enhancement of advanced therapies and regenerative medicine as a boost for excellence research and multidisciplinary collaboration in a variety of knowledge-based fields (cell therapy, clinical genetics, genomics, nano-medicine, etc.).

Noteworthy in this regard, the regional government provided the Andalusian community with a legal framework which has allowed the region to lead stem cells research, biobanks, cell reprogramming or the above-mentioned advanced therapies.

One of the aims of these legal changes and the encouragement of biotechnology through RIS3 Strategy is to boost the sector levels of excellence by enhancing research outcomes transfer and collaboration with the entrepreneurial sector.

The Andalusian Knowledge System (SAC) encompasses a network of public universities, centres and technology parks and several RDI institutions that collaborate with other industrial sectors as biomedical industry.

In Andalusia, there are currently 617 research groups with 7.966 researchers involved developing activities direct or indirectly related to biotechnology.

**Chart 1.1. Number of Andalusian research groups per institution and PAIDI<sup>1</sup> scientific-technical research areas**

Institutions	PAIDI scientific-technical research areas <sup>2</sup>									Grand Total
	AGR	BIO	CTS	FQM	HUM	RNM	SEJ	TEP	TIC	
Spanish National Research Council (CSIC)	21	36	5	3		6				<b>71</b>
SAS / Foundations		19	91						1	<b>111</b>
IFAPA	9									<b>9</b>
University of Almería	3	8	2	5	1	2				<b>21</b>
University of Cádiz	2	2	19	6		2		2	1	<b>34</b>
University of Córdoba	18	20	12	8		6		1	3	<b>68</b>
University of Granada	6	27	36	19	1	5	2	2	1	<b>99</b>
University of Huelva		2	1	5				1		<b>9</b>
University of Jaén	2	8	5	5		1		2		<b>23</b>
University of Málaga	4	10	15	7	1	4		1	3	<b>45</b>
University of Seville	7	45	32	12		5		2	4	<b>107</b>
University of Pablo Olavide		13	3	2		2				<b>20</b>
<b>Grand Total</b>	<b>72</b>	<b>190</b>	<b>221</b>	<b>72</b>	<b>3</b>	<b>33</b>	<b>2</b>	<b>11</b>	<b>13</b>	<b>617</b>

**Chart 1.2. Number of researchers per institution and PAIDI scientific-technical research areas**

Institutions	PAIDI scientific-technical research areas <sup>2</sup>									Grand Total
	AGR	BIO	CTS	FQM	HUM	RNM	SEJ	TEP	TIC	
Spanish National Research Council (CSIC)	272	468	74	45		114				<b>973</b>
SAS / Foundations		155	1318						21	<b>1.494</b>
IFAPA	129									<b>129</b>
University of Almería	38	100	25	70	7	34				<b>274</b>
University of Cádiz	17	25	193	71		74		29	6	<b>415</b>
University of Córdoba	246	242	133	124		76		9	39	<b>869</b>
University of Granada	52	287	405	257	14	78	20	22	12	<b>1147</b>
University of Huelva		28	10	49				1		<b>88</b>
University of Jaén	28	82	48	63		9		51		<b>281</b>
University of Málaga	77	155	193	73	43	56		15	27	<b>639</b>
University of Seville	71	551	423	139		72		19	56	<b>1331</b>
University of Pablo Olavide		230	27	51		18				<b>326</b>
<b>Grand Total</b>	<b>930</b>	<b>2.323</b>	<b>2.849</b>	<b>942</b>	<b>64</b>	<b>531</b>	<b>20</b>	<b>146</b>	<b>161</b>	<b>7.966</b>

Source: Scientific Information System of Andalusia (SICA), Andalusian Knowledge Agency (AAC).

<sup>1</sup> Andalusian Plan for Research, Development and Innovation (PAIDI)

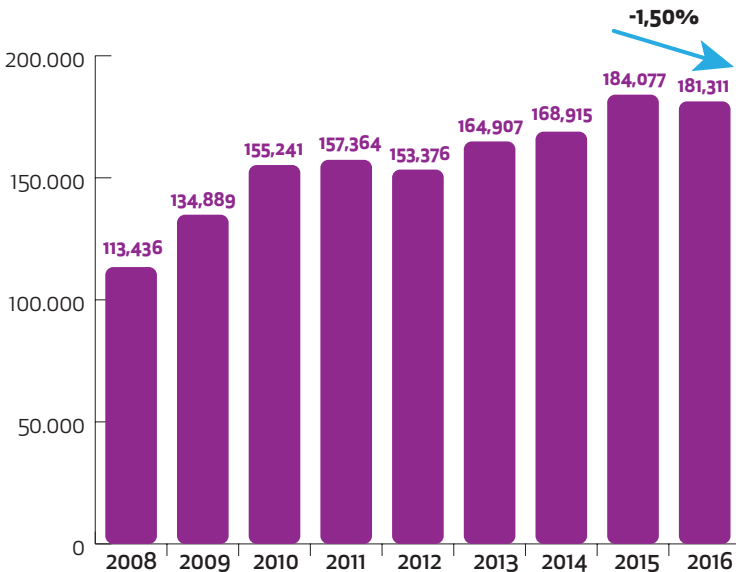
<sup>2</sup> AGR: Agrifood; BIO: Biology and Biotechnology; CTS: Health Sciences and Technologies; FQM: Physics, Chemistry and Mathematics; HUM: Humanities; RNM: Natural Resources and Environment; SEJ: Social, Economic and Legal Sciences; TEP: Production Technologies; TIC: Information and Communication Technologies

Nowadays, the Andalusian Public Health System and the universities of Seville and Granada are the institutions that concentrate the majority of groups and researchers dedicated to biotechnology. The latter, in addition, is supported by technological environments such as the **Granada Health Science Technological Park (PTS)** or the **Campus of International Excellence BioTic Granada**. These innovation ecosystems show the competitive advantages of creating environments where universities, companies, research centres and other entities -such as hospitals- coexist.

Other Andalusian research centres should be mentioned are the **Andalusian Centre for Nanomedicine and Biotechnology (BIONAND)**, the **Andalusian Centre for Molecular Biology and Regenerative Medicine (CABIMER)**, the **Pfizer Centre for Genomics and Oncological Research (GENYO)**, the **Biomedical Research Institute of Granada (IBS-Granada)** y **Málaga (IBIMA)**; the **Institute of Biomedicine of Seville (IBIS)**; the **Maimónides Biomedical Research Institute of Córdoba (IMIBIC)**, the **Research and Innovation Institute in Biomedical Sciences of Cádiz (INIBICA)**; and the foundations that manage research funds provided by the Public Health System such as the **Andalusian Public Foundation Progress and Health (FPS)**.

Concerning investment, it should be noted that internal expenditure on RDI biotech activities in Andalusia was €181,3 million, a slight decrease with respect to 2015 (-1,5%), when was higher than €184 million, the highest one for over the last 9 years.

**Chart 2. Internal expenditure evolution on RDI Biotech activities in Andalusia (€ thousands)**

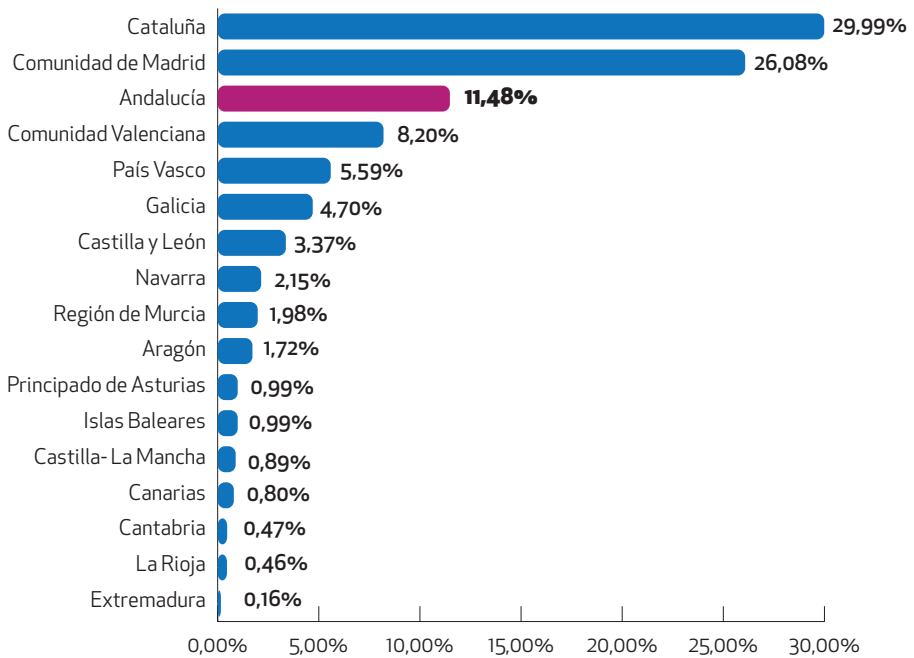


Source: Andalusian Knowledge Agency (AAC).

## Andalusian Catalogue of Biotech Profiles

With respect to total national expenditure, Andalusia holds the third position since 2009, with 11,48%. Additionally, the total expenditure on RDI in Andalusia in 2016 was allocated to biotech activities

**Chart 3. Percentage of total internal expenditure on RDI biotech activities per AA.CC, with respect to total national expenditure**

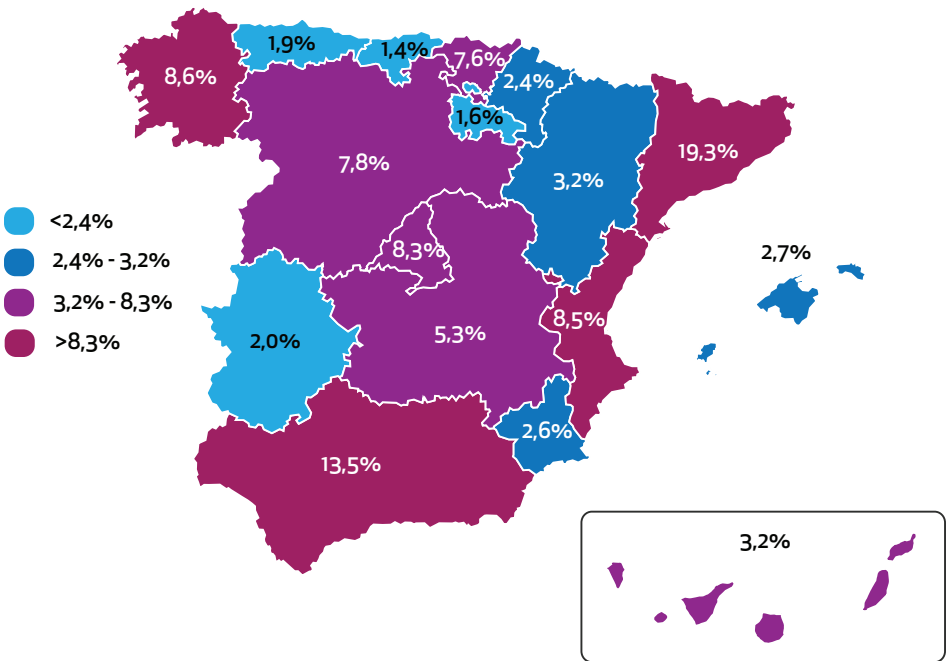


Source: Andalusian Knowledge Agency (AAC).



Definitely these sources have contributed to the fact that Andalusia is currently the second autonomous community in Spain with a higher percentage of biotech enterprises, with 13,5%, only surpassed by Cataluña (19,3%), followed by Galicia (8,6%), according to the last report by Spanish Bioindustry Association (ASEBIO).

**Chart 4. Biotech sector by geographic distribution (2016)**



Source: Spanish Bioindustry Association (ASEBIO), Spanish Statistical Office (INE).

**Chart 5. Percentage of enterprises with a main biotech activity per AA.CC. (2016)**

	Number of companys	% / Total	Average Turnover. Mill. €	% / Facturación Billed	Vab % Regional Total
Andalucía	104	16,0%	4,3	5,1%	0,08%
Aragón	17	2,6%	22,1	4,3%	0,23%
Asturias	16	2,5%	0,5	0,1%	0,02%
Baleares	10	1,5%	0,4	0,0%	0,00%
Canarias	7	1,1%	0,4	0,0%	0,00%
Cantabria	5	0,8%	21,3	1,2%	0,38%
C. León	23	3,5%	5,6	1,5%	0,11%
C. La Mancha	5	0,8%	4,7	0,3%	0,01%
Cataluña	152	23,3%	24,4	42,2%	0,43%
C. Valenciana	65	10,0%	3,4	2,5%	0,07%
Extremadura	2	0,3%	0,0	0,0%	0,00%
Galicia	31	4,8%	8,1	2,9%	0,09%
Madrid	122	18,7%	27,0	37,5%	0,34%
Murcia	14	2,2%	1,3	0,2%	0,04%
Navarra	16	2,5%	3,4	0,6%	0,17%
País Vasco	57	8,8%	2,4	1,5%	0,09%
La Rioja	5	0,8%	0,6	0,0%	0,02%
<b>GRAND TOTAL</b>	<b>651</b>	<b>100%</b>	<b>13,5</b>	<b>100%</b>	<b>0,20%</b>

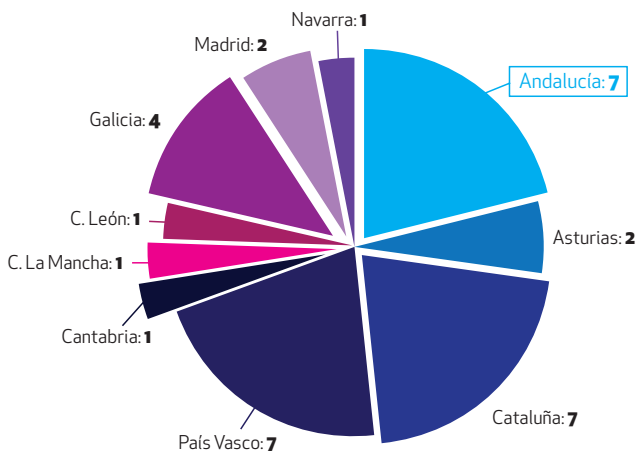
Source: Spanish Bioindustry Association (ASEBIO).



Concerning the enterprises devoted mainly to biotechnology, Andalusia holds the third position (16%), the first Cataluña (23,3%) and second Madrid (19,7%).

Finally, the Andalusian community is, together with Cataluña and Basque country, the region where the majority of biotech enterprises started their activity in 2017, with 7 new more enterprises registered from a total of 33.

**Chart 6. Biotech enterprises that started their activity in 2017**



Source: Spanish Bioindustry Association (ASEBIO).












### 3. Andalusian Catalogue of Biotech Profiles

The icons included in each profile correspond to the following fields:

#### REFERENCE

-  Title
-  Summary
-  Advantages and Innovations
-  IPR status
-  Stage of Development

### 3.1. List of Biotech Profiles

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## 3.2. Description of Biotech Profiles

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**ALMERÍA**

## OTBP001



Processing of brewery wastes with microalgae for producing valuable compounds



An Almería Research center has developed new strategies to generate valuable bioproducts by integrating the treatment of brewery wastes with the production of microalgae biomass and derivate products. They are looking for Commercial agreement with technical assistance with a Company



This integration allows transforming the wastes from breweries into valuable biomass, thus not only reducing the environmental impact of breweries activities but also recovering nutrients contained on these wastes, and producing valuable compounds



Exclusive rights



Available for demonstration

## OTBP008



Recovery of wastewater through microalgae-bacteria consortia



An Almería Research center has developed an innovative and sustainable wastewater treatment processes, using consortiums of microalgae and bacteria, that transform the contaminants contained in these waters (C, N, P, etc.) into products of interest (biofertilizers, biogas), obtaining regenerated water suitable for reuse. They are looking for Commercial agreement with technical assistance with a Company



It is not proposed to give a unique solution to the problem but the development of a catalog of tools to address the implementation of this type of process with greater efficiency and security



Exclusive rights



Available for demonstration

## OTBP009



Valorization of agroindustrial effluents through production and integrated use of microalgae to obtain bioproducts



An Almería Research center has developed an innovative process to recycle and valorise the nutrients of agri-food wastewater economically and sustainably, by obtaining bioproducts from algal biomass, making an integral use of them. They are looking for Manufacturing agreement with a Company



Evaluate viability through life cycle analysis.



Exclusive rights



Available for demonstration

### OTBP010



Development of a biological upgrading technology for the production of biomethane in agroindustrial environments



An Almería Research center has developed an innovative technology for the purification of agro-industrial biogas through biological processes to obtain biomethane suitable for injection in gas networks or use as a biofuel in vehicles. They are looking for Manufacturing agreement with a Company



Develop a technology for the purification of agro-industrial biogas through biological processes to obtain biomethane suitable for injection in gas networks or use as a biofuel in vehicles



Exclusive rights



Available for demonstration

### OTBP013



Double serum bag



An Almería Technology transfer organisation has developed an double serum bag to perform both dilution of a drug such as cleaning intravenous infusion System. They are looking for License agreement with a Company



Simplify the process of drug administration. Minimize the volume of serum is administered to the patient during the cleaning operation of the infusion system. Offers a faithful warranty as to whether there has been or cleaning infusion system



Patent(s) granted



Available for demonstration

### OTBP017



Bacterial flora plate sampling from hand



An Almería Technology transfer organisation has developed an innovative plate with special designed for sampling the bacterial flora in the hands of a healthcare provider in order to improve the performance of traditional method. They are looking for License agreement with a Company



Accurate method for the detection of bacterial flora on health professionals hands that are most representative for a potential infections



Patent(s) applied but not yet granted



Concept stage

## OTBP023



Refractores predictive model of temporal lobe epilepsy



An Almería Technology transfer organisation has developed an innovative predictive model that identifies certain clinical variables and derivatives associated additional tests in cases of refractory temporal lobe epilepsy (TLE), allowing early use of non-drug alternatives for treatment. They are looking for License agreement with a Company



Knowledge and identification in each patient's individual clinical or paraclinical factors associated with the development of refractoriness to medical treatments could support early surgical treatment decision, and thus avoid loss of quality of life secondary to the evolution of the disease and the use of treatments with adverse effects and systemic cognitive sphere and mortality related to the recurrence of crisis



Patent(s) granted



Available for demonstration

## OTBP027



Model to predict hospital mortality of ischemic non lysate ictus



An Almería Technology transfer organisation has developed an innovative predictive model allows to identify patients with higher risk of dying during his hospital admission after suffering an ischemic stroke. In this way, this model could ameliorate, optimize and adapt clinical actions to these type of patient. They are looking for License agreement with a Company



Helps in decision making about the therapy of patients with a high risk score. It facilitates the integration of high risk patients in suitable healthcare networks. Essential element to optimize cost-efficiency of resources devoted to the care of this kind of patients. Sensitivity of model is equal to 90%



Patent(s) granted



Available for demonstration

## OTBP037



Evaluation of the liver involvement degree in patients infected with hepatitis B virus with normal transaminases



An Almería Technology transfer organisation has developed an innovative method of characterization and evaluation of the liver fibrosis degree in patients with chronic infection with Hepatitis B Virus and normal transaminases. They are looking for License agreement with a Company



Non invasive method in patients with chronic infection by Hepatitis B virus with normal transaminases. Classify patients according the liver injury and the evaluation of their progression



Patent(s) granted



Available for demonstration

## OTBP040



Proloaded injectable devise for the treatment of cerebral edema



An Almería Technology transfer organisation has developed an innovative pharmaceutical composition with high stability under extreme environmental conditions typical of a high altitude, for the treatment of cerebral edema in acute mountain sickness. Composition is presented in an injectable device preloaded whose form of administration may be intramuscular, intravenous or subcutaneous injection and can be used therefore as an emergency treatment. They are looking for License agreement with a Company



It reduces the absorption time at the systemic level and accelerates the therapeutic effect. It has greater ease of administration intramuscularly in a single device combining all necessary for the immediate management of acute disease states active substances. It has high stability under extreme environmental conditions of high altitude for the treatment of cerebral edema in acute mountain sickness because the substances are structurally stable to extreme weather conditions for at least 28 days. It allows faster administration and improvement in the treatment of acute cerebral edema mountain allowing the survival of these athletes



Patent(s) applied but not yet granted



Available for demonstration

## OTBP044



Predictive model of anemia in patients treated with ribavirin and direct action antiviral



An Almería Technology transfer organisation has developed an innovative model that predicts patients at higher risk of anemia in response to the treatment of Hepatitis C with ribavirin, before and during treatment. They are looking for License agreement with a Company



Improves safety in the use of ribavirin in the context of the new direct-acting antivirals by predicting those patients who are at higher risk of anemia (main side effect of ribavirin). Allows to identify patients before treatment, who would be candidates for other treatment options or perform a readjustment of treatment once it has begun



Patent(s) applied but not yet granted



Available for demonstration



## OTBP182



Combined system of heating and carbon enrichment from biomass



An Almería Research group has developed an innovative technology capable to recover CO<sub>2</sub> contained in flue gases, from a boiler used to heat greenhouses, to be latter used in CO<sub>2</sub> enrichment to increase the photosynthesis rate and the overall production of the crops during daylight period. The system is based on CO<sub>2</sub> capture by adsorption using adequate materials and conditions, it being a reversible process thus CO<sub>2</sub> being removed from the adsorption material to be used. They are looking for License agreement with a Company



The major advantage of the system is his simplicity, thus it being a robust and cheap method for the recovery of CO<sub>2</sub> from flue gases, that latter can be used. The proposed technology is especially useful as alternative for conventional processes burning fuel during light period to produce CO<sub>2</sub> that is injected into the greenhouse, large volumes of water being heated and stored for heating during the night. The proposed technology allows also to reduce the power consumption of actual processes used, also removing toxic components as NO<sub>x</sub> and SO<sub>x</sub> from flue gases.



Gratend patent or patent application essential



Already on the market

## OTBP183



New strain of Paecilomyces Variotii, Compositions and Applications thereof



An Almería Research group has developed a new strain of Paecilomyces Variotii, given the properties of this new strain, its use to enhance the growth of plants, such as horticultural crops, is contemplated in the present invention. It also refers to a composition comprising said strain, with the ability to promote the development of plants in soils infested by pathogens or stress conditions. Therefore, its use as a biofertilizer for plants is described. They are looking for License agreement with a Company



This invention enhances the growth and / or production of plants, for example horticultural crops, ornamental plants and even forestry



Patent(s) applied but not yet granted



Field Tested / evaluated

OTBP184



System of elimination of heavy metals in waters through microalgae



An Almería Research group has developed an innovative method of removing heavy metals contained in contaminated water, through the use of live microalgae cultures and a sequence of stages suitably designed for the optimal functioning of the system. It is a robust and scalable process, which can be carried out in different locations and environmental conditions since it does not depend on a specific microalgae type, but is adaptable to any microalgae species. In addition, it is a competitive process in cost, being its only difficulty the large size of the equipment necessary due to the high flow rates of contaminated water to be treated. They are looking for License agreement with a Company



The production of microalgae in continuous mode coupled to a secondary reactor for its use as a biological agent for the removal of metals



Patent(s) applied but not yet granted



Available for demonstration



# Almería

The image features a dark blue background with a grid of small white dots. Overlaid on this are several complex molecular structures composed of white and blue spheres connected by lines. A bright light source on the left creates a gradient from red to blue. The word 'CÁDIZ' is centered in a large, white, sans-serif font.

CÁDIZ

## OTBP181



A new family of endogenous neuropeptides with utility to control puberty, reproduction, food intake and growth in fish



A Cádiz Research center has developed natural neuropeptides capable of inhibiting the synthesis and/or secretion of neurohormones, gonadotropins and sex steroids stimulating reproduction in sea bass. This neuropeptide also affects the expression of genes related to food intake and growth. The peptide and its antagonists can be used to modulate sex ratios, puberty, reproduction, food intake and growth in this species and other related perciform species of interest for aquaculture. They are looking for licence agreement with Industrial partners. They are looking for License agreement with a Company



This invention has permitted us to increase our knowledge about the mechanisms controlling and inhibiting reproduction in the European sea bass. The family of neuropeptides developed can be useful to modulate the sex ratio in this species, that is biased to males in the aquaculture practice. They can also be useful to control the precocious puberty in male sea bass. Considering that precocious gonadal development is associated to lower fish growth and decreased quality of fish filets, the possibility to suppress or delay the puberty would permit a higher somatic growth of animals, with benefits for the aquaculture production. Moreover, this development opens the possibility to use cDNA, specific antibodies developed and neuropeptide antagonists to block the inhibitory effects of endogenous neuropeptides, that can be useful to promote gonadal development, maturation and spawning, alone or in combination with gonadotropin-releasing hormone analogues. In addition, the reported effects on orexigenic and anorexigenic peptides suggest their utility to promote food intake. Therefore, the application of this invention could permit to minimise real problems encountered in the sea bass aquaculture, affecting sex ratios, puberty, growth and reproduction. Finally, it is expected that the tools developed could be applied to other related percomorph species such as the seabream, amberjack, meagre or tuna. At present, we are developing nanoencapsulation systems to provide this neuropeptide in the meal



Gratend patent or patent application essential



Concept stage

The image features a dark blue background with a grid of small white dots. Overlaid on this are several molecular structures composed of white and blue spheres connected by lines. A bright light source on the left creates a red-to-white gradient. The word 'CÓRDOBA' is written in large, white, sans-serif capital letters in the center.

# CÓRDOBA

## OTBP007



National Rural Network. Use of agricultural by-products in animal feed to improve the competitiveness of the agricultural sector



A Córdoba Research center has developed an innovative experience. Bases for the use of by-products and industrial waste in animal feed. They are looking for Research cooperation agreement with a Research group



Innovative experience. Bases for the use of by-products and industrial waste in animal feed



Exclusive rights



Available for demonstration

## OTBP132



GOAT (Ghrelin-O-aciltransferase), a new biomarker for prostate cancer screening



A Research Group from the Public Health System of Andalusia and the University of Cordoba have discovered biomarkers for the diagnosis of prostate cancer. Presently, several biomarkers are used in clinical practice for the diagnosis of prostate cancer from non-invasive methods. Specifically, the most widely used is the PSA (prostate specific antigen), which has a sensitivity between 20 and 90 % depending on trim level and tumour grade. In particular, it is to provide a diagnostic tool that serves as a clinically effective use of alternative PSA traditionally used and with a not very high cost. Researchers have found that by measuring expression levels of the GOAT (ghrelin -O -acyl transferase), can be used as a useful diagnostic tool in clinical practice, given its high specificity and sensitivity (66 % and 81 % respectively). They are looking for a partner interested in a license and/or a collaboration agreement to further develop and exploit this innovative technology



The studies carried out indicate that Ghrelin-O-acyl-transferase enzyme (GOAT) levels in blood and/or urine could represent a novel no-invasive biomarker for the diagnosis and/or prognosis of prostate cancer, presenting much higher sensitivity than PSA and a much lower cost than other biomarkers available in the market

The use of biomarkers studied has the following advantages over the currently used methods for the diagnosis of prostate cancer:

- Minimally invasive method
- Good specificity and sensitivity
- Moderate cost

The technology is protected by International Patent Application (PCT and National Phases)

OTBP133



Bone fixation device for decompressive craniectomy



Andalusian Health System (SAS) has developed a device for decompressive craniectomy (idiopathic intracranial hypertension). Offers an alternative to the procedure of removing a portion of bone surface and storing it in a tissue bank or patient's own abdominal subcutaneous level. The device allows the patient's own bone to be kept suspended and sufficiently separated from the brain (under the skin) without the need for new interventions. They are looking for licence agreement with Industrial partners



Decompressive craniectomy is the surgical technique used to reduce the idiopathic intracranial hypertension (IIH) and avoid secondary injuries. This technique consists of removing at least 12 cm<sup>2</sup> portion of bone surface; avoiding permanent brain damage and the potential death of the patient. Currently, the removed bone is stored in a tissue bank otherwise it is introduced at the patient's own abdominal subcutaneous level (risk of spontaneous reabsorption) and even discarded (worst option). Once the "inflammatory" condition has been overcome, the patient must be submitted to a second surgical intervention for bone repositioning, not absent of possible new complications

This innovation has the advantage of allowing patient's own bone to be kept suspended and sufficiently separated from the brain (under the skin), without the need for new interventions and saving costs, both for the patient in particular and for the health system in general, providing progress in the modification of protocols and therapeutic management of these patients. Approximately 1,200 craniectomies are carried out annually in Spain, 13,000 in Europe and 8,300 in the USA. The total cost of the procedure is around €45,000, with the proposed innovation could be reduced to €15,000 (66% reduction). At the same time, the number of necessary interventions would be limited to one, which would increase the patient's and family's well-being and limit the stress caused by interventions

OTBP134



SENTINELPEN : marker pen for lymphography



Andalusian Health System (SAS) has developed a pen or marker integrated to mark the sentinel lymph node in the skin through the test called lymphography. The purpose of marking the skin is to identify the sentinel node and then perform surgery. They are looking for licence agreement with Industrial partners.



The doctor currently identifies the node that emits radiation (visible on the display of the lymphography device) and with a radioactive pointer, either a cobalt 57 pencil or a syringe with a cotton syringe impregnated with radioactive material, locates the node in the skin and with the another hand marks the area of your location. The main issue is that the doctor has to be in a very uncomfortable position for the marking and when outlining with the pen or marker (held with the other hand) he loses a high degree of accuracy.

The system proposed as a solution to the problem would consist of a marker or pen, but with a fungible tip where a cotton impregnated with a radioactive substance would be located. That tip is designed in a way that the radioactive substance never enters in contact with the non-expendable part of the pen (holder and ink). This pen allows an easier and more precise marking of the sentinel node



## OTBP135



Retinoic acid derived component for the treatment of cholestasis



A Research Group from the Public Health System of Andalusia has discovered the application of a component derived from the retinoic acid, which can be used for the cholestasis treatment. The retinoic acid derived component can be used for the prevention and treatment of cholestatic liver disease. They are looking for a licence agreement with industrial partners or a collaboration agreement to further develop and exploit this innovative technology



Cholestatic liver disease represents disorders with different epidemiology, pathophysiology, clinical course and prognosis, characterized by a defect in the formation of bile acids and / or their transport from the liver to the intestine

In any case, the accumulation of toxic bile acids in the serum and liver of patients with cholestasis can lead to fibrosis, cirrhosis and chronic liver failure. Therefore, the consequences of cholestasis are very serious and it will finally progress toward a liver transplantation

The use of this technology improves current solutions for the treatment of cholestatic liver diseases providing the following main advantages:

- It is well tolerated
- Reduces cell death
- Improves activity and reduces side effects derived from toxicity

The technology is protected by International Patent Application (PCT and National Phases)

## OTBP136



ESCATUBE - Extendable intubation cannula



Andalusian Health System (SAS) has developed an innovative intubation cannula (guedel type). Usually intubation cannulas are provided in different sizes for different morphologies of patients. This innovation allows the quick adaptation of a single cannula to different sizes in order to intubate a patient. Simplifies the amount of cannula sizes needed in a health system. They are looking for licence agreement with Industrial partners



Health Systems need to be prepared to entubate different patients and for this they use different cannula sizes. These dimensions must be estimated from a set of available sizes and stock must be available for all those sizes. Escatube stakes on a one-size-fits-all model that allow adaptation to every patient and simplifies stockage

## OTBP137



A method and kit for predicting and forecasting response to antiangiogenic therapy



A Research Group from the Public Health System of Andalusia has developed a prognosis kit based on measurement of the level expression of two proteins to predict a thrombotic event associated with treatment with MSCs in patients with inflammatory diseases. The researchers have conducted a clinical study to evaluate the safety and feasibility of intra-arterial administration of autologous adipose derived mesenchymal stem cells in 36 diabetic patients with critical limb ischemia (CLI). They are looking for Collaboration agreement Licence agreement with a industrial partner



The authors of the present invention have identified a specific mutation that allows them to predict and/or forecast the response to antiangiogenic therapy of individuals with colorectal cancer. Thus, it could be used to customize treatments and selected for each patient the more effective and safe treatment

The advantages of this new technology are:

- The method allows the prognosis and /or monitoring of treatment response
- Use of the kit allows a more accurate selection of the most appropriate treatment for each patient
- Get improved the survival rate of long-term patient

This technology is protected by International Patent Application (PCT and National Phases)

## OTBP146



Detection of pathogens (ELFA - VIDAS)



A Córdoba (Spain) University has developed an innovative Rapid immunological system for Food Microbiology. Detection of the main food pathogens. They are looking for Technical & Research co-operation with a Food companies



Detection of the main food pathogens



Available for clients

## OTBP147



Development of biologic reactors



A Córdoba (Spain) University has development, monitoring and optimization of different fermentation bioprocesses. Wide experience in the optimization and elaboration of fermented products such as wine, vinegar and fermented gluconic substances, from different raw materials (especially fruits). They are looking for Technical & Research co-operation with a Companies of several areas ranging from food-processing industries to pharmaceutical sector



Wide experience in the optimization and elaboration of fermented products such as wine, vinegar and fermented gluconic substances, from different raw materials (especially fruits)



Still under research

## OTBP148



Expression of genes related to mineral nutrition of plants



A Córdoba (Spain) University has experience in analysing, at the molecular level, physiological responses of plants related to the adquisition of mineral nutrients. Knowledge in deep of the responses of plants upon application of either excess or deficient mineral nutrients. They are looking for Technical & Research co-operation with a Fertilizer companies



Knowledge in deep of the responses of plants upon application of either excess or deficient mineral nutrients



Available for clients

### OTBP149



Application of predictive microbiology models for shelf-life extension



A Córdoba (Spain) University has developed an innovative Scientific-technical advice on models implementation that estimate behaviour of spoilage microorganisms for shelf life extension. Cost-saving, prolong the supply chain of perishable products, scientific support against health authorities. They are looking for Technical & Research co-operation with a Agrifood companies



Cost-saving, prolong the supply chain of perishable products, scientific support against health authorities.



Available for clients

### OTBP150



Development of normalized reports for the compliance of the criteria from the regulation No. 1441/2007 for Listeria monocytogenes



A Córdoba (Spain) University has developed an innovative Scientific-technical reports for verifying the compliance of RTE foods of the absence and 100 cfu/g criteria established in the Regulation No. 1441/2007. Exportation to third countries, cost-saving, food chain optimization. They are looking for Technical & Research co-operation with a Agrifood companies



Exportation to third countries, cost-saving, food chain optimization



Available for clients

### OTBP151



Microbiological, physico-chemical and sensorial studies for optimizing food formulations in novel products



A Córdoba (Spain) University has developed an innovative Sample analyses over time aiming at optimizing formulations and increasing quality and safety of the final product before launching to the market. Increase of food quality, cost-saving, technical assistance. They are looking for Technical & Research co-operation with a Agrifood companies



Increase of food quality, cost-saving, technical assistance



Available for clients

## OTBP152



Pre-clinical assays



A Córdoba (Spain) University has developed an innovative Analysis of the action of putative drugs or nanomaterials on different cell types. Development of new drugs, characterization of nanomaterials in biomedicine. They are looking for Technical & Research co-operation with a Pharmaceutical industries and nanotechnology development companies



Development of new drugs, characterization of nanomaterials in biomedicine



Available for clients

## OTBP153



Microbiological and physico-chemical analysis of water



A Córdoba (Spain) University is expert in the analysis of different water samples from diverse origin. Clinical, food technology. They are looking for Technical & Research co-operation with a Several potential clients interested in water contamination and or composition



Clinical, food technology...



Available for clients

## OTBP154



Cation content in solid and liquid samples



A Córdoba (Spain) University is expert in the determination and analysis of the cation content of samples from diverse origin. Multiple: analysis of water, soil, biological material. They are looking for Technical & Research co-operation with a Diverse: agriculture, water industry..



Multiple: analysis of water, soil, biological material...



Available for clients

OTBP155



Ultrastructural analysis of biological samples



A Córdoba (Spain) University has developed an innovative process and analysis of biological samples for transmission electron microscopy. Study of ultrastructural alterations in cells due to several treatments, dietary interventions, or changes in gene expression, among others. The offer is not limited to the mere use of the technique, but also to the specialized assessment of the results. Use of additional techniques for obtaining quantitative parameters from the micrographs is also feasible. They are looking for Technical & Research co-operation with a Research institutions, Technology-based companies



Study of ultrastructural alterations in cells due to several treatments, dietary interventions, or changes in gene expression, among others. The offer is not limited to the mere use of the technique, but also to the specialized assessment of the results. Use of additional techniques for obtaining quantitative parameters from the micrographs is also feasible



Available for clients

OTBP156



Analysis of ubiquinone (coenzyme Q) levels in biological samples



A Córdoba (Spain) University is expert in extraction of the lipid fraction from biological samples and estimation of ubiquinone (coenzyme Q) levels by HPLC. Ubiquinone levels are altered during the course of a number of genetic and degenerative diseases and during aging as well. The maintenance of adequate ubiquinone levels is crucial for the proper generation of energy in cells and for the maintenance of antioxidant defense systems. Their offer allows for the evaluation of possible alterations in ubiquinone levels as a molecular basis for these alterations. They are looking for Technical & Research co-operation with a Research institutions, Technology-based companies, Hospitals, Anti-aging clinics



Ubiquinone levels are altered during the course of a number of genetic and degenerative diseases and during aging as well. The maintenance of adequate ubiquinone levels is crucial for the proper generation of energy in cells and for the maintenance of antioxidant defense systems. Our offer allows for the evaluation of possible alterations in ubiquinone levels as a molecular basis for these alterations.



Prototype / pilot plant scale

## OTBP157



Evaluation of new compounds affecting cell growth and death



A Córdoba (Spain) University is expert in analysis of the effects of new substances on the proliferative capacity of the cells and on apoptotic and necrotic cell death in in vitro cellular systems. Evaluation of possible effects on growth stimulation or the potentiation of cell death in cultures of normal and tumor cells. They are looking for Technical & Research co-operation with a Research Institutions, Technology-based companies, Pharmaceutical laboratories



Evaluation of possible effects on growth stimulation or the potentiation of cell death in cultures of normal and tumor cells



Prototype / pilot plant scale

## OTBP158



Quantification of calciotropic hormones



A Córdoba (Spain) University is expert in measurements of parathyroid hormone (PTH), vitamin D metabolites (calcitriol and calcidiol), fibroblast growth factor-23 (FGF-23) and others parameters related to mineral metabolism. Diagnosis of pathological conditions associated with disturbances of mineral metabolism. They are looking for Technical & Research co-operation with a I+D departments of pharmaceutical companies and other related to biomedicine



Diagnosis of pathological conditions associated with disturbances of mineral metabolism



Available for clients

## OTBP159



Quantification of the main parameters involved in energy metabolism



A Córdoba (Spain) University is expert in measurements of adiponectin, insulin, leptin, fibroblast growth factor-21 (FGF-21) and others parameters related to energy metabolism. Diagnosis of pathological conditions associated with disturbances of energy metabolism (obesity and metabolic syndrome). They are looking for Technical & Research co-operation with a I+D departments of pharmaceutical companies and other related to biomedicine



Diagnosis of pathological conditions associated with disturbances of energy metabolism (obesity and metabolic syndrome)



Available for clients

## OTBP160



Collection, evaluation, cryopreservation and storage of gametes and embryos of the bovine species



A Córdoba (Spain) University is expert in semen collection by electroejaculation and / or artificial vagina, oocytes by OPU technique (ovum pick-up) and bovine embryos. Samples are processed in the Laboratory / Authorized Center of the University of Cordoba for evaluation and cryopreservation by different procedures (cooling, slow freezing, vitrification ...). The Center also offers the option to store gametes or embryos. Diagnosis of subfertile stallions, certification of suitable stallions for breeding, therapeutic treatment of infertile cows by embryo transfer, sperm storage and embryos of endangered species, commercialization of genetic material from highly selected animals. They are looking for Technical & Research co-operation with a Individual ranchers, breeders associations of selected cattle, breeding associations of endangered breeds, agro-livestock cooperatives, research groups



Diagnosis of subfertile stallions, certification of suitable stallions for breeding, therapeutic treatment of infertile cows by embryo transfer, sperm storage and embryos of endangered species, commercialization of genetic material from highly selected animals



Available for clients



## OTBP161



Embryo transfer and cryopreservation (freezing and vitrification) of equine embryos



A Córdoba (Spain) University is expert in obtain embryos of selected donor mares and transfer them to recipient mares or cryopreservation of these embryos by vitrification or freezing. Increase of the genetic potential of livestock farming, biodiversity conservation. They are looking for Technical & Research co-operation with a Individual ranchers, breeders associations of selected cattle, breeding associations of endangered breeds, research groups



Increase of the genetic potential of livestock farming, biodiversity conservation



Available for clients

## OTBP162



Coordinated application of Transcriptomics, Proteomics and Metabolomics in free-living animals



Research groups of Córdoba are working to apply new Omics approaches for the evaluation of the Environmental Quality of Natural Ecosystems, using as bioindicators free-living animals, including the Algerian mouse (*Mus spretus*) for terrestrial ecosystems, the red crayfish (*Procambarus clarkii*) for streams-marshes, and one bivalve (*Scrobicularia plana*) in estuarine ecosystems. The study is focused in Doñana National Park. Their study combines a battery of well-established biochemical biomarkers, with the discovery of new biomarkers by using the most updated Transcriptomics methodologies. This interdisciplinary approach is highly successful, as indicated by a number of important publications in top quality international Journals. They are looking for Technical & Research co-operation with a International (i.e., USA, EU), National or Regional Environmental Protection Agencies, Regional Consortia of potentially contaminating Industries, etc



Since our approaches proved to be highly sensitive for high-quality Natural ecosystems, they will be exceedingly sensitive for more polluted environments, such as those located around areas moderately or heavily polluted. We have developed Environmental Proteomics, based on MALDI-TOF peptide-mass fingerprint, Environmental Transcriptomics, based on microchips for the whole mouse genome, both based on the close homology between gene and protein sequences between the common laboratory mouse (*Mus musculus*) and the free-living species (*Mus spretus*). Subtractive suppression hybridization allowed to isolate genes differentially expressed in *Procambarus clarkii*, and Redox Proteomics has been developed in *P. clarkii* to assess pollutant-promoted oxidative stress. ITRAQ methodologies has recently allowed to identify and quantify hundreds of proteins differentially expressed in *M. spretus* in sites of DNP with different pollution levels. Environmental Metallomics approaches have been developed for *M. musculus*, *M. spretus* and *P. clarkii* species. Environmental Metabolomics approaches have proven extremely sensitive in *M. musculus* and *M. spretus*



Still under research

OTBP163



## Data Analysis and its Applications



A Córdoba (Spain) University is expert in analysis of data is a process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains. Development of predictive models, improvement of decision support systems based on the analysis of data, recommender systems. In each case, the type of information and the techniques applied are different. They are looking for Technical & Research co-operation with a Companies that generate a considerable volume of data and who are interested in extracting new useful knowledge from this information



Development of predictive models, improvement of decision support systems based on the analysis of data, recommender systems, ... In each case, the type of information and the techniques applied are different



Available for clients

OTBP164



Development of immunohistochemical techniques and evaluation of macroscopic and microscopic lesions



A Córdoba (Spain) University has developed an innovative Immunohistochemical detection of infectious agents and tissular components in tissues of domestic and free-ranging animals. Their laboratories have the necessary equipment and reagents for these services, except for the specific primary antibodies required for the purpose of study requested. Immunohistochemical diagnosis of infectious agents and study of pathogenic mechanisms associated with animal diseases. Detection of the effects of a treatment or study factor. They are looking for Technical & Research co-operation with a Laboratories, research groups interested in " in vivo" studies of differents animal pathologies, // Livestock companies, Cooperatives, Agri-food Industry and Pharmaceutical Industry



Immunohistochemical diagnosis of infectious agents and study of pathogenic mechanisms associated with animal diseases. Detection of the effects of a treatment or study factor



Available for clients

## OTBP165



Mathematical modeling in Biomedicine



A Córdoba (Spain) University has developed an innovative numerical solution of nonlinear differential systems arising in the biomedical field. Study of the evolution of a disease. Simulation of drug delivery. Designing optimal therapy. They are looking for Technical & Research co-operation with a Biomedical researchers



Study of the evolution of a disease. Simulation of drug delivery. Designing optimal therapy.



Still under research

## OTBP166



In vivo screening of antipsychotic drugs using *C. elegans* as an experimental model



A Córdoba (Spain) University is expert in *Caenorhabditis elegans*, that is a well-established model organism and is considered to be a powerful tool for the identification and characterization of neurobiological mechanisms. Based on these features they propose to carry out an in vivo screening in order to check precisely, efficiently and economically whether an experimental antipsychotic drug exerts its action on their putative receptors. In this assay they will use a collection of strains of *C. elegans* carrying mutations in one of the genes encoding these receptors. This methodology could allow pharmaceutical companies to verify precisely, efficiently and economically the action mechanism of experimental antipsychotic drugs. Additionally the results obtained in this study will be useful in order to determine the appropriate treatment with the maximum efficacy and minimal side effects, establishing a personalized medicine. They are looking for Technical & Research co-operation with a Pharmaceutical companies



This methodology could allow pharmaceutical companies to verify precisely, efficiently and economically the action mechanism of experimental antipsychotic drugs. Additionally the results obtained in this study will be useful in order to determine the appropriate treatment with the maximum efficacy and minimal side effects, establishing a personalized medicine



Still under research

## OTBP167



Production and characterization of monoclonal antibodies



A Córdoba (Spain) University has extensive experience in production of monoclonal antibodies against a variety of antigens and has the capacity to develop new antibodies to research groups and companies who demand it. Production of monoclonal antibodies consists of six stages and have a variety of academic, medical and commercial uses: 1. Diagnostic tools; 2. Protein purification MAb affinity columns are readily prepared by coupling Mabs; 3. Therapeutic tool in clinical medicine - Autoimmune disease; 4. Conjugated/labeled monoclonal antibodies - Conjugated monoclonal antibodies are coupled with drugs and toxins and radioactive atoms and act as a homing device, circulating in the body until it finds a cancer cells with a matching antigen. It delivers the toxic substance to site of body where it is needed the most. This minimizes damage to other parts of the body. They are looking for Technical & Research co-operation with a Research and diagnostic companies in the areas of Pharmacy, Medicine, Veterinary, environment, quality control and food safety, traceability



Immune responses are used to treat such autoimmune conditions. - They are used in the radioimmuno-detection and radioimmunotherapy of cancer, and can even target it only to the cell membranes of cancerous cells, because recognize cancer cell specific antigens - Monoclonal-mediated immunotherapy block growth factors released by tumor cells by blocking growth factor receptors, arresting the proliferation of tumor cells. 4. Conjugated/labeled monoclonal antibodies - Conjugated monoclonal antibodies are coupled with drugs and toxins and radioactive atoms and act as a homing device, circulating in the body until it finds a cancer cells with a matching antigen. It delivers the toxic substance to site of body where it is needed the most. This minimizes damage to other parts of the body



Available for clients

## OTBP168



Predicting response to antiangiogenic therapy in cancer



A Córdoba (Spain) University is expert in identifying biomarkers to predict response to antiangiogenic therapy in cancer patients. Direct application to the clinical management of patients with solid tumors who will receive antiangiogenic therapy. Currently there are no other reliable biomarkers available. They are looking for Technical & Research co-operation with a Public and private health systems



Direct application to the clinical management of patients with solid tumors who will receive antiangiogenic therapy. Currently there are no other reliable biomarkers available



Prototype / pilot plant scale

## OTBP169



Parentage testing (ISAG certified), traceability, breed and individual assignment, marker assisted selection, quantitative genetics, artificial insemination and reproduction biotechnology



A Córdoba (Spain) University is expert in animal breeding and genetics such as parentage testing and other type of molecular assay. They offer reproduction management for farmer and farmer association and design of breeding scheme. They are looking for Technical & Research co-operation



High work flow capacity, wide service portfolio and research and development capacity



Available for clients

## OTBP170



Hormonal analyses in preclinical models



A Córdoba (Spain) University offers services for hormonal determination of multiple hormones by radioimmunoassay (RIA) and Multiplex panels. RIA and Multiplex analyses provide high sensitive and reliable hormonal measurement in small volume of sample. In addition, Multiplex platform offers the possibility of measuring different hormones simultaneously in the same sample. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



RIA and Multiplex analyses provide high sensitive and reliable hormonal measurement in small volume of sample. In addition, Multiplex platform offers the possibility of measuring different hormones simultaneously in the same sample



Available for clients

## OTBP171



Expression analyses of genes and proteins



A Córdoba (Spain) University offers services for expression analyses of genes by quantitative PCR and in situ hybridization and proteins by immunohistochemistry and western blot. The service includes tissue preparation and processing for expression analysis and evaluation of protein phosphorylation. Gene and protein expression analyses provide high sensitive and accurate quantification of specific targets involved in a variety of genetic, oncologic, neurological or infectious diseases. \*For information about list of genes and proteins determinations, please contact with the service. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



Gene and protein expression analyses provide high sensitive and accurate quantification of specific targets involved in a variety of genetic, oncologic, neurological or infectious diseases. \*For information about list of genes and proteins determinations, please contact with the service



Available for clients

### OTBP172



Phenotype analysis of preclinical models



A Córdoba (Spain) University offers services for phenotyping of preclinical animal models paying special attention to metabolic and reproductive parameters for what we have an extensive experience. Phenotypic analysis of preclinical models provide state-of-the-art approaches for the study of human diseases using animal models, including cancer, obesity, infertility, Parkinson, among others. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



Phenotypic analysis of preclinical models provide state-of-the-art approaches for the study of human diseases using animal models, including cancer, obesity, infertility, Parkinson, among others



Available for clients

### OTBP173



Stereotactic techniques for intracerebral injection of drugs of pharmacological interest in preclinical models



A Córdoba (Spain) University offers services for stereotactic (nucleus specific) delivery of drugs in preclinical models, including rats and mice. Stereotactic delivery of drugs into the brain allows the evaluation of the effects of specific compounds on delimited brain nuclei avoiding interaction with other areas. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



Stereotactic delivery of drugs into the brain allows the evaluation of the effects of specific compounds on delimited brain nuclei avoiding interaction with other areas



Available for clients

### OTBP174



Pharmacological and hormonal tests of compound of interest in neuroendocrinology



A Córdoba (Spain) University offers services for pharmacological and hormonal testing of compounds using different routes of administration in vivo, followed by the analysis of selected parameters (hormones, metabolites, gene and protein expression, body weight, food intake, energy expenditure, among others). In vivo pharmacological and hormonal tests in animals are necessary to evaluate the viability and possible off-target effects of selected compounds before the design of treatments in humans. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



In vivo pharmacological and hormonal tests in animals are necessary to evaluate the viability and possible off-target effects of selected compounds before the design of treatments in humans



Available for clients

## OTBP175



Ex vivo monitoring of cellular immune response against cytomegalovirus (CMV) in transplant patients



A Córdoba (Spain) University offers assessment of CMV-specific CD8+ T cell response based on IFNgamma release assay after CD8+ T cell stimulation with CMV peptides. Main uses: Monitoring of CD8+ T cell response to CMV in both pretransplant and posttransplant patients. Advantages: Standardized and simple to perform. Innovations: It allow the individualization of CMV infection management after solid organ transplantation. They are looking for Technical & Research co-operation with a Hospitals, public and private clinics, pharmaceuticals, research groups



Main uses: Monitoring of CD8+ T cell response to CMV in both pretransplant and posttransplant patients. Advantages: Standardized and simple to perform. Innovations: It allow the individualization of CMV infection management after solid organ transplantation



Available for clients

## OTBP176



Evaluation of the chemopreventive potential of foods using leukaemia tumoral cells



A Córdoba (Spain) University is expert in in vitro assays in leukaemia cells using foods. Any solid or liquid food and its distinctive components can be assayed. One week fast test. Affordable. Foods can be tested as they either as consumed or lyophilized. They are looking for Technical & Research co-operation with a Agrifood companies



Any solid or liquid food and its distinctive components can be assayed. One week fast test. Affordable. Foods can be tested as they either as consumed or lyophilized



Available for clients

## OTBP177



Evaluation of the influence of food on the longevity and healthspan using the drosophila model



A Córdoba (Spain) University has developed an innovative lifespan assays using the food as it is consumed. 4-months trials. They are looking for Technical & Research co-operation with a Agrifood companies



4- months trials



Available for clients

## OTBP178



Evaluation of the food safety with respect to genetic damage



A Córdoba (Spain) University is expert in toxicity, antitoxicity, genotoxicity and antigenotoxicity assays. Evaluation of the ability for protecting DNA. Somatic mutation and recombination test and de comet assay. They are looking for Technical & Research co-operation with a Agrifood companies



Evaluation of the ability for protecting DNA. Somatic mutation and recombination test and the comet assay



Available for clients

## OTBP179



Risk assessment of the mycotoxins produce by entomopathogenic fungi applications



A Córdoba (Spain) University is expert in insecticide regulations, including bio-insecticides, require the human and environmental safety. The group is validating protocols for isolating selected metabolites from the most common entomopathogenic fungi used as insecticides, Beauveria and Metarhizium, from the culture growth, model crops, and insect pests to determine the residual amount of those metabolites remaining in the food chain. HPLC and Capillarity Electrophoresis (CE) techniques are able to detect the following metabolites from real samples. Those methods provide information for register process of mycoinsecticides. The commercialization of a new product requires assessing the production, the fate and behaviour of those metabolites in the environment. It is the first time to apply CE technique for the detection of metabolites secreted by entomopathogenic fungi. They are looking for Technical & Research co-operation with a Development companies of mycoinsecticides for specific evaluations awarded by rating agencies



Those methods provide information for register process of mycoinsecticides. The commercialization of a new product requires assessing the production, the fate and behaviour of those metabolites in the environment. It is the first time to apply CE technique for the detection of metabolites secreted by entomopathogenic fungi



Still under research



## OTBP180



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Mass production of entomopathogenic fungi for field experiments or applications

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A Córdoba (Spain) University is expert in the inundative use of entomopathogenic fungi (EF) the same manner as a chemical pesticide is the most common application methods against insect pest control. The application of the mycoinsecticide sometimes has to be repeated along the time since crop rotation or climate conditions create an unstable environment for the EF. Therefore the mass production of the EF is necessary for field applications. The working group is able to mass produce a high-quality product based on EF. The product offer by this research group is based on conidia and the production is performed on solid medium. The recently obtained product shows high conidial viability and concentration, and long persistence in the soil. They are looking for Technical & Research co-operation with a Development companies of mycoinsecticides. Research groups of institutional organizations and R&D department of companies

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The mass production of entomopathogenic fungi is mandatory for the commercialization of a mycoinsectide for field application. Besides the product can be use for field experiments during the research process before to launch the product on the market. Most of the companies able to produce high-quality product are located outside Spain

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Available for clients

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# GRANADA

## OTBP012



Container to protect the sterility of three-way stopcocks and tube



A Granada Technology transfer organisation has developed an innovative sealed container or reservoir to protect the sterility of medical and surgical instrumentation. This device offers protection to medical and surgical instruments from contamination by microbial agents. They are looking for License agreement with a Company



Maintains the sterility of instrumentation by avoiding exposure to either airborne contaminants or manual contact. Simple and easy to use



Patent(s) granted



Concept stage

## OTBP014



Tracheostomy tube exchanger



A Granada Technology transfer organisation has developed an innovative tracheostomy tube exchanger for avoiding possible infections and / or injuries that may occur during tracheostomy tube exchange. They are looking for License agreement with a Company



Minimize the complications that can arise during the change of the tube, reducing indirect health costs of such complications. Allows ventilate the patient in case a complication may occur. In addition, it facilitates the insertion of a new smaller tube, in case a narrowing of the tracheostoma occurs, reducing patient discomfort



Patent(s) granted



Available for demonstration

## OTBP015



Cell culture and enrichment medium for maintenance of cancer stem cells



A Granada Technology transfer organisation has developed an innovative conditioned medium serum which promotes the in vitro proliferation and conservation potential pluripotency which allows maintaining an undifferentiated state of cancer stem cells subpopulation at the same time does not allow the survival of differentiated cells. They are looking for License agreement with a Company



Serum-free conditioned medium does not require prior manipulation of cells, and can also be from a small town with no extra cost



Patent(s) granted



Available for demonstration

## OTBP016



Blood samples key



A Granada Technology transfer organisation has developed an innovative blood sample key that prevents the need to discard the first amount of blood extracted from a patient. They are looking for License agreement with a Company



Minimize the blood drawn from the patient, reducing the possibility of onset or worsening of anemia. It is not necessary to disconnect the syringe used for blood waste subsequently re-infused into the patient. Minimize the infectious risk



Patent(s) granted



Concept stage

## OTBP018



Disposable ear washing device



A Granada Technology transfer organisation has developed an innovative device formed by a conventional disposable syringe equipped with a cone of a longer length and smaller diameter compared to the cones of conventional syringes, optimizing the ear cleaning procedure. They are looking for License agreement with a Company



Disposable materials, which increases safety for the patient and eliminates the time necessary for cleaning and disinfection. It facilitates that health professionals procedure. Avoid damage the external auditory canal



Patent(s) applied but not yet granted



Available for demonstration

## OTBP019



Ex vivo animal model for endoscopy



A Granada Technology transfer organisation has developed an innovative device that offer a training system for therapeutic endoscopic techniques in humans with an ex vivo animal model. It is indicated for the learning of endoscopic submucosal dissection and endoscopic mucosal resection. They are looking for License agreement with a Company



An electrical contact with the necessary ground connection when using electrosurgical instruments, and a structure that allows to modify the geometric position of the organ. Allow the training of professionals, prior to the intervention in humans. It is comfortable, resistant and easy to apply



Patent(s) applied but not yet granted



Available for demonstration

## OTBPO20



A computer application designed specifically for cardiac secondary prevention and rehabilitation services



A Granada Technology transfer organisation has developed an innovative application that manages the three phases of cardiac secondary prevention and rehabilitation services and the flow of patient through each of them, providing scope for individual care plans. They are looking for License agreement with a Company



Improves waiting times and/or healthcare outcomes/delivery. It facilitates the sharing of information across the multidisciplinary team. It increase patient safety, in terms of both delivery of care and data management. It facilitates and integrates the delivery of care with clinical research. It is adaptable to other binary languages, such as Java, HTML, and others; the information is exportable to other applications, such as spreadsheets, word processors, PDF. It enables networking, facilitating simultaneous access to data from multiple stations and corresponding blocking functions during each access



Patent(s) granted



Available for demonstration

## OTBPO21



Etiological and sensitivity register for the treatment of urinary tract infections



A Granada Technology transfer organisation has developed an innovative electronic tool to know previous causes of urinary tract infections in real time in different clinical scenarios of care work, with their patterns of antibiotic sensitivity for predicting the usefulness of empirical treatments in each medium. They are looking for License agreement with a Company



Improve the treatment of patient with urinary tract infections. Increase the rational use of antibiotic, reducing costs and undesirable effect and basing antibiotic policy. Increase patient safety



Patent(s) granted



Available for demonstration

## OTBP022



Intelligent management system of waitlist



A Granada Technology transfer organisation has developed an innovative intelligent system of surgical priority of patients. This system is based on the timeout and clinical severity following the standards recommended by the Spanish Society of Cardiovascular Surgery and Cardiology. They are looking for License agreement with a Company



Intelligent classification for easy access in patients based on their cardiovascular pathology. Automatic dynamic function of the wait list, with varying color code and priority. Simplification of patient selection for daily surgical program, based on the timeout and clinical severity. Morbidity and mortality reduction associated with waiting lists. Exportable model to other medical-surgical areas. Transferable structure to various health areas



Patent(s) granted



Available for demonstration

## OTBP024



Risk map



A Granada Technology transfer organisation has developed an innovative manual for use of the software application to help Clinical Management Units (CMU) to manage risks to patient safety in health care. This manual is basically graphic and describes the possible access from the home screen to the various options available. They are looking for License agreement with a Company



Have a Risk Map for Areas (hospitalization, surgery and others of the CMU. Conduct an assessment of risks to estimate the level of risk (low, moderate, high and extreme). Manage Risk proposing control measures



Patent(s) granted



Available for demonstration

## OTBP025



Dial balance



A Granada Technology transfer organisation has developed an innovative application that aims to teach, educate, inspire and support the patient who is undergoing dialysis, in self-control of its moisture balance, a fundamental pillar in adherence to treatment, in addition to diet and medication. They are looking for License agreement with a Company



Allows the active and conscious participation of the patient in control of liquids, recording daily water balance and allowing quick and effective consultation of potassium content of foods



Patent(s) granted



Available for demonstration

## OTBP026



Tele-rehabilitation app to recuperate functional independency after suffering a hip fracture



A Granada Technology transfer organisation has developed an innovative specific app for patients who have suffered hip fracture to recuperate functional independency. The app includes a multidisciplinary rehabilitation protocol based on five training weekly sessions for the patient, recommendations for carers, a video conference system, questionnaires and a valid efficiency scale to evaluate the rehabilitation process. They are looking for License agreement with a Company



Allows that patients could receive rehabilitative treatment avoiding unnecessary journeys to hospital centers. A specific content was included for the advisement of carers. Video conference system accessible to resolve possible doubts about the rehabilitation process. Better monitoring for the patient in his own residence. Economic and time savings



Patent(s) granted



Available for demonstration



## OTBP029



Procedure for estimating in vivo dimensions of a surgical piece from its ex vivo dimensions



A Granada Technology transfer organisation has developed an innovative web application that allows to calculate in vivo measures of a surgical piece, surgical and histological margins from ex vivo histological measures that it is dependent on the function of the anatomical location. In addition, permit to specify the surgical defect on the skin surface as a result of the extirpation, using the dimensions of the in vivo surgery piece. They are looking for License agreement with a Company



Easy and practical method to calculate the measures of a surgical pieces, surgical and histological margins in vivo from the measures taken post fixing in formaldehyde, in order to resolve the disagreement between the professional specialists due to the appearance of a contraction effect common in the surgical piece. It facilitates the surgical reconstruction, for example, in aesthetic procedures, by knowing the measurements of the surgical defect on the skin after the extirpation. Avoid medical-legal concerns associated with the patient surgical reintervention, related to the surgical and histological margins that differ for the real ones



Patent(s) applied but not yet granted



Available for demonstration

## OTBP030



Biomarkers, method and kit for the early diagnostic of pancreatic ductal adenocarcinoma



A Granada Technology transfer organisation has developed an innovative method of obtaining useful data for the early diagnosis of pancreatic ductal adenocarcinoma and response to treatment. Early diagnosis is performed by analyzing 9 biomarkers. They are looking for License agreement with a Company



Early diagnosis of pancreatic ductal adenocarcinoma. Prediction of the individual treatment response



Patent(s) granted



Field Tested / evaluated

## OTBP031



Polymorphisms to predict or predicting the response to antiviral treatment



A Granada Technology transfer organisation has developed an innovative method of obtaining useful data to predict or forecast the response to treatment with pegylated interferon plus ribavirin in patients with chronic hepatitis C genotype 1. They are looking for License agreement with a Company



Effective method for determination the response to interferon treatment



Patent(s) granted



Field Tested / evaluated

## OTBP032



New biomarkers and technologies for circulation tumour cell identification and isolation



A Granada Technology transfer organisation has developed an innovative detection platform that should be accompanied by a specific Circulating Tumour Cells biomarkers that enhance their detection and molecular characterization. They are looking for License agreement with a Company



Improve the efficiency of the Circulating Tumour Cells (CTC) isolation process. New miRNA biomarkers. New group of 4 CTC's epithelial biomarkers. Mayor sensitivity in the detection



Patent(s) granted



Field Tested / evaluated

## OTBP033



Use of NFKB1 gene polymorphism for hearing of forecast meniere's disease



A Granada Technology transfer organisation has developed an innovative method by using polymorphisms or single nucleotide variants allow obtaining useful information for diagnosis, prognosis and classification of patients with sensorineural hearing loss, and especially those with Meniere's disease. They are looking for License agreement with a Company



Demonstrate the association of two allelic variants located in specific genomic coordinates in the NFKB1 gene that determine high risk for early hearing loss in Meniere's disease with unilateral sensorineural hearing loss. The identification of a more aggressive form of the disease may determine an alternative therapeutic approach that includes intratympanic drug therapy and surgery



Patent(s) granted



Field Tested / evaluated

## OTBP034



Circulating epithelial cells isolation in peripheral blood



A Granada Technology transfer organisation has developed an innovative method that use of liquid biopsy techniques to obtain epithelial cells, combined with immunological techniques for its detection, characterization and isolation, is useful for determining the patient's severity disease and for the early diagnosis of the disease. They are looking for License agreement with a Company



Non invasive technology, easily reproducible and specific technique. It also facilitates the personalized monitoring of each patient. Its main advantage is based on the early and specific detection of chronic obstructive pulmonary disease, a major cause of morbidity and the third leading cause of death worldwide. It also allows the early diagnosis of the development of a potential emphysema



Patent(s) applied but not yet granted



Field Tested / evaluated

## OTBP035



Use allelic variants on chromosome 6 for the diagnosis, prognosis and treatment of menieres's disease



A Granada Technology transfer organisation has developed an innovative method that includes the use of a group of polymorphisms or single nucleotide variations (SNPs), to obtain useful data for forecasting and classification of patients suffering from sensorineural hearing loss, and especially those with Meniere's disease with bilateral involvement. Kit device and applications. They are looking for License agreement with a Company



Method of obtaining useful data for forecasting Meniere's disease, and to assess the genetic risk of disease progression towards allowing unilateral bilateral optimize the monitoring, planning treatment and genetic counseling



Patent(s) granted



Field Tested /evaluated

## OTBP038



Drug transport colloidal system for use in therapy



A Granada Technology transfer organisation has developed an innovative colloidal transport system, which can transport prednisolone (or another corticosteroid or other drug) that is formulated by a method of simple, efficient and reproducible synthesis. The colloid is intended to apply for therapy for colorectal cancer, and diseases in which is indicated the use of corticoids, for example, chronic inflammatory diseases. They are looking for License agreement with a Company



Formulation is biocompatible, nontoxic and nonimmunogenic, and is composed of concentric phospholipid bilayers alternating with aqueous compartments



Patent(s) granted



Concept stage

## OTBP039



New composition for neurodegenerative disease treatment



A Granada Technology transfer organisation has developed an innovative composition that prevent, alleviate, ameliorate and treat diseases or disorders related to Parkinson's disease. They are looking for License agreement with a Company



Composition acts as a protective factor by preventing the spread of alfa synuclein in the intestine as a result of a modification in the bacterial flora when the patient is suffering an intestinal inflammation. It is possible to use this composition with others drugs as a combination therapy



Patent(s) granted



Concept stage

## OTBP041



Bioartificial membrane for use in tissue engineering



A Granada Technology transfer organisation has developed an innovative biomaterial and in vitro method to prepare a bioartificial tissue with rigidity and elasticity controlled, and the tissue or membrane properly. They are looking for License agreement with a Company



Improve the biomechanical properties of biomaterials, shows that is possible to regulate structural characteristics and to keep the biological characteristics of fibrin-agarose using compression and dehydration processes. To make a drug with that biomaterial or tissue will let improve, restore or replace, partially or totally, the functional activity of a diseased or damaged tissue or organ



Patent(s) applied but not yet granted



Available for demonstration

## OTBP042



Adipose-derived mesenchymal stromal cells tissue for treatment of graft versus host disease



A Granada Technology transfer organisation has developed an innovative therapy for the treatment, prevention or improvement of graft versus host disease with an immunosuppressive agent and mesenchymal stromal cells derived from adipose tissue kit. They are looking for License agreement with a Company



Improve and facilitates the processing and accesibility of the donor tissue. Greater cellular performance. Better genetic stability



Patent(s) granted



Concept stage

## OTBP045



Culture and enrichment method medium and maintenance of cancer stem cells (CSCs) using this medium



Researchers from the University of Granada, University of Jaen and the Andalusian Public Health System have developed a new free conditioned medium serum which promotes the in vitro proliferation and conservation potential pluripotency which allows maintaining an undifferentiated state of cancer stem cells (CSCs) subpopulation and at the same time does not allow the survival of differentiated cells. They are looking for License agreement with a Company



The technology includes a serum-free conditioned medium that does not require prior manipulation of cells, and can also be from a small town with no extra cost



Patent(s) applied but not yet granted



Available for demonstration

## OTBP046



Nanostructured material based on praziquantel for the treatment of parasitic diseases



The University of Granada and CSIC have developed a new nanostructured material comprising praziquantel improving the bioavailability of the drug for the treatment of parasitic diseases such as schistosomiasis. They are looking for License agreement with a Company



- Improvement of the bioavailability of praziquantel, and the material act as a natural protector of said drug in the event of possible photodecomposition by sunlight.
- Use of a common excipient for its therapeutic use.
- The industrial scale-up of the preparation process would be ecological when using natural materials.
- Use, and reuse, of solvents with low boiling point.
- Lower energy cost in the processes of separation of the solvent and drying of the solid.
- Topical administration, avoiding complex galenic formulations.



Patent(s) applied but not yet granted



Field Tested / evaluated

## OTBP047



Composition comprising  $\mu$ RNA for use as a medicament



The University of Granada and the Biology Centre of the Czech Academy of Sciences have developed a composition comprising one oligonucleotide derived from Ixodes ricinus tick saliva miRNAs. Such composition is useful in a method of treatment of a disorder, mainly cancer but others like inflammatory diseases, allergies, atopic dermatitis, lupus, asthma, chronic pain, circadian rhythm-related disorders, metabolic diseases, diabetes, glaucoma, hepatitis, cardiovascular diseases, Parkinson 's disease, neurological and neurodegenerative diseases and epilepsy. They are looking for License agreement with a Company



- The invention opens up a new paradigm for the treatment of mammalian diseases involving gene expression malfunctions, which includes administration to mammals of miRNAs naturally occurring in non-mammalian organisms, such as ticks

- The microRNAs present in the saliva of the tick have targets in genes involved in pathologies such as cancer, therefore, they could be used as a novel strategy of gene therapy



Patent(s) applied but not yet granted



Field Tested / evaluated

### OTBP048



Compounds for the treatment of diseases caused by the accumulation of oxalate



The University of Granada together with the University of La Laguna have developed an invention relates to the use of salicylic acid derivatives, for the treatment of diseases or pathologies related to an excess of oxalate such as hyperoxalurias, and as a complement to the treatment of patients with renal insufficiency (uraemia or hyperazoemia) receiving hemodialysis or dialysis peritoneal, in particular patients treated with ascorbic acid (vitamin C). They are looking for License agreement with a Company



- A 100% reduction of oxalate in cells at 10  $\mu$ M has been achieved
- No cytotoxicity or other adverse effects have been detected
- The synthesis of the compounds is simple and easily scalable without affecting the performance
- The cost of the treatment would present a very low cost compared to similar treatments using RNA
- The structure of the compounds includes a fragment of salicylic acid. Salicylic acid derivatives are already used in therapy



Patent(s) applied but not yet granted



Field Tested / evaluated

### OTBP049



Compounds for the treatment of diseases caused by parasites of the gender leishmania



Researchers of The University of Granada have developed an invention that provides a family of compounds effective against Leishmaniosis or diseases caused by parasites of the genus Leishmania, preferably caused by *L. infantum*, *L. major* or *L. tropica*. They are looking for License agreement with a Company



- The compounds present a low toxicity even at high doses of the compound
- The pharmaceutical composition are suitable for oral or topical administration



Patent(s) granted



Field Tested / evaluated



## OTBP050



Multifunctional nanoparticles for theragnosis



A Granada Technology transfer organisation has developed an invention which refers to functionalized nanoparticles with an imaging tracker and at least one bioactive molecule to be used in the theragnosis of cancer, since they are able to selectively detect the tumour cells. They are looking for License agreement with a Company



- The particles can be organic
- The nanoparticles can selectively detect the tumour cells
- Since they have attached an image tracker, it is possible to direct them to the target organ
- Can be used for either diagnosing cancer (specially breast cancer) and treating it



Patent(s) applied but not yet granted



Available for demonstration

## OTBP051



Use of a melatonin agonist for the treatment and prevention of obesity, diabetes and other related diseases



A Granada Technology transfer organisation has developed an invention which relates to a melatonin agonist for the treatment of diseases such as obesity and diabetes. Previous trials have shown their efficacy in the transformation of white adipose tissue into beige adipose tissue. They are looking for License agreement with a Company



- The dose used to produce the desired effect is much lower than that required with melatonin (order 1:100)
- Oral administration has been shown to be the most effective, increasing the bioavailability of this drug
- At this dose, it does not present any type of toxicity or adverse side effects. Its sedative effects are inferior to those produced by melatonin
- The drug is approved for other medical uses



Patent(s) applied but not yet granted



Field Tested /evaluated

OTBP052



Dual probes for flow cytometry and mass cytometry



A Granada Technology transfer organisation has developed an innovative probes based on nanoparticles, both fluorescent and functionalized with metals, which act as dual probes, and can be used for both flow cytometry (FACS -Fluorescent-Activated Cell Sorting) and mass cytometry (CyTOF -Cytometry by Time-Of-Flight-). Also, they can be used for bar coding of living cells or carrying out in vivo studies of different cell lineages through cell co-cultures as well as the activation of drug precursors through cytoplasmic catalysis of organometallic reactions inside living cells. They are looking for License agreement with a Company



- The nanoparticles can be used for both mass cytometry (CyTOF) and flow cytometry (FACS).
- It allows to carry out studies in living cells. The nanoparticles enter the cell without a previous permeabilization
- The nanoparticles are not toxic, and do not affect the proteome
- It is possible to carry out different cell lines co-cultures, multiple assays and subsequent barcoding
- It allows the activation of drug precursor through cytoplasmic catalysis of organometallic reactions inside living cells
- It is one of the first reagents for mass cytometry



Patent(s) applied but not yet granted



Available for demonstration

OTBP053



Use of melatonin for the treatment of tumours



A Granada Technology transfer organisation has developed an innovative treatment for tumours, specifically from head and neck, by administering melatonin directly in the tumour. The injected melatonin increases mitochondrial activity and thus, free radicals which produce the activation of cell death. Latests results show a full removal of melanoma and head neck tumors in mice assays. They are looking for License agreement with a Company



- The therapeutic agents show an acceptable toxicity profile
- It can be either injected directly into the tumour or intravenously



Patent(s) applied but not yet granted



Concept stage

## OTBP054



Genetic kit for predicting aggressiveness of invasive breast cancer



Researchers from the University of Granada and the Andalusian Public Health System (SSPA) have developed a novel kit for diagnosing invasive breast cancer by using a combination of specific markers that allow to predict its aggressiveness and the appearance of metastasis. They are looking for with a Company



- Early diagnosis of the aggressiveness of aggressive breast cancer and the appearance of metastasis
- Use of a new therapeutical target for producing the appearance of metastasis
- Classification of patients potentially sensible to certain therapy treatments



Secret know how



Field Tested / evaluated

## OTBP055



Improvement of the anti-inflammatory properties of a drug based on lanthanide dinuclear complexes



The University of Granada and the University of The Basque Country have developed coordination complexes that increase the anti-inflammatory effects respect to its ligand, diclofenac. This is a new important finding that opens a new type of strategy to find compounds with high biological activity. They are looking for with a Company



- Diclofenac metal complex inhibits NO production between 70 to 100% without showing cytotoxicity, reaching up to 70% more effective than only diclofenac ligand compound



Secret know how



Field Tested / evaluated

**OTBP056**



Composition comprising chondrocytes encapsulated within a hydrogel



A Granada Technology transfer organisation has developed an invention that provides specific properties for tissue engineering applications. The hydrogel polymers of the invention create the appropriate niche for chondrocyte growth and phenotype maintenance, and were proved to be an optimal candidate for cartilage tissue regeneration. They are looking for with a Company



- The hydrogel polymers of the invention create the appropriate niche for chondrocyte growth and phenotype maintenance

- The compositions of the invention can be used for treating a subject for tissue damage or loss, such as caused by a traumatic injury or a disease involving tissue degeneration



Secret know how



Field Tested / evaluated

**OTBP057**



3D device for the production of high titers of viral vectors for therapeutic purposes



A Granada Technology transfer organisation has developed an innovative device allows to increase the titres of viral vectors without altering the way of culturing the packed cells and, therefore, their metabolism. The 3D device will increase the surface area of the culture stack by taking advantage of all the vertical space that is not used in two-dimensional or monolayer crops. They are looking for with a Company



- The third dimension of cell growth generates a greater contact space and cell adhesion

- 3D culture favors cellular interactions, the diffusion of solutes and binding proteins (such as growth factors or enzymes)

- The 3D device could be functionalized to increase the adhesion and proliferation of the packed cells and, consequently, increase the titers of the viral vectors with therapeutic applications



Secret know how



Available for demonstration



Method for isolating circulating epithelial pulmonary cells and their use as markers for diagnosing Chronic Obstructive Pulmonary Disease (COPD)



The University of Granada and the Andalusian Public Health System have developed a new procedure based on Liquid Biopsy techniques that allows both the diagnosis of COPD, as well as its evolution in patients. In order to do that, circulating pulmonary cells (CPCs) that could be present in blood of patients diagnosed with COPD are detected and characterized by combining two different techniques: - Immunogenetic positive selection for their isolation in peripheral blood. - Immunocytochemistry for detecting CPCs by using specific markers for pulmonary epithelial cells. They are looking for with a Company



- Noninvasive technique, easily reproducible and specific

- Early and specific detection of the existence of COPD

- Possibility of a personalized monitoring of the patient

- Is a highly versatile technique: depending on the chosen markers, the technique could be used for detecting other pathologies, such as adenocarcinomas, squamous carcinomas or emphysemas.

- This technique might also detect an

- The technique might also detect epithelial damage in other vital organs that have a high epithelial renovation rate (liver, reproductive organs...), using specific markers



Patent(s) applied but not yet granted



Field Tested / evaluated



Biomimetic magnetic nanoparticles for their use in biotechnological applications



A Granada Technology transfer organisation has carried out a study of functional improvement of the nanoparticles of chemical synthesis throughout the introduction of a recombinant protein in the aqueous solution where magnetite is formed. Then, a biomimetic magnetic nanoparticles are generated which solve requirements such as biocompatibility, surface charge of the nanoparticles and their size, which determine their magnetic properties. These properties make them show great advantages compared to other already existing in the market for biomedical use, as well as solving the existing bottleneck in production for their commercial use. In that case, researchers have used a recombinant protein MamC mixed with other proteins of the magnetosome in magnetotactic bacteria which, in these bacteria, have a regulatory function in the process of in vivo magnetite formation. They are looking for License agreement with a Company



- The biomimetic nanoparticles developed on this invention have a size of 40 nm, which make them being singular magnetic domains, paramagnetics at room temperature in absence of a field and, on the other hand, show a great coercivity in the presence of an external magnetic field, higher than the smallest commercial nanoparticles. That makes that these particles, in the absence of a magnetic field, will remain stable and not aggregate, while, when an external magnetic field is introduced in order to guide them to the target site, these nanoparticles show hyperthermia

- When compared to magnetosomes, the biomimetic magnetic nanoparticles have the advantage that their production can be scaled

- The biomimetic nanoparticles of the present invention are charged at physiological pH and discharged at tumor pH, thanks to their surface proteins, Unlike the commercial nanoparticles, which are discharged at physiological pH and charged at tumor pH. This facilitates their functionalization with the chosen molecule and its later liberation in response to a pH change that occurs in a natural manner when passing from bloodstream to the tumor

- The nanoparticles can be encapsulated forming magnetoliposomes, in a way that the transported molecule can be protected from degradation or if it is toxic. The magnetoliposomes can be functionalized in order to recognize a marker and then make a selective transport

- Both the biomimetic nanoparticles functionalized or not, and/or encapsulated in liposomes show a hypothermic response

- They can be used for the next techniques:
  - Functionalized transporters
  - Contrast agents for imaging or magnetic resonance
  - Bone marrow purge techniques
  - DNA isolation
  - Particle separation



Patent(s) applied but not yet granted



Concept stage



**Granada**

The image features a dark blue background with a grid of small white dots. Overlaid on this are several molecular structures composed of white and blue spheres connected by lines. A prominent structure on the left side is brightly lit with a red and white glow. The word "HUELVA" is centered in a large, white, sans-serif font.

**HUELVA**



## OTBP002



Sustainable Polymers from Algae Sugars and Hydrocarbons



A Huelva Research center has developed a new biobased industrial platform that uses microalgae as a raw material for the sustainable production and recovery of hydrocarbons and(exo) polysaccharides from algae, as well as their further conversion in to renewable polymers. They are looking for Manufacturing agreement with a Company



It delivers the knowledge, tools and technology needed to establish a new industrial sector,i.e.industrial biotechnology based on algae and/or algal genes to produce polyesters and polyolefins



Exclusive rights



Available for demonstration

## OTBP003



Multi-product Integrated bioRefinery of Algae: from Carbon dioxide and Light Energy to high- value Specialties



A Huelva Research center has developed an innovative and integrated, multiple-product biorefinery for valuable specialties from algae for application in food, aquafeeds and non-food products. The focus is on development and integration of mildcell disruption and environmentally friendly extraction and fractionation processes including functionality testing and product formulation based on established industrial strains. They are looking for Manufacturing agreement with a Company



The project will also develop new technologies for optimization and monitoring of valuable products in the algal biomass during cultivation and innovative photobioreactor and harvesting technology that will enable substantial cost reduction



Exclusive rights



Available for demonstration



JAÉN

## OTBP004



Design and optimization of a sustainable biorefinery based on olive grove biomass and the olive oil industry: techno-economic and environmental analysis



A Jaén Research center has developed an innovative strategy that integrates the different processes of bioconversion into a single concept of modular refurbishment. Validate this strategy through a socioeconomic and environmental system improve the waste management. They are looking for Services agreement with a Company



This project proposes the integration of all the waste generated around the crop and the olive oil industry in a flexible and multi-product biorefinery, with bioethanol as the main product



Exclusive rights



Available for demonstration

## OTBP005



Advanced processes of fractionation and biological conversion to obtain energy and chemical products from olive pruning



A Jaén Research center has developed an innovative and integrated biorefinery processes for the coproduction of chemical products, transport fuels and energy from biomass, including the development at laboratory scale of the entire chain that integrates a biorefinery (physical-chemical fractionation, process biochemical conversion and chemical conversion processes) and the basic design of a biorefinery process based on the conversion of cellulose to ethanol in which the by-products are valued as value-added products (chemical products, cogeneration). They are looking for Services agreement with a Company



Develop a technology based on a multi-product biorefinery to obtain various products from the olive pruning biomass. Apply advanced physico-chemical fractionation of components of olive pruning biomass. Apply innovative technologies for the biochemical conversion of olive biomass into ethanol from the sugars of five and six carbon atoms (pentoses and hexoses) contained in the biomass. Conduct studies on the valorisation of intermediate products derived from biomass based on the design of the integrated chain from biomass to the byproducts obtained, their analysis and optimization.



Exclusive rights



Available for demonstration

## OTBP006



The biomass of the olive grove as an energy source and of chemical products



A Jaén Research center has developed an innovative project, which is part of a more generic study plan that includes the valuation of the liquid and solid currents that are obtained from the processes of transformation of the biomass of the olive grove and focuses on the integral use of the biomass of the olive grove, paying special attention to the olive leaf and bone. For this use, it is necessary to have an experimental facility in which the fundamental operations of the conversion process can be carried out, which is based on the biochemical pathway. They are looking for Services agreement with a Company



Demonstrate the technical feasibility of the use of olive grove biomass as raw material for the production of ethanol and co-products have a versatile experimental facility that allows the study that is proposed in this project and that will be profitable in future projects get the full use of the olive biomass offer an effective alternative to the elimination of olive crop residues



Exclusive rights



Available for demonstration

## OTBP011



Integration of processes to obtain energy, liquid fuels and value-added products from olive pruning: an approach to biorefinery



A Jaén Research center has developed an innovative process for obtaining ethanol, through olive pruning which has also been veiled as a very interesting biomass to obtain other products with high added value. Positive effect on the integral use of the waste and on the increase in ethanol yields. They are looking for Services agreement with a Company



Positive effect on the integral use of the waste and on the increase in ethanol yields



Exclusive rights



Available for demonstration

## OTBP028



Mental health app



A Jaén Technology transfer organisation has developed an innovative application that allow to know the location of different resources and services to support the patient and a channel of communication with the areas of sanitary management. They are looking for License agreement with a Company



Facilitated the location of all the centers of mental health care. Improve the access to srvices and communication between the patient and the centers. Reduce the stigma realted with mental conditions



Patent(s) granted



Available for demonstration

## OTBP036



Marker for the non-invasive diagnosis of renal fibrosis



A Jaén Technology transfer organisation has developed an innovative marker for detection, diagnosis, prediction and / or prognosis of renal fibrosis in an individual, or to follow the efficacy of a treatment for this disease. The marker also describes methods of obtaining useful data to carry out the diagnosis, kits and computer programs that help to carry them out. They are looking for License agreement with a Company



Early diagnosis of renal fibrosis and allows to evaluate its progression



Patent(s) applied but not yet granted



Concept stage

**OTBP043**



Method to obtain useful data for the screening and diagnosis of osteoporosis



A Jaén Technology transfer organisation has developed an innovative method for screening, diagnosis, prognosis and/or monitoring osteoporosis. They are looking for License agreement with a Company



Elaboration of a drug for the prevention, relief, improvement and treatment of osteoporosis. A method for screening, diagnosis, prognosis and tracing of osteoporosis. Development of a kit for this purpose. Prevention and treatment. Noninvasive Clinical Trials have been carried out in 102 patients. That methodology has already used in other diseases like Diabetes mellitus. Current drugs have a limited efficacy and adverse effects. In addition, it helps to lose weight, another advantage in osteoporosis disease



Patent(s) applied but not yet granted



Concept stage

**OTBP221**



Amino peptidases as markers of kidney damage



A Jaén Technology transfer organisation has developed an innovative method and kit for the diagnosis and/or prognosis of kidney damage that involves analysing a sample obtained from a patient and determining the activity of at least one amino peptidase selected from among those claimed in the patent. They are looking for License agreement with a company



Within the first 12 hours after ICU admission, this test allows predicting if a risk patient is going to suffer from renal injury or renal failure. The identified biomarkers can be detected by standard detection techniques like ELISA, colorimetric or fluorometric test. The test could be easily incorporated to standard automatic immunochemical analyzers. Marker A is currently analyzed by these analyzers and enzymes B & C can be detected by kinetic fluorimetric assays (measurement of substrate degradation), that could be incorporated to the automatic immunochemical analyzers. The research group has the support of the Andalusian Public Health System that is made up of 47 Hospitals and, consequently, it has the capacity to increase the number of patients of the clinical trial



Patent(s) granted



Available for demonstration

## OTBP222



Method for obtaining useful data to predict or prognosticate the response to treatment with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients coinfecting with human immunodeficiency virus (HIV) and hepatitis C virus (HCV)



A Jaén Technology transfer organisation has developed an innovative method for obtaining useful data to predict or prognosticate a sustained virologic response (SVR) to treatment of hepatitis C virus (HCV) with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients coinfecting with human immunodeficiency virus (HIV) and HCV, including a kit and its use. They are looking for License agreement with a Company



Patent(s) applied but not yet granted



Available for demonstration

## OTBP223



Method for the determination of human immunodeficiency virus 1 (HIV-1) tropism and an associated kit



A Jaén Technology transfer organisation has developed an innovative method for the determination of human immunodeficiency virus 1 (HIV-1) tropism that involves PCR amplification of the env gene. In addition, the invention concerns a kit for carrying out the aforementioned method, as well as the use of this kit for the determination of HIV-1 tropism. They are looking for License agreement with a Company



Patent(s) granted



Available for demonstration

## OTBP224



Method for the diagnosis of Verticillium wilt in olive trees



A Jaén Technology transfer organisation has developed a method for detecting the presence of Verticillium spp. in an olive tree that involves determining the expression level of this nucleotide sequence, or the levels of the encoded protein for this sequence, in a sample taken from an olive tree. If this expression is greater than a reference value, then it can be concluded that the olive tree is infected with Verticillium spp., and it can thus be diagnosed with Verticillium wilt. They are looking for License agreement with a Company



Specificity and precision



Patent(s) granted



Available for demonstration

## OTBP225



Anti-cancer gene therapy



A Jaén Technology transfer organisation has developed an innovative Anti-cancer gene therapy, specifically for the treatment of colon cancer. They are looking for License agreement with a Company



The authors of this invention have developed retroviral plasmids that incorporate certain genes, providing a pharmaceutical composition and a combined preparation that can be used in anti-cancer therapy, particularly for the treatment of colon cancer



Patent(s) applied but not yet granted



Available for demonstration

## OTBP226



Combined genetic polymorphisms of LDLR and IL28B for predicting the response to treatment with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients infected with hepatitis C virus (HCV)



A Jaén Technology transfer organisation has developed an innovative use of genetic polymorphisms rs2738456, s2738457, rs2569540, rs2738459, rs2738460, rs2116898 and rs6413504 of the LDLR gene to predict or prognosticate the response to treatment with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients infected with hepatitis C virus (HCV). They are looking for License agreement with a Company



Patent(s) granted



Available for demonstration



## OTBP227



Method for obtaining useful data to predict or prognosticate the response to treatment with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients infected with hepatitis C virus (HCV), genotype 3



A Jaén Technology transfer organisation has developed an innovative method for obtaining useful data to predict or prognosticate the response to treatment with pegylated interferon (PEG-IFN) plus ribavirin (RBV) in patients infected with hepatitis C virus (HCV) genotype 3, including a kit and its use. They are looking for License agreement with a Company



Patent(s) granted



Available for demonstration

## OTBP228



Development of poly(butyl cyanoacrylate) (PBCA) and poly (ε-caprolactone) (PCL) nanoparticles associated with 5-fluorouracil for the treatment of colon cancer



A Jaén Technology transfer organisation has developed an innovative system for the transport of biologically active molecules capable of selectively targeting receptors or targets, and in particular the functionalisation of poly(butyl cyanoacrylate) (PBCA) and poly(ε-caprolactone) (PCL) nanoparticles that transport drugs, preferentially 5-fluorouracil. It also refers to the compositions, the preparation procedure and the use of the system for transporting biologically active molecules. They are looking for License agreement with a Company



Patent(s) granted



Available for demonstration

## OTBP229



A culture medium and a method for the enrichment and maintenance of cancer stem cells (CSCs) using this medium



A Jaén Technology transfer organisation has developed an new serum-free conditioned medium that favours in vitro proliferation and preservation of the potential for pluripotency that enables the maintenance of an undifferentiated state in the subpopulation of cancer stem cells (CSCs), while at the same time not allowing the survival of differentiated cells. They are looking for License agreement with a Company



Patent(s) applied but not yet granted



Available for demonstration

## OTBP230



System and procedure for generating monodisperse microbubbles in a co-flow configuration



A Jaén Technology transfer organisation has developed an innovative system and procedure for generating monodisperse microbubbles in a co-flow configuration. This solution is applicable in various fields, such as biomedicine (for developing diagnostic techniques, the application of active principles, etc.) and food manufacturing, as well as in water purification and other applications derived from its use in gas-liquid reactors and foam generation processes. They are looking for License agreement with a Company



The patent offers advantages with respect to techniques employed to date, such as: versatility to adapt to different production areas, simple and economic construction, greater production capacity, easy handling and effective control of both the generation frequency and the size of bubbles, as well as improved efficiency in production processes, allowing considerable savings in terms of energy consumption.



Patent(s) granted



Available for demonstration

## OTBP231



Expanded clay



A Jaén Technology transfer organisation has developed an innovative expanded clay that comprises a mixture of ceramic clays, fly ash from biomass, waste from the production of recycled paper, and meat meal waste. They are looking for License agreement with a Company



The patent presents environmental and economic benefits, since it gives a utility to two waste products, turning them into secondary raw materials or technical nutrients. This avoids the consumption of traditional raw materials, meaning the product will present a lower carbon footprint. Using ash as a flux allows us to reduce and control the firing temperature, resulting in energy savings. Using organic waste in its elaboration (paper waste) achieves a lower-density product, which is an advantage for its use in green roofs, as it does not overload the building structure. Its combustion also gives the product greater porosity compared to products on the market, which is beneficial for its water absorption capacity, while at the same time improving its insulating properties with respect to commercialised products. This is an advantage both for its use in gardening for protection against frost and high temperatures, and for its use in green roofs, as it improves the insulation of the building in which it is used. In addition, the fact that its formulation uses a waste product that contains fertilising elements (as is the case for meat meal) differentiates it from commercialised products, because when the developed materials are subjected to watering cycles they can provide the plant with these fertilising elements



Patent(s) granted



Available for demonstration

## OTBP232



Method for promoting muscle regeneration



A Jaén Technology transfer organisation has developed an innovative method for promoting muscle regeneration. This invention resolves the problem of providing new therapies that are effective for the treatment of muscular dystrophy through the use of compositions that comprise a compound capable of reducing the expression of miRNA-106b in satellite muscle stem cells in human or animal subjects, compared with the expression observed when the compound is absent from these cells. They are looking for License agreement with a Company



Patent(s) applied but not yet granted



Project already started

OTBP233



Disinfectant composition



A Jaén Technology transfer organisation has developed an innovative disinfectant composition, with no toxic or environmentally polluting bactericidal agents, that is suitable for any type of tool or surface exposed to bacterial contamination. The composition of the invention can also be used for the treatment of patients suffering from bacterial infections and/or patients with heavy metal poisoning. They are looking for License agreement with a Company



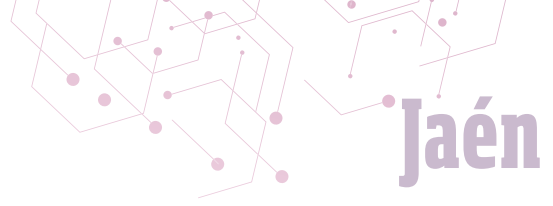
The protected disinfectant composition does not contain toxic or environmentally polluting bactericidal agents. It is suitable for any type of tool or surface exposed to bacterial contamination. The composition of the invention can also be used as an antiseptic for the treatment of patients suffering from bacterial infections and/or patients with heavy metal poisoning



Patent(s) applied but not yet granted



Available for demonstration



The image features a dark blue background with a subtle grid of small white dots. Overlaid on this are several complex, interconnected molecular or network-like structures. These structures consist of various sized circles (nodes) connected by thin lines (edges). The nodes are colored in shades of white, light blue, and dark blue. The overall composition is abstract and technical, suggesting themes of science, technology, or data. The word 'MÁLAGA' is prominently displayed in the center in a bold, white, sans-serif font. The letter 'A' has a small white pill-like shape above it, which is a common logo for the city of Málaga.

**MÁLAGA**

## OTBP092



New diagnostic method for multiple sclerosis



A Málaga Research center has developed an innovative method to diagnose multiple sclerosis (MS) by enzyme-immunoassay. The test diagnoses MS through the detection of a unique protein using ELISA in blood samples, with a 80.5% sensitivity and 70.5% specificity, and it is also useful to differential diagnosis of MS of other inflammatory neurological diseases. They are looking for License agreement with a Company



Current tests require to perform a lumbar puncture on the patient, an invasive and costly procedure. This new ELISA test only need to analyse blood samples, a much less invasive and more innocuous method for diagnosing MS. This technique is also less costly than the current methods

It could be used as a preliminary screening method, so that it would be necessary to perform the current oligoclonal band tests only on patients who give ELISA values that are not clear-cut

Moreover, the test contributes to differentiate MS from other inflammatory neurological diseases in an specific way



Patent(s) granted



Patent(s) granted

## OTBP093



Kit to predict the risk of relapse in breast cancer



A Málaga Research center has developed an innovative kit based on microRNA expression signature to predict the risk of tumor recurrence in patients who have been treated of breast cancer, with a high predictive value at the discrimination of tumors from patients who developed early recurrence from those who are free of disease. They are looking for License agreement with a Company



1. It determines with reliability the risk of relapse in patients treated for breast cancer

2. It allows the establishment of groups of patients according to risk

3. It would help in selecting the appropriate therapy

4. It would allow to adequate monitoring of patients



Gratend patent or patent application essential



Gratend patent or patent application essential

## OTBP094



New probiotic composition for the treatment of metabolic pathologies associated with obesity



A Málaga Research center has developed an innovative probiotic composition useful in the treatment of obesity, metabolic syndrome and other related diseases. The specific combination of these microorganisms and its later liberation in the intestinal tract would modify the harmful microbiota into a beneficial microbiota, provoking an improvement in diverse pathologies in patients. They are looking for License agreement with a Company



The research group has described a microbial profile in the gastrointestinal tract related with healthy cases opposite to others with metabolic problems associated with obesity. It can be used to develop a combination of probiotics associated with a healthy clinical phenotype, that:

- Improves the metabolic problems (patient's lipid and carbohydrate profile), inflammatory, cardiovascular, allergic and oncological problems due to the change of their intestinal microflora
- Also useful to anticipate the side effects associated with the response of radiotherapeutic treatments in patients with colorectal cancer



Gratend patent or patent application essential



Gratend patent or patent application essential

## OTBP095



Useful composition in detection of allergy to clavulanic acid



A Málaga Research center has developed an innovative method that allows the immediate evaluation of allergic reaction to clavulanic acid with a suitable sensibility. They are looking for License agreement with a Company



The research group developed potential antigenic determinants of clavulanic acid (CLV) (that are very difficult to identify) for its immune response. Advantages:

- These compounds can be used for in vitro tests (immunoassays) and in vivo tests (cutaneous test) for the diagnosis of allergy to CLV
- Allows major sensibility in the diagnosis
- Being able to confirm allergy to CLV turns out to be beneficial for the patient and might be translated in a considerable cost saving



Gratend patent or patent application essential



Gratend patent or patent application essential



## OTBP096



Inorganic nanoparticles modified on the surface to improve chemical adsorption



A Málaga Research center has developed an innovative multimodal diagnostic nanosystem based on inorganic nanoparticles (NPs) covered by silica, as a potential radiopharmaceutical in SPECT / MRI or PET/ MRI imaging. With the present technology, considerable biomedical applications would be achieved in diagnostic and therapy areas. They are looking for License agreement with a Company



- The generated nanoparticles have great capacity for PET / SPECT chemical adsorption of radioisotopes on their surface, without having to functionalize them with chelating agents, meaning a reduction in the production costs of the multimodal nanotracers

- Easier manufacturing and handling of the technology, increasing its effectiveness

- These NPs can be functionalized later to confer additional properties of therapeutic interest, maintaining its chemical adsorption capacity once the process has finished



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted

## OTBP097



New components for cephalosporin allergy diagnosis



A Málaga Research center has developed an innovative pyrazolone-type metabolite for its use in the diagnosis of beta-lactam antibiotic allergies, concretely cephalosporins being also useful for penicillin. They are looking for License agreement with a Company



In order to provide a suitable diagnosis tool and allow to evaluate in a correct way the existence of an allergic reaction to this group of antibiotics, these compounds have been derived from alpha - aminocephalosporins, allowing the detection of IgE antibodies that are generated in the allergic reactions to aminocephalosporins and/or aminopenicillins

- The most important advantage is the remarkable increase of sensibility in the diagnosis of hypersensitivity to IgE antibodies against aminocephalosporin and /or penicillin with regard to available methods nowadays

- They are well identified structures that are easy to synthesize



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted

## OTBP098



Precision medicine aimed at the diagnosis and prediction of colorectal cancer



A Málaga Research center has developed an innovative study for the development of a kit using the methylation profile of a specific gene which presents differential methylations in patients with obesity in order to provide useful tools in the diagnosis and treatment of precision colon cancer. They are looking for License agreement with a Company



-The expression of this gene, ZNF543, can be used for the creation of a methylation kit to detect patients susceptible to develop colon cancer associated with obesity

- It consists in an innovative and improved diagnosis to this disease since there is not any alternative products on the market with these characteristics at the moment

-It will quickly predict the susceptibility to colon cancer in patients with obesity through a simple methylation kit

-In the case that colorectal cancer (CRC) is developed, the determination of ZNF543's methylation profile, will allow the establishment of personalized therapy



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted



New method to detect and quantify DNA methylations



A Málaga Research center has developed an innovative procedure called Methyl-DCES to detect DNA methylation in a more effective, precise and sensible way compared to other actual products in the market that present limitations. They are looking for License agreement with a Company



This procedure present advantages over the current technique to detect methylation

- Detection and quantification of general methylation in DNA, in any biological tissue, without knowing the DNA region or promoter
- Detection and quantification of specific methylation in a specific region of DNA
- Monitoring and effectiveness of drugs aimed at diseases linked to DNA methylation, such as chemotherapy or radiotherapy
- Detection and search of new biomarkers for diseases, difficult to diagnose

Advantages:

- Ability to detect and quantify DNA methylation status.
- Increase the sensitivity of the analysis, enabling to show methylation in a more representative way.
- Decrease the procedure's cost.
- Obtain results in a more efficient and fast way.
- This new technique can be applied to any biological tissue or liquid biopsy, with multiple applications in both basic and applied research.



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted

## OTBP100



Predicting response method to treatments with bariatric surgery in type 2 diabetes mellitus.



A Málaga Research center has developed an innovative The research group has proposed the use of a serum biomarker, miR-590, to develop a diagnostic test in which this biomarker would be quantified, jointly with Body Mass Index as well as glycemia in the patient's blood. Its clinical applicability would allow to identify morbidly obese patients with DM2 that are good candidates for remitting the disease through bariatric surgery, discarding those patients that are not good candidates for DM2 remission after the surgical intervention. They are looking for License agreement with a Company



It has very interesting clinical applications, with possible development of diagnostic tests and/or generation of technological innovations.

- This test is minimally invasive and quick to obtain the results, being only necessary a blood draw.

- This will involve a big reduction in sanitary cost, as well as invasive interventions in non-responding patients.

- Predicts in an earl way the remission of the DM2 in OM patients suffering this type of diabetes after bariatric surgery.



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted

## OTBP101



Drug for treatment of steatohepatitis.



A Málaga Research center has developed an innovative set of molecules to treat non-alcoholic fatty liver disease (NAFLD), specifically steatohepatitis. These molecules are fatty-acid amides with phenylalkylamines (amphetamines, dopamine, etc.), that exploit a new mechanism of action based on reducing ingestion, activating the metabolism of fats and reducing their deposits, and antagonizing oxidative stress. They are looking for License agreement with a Company



Properties:

- Activates PPAR alpha, with greater affinity than fibrates, to assure deep hypolipidemic effects and activators of the metabolism of fats.
- Reduces the depositing of fat in the liver. Inhibits the expression of the enzyme SCD1 (desaturase 1), a fundamental mechanism in steatohepatitis.
- Has the capacity to the reduce ingestion, thereby adding anti-obesity to their antisteatotic profile.

In vivo trails evidenced activity against steatohepatitis, showing a reduction in the fatty mass of the liver and plasma triglyceride levels, as well as an improvement in kidney function by reducing increase plasma levels of urea and the profile of hepatic transaminases in plasma.

Advantages

1. New therapeutic entities for one of the most prevalent emerging metabolic pathologies.
2. They are small molecules that are easy to synthesize.
3. They are compounds that are accepted according to the Lipinsky rule.
4. Safe pharmacological profile, no interaction with hERG, and no or only mild effects on the activity of the different isoforms of the hepatic cytochrome P450.



Gratend patent or patent application essential



Gratend patent or patent application essential

## OTBP102



New topical treatment for HPV



A Málaga Research center has developed an innovative topical treatment for mucocutaneous infections caused by human papillomavirus (HPV), with demonstrated effectiveness, high cure rates even in cases of recalcitrant warts, and with no significant side effects. It is based on pyrophosphate that selectively inhibit the polymerase of the viral DNA and viral transcriptase at the site of union with the pyrophosphate. They are looking for License agreement with a Company



No specific antivirals are currently available for HPV, and treatment tends to consist of the use of abrasive or keratolytic techniques, affecting both the infected and the non-infected tissue. There is a need for new effective therapeutic alternatives that are capable of eliminating mucocutaneous lesions caused by HPV by acting specifically against the virus while affecting only minimally the non-infected surrounding tissue. The main advantages of this technology are:

- Antiviral effective when applied topically
- Treatment that is painless and convenient to apply
- No or only minimal irritation associated with its use
- High rate of efficacy demonstrated
- Specific antiviral action as it is an antiviral agent, rather than having a merely "destructive" or immunomodulatory effect, which is what standard methods tend to produce
- Low cost of treatment compared with other topical antiviral agents or some immunomodulators used



Gratend patent or patent application essential



Gratend patent or patent application essential

## OTBP103



New composition for the treatment of allergy



A Málaga Research center has developed an innovative immunotherapy for the treatment of allergy caused by the Lipid Transfer Proteins syndrome (LPT). It is a specific Allergen Immunotherapy based on the multivalent presentation of a peptide derived from the allergenic protein Pru p3, to achieve an increase in the density of presented epitopes, as well as the inclusion of an immunostimulating molecule. They are looking for License agreement with a Company



Specific Allergen Immunotherapy (SIT) is the only treatment able to act by altering the natural record of allergic diseases. One of the possible approaches is the use of T peptides from allergenic protein Pru p 3, but peptides have a lower immunogenic capacity. This multivalent presentation of a peptide derived from the allergenic protein Pru p3, instead of the whole protein, allows enough immunogenic stimulation and also minimizes the risk of induction of an allergic reaction during the treatment. The main advantages are:

1. It will enable the administration of an allergen-specific IT without risks for the patient
2. It involves a savings for the public health system
3. Provides a method for the prevention, improvement, relief and/or treatment of the allergy caused by LTP



Patent(s) granted



Patent(s) granted

## OTBP104



Recombinant protein for the treatment of viral diseases



A Málaga Research center has developed an innovative recombinant protein for the prevention, control, treatment and/or relief of a viral disease in an specific way without affecting non infected cells. They are looking for License agreement with a Company



The recombinant protein sIFNAR2 is a new strategy in the treatment of diseases caused by viruses. Its antiviral activity is due to the neutralizing capacity for the binding of IFN $\beta$  to the IFNAR2 receptor, which involves modulating functions with an antiviral effect. The current antiviral treatments have the problem to be either effective or safe, but not both properties at the same time. This new strategy based on the recombinant protein sIFNAR2 has antiviral activity without affecting the host cell metabolism and without causing negative effects in other non-infected cells of the organism, which is an advance regarding the current alternatives



Patent(s) applied but not yet granted



Patent(s) applied but not yet granted

## OTBP105



Use of a compound in the prevention, improvement, treatment of mental disorders and behavior related to alcohol



A Málaga Research center has developed an innovative use of a lysophosphatidic acid (LPA) receptor antagonist as an alcohol-related problems drug, provoking a reduction in the motivation for alcohol as well as in the characteristic side effects of these treatments, without affecting the individual's health. They are looking for License agreement with a Company



The in vivo administration of this drug causes a decrease of motivation in alcohol consumption, in the hypnotic / sedative effect, the cognitive deterioration and in abstinence symptoms, all without producing aversion. In addition, normal state is recovered in less time and the drug does not affect individual's health in relation to weight, food consumption, motivation by natural reinforcers or behavior

This new use of the compound has several advantages :

- Potential applications both in people diagnosed with substance abuse or substance dependence disorders and those who are not diagnosed as such
- Reduction of the desire to consume alcohol, also to prevent other effects of this drug, without resulting aversive
- Prevention and treatment of psychophysiological symptoms produced by alcohol intoxication and abstinence, also the cognitive and emotional deterioration induced by alcohol
- The repeated administration of this drug does not affect negatively the well-being of the individual, reducing the side effects and obtaining various beneficial effects on other related pathologies



Gratend patent or patent application essential



Gratend patent or patent application essential



## OTBP106



Cell therapy using myogenic cells derived from cremaster



A Málaga Research center has developed an innovative Cell therapy using myogenic cells derived from cremaster. They are looking for License agreement with a Company



This cell therapy uses multipotent precursor cells obtained from the cremaster muscle, thus solving the problem of the lack of donor source of cells in muscular dystrophy as well as the low success rate and the related complications in urinary incontinence treatment. In addition, it could be valid for any other pathology susceptible to skeletal muscle regeneration. Besides, since the cremaster muscle is a densely innervated vestigial muscle with numerous motor plates, a biopsy would not cause functional damage to patients, meaning an opportunity for those with muscular dystrophy. Moreover, myogenic cells have excellent capacity for the formation of skeletal muscle fibers. Other advantages are:

- It is a safe technique, presenting good results without generating rejection
- It could be used as a single treatment or combined with other medical devices
- In urinary / fecal incontinence: it has an excellent ability to simulate an external urinary / anal sphincter
- In muscular dystrophies: it comes from a cellular donor source that might not degenerate in patients with dystrophy



Gratend patent or patent application essential



Gratend patent or patent application essential

OTBP107



New method for the prognosis of breast cancer recurrence



A Málaga Research group has developed an innovative method and kit to predict the risk of breast cancer recurrence based on measurement of the expression levels of a set of 5 specific miRNAs. This kit allows classifying the patients in groups based on the risk of recurrence. They are looking for License agreement with a Company



A novel method and kit determine the risk of breast cancer recurrence based on measuring the expression levels of a set of 5 specific miRNAs. The measured data result in a reliable predictive test for discrimination between patients with tumors showing a risk of early recurrence and those who are free of disease. The risk prediction factor is represented by calculating the area under the curve (AUC) of 0.993. Currently, clinical validation studies are being conducted in different patient cohorts

To date, it has not been documented any specific miRNAs, which could be associated with early recurrence (less than 2 years after treatment) of a particular tumor, or any biomarkers that can predict the risk of recurrence in breast cancer after surgery or a specific treatment

This kit allows classifying, with high precision and reliability, the patients in groups depending on the risk of breast cancer recurrence



Patent(s) granted



Proposal under development



Transgenic trees for biomass or fito-remediation



A Málaga Research group has developed an innovative method to provide trees and other transgenic propagation material with improved physiological parameters and, in particular, with the ability to assimilate high concentrations of nitrate and accumulate more biomass in the form of cellulose. It also provides progenies (offsprings), cell lines and clones. The invention can be used for phytoremediation and within the industry dedicated to biomass and wood and paper production sector. They are looking for License agreement with a Company



The invention provides trees, tree parts, seedlings, tissues, seeds, cells, protoplasts and other kinds of transgenic propagation material, which show improved physiological parameters and, in particular, show the ability to assimilate high concentrations of nitrate and constitutes a cellulosic biomass storage system. It also provides progenies (offsprings), cell lines and clones obtainable from those trees, tree parts, seedlings, seeds, cells, protoplasts and other kinds of transgenic propagation material.

For this method the trees used are species capable to adapt to the environmental conditions with no environmental conflicts as these do not have any agrifood value. The invention uses black poplar due to its high growth rate.

One of the advantages is the flexibility in the harvesting times, hence reducing inventory/storage costs.

The invention could be applied in several environments such as soil decontamination and high concentrated nitrate water treatment, and in the industry dedicated to the use of trees to obtain biomass mainly for the wood and paper industry, and/or for the biofuel production



Patent(s) granted



Field Tested / evaluated

### OTBP109



Multiple sclerosis diagnosis by new recombinant protein



A Málaga Research group has developed an innovative paraclinical test with the IFNAR2.3 protein, which is able to diagnose individuals with multiple sclerosis through a less invasive and more harmless way, without requiring lumbar puncture for the patient. They are looking for License agreement with a Company



The new paraclinical test involves the IFNAR2.3 protein, which has been cloned and purified. This recombinant protein can serve as a positive control to include in the trial

The methodology has been validated and optimized, determining the values of soluble IFNAR2 in the serum of patients with MS and healthy controls

To date, the paraclinical test par excellence to confirm the diagnosis of multiple sclerosis is the presence of oligoclonal bands (BOC) in spinal cord fluid, but this methods requires lumbar puncture

While this novel paraclinical test is able to diagnose multiple sclerosis in patients using a less invasive and more harmless method without needing a lumbar puncture



Patent(s) granted



Proposal under development

### OTBP110



New fixing holder for drinker in cages



A Málaga Research group has developed an innovative low-cost system to improve the watering systems in cages, hold by magnets and easily to remove without needing to disassemble the device. They are looking for License agreement with a Company



The new low-cost system improves the current holders for watering system in cages which usually are held by suction pads or lack of any grill where the system can be fixed securely

The new invention is an easy solution for thin wall cages or maze for rodents and other lab animals

The new device is held by magnets, i.e. it adapts to any kind of surface. The watering system can easily be removed without needing to disassemble the device

The device is compatible and works with different commercial watering systems



Patent(s) granted



Proposal under development

## OTBP111



Use of agonists in key receptors for depression and anxiety treatment



A Málaga Research group has developed an innovative treatment based on the use of (GALN2 and NPYY1R) agonists of and their combined form triggering GALR2/NPYY1R interactions capable to be used as a drug for the treatment of depression and anxiety or as a prevention thereof. The effect of antidepressant NPY is improved by the combination with the agonist proposed. They are looking for License agreement with a Company



The proposed treatment is based on the use of (GALN2 and NPYY1R) agonists and their combined form triggering GALR2/NPYY1R interactions which can be used a drug for the treatment of depression and anxiety and/or prevention thereof

The conventional NPY agonists treatments could be improved thanks to the combined use of GALR2 agonists, which increase the antidepressant effects of NPY

These drugs that promote the interaction GALR2 / NPYY1R could be used for both the symptoms of depression and anxiety, psychic disorders that are usually found together in the patient



Patent(s) applied but not yet granted



Proposal under development

## OTBP112



New antiviral effective recombinant protein



A Málaga Research group has developed an innovative method based in the effectiveness of using a recombinant protein sIFNAR2 such as antiviral drug for the treatment in the infection. In addition, these antibodies are easy to produce from antiserum by standard procedure. They are looking for License agreement with a Company



The use of a recombinant protein sIFNAR2 constitutes a new strategy in the prevention and/or treatment of diseases caused by viruses. The antibodies or fragments thereof against this protein also constitute a therapy for the prevention, control, treatment and/or relief of viral diseases

The present invention refers to the use of the isolated soluble IFNAR2.3 receptor, produced by recombination, in the prevention, control, treatment and/or relief of viral diseases

In addition, these antibodies are easy to produce from antiserum by standard procedure



Gratend patent or patent application essential



Proposal under development

OTBP113



Octopus transportation system for aquaculture



A Málaga Research group has developed an innovative Octopus transportation system, which reduces mortality rate or injuries or stress that octopus fingerlings may suffer during the transport from the sea and release process in the pertinent facilities. They are looking for License agreement with a Company



The Octopus transportation system allows transporting the octopus individually and safely, avoiding possible injuries caused by other octopuses or by the transportation system itself

Once the captured octopuses are introduced individually into systems, these in turn are introduced into containers or transportation tanks keeping the optimal conditions for survival during the transportation process

The system helps in the reduction in mortality or injuries or stress that octopus fingerlings may suffer during the transport from the sea and release process in the pertinent facilities



Patent(s) granted



Already on the market

OTBP114



Octopus farming system and procedure



A Málaga Research group has developed an innovative Octopus farming system and procedure. The system refers to the fattening phase from 1 to 3 kg in farming tanks with higher levels of energetic conversion leading to a constant growing rate with high quality outcome. They are looking for License agreement with a Company



The Octopus farming system and procedure refer to the fattening phase from 1 to 3 kg in farming tanks, i.e. from juvenile to adult phase

The system comprises a large circular tank (preferably) with optimal design including shelter modules, a hydraulic system for recirculating water, a water oxygenation system, and a structure or upper cover that allows regulating the luminosity and water temperature

The methodology defines an adequate and controlled management for octopuses feeding, and the maintenance and cleaning of the system

The system offers higher levels of energetic conversion from the adequate feeding and obtaining a constant growing with high quality, avoiding losses due to low conversion rates caused by food search even when they maintain a territorial interaction with other octopuses



Patent(s) applied but not yet granted



Already on the market

## OTBP115



Useful composition in clavulanic acid allergy detection



A Málaga Research group has developed an innovative synthetic composition of clavulanic acid derivatives that allow the diagnosis of clavulanic acid allergy. The assays can be carried out in vitro or in vivo presenting higher sensitivity rates. They are looking for License agreement with a Company



The complex chemical reactivity of clavulanic acid makes it difficult to identify its antigenic determinant. After its conjugation to proteins, the resultant chemical structure is unstable and leads to complex degradation pathways giving rise to multiple possible determinants. This makes it difficult to identify the molecules that define the antigenic determinant

The synthetic composition proposed of clavulanic acid derivatives allows the diagnosis of clavulanic acid allergy

The assays could be carried out in in vitro (immunoassay type) or in vivo test (skin test) showing higher sensitivity rates. The ability to confirm the allergy to CLV is beneficial for the patient and could result in great cost savings



Patent(s) applied but not yet granted



Proposal under development

## OTBP116



Individuals prone to suffer diabetes and other metabolic diseases identifying method



A Málaga Research group has developed an innovative diagnosis and prognosis method for metabolic and other related diseases. Furthermore, the invention comprises probiotic compositions or drugs for the prevention and/or treatment of overweight, obesity, insulin resistance and/or metabolic syndrome. They are looking for License agreement with a Company



The diagnosis and prognosis method of metabolic and other related diseases identify individuals whose microbiota makes them prone to diabetes, as well as other metabolic syndromes related to obesity

The invention not only describes the identification of the key taxonomic groups of the intestinal microbiota but also provides a method for obtaining useful data for the classification of individuals with risk of suffering metabolic syndrome, preferably diabetes or a disease related to the metabolic syndrome

The invention proposes probiotic compositions or drugs for the prevention and/or treatment of overweight, obesity, insulin resistance and/or metabolic syndrome



Gratend patent or patent application essential



Proposal under development

## OTBP117



New combined therapy for depression and other psychotic disorders by selective inhibitor of Serotonin reuptaking and GAL (1-15)



A Málaga Research group has developed an innovative combined therapy of GAL (1-15) in combination with a serotonin reuptake inhibitor, which is able to cause an elevation in the level of extracellular serotonin for depression treatment, phobias, and other anxiety and psychics disorders. They are looking for License agreement with a Company



The combination therapy of GAL (1-15) for augmenting and/or providing faster onset of the therapeutic effect of a serotonin reuptake inhibitor, which causes an elevation in the level of extracellular serotonin. Particularly, improving and/or potentiating the therapeutic effect of SRI or a compound, which causes an elevation in the level of extracellular 5-HT

The present invention is useful for the treatment of depression, anxiety disorders, and other affective disorders, eating disorders (such as bulimia, anorexia and obesity), phobias, dysthymia, premenstrual syndrome, cognitive disorders, impulse control disorders, attention deficit hyperactivity disorder and drug abuse

The clinical studies on depression and anxiety disorders indicate that non-response to Selective Serotonin Reuptake Inhibitors (SSRI) is substantial, up to 30%. Another factor in antidepressant treatment is compliance, which has a rather profound effect on the patient's motivation to continue pharmacotherapy. There are multiple factors in RRSI use: 1) sexual dysfunction is a side effect common and, 2) there is a delay in therapeutic effect, which the psychiatrists try to cope with an augmentation strategy, which causes other problems

The results of the therapy indicate that GAL (1-15) enhances the antidepressant effects induced by Fluoxetine (FLX) probably acting on 5-HT<sub>1A</sub>R-GALR1-GALR2 heteroreceptor complexes and open up the possibility to use a combination of both as a novel strategy for treatment of depression

In addition, the combined therapy is an alternative for patients, who do not respond to conventional monotherapy, and allows administering lower doses of SSRIs than normally used in monotherapy may be effective, and side effects associated with the larger amounts or serotonin reuptake inhibitor used in monotherapy may be reduced or prevented altogether



Patent(s) applied but not yet granted



Proposal under development



## OTBP118



Use of neuropeptide in the prevention and/or treatment of disorders and effects related to alcohol



A Málaga Research group has developed an innovative method based on using neuropeptide to reduce and/or treatment of effects and/or disorders related to alcohol abuse. The effect of Galanin (1-15) on alcoholism seems to be related to a depletion of the natural booster system. They are looking for License agreement with a Company



The use of Galanin (1-15) aims to reduce and/or treatment of effects and/or disorders related to alcohol abuse and other substances of abuse that are consumed together with this

At present, there are only three medicaments approved for the treatment of alcoholism, but none is certainly effective. The appearance of a new medicament capable of reducing the preference and consumption of alcohol in a fast way, as demonstrated in pre-clinical studies, would be a great advantage for the treatment of alcoholism and its associated pathologies

In recent studies in animal models, the use of the Galanin fragment (1-15) is proposed as a therapy able to produce a decrease in the voluntary consumption of alcohol as well as a great decrease in the preference for this substance

The effect of Galanin (1-15) on alcoholism seems to be related to a depletion of the natural booster system, which not only would help in the consumption of alcohol but also other substances of abuse that are consumed together with this



Patent(s) applied but not yet granted



Proposal under development

## OTBP119



Compound for the prevention, improvement and treatment of alcoholism patients



A Málaga Research group has developed an innovative treatment based in the use of compounds antagonists of lysophosphatidic acid (LPA) receptors for the preparation of a medicament for the prevention, alleviation, improvement and / or treatment of mental and behavioral alterations related to alcohol. The treatment reduces the alcohol consumption desire with a safe pharmacological profile. They are looking for License agreement with a Company



The treatment based in the use of compounds antagonists of lysophosphatidic acid (LPA) receptors for the preparation of a medicament for the prevention, alleviation, improvement and / or treatment of mental and behavioural alterations related to alcohol, such as harmful or risky consumption, alcohol intoxication, alcohol withdrawal/dependence syndrome and alcohol addiction

The treatment not only decreases the desire to consume alcohol but also prevents or reduces other effects (hypnotic-sedative effect, physical symptoms of withdrawal, alcohol effect on the brain-neuroadaptations- and cognitive impairment caused by the alcohol)

The systemic and repeated administration of the drug was not aversive for the animals and did not modify their normal behaviour or health, which suggests a safe pharmacological profile

The use of this type of compounds would not only modulate the psychophysiological and behavioural effects of alcohol but could also have beneficial side effects on various physical illnesses associated with the consumption of this substance, such as cancer, fibrosis, and cardiovascular diseases



Exclusive rights



Proposal under development

## OTBP120



New compounds for the cephalosporins allergy diagnosis



A Málaga Research group has developed an innovative series of compounds with pyrazolone structure, which are derivatives of alpha-aminocephalosporins and allow the detection of IgE antibodies generated in allergic reactions to aminocephalosporins and/or aminopenicillins, increasing the sensitivity against the synthetic determinants developed so far. They are looking for License agreement with a Company



A new series of compounds with pyrazolone structure have been developed. These derivatives of alpha-aminocephalosporins allow the detection of IgE antibodies generated in allergic reactions to aminocephalosporins and/or aminopenicillins, increasing the sensitivity against the synthetic determinants developed so far

The compounds are well-defined and the structures are easy to synthesize

A significant increase in sensitivity in the diagnosis of hypersensitivity to IgE antibodies against aminocephalosporins and/or penicillins with respect to currently available methods



Patent(s) applied but not yet granted



Proposal under development

The image features a dark blue background with a grid of small white dots. Overlaid on this are several complex molecular structures composed of white and blue spheres connected by lines. A bright red and white glow emanates from the left side, fading into the dark blue. The word "SEVILLA" is centered in a large, white, sans-serif font.

**SEVILLA**

## OTBP060



Device to control the blood flow over a blood vessel



A Sevilla Technology transfer organisation has developed an innovative device to control the blood flow over the pulmonary artery in congenital heart disorders with high flow. They are looking for License agreement with a Company



· Control of the pulmonary artery blood form outside the chest cavity; · Increased containment time than conventional band; · Allows operating patients with higher weight and size; · The implantation technique is simple and reproducible; · Materials are resistant and low prices; · Reduces the risk of decubitus complications



Patent(s) applied but not yet granted



Concept stage

## OTBP061



Permanent urinary catheter shutter



A Sevilla Technology transfer organisation has developed an innovative shutter for permanent (or indwelling) urinary catheters (IUCs). They are looking for License agreement with a Company



This technology to provide a shutter for IUCs that enable the patient to urinate intermittently in an independent way and at will, while also enabling the said shutter to be connected to a collection bag during sleeping time. This all results in a considerable improvement in quality of life, while enabling the bladder to regain muscular tone and elasticity



Patent(s) granted



Already on the market

OTBP062



Software for the morphometric analysis of oligoclonal bands for the diagnosis of multiple sclerosis



A Sevilla Technology transfer organisation has developed an innovative algorithms which allow extract quantitative information helpful in computer-aided diagnostic tools for classification of clinically isolated syndromes in multiple sclerosis. They are looking for License agreement with a Company



This software has been specifically designed to allow for a user independent detection of stripes following a systematic, reproducible procedure. Numerical values of obtained OCBs position and intensity data may then be processed to extract further information of potentially useful clinical meaning. The advantages of this new technology are:

- Application of OCB-classifying algorithms to clinically isolated syndromes may be very helpful for early detection of patients who will develop multiple sclerosis
- Automated evaluation of bands is a user-independent, reproducible and systematic procedure yielding data bases useful for different research areas
- The program to extract bands from images of electrophoretic membrane has been extensively validated and is being used routinely at the institution of the clinicians who have developed the present technology



Design rights



Project already started

OTBP063



APP Profund/ Paliar



A Sevilla Technology transfer organisation has developed an innovative mobile application to determine the risk of death in a pluripathological patient or who suffers a certain very advanced-stage disease. They are looking for License agreement with a Company



The app is a program to calculate the risk of death and functional impairment at twelve months in patients with multiple pathologies by applying PROFUND and PROFUNCTION indexes. Additionally, the app calculates the risk of death at 6 months in patients with diseases in advanced stages by applying the PALIAR index. The advantages of this new technology are:

- The user can select the index to be used (PROFUND, PROFUNCTION or PALIAR).
- In the case of selecting PROFUND-PROFUNCTION, a screen appears with the listing categories to ensure that patient is a patient with multimorbidity. After confirming that the patient is a patient with multimorbidity, it allows selecting two indexes:
  - The PROFUND index that determines the risk of death per year.
  - The PROFUNCTION index that determines the risk of significant functional impairment annually. In the case of labeling to compute a PALIAR index, it appears a screen with the five possible criteria of advanced organ failure to check that this is a patient with some of these diseases in said stage. After confirming that the patient is in this clinical situation, the APP enables obtaining the PALIAR index that determines the risk of death at 6 months.



Design rights



Concept stage

## OTBP064



Device for the immobilization and fastening of bedridden patients



A Sevilla Technology transfer organisation has developed an innovative device designed to immobilize patients who remain long time confined to bed in a certain and variable position depending on prescription. They are looking for License agreement with a Company



The present technology describes a novel patient restraint device for bedridden patients that overcome the above drawbacks by two main features: a truss is used to fasten the patient which is fixed to the headboard of the bed instead of to the sides. The advantages of this new technology are:

- The present device does not compress the abdominal region of the patient due to its design
- It allows holding the patient with different bed tilt degrees, avoiding that he falls down when the bed is inclined
- Moreover, this technology enables the patient to adopt a position suitable for non-invasive mechanical ventilation, avoiding positions that would increase the risk of aspiration, inadequate ventilation, and thus, the risk of ventilation failure. This is especially advantageous in certain situations when different bed tilt degrees are prescribed, for instance, in patients with head trauma and increased intracranial pressure
- The truss may be made of any common material for this type of clothing



Patent(s) granted



Already on the market

## OTBP065



Information system for the integrated care of patients with breast cancer



A Sevilla Technology transfer organisation has developed an innovative system that allows, through a structured document, the evolution of breast cancer patients by supporting integrated care of patients. They are looking for License agreement with a Company



Our system has the advantage of giving support, by a set of structured information, to an integrated assistance to breast cancer patients. This system is also able to communicate with a system of decision support developed which sets recommendations for patients based on the most relevant international guidelines

Additionally, it is to be highlighted that the developed system can be applied by healthcare providers for registration and information management of patients with breast cancer. Its application can serve both to document the information required in the care of patients and to support the registration of all relevant variables for clinical research. The system is based on semantic interoperability communications based on the ISO13606 standard allowing the patient's clinical information to be accessible by external systems



Patent(s) granted



Already on the market

OTBP066



Method for the differential diagnosis of vascular parkinsonism and Parkinson's disease



A Sevilla Technology transfer organisation has developed an innovative computer-implemented method for the differential diagnosis of vascular parkinsonism (VP) and Parkinson's disease (PD) as a clinical decision support tool. They are looking for License agreement with a Company



This technology is based on a computer-implemented method which has provided accuracies above 90% in discriminating between VP and PD via two common methods for SPECT evaluation: Region-of-interest (ROI) analysis and Statistical Parametric Mapping (SPM). Furthermore, our technology introduces a method for processing voxel-based data: the use of penalized algorithms implemented in R-packages. This approach provides an automated and therefore objective, fast and efficient solution very beneficial for the nuclear-medicine specialist decision-making. The advantages of this new technology are:

- Currently, conventional structural imaging techniques (CT, MRI) have a limited utility in the diagnosis of parkinsonian patients. However, explorations through Nuclear Medicine (PET, SPECT) can be useful tools for the evaluation of these patients, allowing the study of neurochemical and functional features.
- As far as our knowledge, this is the only existing technology that allows the specialist to diagnose and differentiate PV of PD and make a clinical decision.
- May be applied to other parkinsonisms such as PSP, corticobasal degeneration, dyskinesia, etc... Validation in these pathologies is ongoing. The method has been retrospectively validated in 80 VP patients and 164 PD patients who underwent [123I]FP-CIT SPECT.



Patent(s) granted



Already on the market

OTBP067



Diagnostic kit for soft tissue cancer



A Sevilla Technology transfer organisation has developed an innovative kit and method for detecting the rearrangement of STAT6 and/ or NAB2 genes useful for diagnosing cancer, specifically, soft tissue cancer. They are looking for License agreement with a Company



The present kit and method comprises two probes, consisting of new specific oligonucleotides, using the technique of fluorescence in situ hybridization (FISH), which allows the detection of chromosomal alterations in interphase cells, which makes it particularly suitable for paraffin tissue. A preliminary validation study on samples of 53 patients with pathologic diagnosis of SFT and HPC has been completed. The advantages of this new technology are:

- Higher sensitivity: FISH positivity rate to detect STS6 rearrangements is higher than with immunohistochemistry. This method enables detecting all possible rearrangements of these genes
- Higher feasibility: Developed probes work very well with paraffin-embedded tissue and allow detecting the presence or absence of rearrangement in one step. In contrast, RT-PCR does not always work properly due to starting material (RNA), which can be degraded due to tissue fixation process. PCR also requires more time to detect each of the types of rearrangement that may be produced



Patent(s) granted



Already on the market



## OTBP068



Open retinoscope



A Sevilla Technology transfer organisation has developed an innovative open retinoscope useful for eyes exploration comprising a universal adapter for smartphone. They are looking for License agreement with a Company



The present technology is a new open retinoscope designed for exploration of the back of the eye (retina) which combines a light source to Volk-like ophthalmic lens, allowing the physician to assess the retina of a patient more easily and with much greater visual field than with any actual direct ophthalmoscope. This open retinoscope includes an adapter that allows coupling any model of smartphone to collect the images obtained during the examination. This new retinoscope is portable, inexpensive and easy to handle. In addition, because it has its own light source, it allows exploration of the retina in an autonomous way, i.e. without attaching a smartphone.



Patent(s) applied but not yet granted



Available for demonstration

## OTBP069



Medicines holder for health care



A Sevilla Technology transfer organisation has developed an innovative medicines holder which improves the security in the use of cardiac emergency cars. They are looking for License agreement with a Company



- Facilitates the replacement of medicaments, monitoring of expiry dates, location and management of the drugs, management of the cardiac emergency car. Thus, the holder reduces delivery times and increases safety by avoiding potential adverse events due to errors of administration, both regarding the route of administration and the drug administered as such
- Ergonomic arrangement of blisters which facilitates accessibility to them, and the detection of its absence with the aim of the replenishment of medication in the cardiac emergency car
- Presence of coloured marks (red, yellow, green) that helps to visually and quickly detect the expired drugs
- Arrangement of each piece is customizable depending on the needs of each health service either a primary health center, doctor's office, surgery, medicalized mobile unit or hospital care unit



Already on the market

**OTBP070**



Hypermutable strains of Mycobacterium tuberculosis and M. smegmatis



A Sevilla Technology transfer organisation has developed an innovative hypermutable strains of M. tuberculosis and M. smegmatis. They are looking for License agreement with a Company



The antimutable activity of this gene and its orthologues in the rest of the bacteria of the genus has not been described to the date. Hence, the present methodology is the only which allows:

- Using the genus Mycobacterium strains (including M. smegmatis and M. tuberculosis) for the assessment of resistance to new antibiotics, a combination of them or combinations of already known antibiotics, both in vitro and in animal models
- Using the already mentioned strains for the characterization of antibiotic targets and, in general, for the procurement of mutants in biological processes in Mycobacterium in which the mutation frequency is very low
- Using the hypermutable strain of M. tuberculosis for obtaining new vaccine strains with several mutations in virulent genes, which could prevent the development of virulent revertant strains



Patent(s) applied but not yet granted



Concept stage

**OTBP071**



Streptomyces mutants with high genetic variability



A Sevilla Technology transfer organisation has developed an innovative method for the production of hypermutable actinobacteria. They are looking for License agreement with a Company



The procurement of Streptomyces strains with high genetic variability by mutation and recombination, through the inactivation of the new discovered path, would enable the obtention of:

- Overproductive strains of secondary metabolites such as antibiotics, antitumor, immunosuppressants, antihelmintics, antifungal, herbicides, insecticides, etc.
- More resistant strains to inhibitors of industrial production (physical and chemical)
- Hyperproducing strains of new metabolites by fusing metabolic pathways
- Mutational studies for the analysis of metabolic pathways since it will enable the obtainment of multiple mutations in only one step
- There are no alternative methods because the obtainment of Streptomyces strains with high genetic variability has not been possible previously



Patent(s) applied but not yet granted



Concept stage



### MDi Psoriasis



A Sevilla Technology transfer organisation has developed an innovative decision-making algorithm that allows systematizing and homogenizing the decision-making in complex patients with psoriasis. They are looking for License agreement with a Company



Thus, MDi#Psoriasis allows to systematize and homogenize the clinical decision making in complex patients, reducing the therapeutic variability and adjusting the decisions in each scenario according to the available scientific evidence. Currently the clinician does not have algorithms that facilitate decision making in complex scenarios characterized by the presence of comorbidities and other therapeutic antecedents. The advantages of this new technology are:

- Algorithm based on accepted international therapeutic guides (European Academy of Dermatology, German Society of Dermatology, American Academy of Dermatology), consensuses and recommendations of groups of interest (National Psoriasis Foundation, Grupo de Psoriasis de la AEDV) and technical data sheets of included drugs
- Includes all the therapeutic options currently authorized for the treatment of moderate-severe psoriasis
- Improves the safety of the patient with moderate-severe psoriasis through a system which allows the verification of contraindications, interactions and therapeutic recommendations
- Clinical use-oriented to dermatologists and general practitioners regardless of their experience in the treatment of psoriasis



### Design rights



### Already on the market

OTBP073



Tele dermatology platform for remote screening of skin cancer



A Sevilla Technology transfer organisation has developed an innovative software platform to enhance communication systems between GP and dermatologists in skin cancer diagnostics. They are looking for License agreement with a Company



Thus, Tele dermatology v2.0 responds to the need to make possible the massive screening of skin cancer, in order to enable its diagnosis and early treatment. To achieve this goal, this technology offers a usable, efficient and safe ITC platform. The advantages of this new technology are:

- Improves the efficiency of the process of remote and massive screening of skin cancer without the need for patient movement to the hospital. 51.20% of patients not referred for physical visit to the hospital. Improves the accessibility of the general population to specialized counseling and the early diagnosis of skin cancer
- Reliability, accuracy and validity evaluated in several studies and published in international journals (J Telemed Telecare 2005;11:298-303; Arch Dermatol 2007;143:479-84; Dermatol Surg. 2007;33:1092-8)
- High effectiveness: Mean delay for face-to-face care in those cases with skin cancer or suspected injury was 12.31 days vs. 88.62 days in the conventional care process (Arch Dermatol 2007;143:479-84)
- High efficiency: Unit cost of tele dermatology was 79.78 €/ patient compared to 129.37 €/ patient of the conventional care (J Telemed Telecare, 2009; 15: 40-5)
- Favorable impact on initial prognosis of melanoma patient survival. Frequency of melanomas with good initial prognosis in patients treated with tele dermatology was significantly higher (Arch Dermatol. 2012;148(9):1025-8)
- Improves the security in the transmission of clinical information and personal data



Design rights



Already on the market

## OTBP074



Biomarker for Subarachnoid Hemorrhage and Vasospasm



A Sevilla Technology transfer organisation has developed an innovative method based on the use of RhoA as biomarker for the diagnosis, classification and/ or monitoring of Subarachnoid Hemorrhage as well as useful for the prediction or prognosis of suffering cerebral vasospasm after the same. They are looking for License agreement with a Company



Our research group has shown an inverse correlation between RhoA activity in aSAH patients and the onset of vasospasm. The determination of the activity and expression of RhoA in mononuclear cells in humans during the first four days after aSAH could be a biomarker of early diagnosis of vasospasm that may appear from day 5. The advantages of this new technology are:

- First time that the use of RhoA protein as a biomarker in peripheral blood mononuclear cells of aSAH patients is described
- Minimally invasive test requiring blood extraction by one of the vascular catheters already inserted in the patient
- Does not require administration of potentially toxic substances to the patient (such as the contrast)
- Amount of blood does not exceed that of an additional biochemical determination, without moving the patient. Promising results have been obtained in a proof of concept study performed on samples from 29 subjects (14 with severe aHSA and 15 controls)



Patent(s) applied but not yet granted



Project already started

## OTBP075



Novel phenylpiperazine derivatives for the treatment of opportunistic viral infections and as antibacterial



A Sevilla Technology transfer organisation has developed an innovative antiviral and antibacterial agents with increased therapeutic activity against human adenovirus (HAdV), human cytomegalovirus (HCMV) and drug-resistant bacteria. They are looking for License agreement with a Company



- Capacity to block HAdV and HCMV infections at low micromolar concentration with little or no cytotoxicity. Specifically, most assayed compounds significantly inhibited HAdV5 and HCMV DNA replication by more than 50% at 50  $\mu$ M concentration, with no significant effect on the cellular control gene GAPDH
- Significant and broad-spectrum inhibitors of DNA replication both in HAdV and HCMV
- Based on biological studies, these molecules block HAdV and HCMV infections in different phases of their lifecycle, providing potential candidates for the development of a new class of antiviral compounds to treat infections by DNA viruses



Patent(s) applied but not yet granted



Project already started

OTBP076



Compositions for the treatment of striae distensae and ischemic ulcers



A Sevilla Technology transfer organisation has developed an innovative use of benzotiazepines in the prevention, improvement, relief and/or treatment of striae distensae, and more specifically, of cutaneous ischemic ulcers. They are looking for License agreement with a Company



Our research group has shown that diltiazem cream 2% may be indicated in the treatment of skin ulcers of ischemic origin due to its vasodilator effect, independently if the ulcers are consequence of a medical or surgical treatment or of an affectation of skin vasculature by a basal disease (chronic venous insufficiency, atherosclerosis, diabetes mellitus, vasculitis, thrombophilia, systemic sclerosis, etc.). The research group has demonstrated the effectiveness of Diltiazem cream in cases of ischemic ulcers in clinical situations that had no medical solution. The advantages of this new technology are:

- First case described of SD ulceration associated with bevacizumab resolved without treatment discontinuation. Thus, this composition allows maintaining treatments that otherwise should be discontinued
- Low toxicity profile that allows its administration without discontinuing concomitant medication, especially useful in cases where the treatment causes ulcers or delayed healing thereof
- Pharmaceutical composition of simple synthesis
- Potentially useful in other diseases that lead to an affected skin vasculature



Patent(s) applied but not yet granted



Field Tested /evaluated

## OTBP077



Kit to predict and / or predict the response to a combination treatment with a FGFR inhibitor and an EGFR inhibitor



A Sevilla Technology transfer organisation has developed an innovative in vitro method and kit to predict the response of a subject suffering from lung cancer to a treatment with inhibitors of FGFR and with EGFR inhibitors. They are looking for License agreement with a Company



Our research groups have demonstrated that the expression of FGFR1 and / or FGFR4 in a tumor context with high activation of native or mutated EGFR produces an over-activation of the receptor, which results in an induction of pro-tumorigenic signaling downstream and in an increase of tumor characteristics in vitro and in vivo. The combined use of anti-EGFR and anti-FGFR inhibitors in tumor models dependent on EGFR signaling, with high expression of FGFR1 and / or FGFR4, has been shown, for the first time, to have in vitro synergistic effects and high efficacy in vivo in xenografts of cell lines and in xenografts derived from patients, in the context of non-small cell lung cancer (NSCLC). The advantages of this new technology are:

- It allows selecting candidate patients to administer a combination treatment with anti-EGFR and anti-FGFR drugs, avoiding unnecessarily treating non-responders or preventing access to the treatment of responding patients
- It demonstrates the synergistic effect never described to date that justifies the combined use of inhibitors of these receptors in patients that have high expression of FGFR1 and / or FGFR4 and also over-activation of the EGFR receptor, which allows the treatment with these drugs to subpopulations of patients who have over-activation of EGFR but no mutation and, therefore, are currently excluded from clinical trials
- It helps in the development of better treatments directed to subjects with tumors that have native EGFR, that is, without mutations



Patent(s) applied but not yet granted



Project already started

## OTBP078



Kit to predict and / or predict the response to a treatment with FGFR inhibitors



A Sevilla Technology transfer organisation has developed an innovative in vitro method and kit to predict the response of a subject suffering from lung cancer to a treatment with inhibitors of FGFR. They are looking for License agreement with a Company



Our research groups have developed a predictive model of the response to treatment with FGFR inhibitors of patients, according to a high expression of N-cadherin and also a high expression of at least one of the FGFRs selected between FGFR1 and / or FGFR4. A high expression of FGFR1 in models of xenografts derived from lung cancer patients shows that the efficacy of a selective FGFR inhibitor is only observable in patients with high expression of N-cadherin. The advantages of this new technology are:

- It allows to define the group of patients who will benefit from a therapy with FGFR inhibitors and who, with the current criteria of patient selection (amplification of FGFR1) are not candidates for treatment
- Avoid unnecessarily treating patients who will not respond to treatment, reducing the unnecessary side effects of ineffective treatment, prioritizing the search for alternative treatments more quickly, saving costs in treatment and improving the expectations of an effective response
- Help in the clinical development of new more effective FGFR inhibitors
- It shows for the first time that the pro-oncogenic function of the FGFR1 and FGFR4 genes in lung cancer depends on the expression of N-cadherin



Patent(s) applied but not yet granted



Project already started

## OTBP079



Scarcheck



A Sevilla Technology transfer organisation has developed an innovative mobile app that allows control of surgical wounds at home through a telemedicine system based on image. They are looking for License agreement with a Company



- Novelty: There is no any mobile app for this purpose.
- Reduction of healthcare costs: Both for the patient, who avoids unnecessary visits to the hospital, and for the clinician that saves consultation time.
- Reduction of social costs since the app avoids the absenteeism and avoidable medical visits.
- Low economic costs for commercial exploitation: Available prototype for its development and commercialization.



Design rights



Already on the market





eXaBreast



A Sevilla Technology transfer organisation has developed an innovative device for immobilization that improves breast cancer treatment with conventional radiotherapy and is suitable for SBRT and magnetic resonance. They are looking for License agreement with a Company



Our research group has designed an innovative stereotactic immobilization device that allows increasing the reproducibility of the location of breast tumors among radiation treatment machines (linear electron accelerators) and image acquisition machines (TAC, PET and MRI). The advantages of this new technology are:

- Reproducibility. Fixing the pelvis by controlling the position of the perineum on a rotating lower platform that also facilitates the placement of patients with reduced mobility
- Ensures the immobilization of the patient more precisely than the usual devices
- Comprises an arm support that allows positioning the patient for a more effective and comfortable treatment
- Includes a stereotactic positioning system on the sides and an ad hoc arc
- Compatible with the geometry of the resonances, with anchors for antennas, and does not produce alterations in the magnetic fields of the same



Patent(s) applied but not yet granted



Project already started

OTBP081



Autologous human T cell in vitro culture system



A Sevilla Technology transfer organisation has developed an innovative autologous cell in vitro co-culture system to study the homeostatic proliferation of T-lymphocytes useful in the diagnosis and treatment of patients suffering pathologies that present lymphopenia. They are looking for License agreement with a Company



Our research group has developed, optimized and characterized an in vitro system of culture of autologous human cells that allows studying the various types of homeostatic proliferation in humans respecting the specific antigenic characteristics of each patient. This experimental approach constitutes a tool for the study of peripheral compensatory mechanisms in a more specific way in the different human lymphogenic scenarios, potentially useful for: (i) characterizing and classifying patients with pathologies which present lymphopenia based on the analysis of proliferative capacity of T-lymphocytes in response to homeostatic (autologous) stimuli as well as in the phenotypic characteristics of proliferated cells; (ii) obtaining specific T-regulatory cells (Tregs) generated during HP for the treatment of autoimmune or inflammatory diseases, allergy, asthma, graft versus host disease, or transplant rejection. The advantages of this new technology are:

- In vitro system that allows obtaining very complete information about the different HP processes in humans without having to use non-human animal models, with limited extrapolation in terms of cellular characteristics
- Respects the specific antigenic load of each individual and/ or clinical scenario, allowing extrapolating results to human lymphogenic states
- It allows obtaining the cellular fraction enriched in functional Treg cells, by means of the quantification of specific cellular markers, which could be used as cellular therapy in certain clinical scenarios



Patent(s) applied but not yet granted



Project already started

OTBP082



Guiding device for ultrasound-guided puncture



A Sevilla Technology transfer organisation has developed an innovative device that can be coupled to the transducer of an ultrasound machine to control the angle of insertion of the needle in an ultrasound-guided puncture procedure. They are looking for License agreement with a Company



Our technology is a multi-angle guiding device for echoguided puncture which basically includes:

- Clamp: May have any configuration as long as it allows to carry out the described function. May be coupled to the distal end of the ultrasound probe, mainly by pressure.
- Needle guide element: Attached to the clamp via a connecting arm. This connection arm ensures a separation distance between one side of the ultrasound and the guide element, which improves the mobility and visibility of the needle.

The present technology solves the typical problems thanks to the fact that it has a guide element separated from a coupling clamp to the ultrasound probe and equipped with a curved support surface. Due to the curved shape of the supporting surface, the mobility of the needle is facilitated in a smooth and continuous manner. In addition, when the clamp is separated from the support surface, better mobility and visibility of the needle is ensured in comparison with other devices in which the needle is introduced practically tangent to the lateral surface of the ultrasound machine.



Patent(s) applied but not yet granted



Project already started

OTBP083



Compositions for endogenous GDNF stimulation for the treatment of neurodegenerative diseases



A Sevilla Technology transfer organisation has developed an innovative series of modulating agents that allow stimulating the production of endogenous GDNF-derived neurotrophic factor as potential therapies for Parkinson's disease and other neurodegenerative diseases. They are looking for License agreement with a Company



Our research group has identified a series of therapeutic targets, and modulating agents thereof, expressed very selectively by the positive parvalbumin (PV) interneurons of the striatum which are the cells that produce 95% of the GDNF and which, presumably, maintain the survival of the DA neurons of the substantia nigra. First preclinical tests in mice show that the stimulation of certain receptors induces a significant increase in the expression of the endogenous Gdnf gene. Thus, activation of endogenous GDNF is a feasible clinical method to protect dopaminergic neurons and slow the progression of motor symptoms in PD. The advantages of this new technology are:

- Endogenous GDNF production stimulation for the PV + neurons aims to reduce and/ or eliminate the adverse effects observed with the exogenous GDNF
- The use of pharmacological compounds that stimulate the production of GDNF by the PV + interneurons could be administered peripherally (orally, intravenously) avoiding surgery (intracranial delivery)
- The therapeutic targets identified are expressed very selectively by the PV+ of the striatum
- The expression of specific genes by PV+/ GDNF+ neurons constitutes an important advance to design a selective method of endogenous GDNF stimulation in order to overcome the problems encountered with exogenous GDNF



Patent(s) applied but not yet granted



Project already started



Method for risk prediction of death or vasospasm after subarachnoid haemorrhage



A Sevilla Technology transfer organisation has developed an innovative method and system that allows predicting the probability of death or of suffering vasospasm of a patient from a Computerized Tomography image (CT) of neurocritical patients. They are looking for License agreement with a Company



The present technology is based on a set of objective parameters obtained from an image of cranial CT, which allows to estimate the risk presented by each patient to undergo vasospasm or even to die by measuring in a standardized, objective and precise manner the amount and size of the image of blood or injured area. This method may be carried out in whole or in part automatically by a processing means. The advantages of this new technology are: Real risk stratification enabling to: (i) Identify intracranial lesions; (ii) Estimate volume of bleeding/ brain injury of spontaneous or traumatic origin; (iii) Estimate affected areas and possible secondary functional repercussions; (iv) Estimate the objective prognosis of the neurocritical patient of suffering vasospasm or intra-hospital death.

- Automated and immediate image processing independent of the observer through internet application <http://sahcna.us.es> or via plug-in in TAC system to be developed
- Does not need manual detection of injuries reducing errors due to lack of attention or knowledge
- Prevents the occurrence of disabling sequelae, as well as safeguard the life of patients and improves hospital resources efficiency both because patient location and effective treatment after SAH



Patent(s) applied but not yet granted



Project already started

OTBP085



VITHA-chest



A Sevilla Technology transfer organisation has developed an innovative smart system equipped with technological innovative systems for the treatment of chronic respiratory diseases. They are looking for License agreement with a Company



VITHA-Chest is a vest with a dual purpose: (1) create a customized vibratory field on the chest wall, which fosters the mobilization and expulsion of bronchial secretions; and (2) encourage compliance to treatment by self-control of functional respiratory parameters (VEMS, Sat O<sub>2</sub>, metabolic equivalents or METs) that can be telematically monitored by the medical specialist. The advantages of this new technology are: -Portable: Allows the daily use by the patient.

- Versatile: Allows the patient and the physician configuring and adapting the therapy, thus, reducing the activity of the physiotherapist, caregiver, patient and its family. It ensures the patient independence.
- Personalized therapy: Massage application depending on breathing state, coughing detection, etc... Capacity to issue an adaptive therapy based on the entries received.
- Guidance for the doctor / physiotherapist: Medical record and patient data available and analyzable by the physician/ physiotherapist.



Patent(s) applied but not yet granted



Proyect already started

# OTBP086



Resorbable membrane for guided bone regeneration



A Sevilla Technology transfer organisation has developed an innovative film or membrane with a suitable stability and degradation rate, which allows guided bone regeneration (GBR) without removing the implanted material. They are looking for License agreement with a Company



Therefore, there is an unmet medical need of developing a biodegradable resorbable membrane with a suitable stability and degradation rate, which allows guided bone regeneration (GBR) without removing the implanted material. The present offer provides a membrane comprising a biodegradable polymer which is activated in one or both sides by exposure to an oxygen plasma or other active gas generated in a conventional plasma reactor. As a result of this procedure, a resorbable membrane with controlled rate of degradation in the physiological environment is obtained. The advantages of this new technology are: · The technology includes a resorbable biodegradable polymeric film or membrane, (suffer hydrolysis on contact with the physiological medium), sufficiently stable, high design flexibility, with an adaptable composition and structure depending on the specific needs.

- Additionally, the obtained membrane has nanotechnological characteristics that can improve the implants bioactivity for promoting their in situ conduction and osteo-induction in the patient and osteoprogenitor cells. Consequently, the osteointegration between the implant and the surrounding bone is improved.

- The present technology also includes a process of synthesis where the degradation rate of the "film" polymer can be controlled by varying the activation time of the polymer treatment



Patent(s) applied but not yet granted



Concept stage

**OTBP087**



Software for surgical planning and simulation of body contouring reconstruction by filling



A Sevilla Technology transfer organisation has developed an innovative software application for surgical planning and simulation of body contouring reconstruction by filling, especially useful for VIH patients suffering lipodistrophy. They are looking for License agreement with a Company



The present tool is based on a model of the patient's facial surface obtained using a flatbed scanner. The developed algorithm comprises the following features:

- Graphical interface that allows monitorization for surgical planning management which shows the face surface model as well as the results on the simulated intervention.
- Display model
- Delimitation of the area to be operated. The physician selects the points around the area where the surgery will be performed. The algorithm calculates new points between them and connects all together to make a surface reconnaissance
- Operation simulation. The algorithm creates a smooth surface on the enclosed area eliminating the irregularities due to the lipodystrophy

Calculation of the volume difference between the new generated surface and the original surface in the patient's facial model. The advantages of this new technology are: · The display model consists of a set of points linked by a mesh that gives the appearance of three-dimensional surface. No texture information is necessary for calculating the desired facial surface or the needed volume for operations; · The user is free to select as many points as required for the marking out of the area to be operated; · It enables carrying out numerous functions and increases user interactivity with the program, allowing several simulations in different areas of the patient's face at the same intervention



Design rights



Already on the market

**OTBP088**



TeleStroke: eHealth system for the care of patients with acute stroke



A Sevilla Technology transfer organisation has developed an innovative software application that enables to provide a telemedicine service between hospitals to treat patients with acute stroke. They are looking for License agreement with a Company



- Use of communications standards, providing the system with greater flexibility
- Accordance with semantic and organization interoperability standards of the Health domain
- Development has been directed towards the care process, and expert health personnel have been involved in the design and definition of requirements
- Improvement in serviceability
- Assurance of the accuracy of the results



Patent(s) applied but not yet granted



Project already started



## OTBP089



Kit for the differential diagnosis of hepatic fibrosis



A Sevilla Technology transfer organisation has developed an innovative diagnostic kit that allows differentiation between the early and late stages of fibrosis and the cirrhosis stage. They are looking for License agreement with a Company



Precise diagnosis of the degree of fibrosis is necessary to determine the progression of the liver disease, conduct a prognosis and adopt therapeutic decisions. An SSPA research team has developed a kit for the early diagnosis of hepatic fibrosis, as well as to assess the response to treatment of this disease; it allows an individual specific recognition model to be determined, which can be modified post-treatment, a factor that allows diagnosis-related groups to be established

The research team has discovered a marker that is expressed in the stellate cells of the human adult liver in non-pathological conditions. However, the expression of this marker diminishes in advanced fibrotic stages. This decrease is even more dramatic in cirrhotic stages of biopsies for C-virus hepatopathies and especially in alcoholic hepatopathies. The advantages of this new technology are: · It allows early diagnosis of hepatic fibrosis; · It allows the response to the treatment to be assessed, and diagnosis-related groups can be established



Patent(s) applied but not yet granted



Project already started

## OTBP090



New cannabinoid agents for the treatment of multiple myeloma and acute myeloblastic leukemia



A Sevilla Technology transfer organisation has developed an innovative cannabinoid-derived compounds that have shown very promising safety and efficacy results in in vitro and in vivo studies, both in multiple myeloma and acute myeloblastic leukemia. They are looking for License agreement with a Company



Mechanism of action, in vitro toxicity and efficacy studies (both in vitro and in vivo), have been completed with WIN55,212-2, a known unspecific agonist of CB1 and CB2 with very promising results: (i) Dose-dependent inhibitory activity of viability in 4 different MM cell lines and 6 different AML cell lines as well as in plasma cells and blasts from patients; (ii) Normal hematopoietic cells not affected in terms of viability and proliferation; (iii) Not neurological symptoms; (iv) Proof of efficacy performed in a murine model of MM cell line U266 xenogeneic transplant showed significant differences in terms of tumour growth, mice weigh and survival; (v) AML mouse model with KG1 cell line also confirmed in vivo efficacy. In addition, a new indazole CB2- specific agonist derived from the above compound has shown a potent antiproliferative effect. Chemical optimization and in vivo proof of concept in MM and AML of new optimized compounds is ongoing. The advantages of this new technology are: · Improved efficacy: (i) Completely abolish already established tumor growth with complete regression of the tumor mass; (ii) High cytotoxic effect against MM and AML cells whilst do not hamper viability of normal cells; · Maintained quality of life: (i) Low toxicity profile which allows maintenance therapy; (ii) Allow combining our compounds with currently available drugs. Synergistic effect demonstrated with dexamethasone and melphalan; · Low toxicity: (i) Orally available vs. IV administration (bortezomib & carfilzomib); (ii) High expected patient compliance in maintenance therapy; · Possibility of orphan drug designation (EU, US) and fast-track status (US)



Patent(s) applied but not yet granted



Field Tested / evaluated

OTBP091



Software for 3D representation of burns and calculation of burnt skin area and burn depth



A Sevilla Technology transfer organisation has developed an innovative computer-based system for burnt surface area estimation (BAI) and burn depth analysis (BDA) based on 3D modeling of the patient. They are looking for License agreement with a Company



The potential of the present technology is that 3D models are adapted to age, gender and constitution. Furthermore, the program allows for 3D models to be scaled, rotated and moved into space allowing burns in hidden regions to be represented. The program also has a selection of different radii tools, according to the size of the burnt area to be represented, and enables the physicians to classify burns into their depths. This system has been validated by estimating surface area of 37 known size patches attached to volunteers' body as well as in 80 patients. The advantages of this new technology are:

- Avoids hidden body regions such as the temporoparietal area, axilla and body sides allowing the partial or total estimation of the body surface.
- Adapted to patient's gender, age and constitution, thus eliminating variations in burn surface area estimation due to the use of predefined body models, 2D analysis and variations due to the assessor.
- Easy to use and eliminates systematic errors produced by other estimation methods. It also allows photographs to be attached to a particular model.
- Other 3D systems have not been clinically validated.
- Compatible with other technologies which would substitute the manual entering of depth information



Patent(s) applied but not yet granted



Already on the market



Metal nanoparticles functionalised with fluorescent organic molecules



A Sevilla Research center has developed an innovative new metal nanoparticles functionalised with fluorescent organic molecules obtained in a simple manner, in a single stage, by the dissolution of metallic salts (silver, gold, aluminium, platinum, cobalt and palladium) by their treatment in a water medium with a reducing agent in the presence of a fluorescent organic molecule. They can be used in detection tests employing fluorescence techniques, and are noted because they possess the advantages of metal nanoparticles and of Quantum Dots. They are looking for License agreement with a Company



Obtained by a simple, single-stage method. In these nanoparticles, the fluorophore is not deactivated by the proximity of metals. The proximity of the fluorophore leads to increase both the intensity of the fluorophore emission and its stability, a feature that makes them a good alternative to the use of “conventional” organic fluorophores

They are stable in a water medium, capable of functionalisation with other molecules of interest (such as antibodies in biomedical applications) and they are biocompatible

In addition to the well-known fluorescence techniques, these nanoparticles can also (and will preferably) be detected by means of other techniques, specifically UV-Vis, IR and Raman. They possess both the typical advantageous properties of metal nanoparticles (intensive surface plasmon in the visible spectrum, capacity to be detected by enhanced-surface spectroscopy) and those of Quantum Dots (intensive fluorescence)

Need or problem solved

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Patent(s) granted



Already on the market

OTBP122



Method for enhancing nematodes for their utilisation in aquaculture and aquariums through the use of microorganisms



A Sevilla Research center has developed an innovative use of the nematode *Caenorhabditis elegans* as live food in the larval breeding of species in aquaculture and aquariums, after its enrichment in essential fatty acids by feeding it with microorganisms producing them. *C. elegans* evidences a series of exceptional advantages when compared with the traditional feeding with artemia and rotifers, because it facilitates the design of a food suitable for the needs of larvae in aquaculture. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved and how:

- This patent makes it possible for the nematode *C. elegans*, enriched in essential fatty acids by feeding it with bacteria producing them, to serve as food for cultured aquatic species in their larval phase. Currently, the most popular species in aquaculture is the crustacean artemia, which is not cultured and is captured in large salty lakes and, therefore, its availability is highly irregular and its price is high
- Nematodes can also be used as part of the fattening food for organisms of interest in aquaculture, once they have completed their larval stage. Currently, foods contain fish meal obtained from fishing activities and, consequently, aquaculture is not sustainable from an environmental point of view. Moreover, in the case of fish requiring diets rich in polyunsaturated fatty acids, food need to be manufactured using marine organisms, such as algae and phytoplankton, that, although indeed cultivable, are hard to include in the diet of most fish of interest in aquaculture because they are carnivorous
- The invention could also be applied to other nutrients, vitamins, hormones, antibiotics, growth factors or other compounds that are not naturally carried by the nematode

Competitive advantages:

- À la carte diets: *C. elegans* is one of the most researched model species because, along with their plasticity, they make it possible to offer customised solutions to the needs of each aquaculture farmer. For instance, *C. elegans* can function as a vector for the provision of vitamins and even for strengthening the immunological system
- Artemia is an overexploited natural resource and its availability is a limiting factor in aquaculture. *C. elegans* is an alternative and sustainable food that reduces producers' costly dependence on the unstable international artemia market
- The optimisation of the *C. elegans* culture could make it possible to obtain a high-quality product at a sustainable lower price than that of artemia



Patent(s) granted



Patent(s) granted



Culture of Moritella Marina in milk whey



A Sevilla Research center has developed an innovative protocol for the culture of the marine bacterium Moritella marina in milk whey, a highly polluting byproduct from the dairy industry, such as cheese-making. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved and how

- Turning milk whey, a byproduct of the dairy industry that is highly polluting when spilled to good use, due to its high organic matter contents and its high biological oxygen demand
- Reducing the cost of dairy industry spill decontamination, as the presence of milk whey in spills leads to a costly decontamination process.
- Moritella marina is a bacterium that naturally produces a fatty acid that is essential in the diet of most of the marine species cultured in aquaculture. This bacterium could be useful for enriching the fatty acids essential for the nematode *C. elegans*, so that the latter can serve as live food for fish larvae and be used for the manufacture of fattening food

Innovative issues/Competitive advantages

- Researchers in the field have also patented a method for enriching the nematode *C. elegans* for its utilisation in aquaculture and aquariums through the use of microorganisms
- The fact is that, currently, the culture of seawater fish larvae is based on the use of rotifers and artemia; however *C. elegans* has a series of exceptional advantages making it possible to design food customised to the needs of larval feeding in aquaculture
- It is significant that it is now possible to breed fish larvae in fresh water (zebra fish), as well as those of gilthead (*Sparus aurata*) and sea bass (*Dicentrarchus labrax*), by feeding them exclusively with these nematodes



Patent(s) granted



Patent(s) granted



Metal nanoparticles functionalised with fluorescent organic molecules



A Sevilla Research center has developed an innovative new metal nanoparticles functionalised with fluorescent organic molecules obtained in a simple manner, in a single stage, by the dissolution of metallic salts (silver, gold, aluminium, platinum, cobalt and palladium) by their treatment in a water medium with a reducing agent in the presence of a fluorescent organic molecule. They can be used in detection tests employing fluorescence techniques, and are noted because they possess the advantages of metal nanoparticles and of Quantum Dots. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- Detection by means of fluorescence techniques serves as a basis of most of the biological tests currently available. However, at a molecular level, fluorescent detection shows serious limitations deriving from the use of organic fluorophores and its high "photoblinking". As an alternative, Quantum Dots (QD) are becoming more and more relevant; these are also nanoparticles but they evidence important limitations, such as the complexity of their synthesis, low stability in water media, difficult functionalisation and toxicity
- These metal nanoparticles with fluorescent properties serve as markers both for fluorescence and for surface-enhanced spectroscopies (SERS and SEIR).
- They allow the detection of oncological biomarkers in the organism
- They can be used for the diagnosis and the treatment of diseases, as they are capable of joining to drugs and biomolecules of pharmacological interest, such as antibodies, proteins, etc. Thus, these functionalised nanoparticles could be selectively directed to the site of action of the joined drug and even protect it from possible degradation in the organism, also joining certain antibodies

Innovative issues/Competitive advantages:

- Obtained by a simple, single-stage method
- In these nanoparticles, the fluorophore is not deactivated by the proximity of metals. The proximity of the fluorophore leads to increase both the intensity of the fluorophore emission and its stability, a feature that makes them a good alternative to the use of "conventional" organic fluorophores
- They are stable in a water medium, capable of functionalisation with other molecules of interest (such as antibodies in biomedical applications) and they are biocompatible
- In addition to the well-known fluorescence techniques, these nanoparticles can also (and will preferably) be detected by means of other techniques, specifically UV-Vis, IR and Raman



Patent(s) granted



Patent(s) granted



Genetically modified yeasts with capacity for floating in a liquid medium. Procedure for their procurement and utilisation



A Sevilla Research center has developed an innovative technology that involves attaining the growth of a biofilm (wine yeast), controlling both quantity and quality, through the use of fungi or yeasts having such capacity or lacking it naturally but endowed with it. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- Possibility of inducing, controlling and improving the amount and quality of a yeast biofilm, guaranteeing control during its biological growth, as well as a fast development of more veil of flor for new inoculations of butts and flor replacement
- The fact that industrial yeast grows on a surface producing a biofilm propitiates a simple, effective, fast and low-cost method for separating yeast from the liquid medium in which it grows by a simple collection of this yeast aggregated on the surface
- It makes it possible to manage the design of specific drugs against human pathogens that are protected from antibiotics by this biofilm, by knowing the proteins involved in their development

Innovative issues/Competitive advantages:

- The biofilm created by this invention provides better insulation of the wine contained in the butt, avoiding its oxidation, accelerates the wine metabolism and, consequently, the appearance of the organoleptic components that characterise wine
- Moreover, the procedure for procurement improves the stability of the biofilm itself during the summer months and, in case of loss, it enables fast regeneration based on the surviving yeasts or of the inoculate grown in the laboratory or added to the butts
- The patent makes it possible to procure strains carrying out this fermentation or metabolic process in the form of biofilm within the liquid-air interphase, in such a way that, once fermentation is complete, the medium used in the lower part of the fermenter is eliminated and a new medium is pumped in, without requiring the removal of the fungus or yeast and without affecting their growth, thus attaining a continuous high-yielding culture
- *S. cerevisiae* is the most explored fungus from all points of view. Considering that the formation of biofilms in other fungi, and even in bacteria, shares many common elements with *S. cerevisiae*, the use of the latter as a model organism can provide



Patent(s) granted



Patent(s) granted

## OTBP126



Procedure for regulating the production of heterologous proteins controlled by salicylic acid derivatives in microorganisms associated with higher-level organisms



A Sevilla Research center has developed an innovative method by which the expression of proteins of interest in microorganisms can be controlled by means of an expression system, which is regulated and inducible by the presence of salicylate derivatives, preferably of acetylsalicylic acid because of its toxicological safety in cells. The system can be established in bacteria hosting or infecting cells in eukaryotic organisms, including humans. For instance, it can be used in attenuated pathogen bacteria, such as Salmonella, and, once hosted in the eukaryotic cell, it can be induced by means of aspirin concentrations within the range of pharmacological safety. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- This invention makes it possible to produce efficient proteins in a long-lasting manner; that is, a single bacterial culture can be used in order to produce large amounts of proteins during a long period of time
- The system is inducible by acetylsalicylic acid, that is, aspirin, which has led to its application in the field of Biomedicine. This means that it could be used for the manufacture of pharmaceuticals within animal bodies
- There is still research work to be done in order to produce proteins manufactured at will, within the cells of an animal and, eventually, within a human being, in the future. This will lead to novel applications in Biomedicine. For example, it will be applicable to the design of live vaccines or, also, as therapeutic agents

Innovative issues/Competitive advantages:

- Bacterial cells will maintain their viability and physical condition because the expression of heterologous genes will be silenced
- The administration of the drug would make it possible to induce the expression of the heterologous genes into the bacterium when desired
- The tropism of some bacteria for certain tissues or organs can be used to increase the local concentration of recombinant proteins
- The expression system can control the in situ production of biomolecules for research and can be used for the controlled release of biopharmaceuticals; for instance, for controlling the expression of antigens or anti-tumour proteins



Patent(s) granted



Patent(s) granted





Systems of heterologous expression for the functional analysis of metagenomic DNA libraries



A Sevilla Research group has developed an innovative system for facilitating the expression of metagenomic genes that do not express by themselves in bacteria hosting a metagenomic DNA library, thus maximising the detection of the functions that, formerly, remained unidentified. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- Metagenomic DNA libraries store DNA from bacteria found in a given environment and make it possible to analyse the codified functions in their genomes, regardless of the culture of such bacteria, thus bridging the difficulties encountered in the laboratory culture of certain microorganisms. However, these libraries have a limitation: most of the genes do not express in any particular host bacteria selected for replication and their functions remain silenced and undetected. The present invention maximises the possibilities of expressing any gene in a metagenomic DNA library and the detection of the functions that it codifies.

- The patent makes it easy to discover new proteins with already-known functions, new proteins with novel functions, well-known proteins with unique functions and novel natural products performing useful activities in the medical, agricultural or industrial fields. For instance, this patent could be applied to the detection of biocatalytic functions.

- The data provided by the metagenomic DNA libraries and the potential of this patent enhances knowledge and practical applications in the fields of industry, therapeutic research or the environment.

Innovative issues/Competitive advantages:

- This patent refers to an expression system offering the possibility of identifying genes of interest that do not express by themselves in the bacteria hosting the metagenomic DNA library, making it possible to detect the functions that they codify and that, otherwise, would remain silenced.

- The invention results in a higher number of metagenomic clones showing a particular function of interest for a given metagenomic DNA library.

- The potential of metagenomics (the field of microbiology aimed at obtaining sequences of the genomes in different microorganisms, bacteria in this case, comprising a community, by extracting and analysing their DNA in a global manner) is thus enhanced.



Patent(s) granted



Patent(s) granted

## OTBP128



Procedure for obtaining metal nanoparticles and their use in Raman spectroscopy



A Sevilla Research group has developed an innovative procedure for obtaining metal nanoparticles from salt solutions using their metal cations, such as silver, gold, copper, aluminium and palladium salts, for their use in the manufacture of sensors for the detection of organic compounds of the calibre of pesticides, by means of Raman spectroscopy. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- The procedure described in this invention allows metal nanoparticles to be obtained that can be laid on substrates and, particularly, silver, gold, copper, aluminium or palladium nanoparticles with morphologies that make them especially useful for the manufacture of sensors applicable to the detection of organic compounds (in crops, water, food) by means of the "Surface-Enhanced Raman Spectrometry"
- The method of reference for the detection of organic contaminants is chromatography coupled with high resolution mass spectrometry. This method has drawbacks, solved in this patent, such as the high cost of the instruments required and the labour-intensive preparation of the samples
- When the compound to be detected is adsorbed on an adequate nanostructured substrate, trace amounts of the compound can be detected by "Surface-Enhanced Raman Spectroscopy"

Innovative issues/Competitive advantages:

The detection procedure using this invention's sensors has numerous advantages, when compared with the existing procedure; the following are to be noted:

- Lower cost of the required analytical equipment
- Absence of equipment maintenance costs
- Simple and easy implementation that does not require qualified technical staff
- Fast analyses because the preparation of the samples does not require any complex processes
- Sensors with high chemical stability
- Sensors can be re-used; high sensitivity; selectivity
- Not limited to the detection of a single type of contaminant



Patent(s) granted



Patent(s) granted



Method for “in vitro” proliferation of cells obtained from endodermal tissues



A Sevilla Research group has developed an innovative method for fast in vitro proliferation of cells obtained from endodermal tissues, preferably from pancreatic beta cells. It also refers to the cell culture medium inducing proliferation used in said method, to the cells and cell populations that can be obtained by the same and to the drugs containing these cells or cell populations for their use in somatic cell therapy for lesions or diseases in endoderm-derived tissues, preferably for lesions or pancreas diseases, most probably of Diabetes mellitus. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- Diabetes mellitus is a serious health problem because of both its prevalence and the critical chronic complications that it develops. A mayor issue in the development of diabetes is the reduction in number of the pancreatic beta cells producing insulin and the inability to produce sufficient insulin in order to maintain normoglycaemia
- Often, diabetes is treated with an exogenous provision of insulin, but one of the most promising treatments is the transplant of pancreatic islets, which provides better glycaemic control and avoids the daily administration of insulin. However, there are still limitations to the transplant of pancreatic islets, the most significant being the scarce amount of tissue for their transplant and immunosuppression. Consequently, stem cell therapy is a very promising alternative.
- Thus, experts have invented this method that can rapidly induce the in vitro proliferation of pancreatic beta cells producing insulin obtained from stem cells previously isolated from pancreatic islets or from endodermal tissues
- This method would compensate for the lack of mass in the beta cells to be transplanted and avoid the onerous immunosuppression regimes to which patients are submitted

Innovative issues/Competitive advantages:

- The present invention makes it possible to obtain a greater cell mass in a shorter period of time, when compared with conventional methods.
- The loss of the phenotype and of biological functionality of the cells during their expansion in the culture is avoided.
- Definitely, the “in vitro” cell proliferation of the invention makes it possible to expand the mass of pancreatic beta cells and, in general, of cells obtained from endodermal tissues, beyond the existing protocols, while preserving their phenotype, this being especially relevant in cell therapy of diseases such as diabetes, where the lack of pancreatic beta cells for transplant is the major problem



Patent(s) granted



Patent(s) granted

## OTBP130



Method for the cultivation and maintenance of pluripotent stem cells and of mammalian parent cells in a non-differentiated stage



A Sevilla Research group has developed an innovative method for the cultivation and maintenance of pluripotent cells and of mammalian parent cells in a non-differentiated stage, using nitric oxide. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- This new method makes it possible to cultivate and maintain pluripotent stem cells and mammalian parent cells in a non-differentiated stage through the addition of nitric oxide to the culture. The pluripotent mammalian stem cells can be obtained from adult tissues or from foetal tissues, or can be embryonic stem cells, including those from human embryos

Innovative issues/Competitive advantages:

- The addition of nitric oxide can be performed by means of exogenous donors, directly into the culture medium in different concentrations and, optionally, mixed with other compounds, preferably proteins obtained from extracellular matrices, as a support for cell growth
- Alternatively, the addition of nitric oxide is performed by means of endogenous production of nitric oxide, preferably by an over expression of the enzymes involved in the synthesis of nitric oxide, preferably the endothelial nitric oxide synthase
- A specific manner of performing such endogenous production of nitric acid would be a transfection of the pluripotent mammalian stem cells with a plasmid inducing the over expression of the endothelial nitric oxide synthase



Patent(s) granted



Patent(s) granted



Method for differentiation of pluripotent stem cells into definitive endoderm cells



A Sevilla Research group has developed an innovative method for the differentiation of pluripotent stem cells into precursor cells of the tissues deriving from the endoderm, which can be used in the preparation of drugs and pharmaceutical compositions for the prevention or treatment of lesions and degenerative or genetic diseases in tissues derived from the endoderm or in transplants aimed at their regeneration. They are looking for Commercial agreement with technical assistance with a Company



Need or problem solved:

- These cells can be used in the preparation of drugs or pharmaceutical compositions for the prevention or treatment of lesions and degenerative or genetic disease in tissues derived from the endoderm (pancreas, trachea, bronchus, lungs, liver, bladder, digestive apparatus, thyroid glands, thymus, tympanic cavity, auditory canal, tonsils and parathyroids), as well as in transplants aimed at their regeneration.
- The cells embody the following applications: Cells handled in order to modify their immunologic, metabolic or other functional properties in their qualitative or quantitative traits; Classified, selected or handled cells further submitted to a manufacturing process in order to obtain a finished product; cells handled or combined with non-cellular components (such as matrices or biological or inert health-care products) performing the action that, in principle, is desired in the finished product; derivatives of antologous cells expressed in Vitro under specific cultivation conditions; and Cells modified genetically or submitted to other types of handling in order to express homologous or non-homologous expressions other than the ones expressed above

Innovative issues/Competitive advantages:

- The differentiation induction method is faster and makes it possible to obtain endodermal cells able to regenerate any derivative tissue
- The pluripotent stem cells are, preferably, adult human cells, although they can also be from human embryos so long as they are obtained using methods that do not compromise the viability of the embryo
- The administration of the pharmaceutical compositions to animals, including humans, can be performed in diverse manners (epidural, intrastromal, intraarticular, subcutaneous, by means of transdermal patches, vaginal route, etc.)
- A differentiation kit of pluripotent mammal stem cells includes all the necessary elements for the application of the differentiation method of the present invention



Patent(s) granted



Patent(s) granted

### OTBP138



Kit for predicting the response to treatment with Mesenchymal Stem Cells (MSCs) in patients with inflammatory diseases



An Andalusia Spain Andalusian Public Health System has developed a prognosis kit based on measurement of the level expression of two proteins to predict a thrombotic event associated with treatment with MSCs in patients with inflammatory diseases. The researchers have conducted a clinical study to evaluate the safety and feasibility of intra-arterial administration of autologous adipose derived mesenchymal stem cells in 36 diabetic patients with critical limb ischemia (CLI). They are looking for Collaboration agreement Licence agreement with a industrial partner



The treatment of inflammatory diseases with MSCs is often associated with the development of thrombosis. Consequently, there is currently a need to provide a safety test in order to determine the risk of suffering a thrombotic event after treatment. The advantages of the technology are:

- A) This test allows allocating the human subject in one of two groups, wherein group 1 comprise subjects with low risk of having a thrombotic event after treatment, and wherein group 2 represents the remaining subjects
- B) The kit enables determine the best treatment for each patient



European patent and EEUU patent

### OTBP139



Compound for treating proteopathies or conformational disorders and a diagnostic protocol



A research group from Andalusian Public Health System has developed an innovative The researchers have developed a compound for treating neurodegenerative conformational disorders, such as Parkinson's. In addition, they are proposing a diagnostic protocol for detecting specific features of this disease, so as to then be in a better position to apply the most appropriate treatment and management pathway. Studies conducted on mice have demonstrated its protective and preventive effects in terms of the symptoms associated with these disorders, such as Parkinson's. They are looking for Collaboration agreement Licence agreement. with a industrial partner



Parkinson's and Alzheimer's are two of the most common proteopathies or conformational disorders, and most prevalent in industrialised countries. In recent years, immunisation has been proposed as a therapeutic strategy for the treatment of certain neurodegenerative proteopathies. This pathway has not been studied adequately in the context of Parkinson's, and together with other techniques, none have proved optimal in the management of such diseases. Its advantages are the development of a kit for detecting neurodegenerative disorders, such as Parkinson's, to potentially help address and/or monitor the condition. In addition, the proposed compound offers an immunisation mechanism against these proteopathies



European patent and EEUU patent

## OTBP140



Use of mesothelial cells in tissue bioengineering and artificial tissues



A research group from Andalusian Public Health System has developed a technology that provides new uses for mesothelial cells to engineer artificial tissues and organs and to substitute endothelium, serous membranes and simple squamous epithelium, with the cells anchored to a support material as a basement membrane or not. They are looking for Collaboration agreement Licence agreement. with a industrial partner



The assays carried out by the research group shows that culture of mesothelial cells under specific conditions, maintain their original mesothelial phenotype and inhibits their epithelial-mesenchymal transition in culture containing a low concentration of serum. Also shows that mesothelial cells can efficiently attach to different biomaterials, retaining both the capability to proliferate in a monolayer until fits the whole area and to display contact inhibition of proliferation. Then, the research group shows that the adult visceral adipose tissue mesothelium represents a valuable source to isolate autologous cells with capacity to substitute structurally and biochemically: i) the serosal wall of many organs and tissues; ii) substitution of damaged corneal endothelium; iii) recovery of damaged cartilage and hyaluronan production; iv) substitution of both mesothelial and endothelial cells in artificial urethra, trachea and other tissues and organs; v) substitution of endothelial cells in artificial blood vessels, etc. Also, the research group has developed a methodology to achieve a full mesothelialization of different biomaterials such as the decellularized basal membrane of anterior lens capsules, silk lamina, collagen, and other tissue from organs using mesothelial cells isolated from the visceral adipose tissue. Currently, the research group is developing a biomimetic human corneal endothelial tissue from human mesothelial cells isolated from clinical specimens of greater omentum, using as matrix adhesion, the anterior capsule of the human lens. The advantages of the technology are: i) The mesothelial cells have great structural and functional similarity to the corneal endothelium. ii) The use of autologous cells avoids immune system rejection. iii) The tissue source where the mesothelial cells are isolated is very accessible. iv)



European patent and EEUU patent

## OTBP141



Treatment of Natural Killer cell-mediated diseases and interferon  $\gamma$  (IFN- $\gamma$ ) mediated diseases



A research group from Andalusian Public Health System has developed a composition which acts as a “natural immunosuppressant” and has similar properties to immunosuppressive drugs that are currently used to treat immune-mediated inflammatory disease, such as dermatitis. They are looking for Collaboration agreement Licence agreement. with a industrial partner



Treatments currently available for NK cell mediated diseases such as dermatitis aim to control symptoms by reducing inflammation. Notably, steroids or topical immunosuppressant are used to control some of the symptoms due to cell-mediated immunity. However, corticosteroid based treatments have been shown to produce many side effects. This composition shows a decrease in cytotoxicity, reduced proliferation and inhibition of interferon  $\gamma$  (IFN- $\gamma$ ) production by NK cells. This composition can be used as cosmetic product.



European patent and EEUU patent

OTBP142



Insulator to prevent silencing and promote expression in Stem Cells



A Andalusia Spain Andalusian Public Health System has developed an innovative A research group from Andalusian Public Health System (APHS) has developed a new insulator that improves the expression pattern of vectors. Gene-transfer technologies aim to achieve a stable expression that does not affect the physiological expression of the target cell. Achieving this is essential both in basic science and in gene therapy. The only tools capable of achieving this stable expression in stem cells are retroviral vectors

Retroviral vectors achieve stability of the expression by integrating themselves inside the genome of the genetically modified cell. To avoid the negative effects of this type of vector on heterochromatin and vice versa, the research group has developed an insulator that is included in the actual structure of the retrovirus. Specifically, the authors demonstrate the usefulness of lentiviral vectors

They are looking for Collaboration agreement Licence agreement. with a industrial partner



The main advantages of this new element integrated into lentiviral vectors are:

1. Improved expression pattern for different lentiviral vectors in stem cells
  - a. Avoids gene silencing
  - b. Reduces heterogeneity of expression depending on the integration site
  - c. Increases expression levels
  - d. Enhances regulation by doxycycline-regulated all-in-one vectors

Owing to these characteristics, it could also improve the efficiency and safety of gene-therapy strategies that require the integration of genetic material in stem cell



European patent and EEUU patent

OTBP143



Stem Cell-based Therapy to improve neurological functions and prevent radiation-induced brain injur.



A Andalusia Spain Andalusian Public Health System has developed an innovative A research group from Andalusian Public Health System (APHS) has developed a new a Stem Cell-based therapy for treating a radiation-induced disorder. They are looking for Collaboration agreement Licence agreement. with a industrial partner



Radiotherapy is currently the most effective treatment to suppress or stop tumor progression, either in the brain or in other locations. Unfortunately, brain cancer survivors who received radiation undergo an accelerating aging that manifest as neurocognitive sequelae that impede optimal quality of life. The main advantage of the technology is the prevention of side effects associated with radiotherapy to promote a healthy cancer-free life.



European patent



## OTBP144



Lent-On-Plus system for conditional expression in human stem cells in jur



A Andalusia Spain Andalusian Public Health System has developed an innovative A research group from Andalusian Public Health System (APHS) has developed gene transfer vectors capable of improve expression regulation and avoid silencing of gene transfer vectors (viral or non-viral) for gene therapy applications.. They are looking for Collaboration agreement Licence agreement. with a industrial partner



The research group has constructed the Lent-On-Plus Tet-On system that achieves efficient transgene regulation in human multipotent and pluripotent stem cells. The generation of inducible stem cell lines with the Lent-ON-Plus system did not require selection or cloning, and transgene regulation is maintained after long-term cultured and upon differentiation toward different lineages



PCT patent

## OTBP145



Hemostatic Efficacy of a Nanostructured Fibrin Agarose Hydrogel



A research group from Andalusian Public Health System (APHS) has developed an adhesive sealant component and hemostatic agent of nanostructured fibrin and type VII arose hydrogels (NFAH). Such NFAH may be use to stop bleeding or seal tissue in vivo with and without compression.They are looking for Collaboration agreement Licence agreement. with a industrial partner



In vivo studies shown that nanostructured fibrin and type VII agarose hydrogels are an excellent general hemostatic agent candidate for use as adjunct and primary treatment in moderate bleeding. The agent is durable, easy to store, poses minimal risk, requires little training to use, and is highly effective against bleeding.



Spanish Patent

## OTBP185



Method to predict or predict the risk of death or vasospasm of a patient with subarachnoid hemorrhage



A Sevilla Technology transfer organisation has developed a method for predicting the risk of death or vasospasm in a patient with subarachnoid hemorrhage comprising the following steps: performing a clinical evaluation of the patient according to the Hunt-Hess and WFNS scales; obtain a computerized axial tomography image of the patient's skull; normalize the image obtained according to a standard skull template; obtain a region corresponding to intracranial blood by segmentation of the normalized image; calculate at least the following parameters of the cranial blood region obtained: total volume, fractal dimension, and surface / volume ratio; and determine the probability of death or vasospasm of the patient based on at least the calculated parameters. They are looking for License agreement with a Company



- Independent Observer
- Automated procedure
- No need for manual injury detection
- Immediate result



Patent(s) granted



Available for demonstration

## OTBP186



Compositions capable of modulating the stimulation of endogenous GDNF for the treatment of neurodegenerative diseases



A Sevilla Technology transfer organisation has developed a composition capable of modulating the stimulation of endogenous GDNF for the treatment of neurodegenerative diseases, and more specifically for the treatment of Parkinson's disease (EP). Also has developed a method of selecting drugs useful in the treatment of neurodegenerative diseases and to a method for the collection of useful data in the diagnosis of said diseases. They are looking for License agreement with a Company



The activation of endogenous GDNK is a clinically feasible method to protect dopaminergic neurons and to slow the progression of the motor symptoms of Parkinson progression.



Patent(s) granted



Available for demonstration

## OTBP187



Polymeric membranes generating carbon dioxide and obtaining procedure



A Sevilla Technology transfer organisation has developed an innovative Polymeric membranes generating carbon dioxide and obtaining procedure. The present invention relates to polymeric carbon dioxide generating membranes comprising a synthetic biodegradable polymer with a concentration of 30-90% by weight, an organic acid with a concentration of 5-40% by weight and a carbonate with a concentration of 5-30% by weight, as well as the procedure for obtaining said membranes by using techniques such as electric spinning, also called electrospinning. They are looking for License agreement with a Company



This invention refers to a carbon dioxide-generating membrane, with possible applications in food, medical and/or pharmaceutical sectors, which comprises a biodegradable synthetic polymer, an organic acid and a salt and its obtaining procedure. Using the technique of electric yarn or electrospinning



Patent(s) granted



Available for demonstration

## OTBP188



Expression signature for glioma diagnosis and/or prognosis in a subject



A Sevilla Technology transfer organisation has developed a gene signature useful for diagnosing glioma in a subject, for determining the prognosis of a subject suffering from glioma, or for determining the response of a subject to a therapy against glioma. The gene signature comprises the NAMPT gene and, at least, two genes from the list consisting of CD44, Jun, TEAD4, CSNK1A1, ABCC3, Serpine1 and HES1. The invention also relates to a kit comprising reagents for determining the expression levels of said genes. They are looking for License agreement with a Company



A more complete molecular signature that allows early diagnosis, classification, prognosis and prediction of response to treatment



Patent(s) granted



Available for demonstration

## OTBP189



Diagnostic and therapeutic uses of an in vitro system of autologous lymphocytes culture



A Sevilla Technology transfer organisation has developed an in vitro system of autologous lymphocytes culture, a method for the identification and classification of individuals suffering from a lymphopenia related disease, and the use of the regulatory T cells obtained by a method of the present invention for treating autoimmune diseases, inflammatory diseases, allergic or asthmatic condition, graft versus host disease or for preventing graft rejection. They are looking for License agreement with a Company



The existence of commercial products is not known to be used to analyse or quantify homeostatic proliferation



Patent(s) granted



Available for demonstration

## OTBP190



Procedure for the preparation of candies with a high content of prebiotic oligosaccharides



A Sevilla Technology transfer organisation has developed an innovative method of the transformation of food sugars that containing D-fructose, in candies enriched in oligosaccharides with prebiotic activity by using carbon dioxide gas as a catalyst, alone or in combination with a food acid such as acetic acid, citric acid or phosphoric acid, in medium 10 homogeneous, by a procedure that does not require any separation stage or generates no waste. The resulting caramel exhibits prebiotic properties, favoring the development of a beneficial intestinal flora and a repairing effect on the damaged colon. They are looking for License agreement with a Company



An important advantage of the method is that it makes the catalyst separation unnecessary at the end of the process and does not generate any residue



Patent(s) granted



Available for demonstration

## OTBP191



Biomarker for Subarachnoid Hemorrhage and Vasospasm



A Sevilla Technology transfer organisation has developed an innovative method of obtaining useful data for diagnosis, classification and / or monitoring of Subarachnoid Hemorrhage and a method of obtaining useful data to predict or predict cerebral vasospasm after hemorrhage subarachnoid Said methods are carried out by quantifying the expression product of the RhoA gene or its activity. They are looking for License agreement with a Company



This is a minimally invasive test



Patent(s) granted



Available for demonstration

## OTBP192



Use of sodium selenite for the treatment and prevention of DNA damage caused by excessive consumption of acute alcohol



A Sevilla Technology transfer organisation has developed an innovative use of sodium selenite, Na<sub>2</sub>SeO<sub>3</sub>, for the preparation of a medicine or a nutritional supplement to combat the damage in the somatic DNA that accompanies the binge drinking or bottle in adolescents. They are looking for License agreement with a Company



In this invention we present the supplement of Se, in the form of sodium selenite, as a therapeutic alternative against oxidative damage in biomolecules and, mainly, in the prevention or treatment of cell damage, manifested by the instability of DNA caused by excessive consumption of acute alcohol, which could have an impact on organic damage



Patent(s) granted



Available for demonstration

**OTBP193**



Composite biomaterials for 3D printing of medical devices



A Sevilla Technology transfer organisation has developed an innovative method to obtain nano-structured and bioactive composite biomaterials for 3D printing of medical devices, formed by biocompatible mixtures of polymers derived from Urethane Dimethacrylate (UDMA), TetrahydrofurfurylMethacrylate (THFMA), MethylMethacrylate (MMA), Polymethylmethacrylate. of Methyl (PMMA), 2-hydroxyethyl methacrylate (HEMA), Vinyl Alcohol (AV), Polyvinyl Alcohol (APV), Polylactic Acid (APL), Polyglycolic Acid (APG), Vinyl Acetate (VAc) and Polyvinyl Acetate (PVAc) ) combined with photoinitiators and mixtures of nano and microparticles of inorganic compounds of calcium hydroxycarbonate and titanium oxide doped with multilayer carbon nanotubes and graphene. The resulting mixtures are 3D printable given their composition and nature, allowing accurate reproduction of virtual solid images of tissue and organ parts. They can be made by computer-aided design or generated from medical images such as TAC, IRMN and others. The synthesized polymers have adequate mechanical properties and are biocompatible, which allows their use in the manufacture of implantable medical devices. They are looking for License agreement with a Company



Is far as we know, there is no publication on materials that include the combinations of photocurable polymers, loaded with calcium salts containing the components of our invention. Nor with specific properties for use as biomaterial for the 3d printing of implantable devices in bone tissues.



Patent(s) granted



Available for demonstration

**OTBP194**



Blood flow control device in a blood vessel



A Sevilla Technology transfer organisation has developed a device (1) for controlling blood flow in a blood vessel comprising a chain (2) formed by links where the maximum angle of rotation between each pair of links is limited, where the chain (2) has a proximal portion (2p) provided with a loop (3) configured to surround the blood vessel for the purpose of compressing it and a distal portion (2d) configured to close the loop (3) through the application of traction..They are looking for License agreement with a Company



Blood flow control device in a blood vessel based on the use of a chain instead of elements such as tapes or similar. It is a chain formed by links where the maximum angle of rotation between each pair of links is limited. This chain has a proximal portion endowed with a loop configured to surround the blood vessel for the purpose of compressing it and a distal portion configured to close the loop by applying traction. The user can thus control the diameter of the loop, and consequently the flow of blood through the inner blood vessel to the loop



Patent(s) granted



Available for demonstration

## OTBP195



Method for the early diagnosis of equine infertility



A Sevilla Technology transfer organisation has developed an innovative method to solve the problems described above since it provides a molecular diagnostic system that allows the detection of chromosomal alterations related to reproductive problems in equines. The method of the present invention has the advantage of being a fast and reliable method since it has 100% sensitivity (probability of giving as positive to an affected individual) and 99.75% of specificity (probability of giving as negative to an unaffected individual) so that every animal with alteration will be given as positive and only 0.25% of healthy animals can be diagnosed as false positives. They are looking for License agreement with a Company



A procedure for the detection of reproductive problems in horses, in an early, fast, reliable and with high sensitivity and specificity.



Patent(s) granted



Available for demonstration

## OTBP196



Use of amitriptyline for the treatment of liver and breast cancer



A Sevilla Technology transfer organisation has developed an innovative use of amitriptyline as an antitumor agent for the treatment of liver and breast cancer through the activation of mitophagy, preferably focused on those tumors with mutations in the gene. They are looking for License agreement with a Company



This invention provides a new anticancer agent by activating the Mitofagia. The invention offers an alternative therapy for the treatment of liver and breast neoplasms, especially when these are resistant to treatment with conventional chemotherapy due to mutations in p53.



Patent(s) granted



Available for demonstration

## OTBP197



Optical image processing methods for analysis of magnetic resonance images for quantifying or determining liver lesions



A Sevilla Technology transfer organisation has developed in the field of hepatic diagnosis and more precisely to computerized optical analysis, methods of conventional, preferably non-contrast-enhanced, MR (magnetic resonance) images for quantifying or determining liver lesions, especially due or related to liver impairment, liver steatosis, non-alcoholic fatty liver disease (NAFLD), or nonalcoholic steatohepatitis (NASH). They are looking for License agreement with a Company



The methods of the invention considerably reduce the need of biopsies, as they catch more information than in the prior art about the lesions evaluated, they ensure reproducibility and performance, while attenuating causes of false results (generally, sources of false results are antagonized in a score including several markers provided that some precautions are included)



Patent(s) granted



Available for demonstration

## OTBP198



Method for obtaining useful data for the differential diagnosis of liver fibrosis



A Sevilla Technology transfer organisation has developed an innovative method of obtaining useful data for the early diagnosis of the Hepatic fibrosis, as well as to evaluate the response to the treatment of the disease, which allows the establishment of an individual pattern of recognition (quantitative) Specific, which is modified after treatment, allowing the establishment of Patient groups. They are looking for License agreement with a Company



The present invention has developed a method and a kit that employs a Marker sufficiently sensitive to discriminate between early stages and 25 late fibrosis and cirrhosis stage.



Patent(s) granted



Available for demonstration



## OTBP199



Composition for the systematic chemical treatment of the plantar wart



A Sevilla Technology transfer organisation has developed a composition containing as active ingredient monochloroacetic acid (MCA), in solution with ethanol (50% by volume), prepared according to a method described, used for the systematic chemical treatment of the wart plantar sole (human papillomavirus plantar), without surgery, producing its chemical cauterization and the use of it as a method of therapeutic application. They are looking for License agreement with a Company



The technical problem that solves the invention is an improvement of results in the treatment of plantar warts if compared with other procedures that use the same active principle. In particular, in relation to a lesser pain in the removal of the wart, greater ambulatory capacity of the patients and an improvement of the unwanted effects, such as the formation of vesicles or flictenas, or the reduction of inflammation and that are clear advantages Other alternatives available



Patent(s) granted



Available for demonstration

## OTBP200



Composition for the treatment of diseases associated with lysosomal disorders



A Sevilla Technology transfer organisation has developed an innovative method for the treatment of Gaucher disease (EG) type II / III, patients with involvement of the central nervous system (CNS) for which currently there is no effective treatment. The sector of activity in which it is framed is the general field of biomedicine. Gaucher disease (GD) is a lysosomal disease caused by a defect in the gene encoding glucocerebrosidase (GBA). The deficit of the same causes the accumulation of glucosylceramide (GlcCer) and glucosilesfingosina (GlcSph), in the monocyte-macrophage system producing visceromegalias, and skeletal and neurological alterations. There are 3 clinical forms: Type 1 without neurological involvement, acute neuropathic type II Gaucher, where neurological deterioration is very rapid, and severe impairment of the general state means that the average survival of affected children is approximately two years, and neuropathic type III Gaucher. chronic with involvement of the CNS. They are looking for License agreement with a Company



The advantages of the invention allow:

1. Both the CoQ and the PC are able to cross the biological barriers, including the BHE. Thus, the combined treatment of CoQ + PC is applicable to patients with EG with neurological involvement for those who currently do not have effective treatment
2. Possibility of use in therapies combined with the recombinant enzymes used in TES
3. Lower economic cost








Patent(s) granted








Available for demonstration






## OTBP201

-  Antagonists of the NK1 receptors derived from Carbohydrates: Method of obtaining and medical use
-  A Sevilla Technology transfer organisation has developed an innovative a compound of general formula I, and to its use in medicine, or for the manufacture of a medicament, for the treatment of various diseases, preferably a cancer such as melanoma, lung carcinoma or breast cancer. Therefore, the present invention also relates to a pharmaceutical composition comprising said compound. Also, another object of the present invention relates to a process for obtaining the compound of general formula I. They are looking for License agreement with a Company
-  The design and synthesis of new non-peptide molecules with high affinity for the NK1 receptor, and preferably with a chemical structure different from the known NK1 receptor antagonists
-  Patent(s) granted
-  Available for demonstration

## OTBP202

-  Biomarkers for amyotrophic lateral sclerosis (ALS)
-  A Sevilla Technology transfer organisation has developed an innovative method to the use of the MyD88 and / or TL3 gene for diagnosis, prognosis and / or follow-up of amyotrophic lateral sclerosis (ALS), to a method of obtaining useful data for the diagnosis, prognosis and / or follow-up of the ELA, kit or device and uses. They are looking for License agreement with a Company
-  - Non-invasive biomarkers  
- Low cost and reliable
-  Patent(s) granted
-  Available for demonstration

## OTBP203

-  Method of detecting antibiotic multiresistant actinobacteria strains
-  A Sevilla Technology transfer organisation has developed an innovative method of detecting antibiotic multiresistant actinobacteria strains. They are looking for License agreement with a Company
-  There is no alternative
-  Patent(s) granted
-  Available for demonstration

## OTBP204



Hypermutable Mycobacterium strains



A Sevilla Technology transfer organisation has developed an innovative method of inactivation of nucS gene in M. tuberculosis, encoding a putative endonuclease, increases two orders of magnitude the mutation rate for drug resistance. They are looking for License agreement with a Company



There are No similar products in mycobacteria



Patent(s) granted



Available for demonstration

## OTBP205



System of adaptive detection of slight movements for people with disabilities



A Sevilla Technology transfer organisation has developed an innovative method for detection of mild voluntary movements in persons with disabilities and, thereby, facilitate their access to the computer. The invention includes a hardware part, necessary for the acquisition and filtering of the signals coming from the sensors that detect the movement, and an intelligent algorithm that allows the detection of the same and the ability to be progressively adjusted to the intensity with which the user He carries it out. The invention can work with sensors located in different parts of the body: head, hand, leg and arm, adapting to the residual movement of the disabled. They are looking for License agreement with a Company



It is a flexible and adaptable system that allows people with motor difficulties to control the computer



Patent(s) granted



Available for demonstration

## OTBP206



Kit and method for quantifying the toxicity in neurons of the cerebral cortex for the detection of neurodegenerative diseases



A Sevilla Technology transfer organisation has developed an innovative method and a kit for detecting and / or quantifying the effects of the toxicity on the intrinsic properties of the membrane that determine the neuronal excitability, from the temporal detection of the change in said variables. This invention is framed in the pharmaceutical scientific-technical area. As an improvement over previous techniques, this procedure can be applied to the determination of the neuroprotective properties of drugs developed to alleviate neuronal oxidation. They are looking for License agreement with a Company



This invention contributes as benefits (technical advantages) to the current techniques the combination of procedures of a biochemical nature, such as the use of an organic oxidizer (the HC), with others of a purely neurophysiological nature, such as the Technique of preparation of in vitro slices and an electrophysiological approach of direct access to the neurons called of patch-clamp



Patent(s) granted



Available for demonstration

## OTBP207



Method of disinfection of water by over-oxygenation through microalgae in watertight systems



A Sevilla Technology transfer organisation has developed an innovative method to the disinfection of water by over-oxygenation through microalgae in watertight systems is oriented as a method for the over-oxygenation of water through the generation and growth of microalgae for water disinfection. The invention is framed in the field of water treatment, its use being viable both for wastewater and for drinking water. They are looking for License agreement with a Company



Studying the processes that have been used classically in artificial water treatment systems, a watertight system is developed in order to intensify the action of dissolved oxygen content. The present invention describes a low cost method to carry out the reduction of organic matter and disinfection



Patent(s) granted



Available for demonstration

## OTBP208



Use of AMPK inducers and metformin for the treatment of fibromyalgia



A Sevilla Technology transfer organisation has developed an innovative method to use of metformin, derived from metformin, compounds containing metformin and inducing compounds of the activation of the phosphorylation of AMPK for the treatment of fibromyalgia, reducing pain and depression, as well as Dysfunctional biological parameters

The main sector of application is the pharmacist and doctor, by the development of tablets at lower doses of the current ones for these patients. They are looking for License agreement with a Company



A faster way to find new treatments for a disease is to discover potential new functions in old drugs already authorized for other illnesses. This is the case of metformin, one of the most popular antidiabetics. This invention is based on a new indication for this old drug



Patent(s) granted



Available for demonstration

## OTBP209



Computerized optical analysis methods of MR (magnetic resonance) images for quantifying or determining liver lesions



A Sevilla Technology transfer organisation has developed an innovative method to computerized optical analysis, preferably non-contrast-enhanced, MR (magnetic resonance) images for quantifying or determining liver lesions, especially due or related to liver impairment, liver steatosis, non-alcoholic fatty liver disease (NAFLD), or nonalcoholic steatohepatitis (NASH). They are looking for License agreement with a Company



Main Advantages:

- Non-invasive diagnostic tool which replaces the gold-standard method (liver biopsy)
- Powerful validated tool which is easy to be performed, innocuous, low cost, enables volumetric analysis of the whole liver, extensible to other liver diseases and allows simplified screening of patients at risk
- Further applications currently under development: Exploration of liver damage in other diseases (viral & autoimmune hepatitis, alcoholic steatohepatitis, hepatotoxicity), evaluation of surrounding tissue in hepatocellular carcinoma and monitoring of patients' evolution



Patent(s) granted



Available for demonstration

## OTBP210



Anti-inflammatory agents



A Sevilla Technology transfer organisation has developed an innovative methods and compositions for treating inflammation. More particularly, the present relates to the use of an effective amount of a LRH-1 agonist according to the invention or a pharmaceutically acceptable salt thereof for treating an inflammatory disease or condition in a subject in need thereof. They are looking for License agreement with a Company



the present invention relates to the use of an effective amount of a LRH-1 agonist which could be used as immunomodulators for the treatment and prevention of any inflammatory disease including diabetes mellitus



Patent(s) granted



Available for demonstration

## OTBP211



Bioimpedance measurement system for the real-time and wireless monitoring of cell cultures based on an oscillation test using integrated circuits



A Sevilla Technology transfer organisation has developed a new bioimpedance measurement system for real-time and wireless monitoring of cell cultures. The electrodes system as bioimpedance sensors and implements a "biological oscillator" circuit of measurement with integrated circuits. It is proposed to use oscillation parameters (frequency, amplitude, phase, etc.) as empirical markers to make an adequate interpretation in terms of identification of cell size, cell count, cell growth, growth rate, etc. They are looking for License agreement with a Company



To characterize in detail the number of cells in a crop at a specific time, as well as to measure the ratio of cell proliferation



Patent(s) granted



Available for demonstration

## OTBP212



Procedure for the conservation of *Caenorhabditis elegans* in adult stage by vitrification using ultra-fast cooling rates and low concentrations of cryoprotectant



A Sevilla Technology transfer organisation has developed an innovative method to offer an effective system for the cryopreservation of *Caenorhabditis elegans*, in the adult state, in the absence of a current method. This procedure is applicable to all stages of development of the nematode, as well as to different living systems with similar characteristics, such as isolated cells, fragments of tissues, organs and other organisms. It is based on vitrification, using ultra-fast cooling speeds and low concentrations of cryoprotectant, avoiding cell damage due to toxicity and ice formation. They are looking for License agreement with a Company



The methodological advantages presented by the method proposed here, the vitrification at velocities ultrafast using low concentrations of cryoprotectant, compared to slow cooling are the following:

- Elimination of ice formation, thus reducing the cellular damage caused by the pressure of the ice crystals
- Use of cryoprotectant at a low concentration and incubation time, and thus decreased cell damage related to the toxicity of cryoprotectants
- Storage of larger samples to the cell by means of a closed and easy to use system

This procedure allows to preserve the nemato in all its larval stages with a higher survival rate (98%, for L1-L2) and above all the great advantage is the possibility of preserving the organism in adult state, also with a high survival rate (95 %).



Patent(s) granted



Available for demonstration

## OTBP213



Portable system for recording eye movements in small animals



A Sevilla Technology transfer organisation has developed an innovative Portable system that allows the detection with high resolution of eye movements in small animals in freedom. The system solves the problems of immobilization of the individual required by the current techniques that offer a similar resolution and improves the resolution of those that do not require the immobilization of the animal. They are looking for License agreement with a Company



The system described here, is based on the technique of the magnetic follower of the ocular position and presents a level of spatial and temporal resolution in the same range as the original technique and, unlike the current devices, can be implanted in animals Small. Through an implantable and low-weight magnetic field generator, it allows continuous recording of eye movements in small animals where movement restriction is not necessary, making it ideal for long-term approaches including Sleep periods



Patent(s) granted



Available for demonstration

## OTBP214



Procedure for the colorimetric detection of lysozyme by added gold nanoparticles



A Sevilla Technology transfer organisation has developed an innovative a simple and direct method, which allows even to the naked eye, to detect cationic substances such as for example lysozyme-like proteins, using gold nanoparticles previously added by the use of a salt such as NaCl to a certain concentration. We have recently discovered how previous aggregates of gold nanoparticles protected from citrate ions are valid for use as a lysozyme biosensor in solution. It is an effective medical diagnostic tool in the detection of various pathologies such as leukemia, kidney diseases or meningitis. They are looking for License agreement with a Company



It is a simple method for the detection of lysozyme by previously added anionic gold nanoparticles. Unlike all previous methods, it is part of gold clusters previously added by adding an inert salt such as sodium chloride



Patent(s) granted



Available for demonstration

## OTBP215



Bioimpedance measurement system for wireless and real-time monitoring of cell cultures based on CMOS circuits and electrical modeling



A Sevilla Technology transfer organisation has developed a new bioimpedance measurement system for real-time and wireless monitoring of cell cultures. The system uses a two-dimensional array (2D) of electrodes as bioimpedance sensors and implements the measurement circuit with CMOS technology, using electrical modeling for image reconstruction. They are looking for License agreement with a Company



This paper presents a new system of impedance measurement for biological samples useful for obtaining 2d images of a cell culture in real time and in a wireless way, unlike other systems found in the bibliography



Patent(s) granted



Available for demonstration



## OTBP216



Combined use of a protein kinase C inhibitor with at least one inhibitor of the CA2 + type L channels and of Rho kinase for the reduction of arterial vasospasm



A Sevilla Technology transfer organisation has developed an innovative method for combining therapy that incorporates low doses of protein kinase C inhibitors in conjunction with at least one inhibitor of the CA2 + type L channels dependent voltage and Rho kinase, conforming a selective vasorelajante treatment of physiopathological processes characterized by maintained arterial contraction. They are looking for License agreement with a Company



In response to the state of the art, the current pharmacological therapies used in the treatment of arterial vasospasm have side effects as a result of the dose used. Therefore, it would be necessary to have a new combination of drugs, preferably at lower doses, that have an important vasorelajante power over the arteries contracted with minimal side effect and toxicity. A possible approach to the treatment of arterial vasospasm could be carried out with the combined therapy of low doses of PKC, CCVDs and ROCK inhibitors



Patent(s) granted



Available for demonstration

## OTBP217



Intelligent bioimpedance Sensor for biomedical applications



A Sevilla Technology transfer organisation has developed an innovative portable sensing device capable of carrying out bioimpedance measurements in multiple configurable frequencies, processing the data to obtain the module and the phase of the bioimpedance (or real and imaginary part of the bioimpedance) in each of the frequencies, and wirelessly transmit the processing results. They are looking for License agreement with a Company



The Intelligent bioimpedance Sensor has a number of features described in the form of innovative features thanks mainly to the modular design used to gather 6 subsystems: sensorization, processing, communications, Data storage, timing and power



Patent(s) granted



Available for demonstration

OTBP218



CT monitoring of cold preservation processes and cryopreservation of biological material



A Sevilla Technology transfer organisation has developed a novel use of computed axial tomography (TAC) for the monitoring of cold preservation processes and cryopreservation of biological material. The use of CT allows significantly improve these processes due to their ability to detect the concentration of cryoprotectant in the processes of cryopreservation and detection of ice formation in biological samples

This invention is part of the research or analysis of materials by determining its chemical or physical properties, and within it, is of interest both in the conventional food conservation, as in cryopreservation of Biological material of all kinds (in slow freezing, rapid vitrification or others). They are looking for License Agreement with a Company



The procedure covered by the present proposal reaches the necessary precision for a control of the concentration of the cryoprotectant required for a successful vitrification using a lower TAC energy and obtains the characterization of the ice through a Different technique, from the difference of density of the ice with the Crioprotectoras substances used in the processes of cryopreservation



Patent(s) granted



Available for demonstration

## OTBP219



Technology for computer-aided diagnosis of multiple sclerosis



A Sevilla Technology transfer organisation has developed a method and software for computer-aided diagnosis of multiple sclerosis based on image analysis of a standard (oligoclonal bands) lab test. It may be applied for early diagnosis and for the evaluation of the response to treatments. Initial tests are succesful. They are looking for a license agreement with industrial partners. They are looking for License agreement with a Company



Multiple Sclerosis is the most frequent neurodegenerative disease in young adults in Europe and North America and it represents the most frequent cause of disability in this group of population. It affects predominantly women and it is suffered by about 2,5 million people worldwide (47.000 in Spain, 600.000 in Europe). In 2017, the international diagnostic criteria for this disease were updated and included the results of a laboratory test called "determination of oligoclonal bands". The authors of this proposal have developed a method for processing the images generated in this test and for the analysis of the extracted data. It allows, in an objective and reproducible way, to relate patterns in oligoclonal bands with the diagnosis and temporal evolution (progression) of the multiple sclerosis. Currently, this method is the only reference available in the literature. It is implemented in the form of a software program prototype and it has been evaluated in a relatively small group of patients (106 cases) with very positive results: sensitivity and specificity of prediction for the progress of the disease and its temporal evolution from isolated neurological syndrome is greater than 85%. In this proposal it is proposed i) to extend the international patent protection, ii) to perform an extended clinical test relating band patterns with the results of standard medical (magnetic resonance) imaging tests and the evaluation of cerebral atrophy and disability scales; and iii) to transfer the technology for commercial exploitation, taking advantage of the scientific leadership position achieved



Patent(s) applied



Available for demonstration

OTBP220



Technology for computer-aided diagnosis of non-alcoholic fatty liver disease based on magnetic resonance imaging



A research group of the University of Sevilla and the Andalusian Health Service have developed a method and software for non-invasive, computer-aided diagnosis of non-alcoholic fatty liver disease and liver fibrosis based on standard magnetic resonance (MR) imaging. It has been successfully field tested, patented and transferred. They are looking for a license agreement with industrial partners for expansion



Non-alcoholic fatty liver disease (NAFLD) is a very important -and increasing- health problem worldwide, currently suffered by about one third of the overall population. It is a clinical-pathological entity that ranges from hepatic fat accumulation (simple steatosis) to non-alcoholic steatohepatitis, a progressive form that may lead to liver fibrosis, cirrhosis and ultimately hepatocellular carcinoma. The authors of this proposal have developed a set of imaging biomarkers and a method for obtaining NAFLD and liver fibrosis scores by processing the images obtained in standard magnetic resonance studies. They allow for non-invasive quantification and evaluation of the extension and distribution of damage in the liver. They have been successfully field tested, patented and transferred to a company. This tool for computer-aided diagnosis is currently available as a web-based online platform. Magnetic resonance imaging biomarkers overcome the limitations of liver biopsy since they are non-invasive, allow for the evaluation of the spatial distribution and inhomogeneity of damage, can be easily combined with other clinical and biochemical tests, and are cost-effective. In this proposal we look for industrial and financial partners to expand the commercial exploitation



Patent(s) granted



Already on the market



## 4. Contact

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