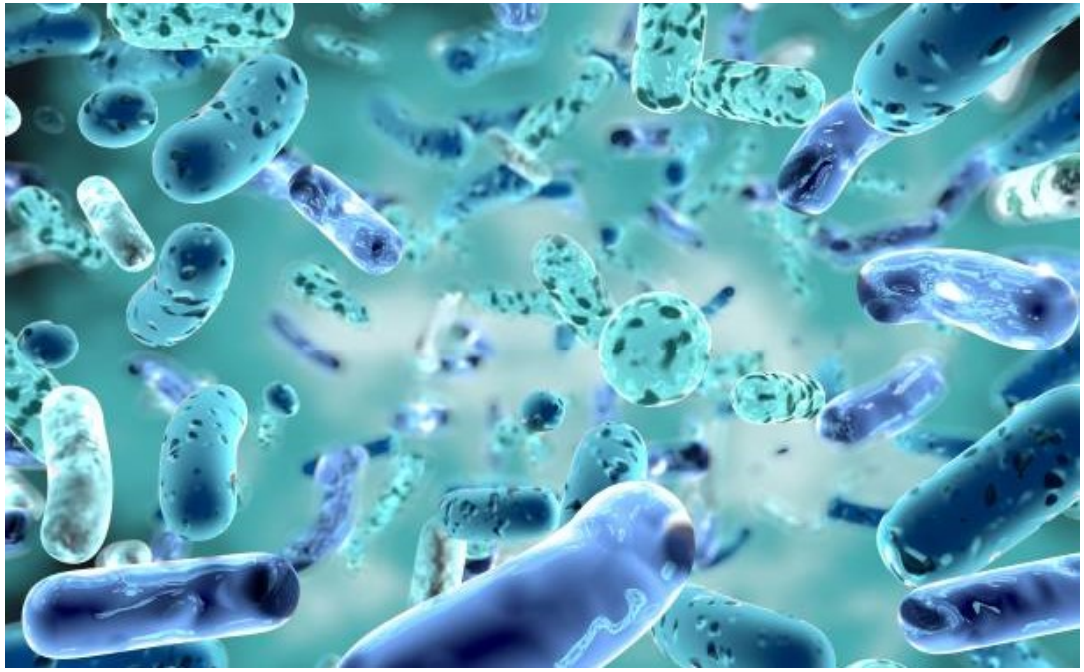
TECHNOLOGY PROPOSAL 1

PATENT APPLICATION SUBMITTED, PCT EXTENDED
WE ARE LOOKING FOR PARTNERS TO SPEED UP THE PROTOTYPE DEVELOPMENT

ANTITUMOR VACCINE FOR ORAL ADMINISTRATION USING A CELLULAR SYSTEM



Certain types of tumors are still incurable, the result of this condition is that there aren't valid and consistent strategies that can enhance patients survival rates. This invention refers to an antitumor vaccine whose mode of action consist in the expression of a specific antigen on the cell surface of a probiotic bacterium; after that, the antigen can be absorbed by the mucosal barrier, reach the bloodstream and determine the generation of an immunogenic response that targets tumors with the same expressed antigen.

PRIORITY NUMBER:
102022000020571

KEYWORDS:
Antitumor vaccines
Oral administration
Combined therapy
Probiotics
Immunotherapy

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TECHNOLOGY PROPOSAL 1

PATENT APPLICATION SUBMITTED, PCT EXTENDED
WE ARE LOOKING FOR PARTNERS TO SPEED UP THE PROTOTYPE DEVELOPMENT

ADVANTAGES:

- The oral formulation is more easy and cheap to produce in confront of the parenteral alternative;
- The administration doesn't require trained healthcare personnel ;
- Applicable both as therapy or vaccine.

APPLICATIONS:

- Antitumoral vaccine;
- Cancer treatment;
- Combination with other treatments (for example chemotherapic drugs);
- Specific application in several types of untreatable tumor types.

DESCRIPTION:

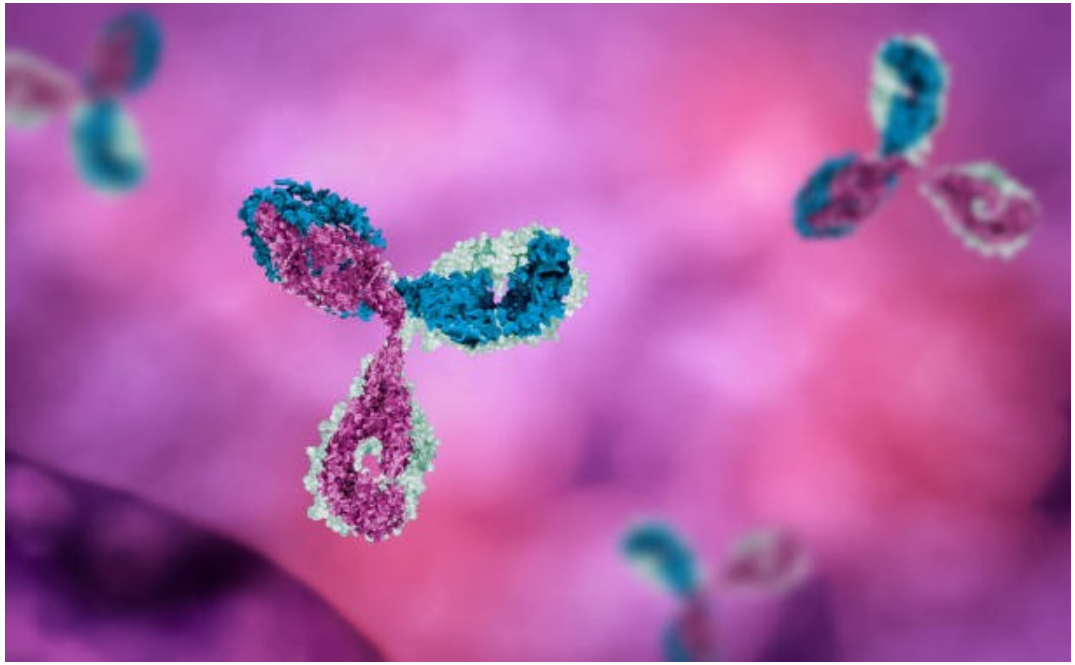
Additional informations could be provided only under confidentiality, if interested reach us with the following contact informations:

- Ermes Mestroni (Head of TTO) ✉emestroni@cro.it ☎0434 659723
- Samuele Tusini (KTM TTO) ✉samuele.tusini@cro.it ☎0434 659749

TECHNOLOGY PROPOSAL 2

PATENT APPLICATION SUBMITTED, PCT EXTENDED: CURRENTLY SEARCHING FOR PARTNERS FOR CO-DEVELOPMENT OF PRODUCTS

ANTI-GPC1 MONOCLONAL ANTIBODY FOR THERAPEUTIC AND DIAGNOSTIC PURPOSES



The invention refers to a IgM monoclonal antibody that can be used for diagnosis and treatment of tumors expressing the tumor-associated antigen (TAA) Glypican-1 (GPC1). The invention also relates to a method for the production of the monoclonal antibody by immunization given by exposure, on the cell surface of murine cells, of the specific interactive portion belonging to the GPC1 protein. Co-ownership: CRO 60% + UniTS 40%.

PRIORITY NUMBER:

102022000020571

KEYWORDS:

Immunotherapy
CAR-T therapy
TAA
Cancer treatment
Antibody-drug conjugates

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TECHNOLOGY PROPOSAL 2

PATENT APPLICATION SUBMITTED, PCT EXTENDED: CURRENTLY SEARCHING FOR PARTNERS FOR CO-DEVELOPMENT OF PRODUCTS

ADVANTAGES:

- Maximum specificity for GPC1 protein, due to the unique production technique;
- Unique features of immune response activation and interaction with the tumor microenvironment;
- Intense recruitment of the complement system.

APPLICATIONS:

Diagnostic and therapeutic purposes, in particular:

- MAbs to activate the immune response;
- CAR-T cells production, Antibody-Drug Conjugate (ADC);
- Nanoparticle-Protein conjugates.

DESCRIPTION:

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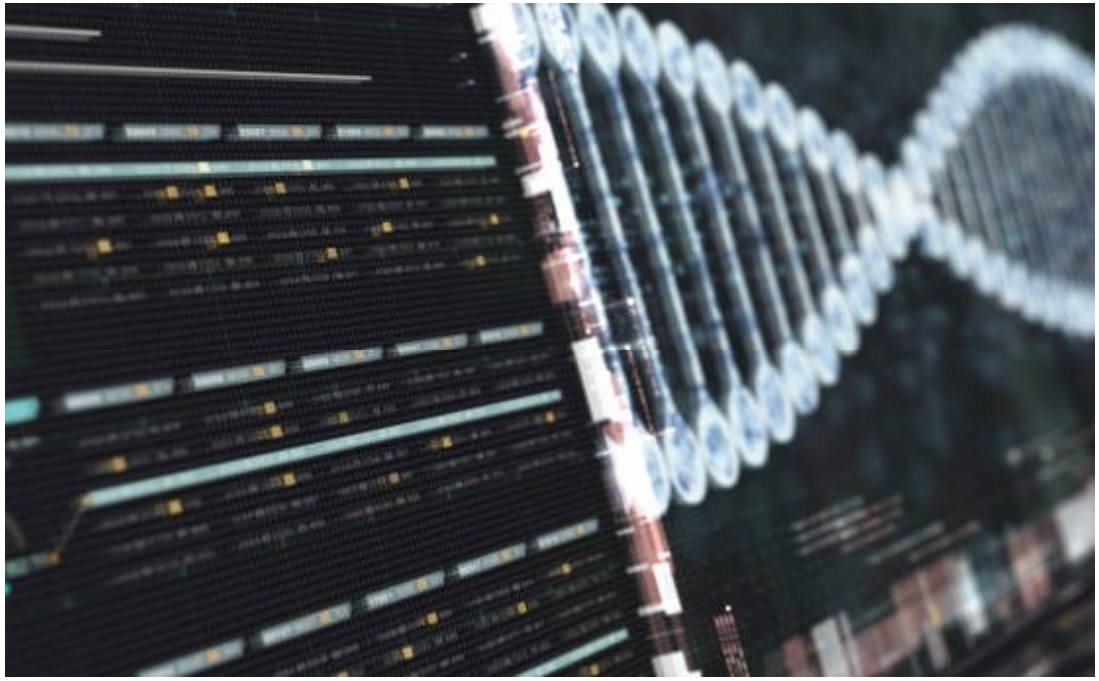
TECHNOLOGY PROPOSAL 3

PATENT APPLICATION SUBMITTED, PCT EXTENDED:
WE ARE LOOKING FOR PARTNERS TO DEVELOP A TOOL OR AN ADD-ON OF AN EXISTING SOFTWARE

BIOINFORMATICS PIPELINE FOR THE CORRECTION OF NGS DATA OF IMMUNE REPERTOIRE



Next generation sequencing (NGS) allows to identify and quantify mutations within the human genome, this has great relevance in the diagnostic and prognostic fields. Nevertheless, NGS is intrinsically subject to errors, this patent relates to a bioinformatics pipeline that can be used to correct systematic errors generated by RepSeq standard procedures.

PRIORITY NUMBER:
102022000027138

KEYWORDS:
CLL
RepSeq Data
Error Correction
Simpson Index
Cheapness

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TECHNOLOGY PROPOSAL 3

PATENT APPLICATION SUBMITTED, PCT EXTENDED:
WE ARE LOOKING FOR PARTNERS TO DEVELOP A TOOL OR AN ADD-ON OF AN EXISTING SOFTWARE

ADVANTAGES:

- Greater confidence on the part of the clinicians in making diagnostic and prognostic judgments;
- Improved alternative to existing RepSeq correction methods in laboratory practice: enhanced simplicity, cheapness and quickness of protocols.

APPLICATIONS:

- Enhanced accuracy in diagnosis and prognosis for patients affected by chronic lymphocytic leukemia or analogue pathologies;
- Laboratory practice, production of datasets that can then be used for the development of AI algorithms.

DESCRIPTION:

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TECHNOLOGY PROPOSAL 4

PATENT APPLICATION SUBMITTED, PCT EXTENDED
WE ARE LOOKING FOR PARTNERS TO SPEED UP THE PROTOTYPE DEVELOPMENT AND SCALE-UP

NITROPRUSSIATO DI RAME (II) (CU(II)NP) PER L'USO NEL TRATTAMENTO DEI TUMORI

The invention involves nanoparticles containing copper nitroprusside (CuNP) for use as a cancer treatment. CuNP can generate reactive oxygen species (ROS) within tumoral cell lines, causing apoptosis by altering their physiology. This compound is particularly effective against ovarian cancer, breast cancer, and glioblastoma. Co-ownership of the patent: 25% CRO + 75%UniVE.

PRIORITY NUMBER:
102022000025359

KEYWORDS:
Nanoparticella
Farmaco antitumorale
Specie ossigeniche reattive
Terapia chemodinamica
Tumore ovarico

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TECHNOLOGY PROPOSAL 4

PATENT APPLICATION SUBMITTED, PCT EXTENDED
WE ARE LOOKING FOR PARTNERS TO SPEED UP THE PROTOTYPE DEVELOPMENT AND SCALE-UP

ADVANTAGES:

- ROS generation is greater inside acidic tumoral microenvironment;
- Degradation of tumoral dense and complex extra cellular matrix (ECM);
- Fenton-like reaction doesn't need external supply of reductive agents to deliver ROS.

APPLICATIONS:

- Chemodynamic Therapy;
- Second line cancer treatment;
- Combination with other treatments (for example ADCs or inhibitors).
- Particularly indicated for solid tumors with compact structures.

DESCRIPTION:

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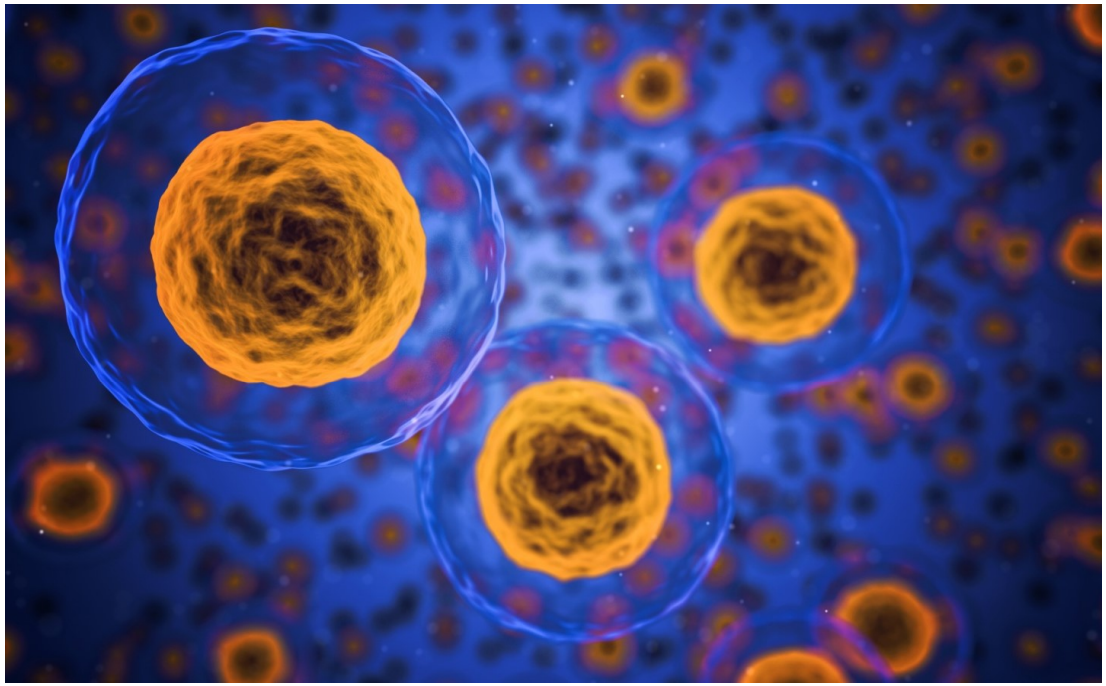
TECHNOLOGY PROPOSAL 5

ITALIAN PATENT GRANTED, PCT EXTENSION
CURRENTLY UNDER POC PROGRAM

SMART-ASC: THERAPEUTIC AGENT DELIVERY SYSTEM BASED ON ADIPOSE STROMAL/STEM CELLS



PRIORITY NUMBER:
102020000030692

KEYWORDS:
Cell Therapy
Adipose Stem Cells
Homing
Electroporation
Tumor

SmartASC is an efficient targeted delivery system of therapeutic molecules (e.g. cytotoxic agents) based on ex-vivo expanded Adipose Stromal/Stem cells (ASCs).

The procedure to culture ASCs is compatible with Good Manufacturing Practice guidelines and it enables transient or stable genetic modification of ASCs by a non-viral method for clinical applications.

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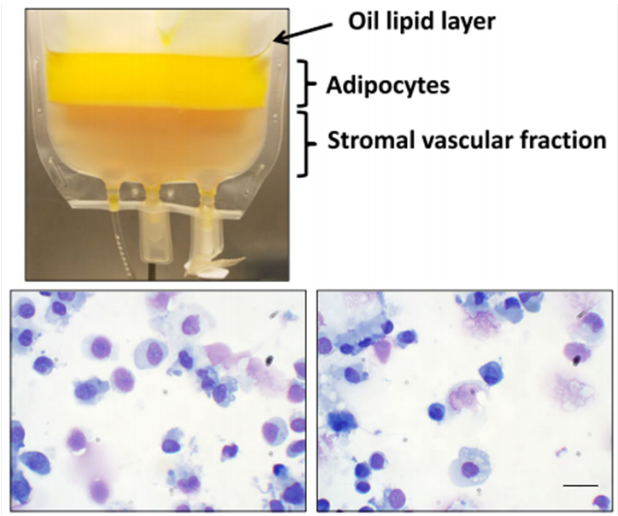
TECHNOLOGY PROPOSAL 5

ITALIAN PATENT GRANTED, PCT EXTENSION CURRENTLY UNDER POC PROGRAM

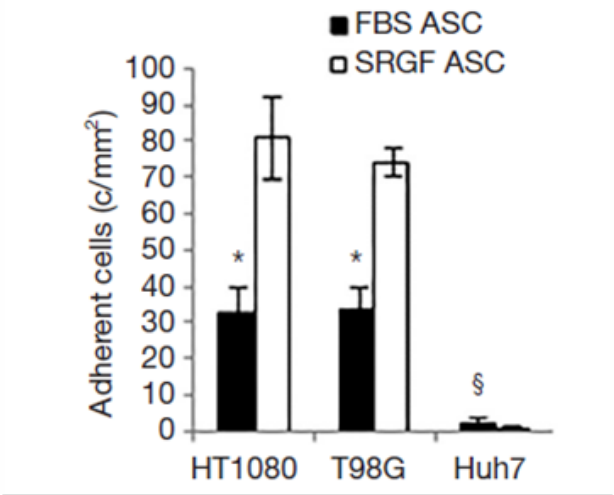


DESCRIPTION:

Researchers optimized and validated the procedure to expand ASCs using a GMP grade Supernatant Rich in Growth Factors derived from platelets of human origin (SRGF) as medium additive substitute for fetal bovine serum. SRGF significantly improves ASC homing potential, proliferation rate and transfection efficiency by electroporation.

As required by GMP guidelines, in order to reduce batch-to-batch variability, a standardized SRGF production method was implemented with subsequent biological validation and quality controls definition.

Ref. Agostini et al., J Transl Med. (2017) doi: 10.1186/s12967-017-1210-z; Agostini et al., PLoS One. (2018) doi: 10.1371/journal.pone.0203048; Agostini et al., Stem Cell Res Ther. (2018) doi: 10.1186/s13287-018-0886-1; Agostini et al., Ann Transl Med (2020) doi: 10.21037/atm.2020.04.25.



ADVANTAGES:

- Rapid cell expansion rate
- Improved homing ability on cancer cells
- Improved efficiency of cell transfection by electroporation
- Stable release kinetic of the therapeutic molecules

APPLICATIONS:

- **Cell therapy**: ASCs can be used both as autologous and as allogenic cell therapy product
  - **Oncology**: **SmartASC** can be loaded with cytotoxic agents and used for targeted delivery
  - **Regenerative medicine**: **SmartASC** can be loaded with trophic factors

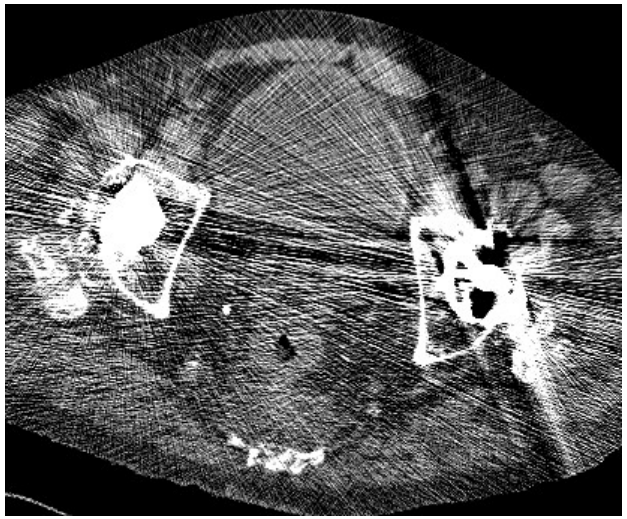
TECHNOLOGY PROPOSAL 6

WE WANT TO LICENSE THE SOFTWARE TO A PRODUCER OF CT SCANS

AI ML ALGORITHM FOR THE CORRECTION, IN CT IMAGES, OF ARTIFACTS CAUSED BY DENTAL IMPLANTS

DESCRIPTION:

This algorithm, implemented cooperatively by CRO Aviano and Università degli Studi di Udine, guarantee the conversion of Computed Tomography images generated through kV-CT in images equivalent to MV-CT ones. The advantage of this condition is that, with a unique analysis, it can be obtained an optimal level of detail and resolution, granted by the kV-CT image, without worrying too much about the presence of artifacts, thanks to the MV-CT generated image.



ADVANTAGES:

- It can remove artifacts caused by the presence of dental implants;
- kV-CT scans are more often available in diagnostic healthcare facilities, MV-CT scans are integrated in radiotherapy devices;
- Remove the necessity of conducting multiple analysis on the same patient, lowering the radiation burden.

APPLICATIONS:

- Diagnosis of head and neck cancers;
- Support to targeted radiotherapy.

Technology proposal 7

Currently in PoC program: device under development European (Imatinib) and Italian (Imatinib+Irinotecan) granted patents.

CHEMOTHERAPY: IMATINIB AND IRINOTECAN DRUG MONITORING

PRIORITY NUMBER:

102019000008808

KEYWORDS:

Imatinib
Anti-cancer drugs
Therapeutic drug monitoring
Point-of-care

The effectiveness of many anticancer drugs varies greatly from patient to patient, with risks of incorrect dosages and adverse side effects. The invention provides for the first time an electrochemical method to measure the concentration of various drugs, like Imatinib and Irinotecan, in patient's plasma and then to establish the optimal dose, with an on-site test readable in real time.

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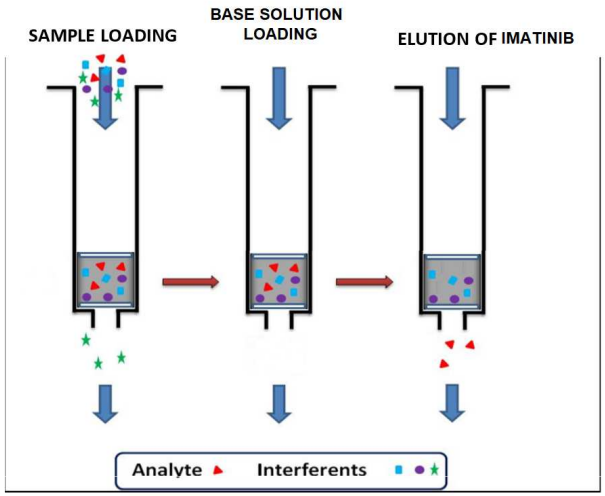
Technology proposal 7

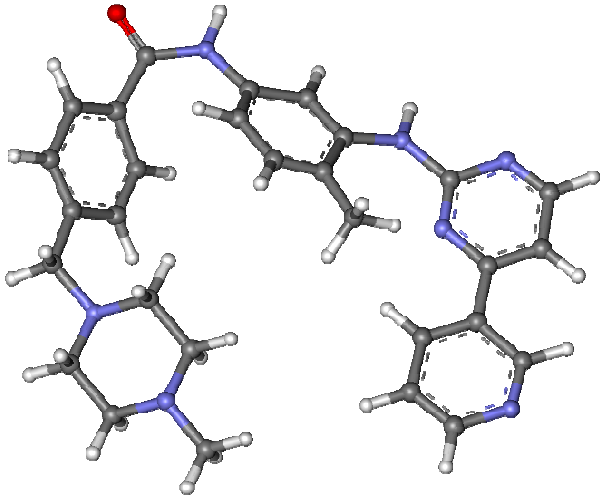
Currently in PoC program: device under development
European (Imatinib) and Italian (Imatinib+Irinotecan) granted patents.



DESCRIPTION:

CHEMOTHERAPY: IMATINIB DRUG MONITORING

Imatinib and Irinotecan are anticancer drugs used for the treatment of pathologies like acute lymphoblastic leukemia and metastatic colorectal cancer. The therapeutic drug monitoring (TDM) greatly improves the effectiveness of the cancer treatment and helps to personalize the doses and to limit side effects. Quick procedures are therefore essential. The patented electrochemical methods provide a simple, fast and cost-effective protocol for the measurement of the drug concentration through plasma collection; said method is suitable for the manufacturing of a device, that will make the test results readily and easily accessible at the patient's bed (point-of-care), avoiding long times required by specialized analysis. The methods involve the selective extraction of the drug on a liquid-liquid extraction column and a following measurement of its concentration using an electrochemical technique: adsorptive stripping voltammetry.



ADVANTAGES:

- Simple protocol to be performed also by non-specialized personnel;
- Rapid and accurate diagnosis on site;
- Minimum amount of plasma required;
- Results in real time;
- Determination of drug concentration and therefore of treatment effectiveness for a timely adjustment of individual dosage.

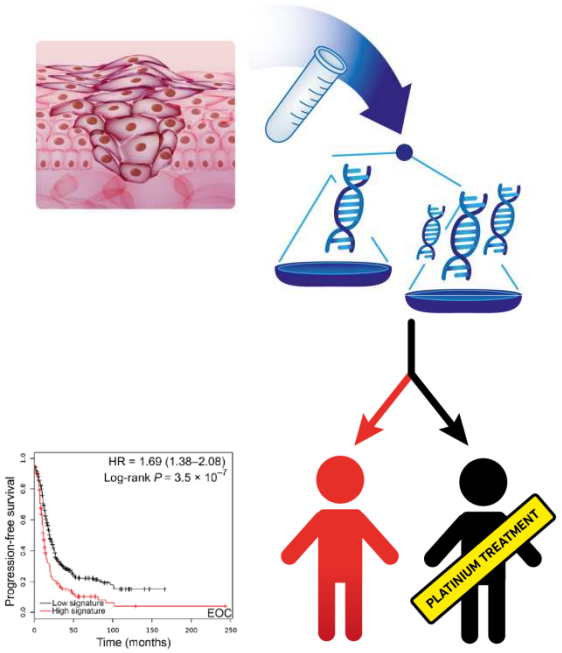
APPLICATIONS:

- Protocol to determine Imatinib concentration in patients' plasma;
- Suitable for developing a portable device to perform therapeutic Imatinib drug monitoring.

Technology proposal 8

Italian patent elapsed

PREDICTIVE KIT FOR PLATINUM THERAPY



The invention consists in quantifying the expression of 10 genes from tumor cells to detect patients eligible for platinum treatment at higher risk of developing drug resistance and disease progression. Drugs such as cisplatin, oxaliplatin and carboplatin are used to treat various types of worldwide common cancer, but resistance is a frequent event. Patient stratification based on tumor gene expression profile allows to personalize treatment reducing side effects and costs.

PRIORITY NUMBER:

102019000000130

KEYWORDS:

Predictive analysis
Platinum Chemotherapy
Gene Expression
DNA - mRNA
Personalized medicine

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Technology proposal 8

Italian patent elapsed

PREDICTIVE KIT FOR PLATINUM THERAPY

Formulation	Cancer type
cisplatin	Testicular cancer, ovarian cancer, bladder cancer, head and neck cancer, NSCLC, SCLC, gastric cancer, anal cancer
carboplatin	Ovarian cancer, NSCLC, SCLC, melanoma, head and neck cancer, thymic cancer, breast cancer
oxaliplatin	Colorectal cancer

- X. Kang, et al. Cancer Biol. Med. 12, 362–374 (2015) DOI: 10.7497/j.issn.2095-3941.2015.0063

Cancer type	Estimated new cases/year in the USA
breast	268600
colorectal	145600
bladder	80470
ovarian cancer	22500

- https://www.cancer.gov/types/common-cancers
- G. C. Jayson, et al., Ovarian cancer. Lancet 384, 1376–1388 (2014) DOI: 10.1016/S0140-6736(13)62146-7

DESCRIPTION:

Inventors observed a correlation between the expression of 10 genes in tumor cells of patients eligible for platinum treatment and the risk of developing drug resistance and disease progression.

“Platinum agents comprise…in 80% of clinical anticancer regimens as a single agent or combined with other anticancer drugs.” (DOI: 10.7497/j.issn.2095-3941.2015.0063) “Unfortunately, the development of platinum-resistant tumor recurrences represents a very frequent event.” (DOI: 10.1126/sciadv.aav3235) Moreover costs of platinum-free treatment can be lower than platinum based treatment. (DOI: 10.1200/JOP.2015.006700)

In this context, having the possibility to identify patients who will most benefit from drug specific treatment is economically and clinically relevant.

ADVANTAGES:

- Gene expression quantification can be performed with high throughput, widespread techniques
- Applicability in different tumor types treatable with platinum
- Reduction of treatment costs
- Improvement of patients life quality by avoiding ineffective treatment and potentially serious, useless side effects

APPLICATIONS:

- Disease: Epithelial Ovarian Cancer, Triple Negative Breast Cancer and potentially applicable to other cancer treatable with platinum
- Sample: mRNA extracted from cancer cells
- Technology: any technique to quantify nucleic acids

Technology proposal 9

We are looking for investors interested in supporting the App development.

COGNITIVE FUNCTION SELF-ASSESSMENT TOOL

Technology Overview

Novel tool for the evaluation of cognitive impairment that interfere with optimum quality of life:
18 items questionnaire with score correlated to clinical outcome and indications.

Cognitive Function refers to intellectual processes and all aspects of perception, thinking, reasoning, and remembering that are key in maintaining personal and social independence, working capability, and associated quality of life.

Technology Application

In cancer patients surgical treatment of Central Nervous System tumors, as well as radiotherapy, chemotherapy, and hormone-therapy, could induce transitory or long-term cognitive impairment due to damaged encephalic tissues or blood-vessels.
The tool can be applied for other non-neurological populations.

Development Stage

The tool is ready to use and well known around the world.
It was validated in cancer patients 1 to 3 years after diagnosis, and 5 progression free years after the end of treatment.

Technology proposal 10

Italian patent elapsed

HPLC device for high-volume samples analysis

Technology Overview

Fluidic device that allows **high sample volume** injection in HPLC systems and provides an automated purification step, reducing sensitivity problems and facilitating the analysis of extracted compounds from **complex matrix**.

Technology Application

- Therapeutic drug monitoring and forensic medicine
- Environmental analysis e.g. pollutants in air, water, soil
- Food quality evaluation

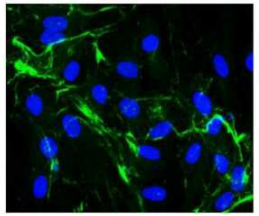
Developmental Stage

A LC-MS/MS method based on this fluidic device has been validated in the laboratory and is currently used for therapeutic drug monitoring (Imatinib and Norimatinib) of cancer patients. Miniaturization and automation are required for commercial use. Patent opportunities are currently under evaluation.

Technology proposal 11 Available for licensing

Centro di Riferimento Oncologico
Scientific Direction – Technology Transfer Office

REGIONE AUTONOMA FRIULI VENEZIA GIULIA
ISTITUTO DI RICOVERO E CURA A CARATTERE SCIENTIFICO
CRO di Aviano - Istituto Nazionale Tumori



Sector: Research
Ownership: 100% CRO Aviano (IT).
Inventors: Mucignat M.T., Doliana R., Spessotto P., Mongiat M., Colombatti A.
Creation date: May 1999
Publication Update: July 2017
Availability for non-exclusive licensing
Contacts: Technology Transfer Office of CRO Aviano
dirscienti@cro.it
+390434659-749(-723);

Anti-human Emilin-1 (#1H2G8)

-Description-

Centro di Riferimento Oncologico
Scientific Direction – Technology Transfer Office

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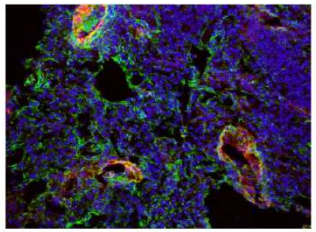

Sector: Research
Ownership: 100% CRO Aviano (IT).
Inventors: Mucignat M.T., Doliana R., Spessotto P., Colombatti A.
Creation date: January 2004
Publication Update: July 2017
Availability for non-exclusive licensing
Contacts: Technology Transfer Office of CRO Aviano
dirscienti@cro.it
+390434659-749(-723);

Anti-mouse Emilin-1 (#1007C11A8)

Centro di Riferimento Oncologico
Scientific Direction – Technology Transfer Office

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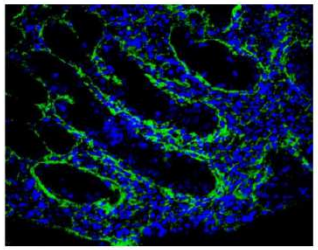

Sector: Research
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Inventors: Mucignat M.T., Doliana R., Mongiat M., Colombatti A.
Creation date: August 1999
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Availability for non-exclusive licensing
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dirscienti@cro.it
+390434659-749(-723);

Anti-human Emilin-2 (#828B3B3)

Licenses of these and other *monoclonal antibodies*