

# PATENT PORTFOLIO AND SPIN-OFF COMPANIES

CAMPUS BIO-MEDICO UNIVERSITY OF ROME



The background of the page is a light gray color, covered with a repeating pattern of small, stylized icons. These icons include DNA double helices, interlocking gears, and sprouting leaves, all rendered in a light teal or gray color. The icons are scattered across the entire page, creating a textured, scientific, and technological feel.

# Patents



# A bioactive material for use in the regeneration of cartilage and a process for the obtainment thereof

(Italian patent)



**Inventors:** M. Centola, V. Denaro, A. Marsano\*,  
I. Martin\*, A. Rainer, M. Trombetta,  
G. Vadalà

**Co-ownership** with Universitatsspital Basel(\*)

Porous hyaluronic acid/fibrin-based bioactive material with topical controlled release of an anti-angiogenic drug (bevacizumab) for applications in the field of the regeneration of cartilage and/or of nucleus pulposus of the intervertebral disc. The scaffold obtained is capable of supporting neocartilage formation when ectopically implanted in vivo. This invention can have a direct repercussion in clinical practice, both in the field of matrix-assisted cellular therapy (MACI technique) and as construct for regenerative medicine applications.

# Adipose tissue purification technique to obtain high concentration of adipose stem cells

(Italian patent)



**Inventors:** C. Gregorj, G. F. Marangi, F. Pantano, P. Persichetti,  
F. Segreto, M.C. Tirindelli

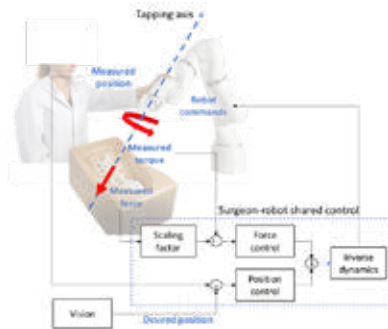
Technique for obtaining a purified, autologous and histocompatible biological regenerative matrix, consisting mainly of stem cells.

The method has the advantage of being low cost and with minimal manipulation through mechanical procedures; the use of special equipment or chemical agents is not required, even if a product

with a higher concentration of stem cells is obtained compared to other techniques with minimal manipulation.

# Apparatus and control method of a robotic manipulator

(Italian and European patent application)



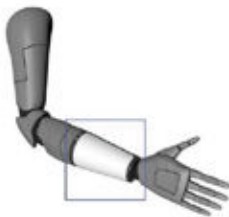
**Inventors:** F. Cordella, P. Larizza\*, C. Lauretti, L. Zollo

**Co-ownership** with MASMEC SpA<sup>(\*)</sup>

The proposed apparatus and control method, to be used for pedicle screw fixation, make the tapping procedure semi-autonomous. The surgeon continues to have a full control over the surgical intervention by i) accurately move the robot end-effector using a hands-on control interface, i.e. the surgical tapper, along a pre-planned axis, ii) continuously controlling the forces exerted onto the patient spine during the tapping phase, iii) modulating the torque about the tapping axis by adequately tuning the tool-bone interaction force along the same axis.

## A tactile sensor device

(Italian patent)



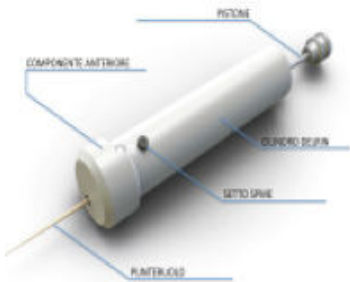
**Inventors:** J. D'Abbraccio\*, L. Massari\*, C. M. Oddo\*, E. Palermo\*\*, E. Schena, E. Sinibaldi\*\*\*\*, G. Terruso\*\*\*, M. Zaltieri\*\*

**Co-ownership** with Scuola Superiore Sant'Anna<sup>(\*)</sup>, La Sapienza Università di Roma<sup>(\*\*)</sup>, Università Ca' Foscari di Venezia<sup>(\*\*\*)</sup>, Istituto Italiano di Tecnologia<sup>(\*\*\*\*)</sup>

Tactile sensor device providing a large area sensor device, which represents a sort of artificial sensing skin, mimicking the human sense of touch by perceiving intensity and direction of applied forces thus imitating the activity of human mechanoreceptors. The device is also light, flexible and adaptable to cover any type of surface, including curved surfaces such as the surface of a robotic prosthetic forearm or a collaborative industrial robot.

# Device for sampling food products

(Italian patent)



**Inventors:** M. Dachà, A. D'Amico, G. Pennazza,  
M. Santonico, A. Zompanti

Device for non-destructive sampling of aroma from a food product undergoing cured process (ham, cheese, ...) via a minimally invasive procedure. The volatile sample is caught and stored into the FLUTE chamber. From this chamber it can be delivered in whatever instruments for the analysis of food .

# Device for the sampling of the eye surface by imprinting

(Italian, French, German and UK patents)



**Inventors:** B. Balzamino\*, I. Ghezzi, A. Micera\*,  
R. Sgrulletta, L. Zollo

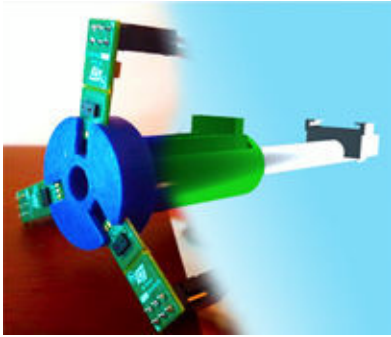
**Co-ownership** with Fondazione G. B. Bietti<sup>(\*)</sup>

The invention relates to a device for the sampling of the outer layers of the ocular surface, by impression cytology, solving the disadvantages of other devices in terms of safety, accuracy, repeatability, patient tolerance e ease of use by the operator.



# Device for subcutaneous administration

(Italian patent application)

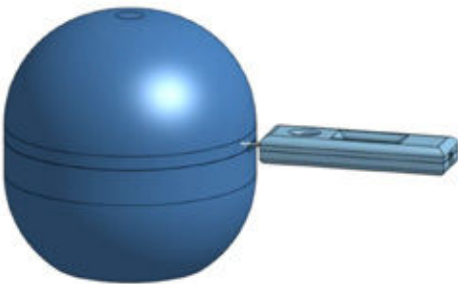


**Inventors:** E. Cordelli, L. Francini, S. Manfrini, V. Piemonte, R. Sicilia, P. Soda

A device for subcutaneous administration, in particular for insulin injection. The device is characterized by an insulin pen and includes a sensorized case. The device is able to measure the injection angle, recognize the anatomical site, identify the presence of lipodystrophy and detect the injected insulin dose.

# Development and design of a portable device for monitoring endocrine analytes

(Italian patent application)



**Inventors:** V. Piemonte, T. Boscarino

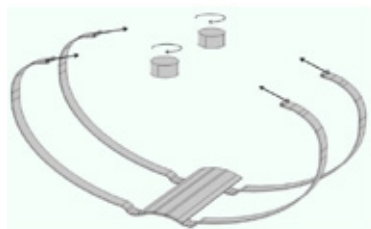
Device is a point-of-care (POC) platform for the diagnosis of metabolic diseases. It is an affordable, portable, and multi-sensing device for the detection of thyroid/parathyroid diseases and for the prevention of other endocrine conditions. The POC platform is

composed of a new lateral flow device and a device for reading a chromatographic strip, for the detection and/or quantification of one or more regulatory compounds of thyroid function, in particular thyroid-stimulating hormone (TSH) and calcium. The proposed device will measure several analytes simultaneously and will be a viable alternative to laboratory tests.



# Gradual compression medical device for supporting and optimizing the cutaneous scar

(Italian patent and European patent application)



**Inventors:** C. Falcinelli, S. Filippi, A. Gizzi,  
G. Marangi, P. Persichetti, F. Segreto

The invention is related to the development of an innovative and personalized compressive sheath, that can be applied on different body districts, to optimize the healing of cutaneous lesions derived from surgical treatments. The device is able to apply a gradual compression on cutaneous scars based on different clinical needs, avoiding the drawbacks related to the cicatrization process.

# Innovative functionalization on liquid phase sensors for the detection of bioactive lipids

(Italian patent)



**Inventors:** T. Bisogno\*, S. Grasso, M. Maccarrone,  
G. Pennazza, M. Santonico,

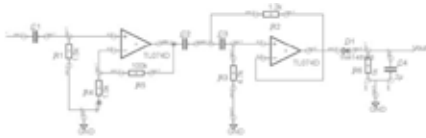
**Co-ownership** with CNR(\*)

Innovative approach to the functionalization of chemical sensors for the detection of biochemicals, in particular bioactive lipids.

The innovative strategy on an electrochemical sensor can be generalized to any sensor that works in cyclic voltammetry mode and offers an advantage in strengthening the resolving power of such sensors.

# Method for measuring the slipping between two surfaces

(Italian patent)



**Inventors:** E. Guglielmelli, R. Romeo, L. Zollo

**Co-ownership** with INAIL

Method for detecting slip events that may occur during tasks involving the interaction between objects and robotic effectors, such as grip, manipulation, contact, starting from the normal component of the force only. The method can be applied to any force sensor and guarantees a correct operation even online.

# Method for positioning receptors for sensory stimuli, a device obtained by said method and apparatuses comprising said device

(Italian patent)

$$\begin{cases} \Delta p = \Delta p_{1,2}(k) = 2\pi \frac{\Delta p_{1,2}}{\theta_1^* - \theta_2^* + i2\pi} \\ \Delta p = \Delta p_{2,2}(m) = 2\pi \frac{\Delta p_{2,2}}{\theta_2^* - \theta_1^* + i2\pi} \\ \theta_1^* + k2\pi > \theta_2^* > \theta_1^* - m2\pi \\ \Delta p > 0 \\ k, m \in \mathbb{Z} \\ v = f\Delta p > 0 \end{cases}$$

**Inventors:** L. Beccai\*\*, M. C. Carrozza\*, E. Guglielmelli, C. Oddo\*, R. Romeo, L. Zollo

**Co-ownership** with Scuola Superiore Sant'Anna<sup>(\*)</sup>, Istituto Italiano di Tecnologia<sup>(\*\*)</sup>

Mathematical method for the optimal positioning of tactile sensory units, aimed at recognizing surface roughness during tactile exploration activities. The method allows to obtain the pitch of a texture without requiring a priori information on physical quantities such as the distance between the sensors themselves.

# Method for the early diagnosis of the pancreatic adenocarcinoma

(Italian patent, European, USA and Chinese patent application)



**Inventors:** D. Caputo, G. Caracciolo\*,  
R. Coppola, L. Digiacoimo\*,  
S. Palchetti\*, D. Pozzi\*

**Co-ownership** with Sapienza Università di Roma<sup>(1)</sup>

Blood test that allows the early diagnosis of pancreatic adenocarcinoma, based on the use of gold nanoparticles in protein electrophoresis on polyacrylamide gel. The main difference compared to the traditional proteomic approach consists in the use of one-dimensional electrophoresis, a low-cost, fast and widespread experimental technique in clinical laboratories. The test could be used on high risk population groups based on clinical (e.g. age, smoking, obesity, diabetes, chronic pancreatitis) and genetic characteristics.

# Pneumopipe – Auxiliary device for collection and sampling of exhaled air

(Italian, French, German, UK, Austrian and Dutch patents)



**Inventors:** R. Antonelli Incalzi, A. D'Amico, G. Pennazza, M. Petriaggi,  
M. Santonico

Device for non-invasive collection of exhaled breath. The individual has to breath normally into the Pneumopipe for three minutes. After this 3 minutes the exhaled breath has been collected into a cartridge which can be stored, delivered or measured by thermally desorbing its content into an instrument for gas and vapour analysis.

# Porous material for the inclusion of cytologic preparations, process for obtaining the same and its use

(Italian and Indian patents and European, USA and Canadian patent application)



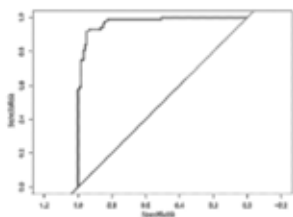
**Inventors:** M. Costantini, A. Crescenzi, P. Mozetic, A. Rainer, A. Santoro\*, C. Taffon, M. Trombetta

**Co-ownership** with UCS Diagnostic srl<sup>(\*)</sup>

Porous material based on chitosan that can be used as a support for the inclusion of eukaryotic or prokaryotic cells for the purpose of processing them with histological inclusion techniques. The porous substrate shows a high affinity for the cellular material, which is retained within the mesh of the same, maximizing the yield.

## Predictive analysis of endometrial cancer risk

(Italian patent)



**Inventors:** R. Angioli, S. Capriglione, C. De Cicco, D. Luvero, R. Montera, F. Plotti, C. Terranova

Method for the determination of an index (REM7) predictive of the risk of endometrial cancer in a subject.

The index is calculated through a regression based on a plurality of parameters, including body mass index, estrogenic exposure and an indicative value of a diabetic pathology, in which each parameter is weighted by means of coefficients.

# Robotic joint for prosthetic articulation

(Italian, French, German and UK patents)



**Inventors:** L. Bramato, G. Carpino, D. Simonetti,  
L. Zollo

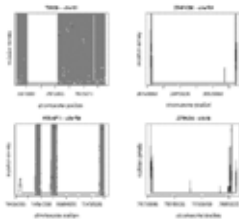
**Co-ownership** with INAIL

Robotic joint of innovative prosthetic wrist for active prono-supination and passive flexion-extension.

The flexion-extension module uses two Scotch-Yoke mechanisms in parallel in order to transform the rotation into translation to compress a linear compression spring pack. The elasticity of the spring pack ensures the elastic return of the module to the rest position.

# Statistical methods for the identification of regions of the genome that are highly representative of the tumor mutational burden

(Italian patent and European patent application)



**Inventors:** P. Manca, A. Napolitano, F. Pantano, D. Santini,  
G. Tonini

The invention relates to a method allowing the identification of genome regions most significant for the estimation of the tumor mutational burden (TMB). Through this method, it is possible to optimize the panel length for the TMB estimation, identifying the highly informative regions of the genome, reducing the amount of genome to be sequenced and, consequently, reducing the costs for the TMB estimation in cancer patients.



The background of the slide is a light teal color with a repeating pattern of stylized icons. These icons include DNA double helices, interlocking gears, and leaf-like shapes with wavy stems, all rendered in a slightly darker teal shade. The pattern is dense and covers the entire slide area.

## UCBM spin off companies



# Biomedical Research in Otolaryngology srl (B.R.I.O.)

BRIO produces and distributes innovative biomedical devices for the healthcare sector. In particular, the company is involved in the distribution of an innovative device for otolaryngology, manually operable, dispensing substances in the form of aerosol.



*SpraySol*



## BPCO media srl

BPCO media deals with telemedicine and medical diagnostics research. Its innovative medical device allows patients to monitor their health state and detect the onset of flare-ups and critical clinical situations. It highlights prognostic symptoms that patients are not able to perceive and prompts them to contact their doctor in order to receive an early treatment and avoid potential dangerous situations before symptoms appear.



*BPCOmedia patented device*

**Website:** [www.bpcomedia.com](http://www.bpcomedia.com)



# Brain Innovations srl

(Participated by UCBM)

In Parkinson's disease management, today there are 3 main problems, misdiagnosis, symptoms monitoring and therapy management.

The solution proposed by PD Innovations is a complete solution that addresses all the needs of Parkinson's disease patients with the following instruments:

- Answer to PD - Diagnosis device
- Answer to PD - Symptoms monitoring device
- PD Assistant - Oral Therapy device
- PD Assistant - Infusional Therapy device



**Website:** [www.braininnovations.eu](http://www.braininnovations.eu)



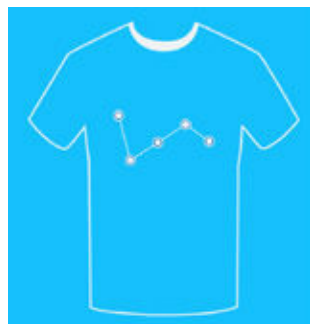
# Epiclick srl

Epiclick aims at contributing to the prevention of melanoma by using modern technologies: by exploiting the immediacy of the information technology and through the joint use of epiluminescence and the best telematic tools, it allows early remote diagnosis of melanoma, avoiding long waiting lists of public service.



**Website:** [www.epiclick.it](http://www.epiclick.it)

HEREMOS is a wearable health monitoring system that enables continuous, real-time detection, storage, and interpretation of vital physiologic parameters. As delivery of health care continues to focus on wellness solutions beyond healthcare facilities, our technology brings the comprehensive monitoring found in hospital rooms to the comfort of one's home. HEREMOS empowers patients, and caregivers alike, with seamless health surveillance that fits into their daily activities and lifestyle.



**Website:** [www.heremos.com](http://www.heremos.com)

ICan Robotics is an innovative start-up company, founded in September 2014, active in the field of biomedical robotics, developing technologies for rehabilitation and physical assistance for patients with neurological, orthopedic or age-induced conditions.

ICan robotics develops innovative and user-friendly products, which can be used not only in healthcare facilities, but also at patients' abodes, for the benefit of the quality of life of patients and their caregivers.



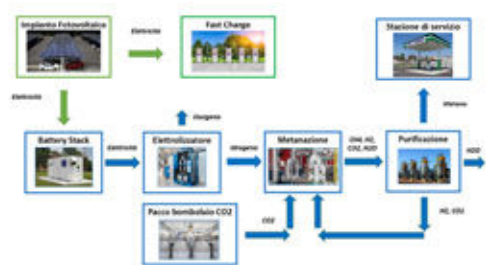
*ICONE device  
distributed by ICan Robotics*

**Website:** [www.icanrobotics.com](http://www.icanrobotics.com)

# Move To Zero srl

(Participated by UCBM)

The company develops and produces innovative services in the field of process engineering and energy efficiency by building energy production plants and power supply and charging systems. The main focus is to design and implement on-site energy production and consumption systems according to scalable models, in particular by realizing on-site renewable energy production units aimed at powering the charging network of electric car.



# Winged srl

WINGED proposes to create technological platforms for the recycling of food waste, in the logic of integrated biorefinery for the production of energy, biofuels and organic compounds for fine chemicals.

The project giving it its name (WINE GrEen Distillery) concerns the realization of a technological system for the valorisation of wine processing waste in order to produce high added value products, such as fine chemicals and nutraceuticals, and green energy.



**Contacts:**

**Gianfilippo Capriotti  
Maria Carla De Maggio  
Venceslao Marinaro**

**Knowledge Transfer Office  
Campus Bio-Medico University of Rome**

**Email: [kto@unicampus.it](mailto:kto@unicampus.it)  
Phone: (+39) 06.22541.9126/9224**