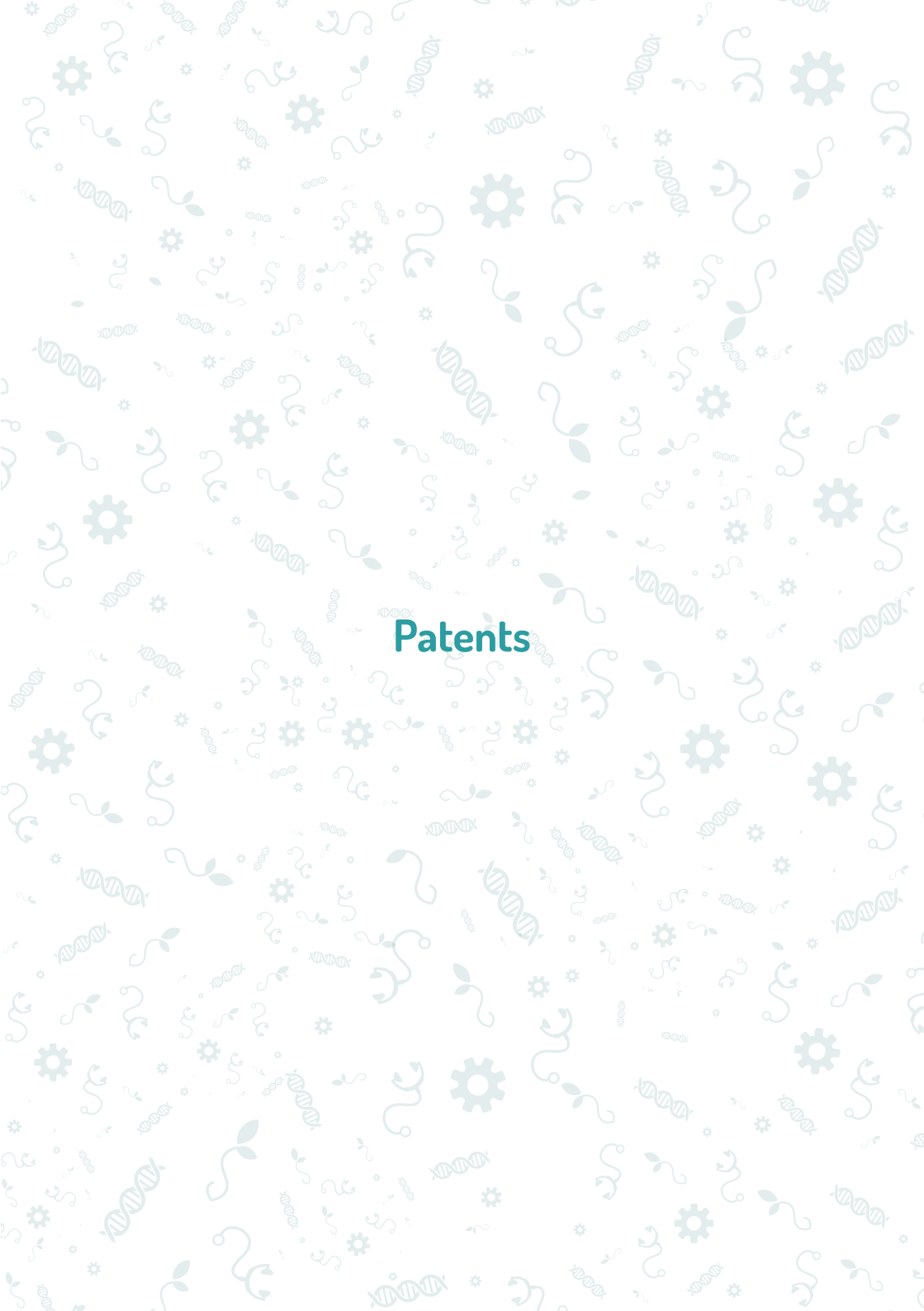


PATENT PORTFOLIO AND SPIN-OFF COMPANIES

UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA



Patents

A method for designing and manufacturing a customized hand prosthesis

(Priority date: 26/04/2023 – Italian patent, EU and USA application)



Inventors: N. Tagliamonte, A. Ceccarelli, F. Taffoni,
F. Cordella, L. Zollo, M. Lapresa, L. Nini,
E. Gruppioni*, K. Morellato*

Co-ownership with INAIL^(*)

The invention presents a design process for custom hand prostheses realized by means of additive manufacturing.

The device is designed to be totally personalized to the specific characteristics of a specific patient, by using kinematic analysis and healthy controlateral limb 3D scanning. Finally, an ad hoc manufacturing allows to develop a prototype which integrates actuation and electronic system into a mechanical structure that replicates functionalities and morphologies of the healthy limb.

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

(Priority date: 16/01/2017 – Italian patent)



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

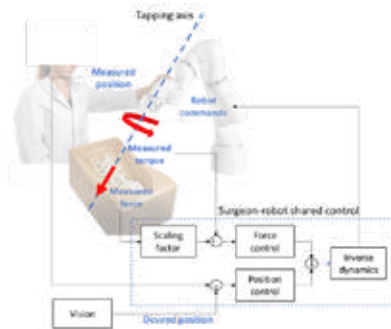
Technique for obtaining a purified, autologous and histocompatible biological regenerative matrix, consisting mainly of stem cells.

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

(Priority date: 31/01/2020 - Italian patent and European patent application)



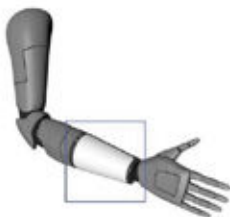
Inventors: F. Cordella, P. Larizza*, C. Lauretti, L. Zollo

Co-ownership with MASMEC SpA^(*)

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

(Priority date: 13/03/2019 - Italian patent)



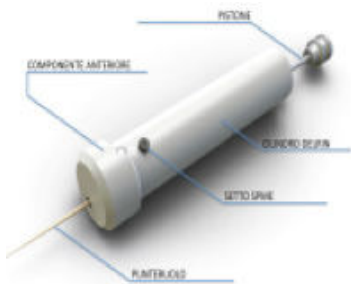
Inventors: J. D'Abbraccio*, L. Massari*, C. M. Oddo*, E. Palermo**, E. Schena, E. Sinibaldi****, G. Terruso***, M. Zaltieri**

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

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

(Priority date: 28/02/2013 - Italian patent)

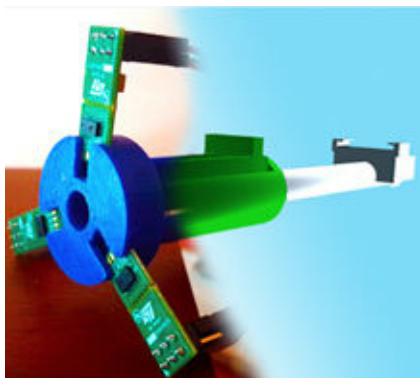


Inventors: M. Dachà, A. D'Amico, G. Pennazza, M. Santonico, A. Zompanti

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 subcutaneous administration

(Priority date: 14/10/2021 - Italian patent)

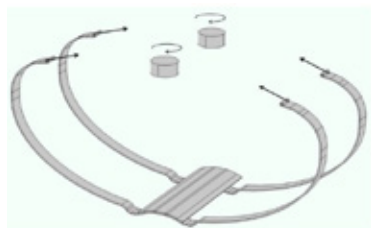


Inventors: E. Cordelli, L. Francini, S. Manfrini, V. Piemonte, R. Sicilia, P. Soda

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.

Gradual compression medical device for supporting and optimizing the cutaneous scar

(Priority date: 15/02/2018 - Italian patent)

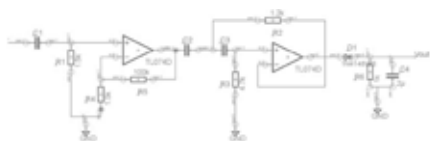


Inventors: C. Falcinelli, S. Filippi, A. Gizzi,
G. Marangi, P. Persichetti, F. Segreto

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.

Method for measuring the slipping between two surfaces

(Priority date: 19/10/2016 - 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

(Priority date: 21/07/2016 - Italian patent)

$$\begin{cases} \Delta p = \Delta p_{1,2}(k) = 2\pi \frac{\Delta x_{1,2}}{\Delta x_1 - \Delta x_2 + i2\pi} \\ \Delta p = \Delta p_{2,3}(m) = 2\pi \frac{\Delta x_{2,3}}{\Delta x_2 - \Delta x_3 + i2\pi} \\ \Delta x_1 + k2\pi > \Delta x_2 > \Delta x_2 - m2\pi \\ \Delta p > 0 \\ k, m \in \mathbb{Z} \\ v = f\Delta p > 0 \end{cases}$$

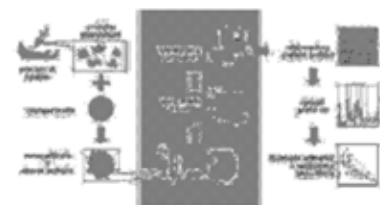
Inventors: L. Beccai^{**}, M. C. Carrozza^{*}, E. Guglielmelli, C. Oddo^{*}, R. Romeo, L. Zollo

Co-ownership with Scuola Superiore Sant'Anna^(*), Istituto Italiano di Tecnologia^(**)

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

(Priority date: 22/07/2019 - Italian and European patent, USA, China, UK and Switzerland+Liechtenstein patent application)



Inventors: D. Caputo, G. Caracciolo^{*}, R. Coppola, L. Digiaco^{*}, S. Palchetti^{*}, D. Pozzi^{*}

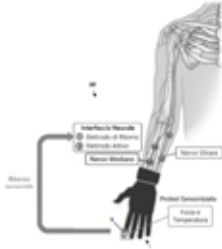
Co-ownership with Sapienza Università di Roma^(*)

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.

Multimodal stimulation system

(Priority date: 07/11/2023 - Italian patent, EU and USA application)

Inventors: A. Scarpelli, F. Cordella, L. Zollo



The present invention refers to an electrical stimulation system, for a body area of a subject, configured to collect a plurality of external mechanical and thermal stimuli, and feedback a corresponding plurality of mechanical (both harmless and harmful or painful) and thermal (in terms of heat and cold) sensations to the subject, through the activation of the corresponding sensory fibers

Pneumopipe – Auxiliary device for collection and sampling of exhaled air

(Priority date: 20/03/2012 - Italian, French, German, UK, Austrian and Dutch patents)

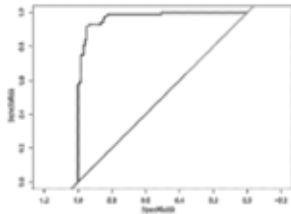
Inventors: R. Antonelli Incalzi, A. D'Amico, G. Pennazza, M. Petriaggi, M. Santonico



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.

Predictive analysis of endometrial cancer risk

(Priority date: 26/03/2018 - Italian patent)



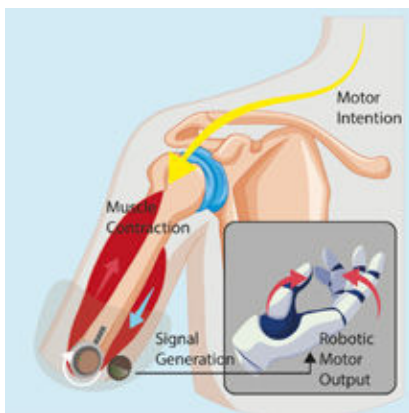
Inventors: R. Angioli, S. Capriglione, C. De Cicco, D. Luvero, R. Montera, F. Plotti, C. Terranova

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.

Prosthetic interfacing device

(Priority date: 11/12/2023 - Italian patent, EU and USA application)



Inventors: G. Di Pino, E.D. Papaleo

Interface system for robotic limb prostheses that converts linear muscle shortening into rotation of an implanted pulley detected and transduced by an external encoder to produce a control signal.

Robotic joint for prosthetic articulation

(Priority date: 07/08/2018 - Italian, French, German and UK patents)



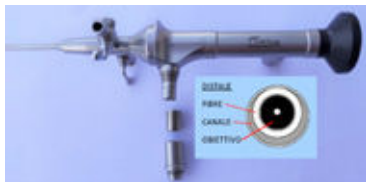
Inventors: L. Bramato, G. Carpino, D. Simonetti, L. Zollo

Co-ownership with INAIL

Robotic joint of innovative prosthetic wrist for active prono-supination and passive flexion-extension. The flexion-extension module uses two Scoth-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.

A temporary percutaneous ileostomy probe

(Priority date: 10/07/2024 - Italian patent)



Inventors: G. T. Capolupo, G. Costa, F. Carannante, F. Rondelli, G. Pennoni, A. Rinaldoni

Co-ownership with Me.Sys Srl, Fondazione Policlinico Universitario Campus Bio-Medico

The solution fits within the field of colo-rectal surgery, specifically to solve problems related to percutaneous ileostomy. The solution is a fiber-optic device that allows a direct view of the anatomical site, consequently avoiding possible complications.

Modular, Reconfigurable, and Multi-Functional robots for rehabilitation

(Priority date: 20/11/2024 - US patent application)



Inventors: L. Zollo, A. Demofonti, A. Ryolo,
M. Johnson

Co-ownership with University of Pennsylvania

The proposed method offers the possibility of designing innovative modular and reconfigurable therapy robots able to overcome the limitations of current rehabilitation systems (mechanical complexity, huge sizes and masses, high costs) in terms of affordability, usability, functionality and portability.

Electrocardiogram-based blood calcium level determination

(Priority date: 13/02/2025 - UK and PCT patent application)



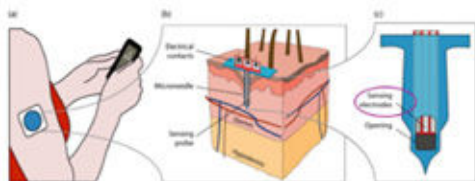
Inventors: A. Palermo, A. Naciu, G. Tabacco,
N. Napoli, C. Pelliccioni, L. Pecchia,
M. Merone, L. Bacco, L. Petrosino,
O. d'Angelis, V. Piemonte, F. D'Antoni

Co-ownership with Fondazione Policlinico Universitario
Campus Bio-Medico

The proposed method offers the possibility of designing innovative modular and reconfigurable therapy robots able to overcome the limitations of current rehabilitation systems (mechanical complexity, huge sizes and masses, high costs) in terms of affordability, usability, functionality and portability.

Device for monitoring of a parameter in interstitial fluid

(Priority Date: 29/07/2025 - EU and PCT patent application)



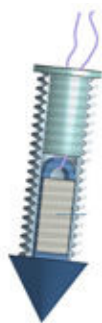
Inventors: G. Pennazza, M. Santonico,
A. Zompanti, D. Ciarrocchi,
S. Grasso, L. Di Biase,
I. Taurino

Co-ownership with Brain Innovation
Srl, KU Leuven

The invention serves as a support to current commercial Continuous Glucose Monitoring (CGM) systems, as it involves the insertion of an additional needle to be used as a reference for applying a current to enhance electroosmotic flow around the sensor, thereby accelerating the diffusion of glucose from the capillary blood to the interstitial fluid through the endothelial membrane.

Suture Anchor

(Priority Date: 19/08/2025 - Italian patent and PCT application)



Inventors: E. Schena, U. G. Longo, A. Carnevale

Co-ownership with Fondazione Policlinico Universitario
Campus Bio-Medico

The solution involves the development of a suture anchor capable of detecting mechanical loads and joint movements following surgery to repair tendon tissue. The anchor will also feature a sensor component containing a strain gauge and an IMU (Inertial Measurement Unit).

Carob-based breakfast flakes and extruded products

(Priority date: 20/11/2025 - Italian patent application)



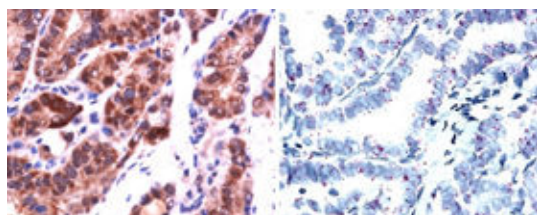
Inventors: V. Piemonte, V. Nacca, S. Niro, F. Piciucchi, L. Mazzeo, A. Bertino, L. Nataloni

Formulation and production of gluten-free flakes made using carob pulp flour and degermed corn semolina as the main ingredients. The use of carob pulp flour represents an innovation in the sector, giving the flakes a higher fiber content and no added sugars, resulting in a lower caloric

intake compared to products currently available on the market.

Diagnostic markers of papillary thyroid carcinoma and their uses

(Priority date 13/01/2026 - Italian patent application)



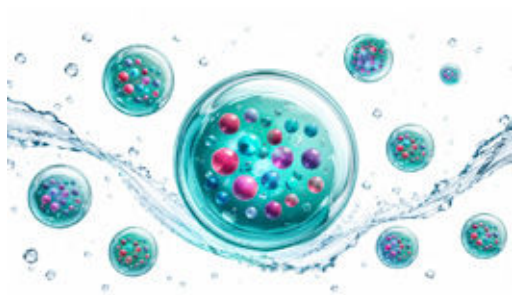
Inventors: A. Palermo, A.M. Naciu, A. Crescenzi, C. Durante, M. Sponziello, G. Grani, V. Pecce, G. Maricchiolo, V. Morano, A. Sodo, M. Di Gioacchino, A. De Masi

Co.ownership with Fondazione Policlinico Universitario Campus Bio-Medico di Roma, Sapienza Università di Roma, Università degli Studi Roma Tre

The main features of the innovation are the use of LRP4 protein expression in thyroid cells as a highly specific and sensitive biomarker for the diagnosis of papillary thyroid carcinoma.

Multiple emulsions with deep eutectic solvents (DES)

(Priority date: 22/01/2026 - Italian patent application)



Inventors: A. Ronconi, S. Scialla, C. Fanali, V. Piemonte, A. D'Ambrosio, L. Mazzeo, S. Della Posta, G. Pietrangeli

This technology enables the incorporation of deep eutectic solvents (DES) into aqueous matrices while

preserving their outstanding solubilizing properties, even at high water content. The platform supports the formulation of poorly water-soluble bioactives while addressing key limitations of neat DES, such as viscosity and cost, without relying on polymeric microencapsulation and using simple mixing processes.

Suture Passer

(Priority date: 11/05/2026 - Italian patent application)



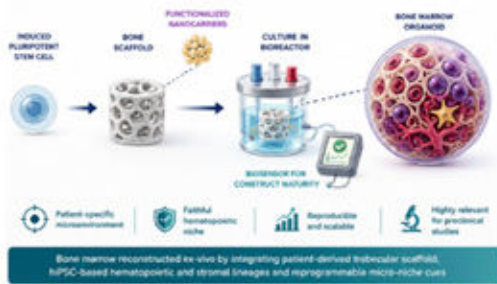
Inventors: G. Longo, E. Schena, A. Carnevale, R. Papalia, E. Franceschetti, S. Campu, G. Salvatore, V. Cancela, A. Berton, G. Spallone, L. Mancini

Co.ownership with Fondazione Policlinico Universitario Campus Bio-Medico di Roma

The invention relates to minimally invasive orthopaedic surgery, specifically arthroscopic repair of muscle–tendon injuries. It proposes an arthroscopic suture passer that allows the suture to be passed multiple times through the tissue, rather than only once as in most existing devices. This design provides a stronger and more biomechanically stable repair, particularly under high loads, while reducing the risk of the suture cutting through fragile or degenerated tendon tissue.

Ex Vivo regeneration of a human bone marrow niche

(Priority date 04/06/2026 - Italian patent application)



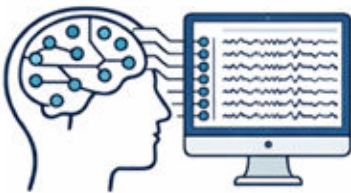
Inventors: J. Lovecchio,
F. Arciprete,
M. Zingariello,
V. Piemonte, V. Velardi,
G. Della Porta,
E.P. Lamparelli,
C. Castaldo,
F. Di Meglio, A. Menini,
G. Izzo

Co.ownership with Università degli Studi di Salerno and Università degli Studi di Napoli Federico II

A three-dimensional bone marrow organoid is generated by cultivating stem cells in a bone-like support structure under controlled conditions that reproduce the natural environment of the body. Biological signals released over time direct the formation of the various cell populations that make up bone

Computer based method for risk of drug resistance in an individual with epilepsy

(Priority date 21/07/2026 - Italian patent application)



Inventors: M. Matarrese, G. Assenza,
L. Pecchia, B. Sancetta

Co.ownership with Fondazione Policlinico
Universitario Campus Bio-Medico di Roma

A computer-implemented method for estimating an individualized continuous risk score for pharmacoresistance in patients with epilepsy based on EEG data processing. The method extracts quantitative EEG features, including spectral power, functional connectivity, and hemispheric asymmetry variables, to generate a patient-specific risk estimate

Electrocardiogram-based blood Glucose Level Monitoring

(Priority date 30/08/2019 - UK patent and European and USA patent application)



Inventors: L. Pecchia,
M. Porumb

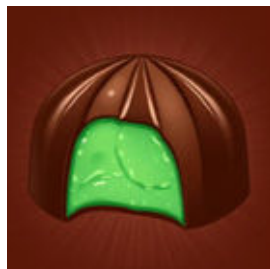
Method for detecting hypoglycaemia without directly measuring glucose, by analysing ECG signals using AI and a personalised model for each individual. A wearable device,

such as a smartwatch, records the ECG and detects cardiac patterns associated with low blood glucose, potentially triggering an early warning alert.

Other IP rights

Creamulin

(European desing model, Priority Date 16/12/2024 - European brand, Priority Date 10/12/2024)



Authors: E. De Arcangelis, L. De Gara,
G. Iafelice, E. Marconi,
G. Pannella, D. Polizzi,
M. Santonico, S. Aversa,
M. C. Berardi, B. De Martino,
M. Monticone, I. Nunziata

Creamulin is an eco-sustainable chocolate praline, with a creamy green filling made from Spirulina and enriched with Inulin (a plant-based prebiotic).

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 shade of teal. 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.

Website: www.bpcomedia.com



BPCOmedia patented device



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



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.



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.



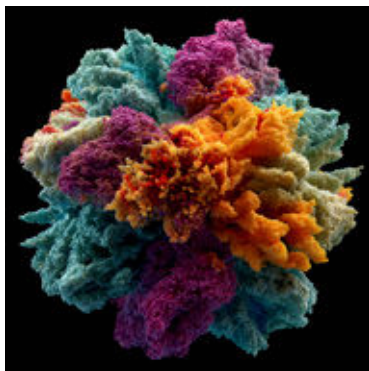
Website: www.heremos.com



Ichnovia Srl

Ichnovia is an Italian biotech startup established to develop a new generation of diagnostic tools for the early detection of cancer, with an initial focus on pancreatic ductal adenocarcinoma (PDAC), one of the most aggressive and difficult-to-diagnose malignancies.

Website: www.ichnovia.com



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:

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Antonella Benvenuto
Venceslao Marinaro
Sara Consilia Papavero**

**Knowledge Transfer Office
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Phone: (+39) 06.22541.9167 - 9224 - 9234**