meet in italy
FOR LIFE SCIENCES
GENOVA - LIGURIA 2021

MIT4LS SUB2020
StartUp Bootcamp

Meet in Italy for Life Sciences

StartUp Bootcamp 2020 - MIT4LS SUB2020
Atlantis Pitching Arena
30 October 2020

https://tinyurl.com/yxeje4wt

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MEET IN ITALY FOR LIFE SCIENCES STARTUP BOOTCAMP 2020 MIT4LS SUB2020, DIVING INTO BUSINESS

ATLANTIS PITCHING ARENA 30 OCTOBER 2020

Meet in Italy for Life Sciences – MIT4LS - the leading international partnering event in the life sciences sector in Italy, 12-14 May 2021 - is used to showing special attention for startups, with more than **540 startups** participating in the networking sessions over six editions.
Since 2016, specific initiatives to train and support international startups and business idea, have become a key component of MIT4LS, with **more than 260 applications** collected, 80 startups attending the training and final sessions, 80 investors and corporate representatives involved in the final pitch presentation event over the last four editions.

Within the framework of activities of the 2021 edition of MIT4LS, an international startup bootcamp (5th edition) has been organised, **MIT4LS StartUp Bootcamp** - **MIT4LS SUB2020**, designed for all life sciences startuppers. The goal is to provide them with expertise, tools and connections in order to boost and fully exploit their business potential, thanks to the support of a relevant network of startup mentoring and coaching experts, including several investors. See the link below for the full list:
https://meetinitalylifesciences.eu/en/commission-year/2020-en/
https://meetinitalylifesciences.eu/en/coaches-year/2020-en/

MIT4LS SUB2020 selected startups benefit a tailored entrepreneurial journey, diving into coaching sessions with the life sciences mentors, who help them in refining their business approach and the communication of their innovation value.
The journey ends **on the 30th of October 2020 with the ATLANTIS PITCHING ARENA,** in which the trained startups take their pitch presentations to potential corporate partners and international investors. At the end of the event an expert jury will assign the title of most innovative start-up award and the Special Award, offered by Zcube-OpenZone.

Investors and corporates are invited to participate in the ATLANTIS PITCHING ARENA on the 30th of October 2020 and dive into its life sciences innovation showcase, exploring unique opportunities of investments and joining the several investment funds and life sciences organisations already supporting **MIT4LS SUB2020** (see below).
ATLANTIS PITCHING ARENA is a **free, virtual event.** Connection details will be shared with registerede participants only.

Registration form here: https://forms.gle/twkLV5Y5rcaH9FMD7

For information, please contact: f.mazzini@scienzedellavita.it.

In addition, there will be many other interesting startups to evalute in the MIT4LS partnering platform, that will start populating from October 2020. **Don't forget to register, it is free**!

Enjoy Meet in Italy for Life Sciences!

Organisation staff
Meet in Italy for Life Sciences
StartUpBootcamp 2020

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StartUp Bootcamp

Investors and innovation centers supporting

Meet in Italy for Life Sciences StartUp Bootcamp 2020

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StartUp Bootcamp

Atlantis Pitching Arena companies overview

AEQUIP	**Italy**	**medical devices, diagnostics, AI, digital pathology**	AEQUIP developed a very innovative decision support system for digital pathology based on AI, aiming to be a second observer to help pathologists make faster and more accurate diagnoses for timely patients treatment.
APTUS.AI Shaping Unstructured Data	**Italy**	**medical devices, diagnostics, AI, digital imaging**	Aptus.AI has developed DeepMammo, AI powered SaaS service for the early detection of breast cancer, based on the analysis of structured and unstructured data (text, audio, images and video), using proprietary deep learning technology applied to radiology workflows and imaging in mammography.
ChemICare Pharma for calcium regulation	**Italy**	**pharma, orphan drugs, calcium-related rare diseases**	ChemICare efforts have resulted in the discovery and development of unique and potent inhibitors of the SOCE (Store Operated Calcium Entry) hyper-activation, representing potential therapeutic treatments for patients affected by calcium-related diseases such as acute pancreatitis and rare genetic diseases (Tubular Aggregate Myopathy, York Platelet Syndrome and Stormorken Syndrome).
D·Heart	**Italy**	**medical devices, portable ECG, telecardiology, homecare**	D-Heart developed the first smartphone based, portable, hospital grade, 8 and 12-lead ECG device combining the usability required by the patient and the reliability of the ECG wanted by the doctor. Users can rely on the 24/7 tele-cardiology service to get results quickly.
hucare	**Italy**	**e-Health, therapy adherence, patient relationship and clinical trial management system**	HuCare mission is to bring the patient and the healthcare system on a secure platform to increase therapy adherence. It developed a SaaS system made of a 3-in-1 platform, including a clinical trials management system (CTMS), a patient relationship management system (PRM), and a Covid-19 monitoring and tracking platform.
M2TEST MICRO MACRO TESTING	**Italy**	**medical devices, diagnostics, osteoporosis, bone fragility, software as MD**	M2TEST developed BES TEST® (Bone Elastic Structure Test), a CE-marked SaaS providing bone architecture analysis service, based on low dosage radiographic images and allowing the evaluation of the actual risk of bone fracture in a totally different and complementary way to X-ray densitometry.
OaCP	**Ireland**	**medical devices, diagnostics, IVD, oncology, fast genetic diagnosis**	OaCP produces and sells proprietary CE-IVD approved chemical reagents that improve the DNA test efficiency, making possible to perform in situ hybridization tests reducing test time from 3 days to only 2 hours while saving 50% of the overall test costs. OaCP offers also a complete range of in situ hybridization probes and ancillaries.

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PersImmune	**USA**	**pharma, cellular therapy, cancer immunotherapy, personalized medicine**	PersImmune is developing cancer patients optimized immunotherapy, personalized on the basis of their own unique tumor signature. PersImmune proprietary protocol, Personal Adoptive Cellular Therapy for Neoantigens (PACTN) identifies the DNA alterations present in the patient cancer cells and generates enriched, tested, highly-specific T-cells that effectively kill the patient's tumor cells.
RECORNEA securing your vision	**Italy**	**medical devices, ophthalmology, corneal implants, keratoconus**	Recornea developed GROSSO® corneal implants, the first metal ophthalmic medical device designed for the restoration of physiological shape of corneas in cases of pathological corneal shape deformations (PCSDs) with predictable visual outcomes.
SurgiQ	**Italy**	**digital health, AI, hospital resources optimization, automatic planning**	SurgiQ is an AI based digital health platform helping hospitals optimize the utilization of critical resources such as operating theatres, beds and staff. SurgiQ makes clinical care processes more effective, less invasive and easier on patients, their families and healthcare teams by achieving targets and allowing priority-based scheduling for patients.
TESEO Human-Centred Innovation	**Italy**	**healthtech, healthy aging, ambient assisted living, AI, IoT**	Teseo developed Kibi, an AI based plug&play system (series of distributed devices interacting with a wearable one) allowing for an unobtrusive monitoring and proactive motivator of a person's well-being, without interfering with his/her habits, and automatically alerting relatives or assistance centres in case of need.
U CARE DIGITAL BIOMARKER FOR ACUTE KIDNEY INJURY	**Italy**	**medical devices, acute kidney injury, intensive care unit, AI**	U-Care Medical provides real-time evaluation to predict acute kidney injury (AKI) episodes, particularly relevant in ICU patients, by using innovative sensors and artificial intelligence algorithm based on patient urine output. The system provides a risk score of getting AKI within the next 12 hours, alerting doctors.
ViroStatics	**Italy**	**pharma, kinase targeted inhibitors, oncology, infectious disease**	ViroStatics is focused on the design and development of novel, highly selective, kinase inhibitors for distinct disease indications (aggressive tumours and HIV infection). Lead compound VS2-370 targeting CDK4/6/9 in a specific, unique and synergistic fashion showed differentiated efficacy and safety profile on aggressive tumours, in particular metastatic breast cancer, compared to competitors.

AEQUIP
Automated Enhanced QUantitative imaging in Immunohistochemistry and Pathology

Turin - Italy

medical devices | diagnostics | AI | digital pathology | quantitative imaging

Founding year: **2020**

Current stage: **early stage (prototype validation)**

IP**: patents**

Looking for funding: **€ 4 M, 2 years**

AEQUIP is a spin off of the Politecnico di Torino, founded in 2020, that developed a very innovative decision support system for digital pathology based on artificial intelligence (machine and deep learning). AEQUIP wants to be a second observer to help pathologists make faster and more accurate diagnoses for timely patients treatment.
All the AEQUIP's tools are developed and designed in close collaboration with clinical pathologists (from: Molinette Hospital, Alba Hospital and Humanitas Rozzano).

Context
Cancer is the second leading cause of death globally. According to the Global Cancer Observatory, in 2018, over 18.1 M new cancer cases were diagnosed worldwide, and they will be more than 29.5 M in 2040, with an increase of about 60% in just 20 years. Histopathological image analysis is a gold standard for most types of cancer, and there has been an accelerated adoption of digital pathology in recent years.
In the coming years, the ongoing shortage of pathologists is expected to become much more severe worldwide. In Italy, according to FIASO, in 2028 there will be a drop of about 80% of clinical pathologists, and the same trend can be found in the USA where, according to the AAMC, out of about 13.000 specialists (65%), are more than 55 years old.

Value Proposition
AEQUIP is based on an innovative and modular algorithm based on machine learning and deep learning, able to perform a rapid and accurate recognition of cellular structures within digital histological images. Algorithm has been developed analyzing two of the most common tumors, prostate and breast cancer, but the versatility of AEQUIP software allows to extend it for the analysis of other types of tissues in a relatively easy way.
Different tools have been developing, covering the workflow of pathologist work:

- Stain Normalization tool, that is able to normalize and digitally re-stain a physical slide in 2 clicks, providing a new digital image according to the pathologist preferred intensity.
- Tumor Detection tool, detecting and recognizing the cancer tissue on a digital slide, working as pre-screening stage and thus optimizing the time spent by the pathologist on slides analysis.
- Tumor Quantitative Analysis tool, that is able to quantify the tumor aggression through the automatic extraction of specified parameters, minimizing potential errors due to the variability of such analysis, nowadays carried out by the pathologists by eyes using the microscope.

Digital pathology companies landscape is made of big multinational companies, such as Philips, Leica and Roche, as well as small companies and startups, such as PathAI, Indica Labs, AIforia and others. Unlike other competitors, AEQUIP tools will be able to analyze images coming from different scanner, and they are modular.

Market overview
According to Markets and Markets 2020 report, the global digital pathology (DP) market is projected to reach $ 1.2 Bn by 2025 from $ 613 M in 2020, at a CAGR of 13.2%. The growth of the market is due to the increasing adoption of DP to enhance lab efficiency, rising prevalence of cancer, and the growing application of digital pathology in drug development & companion diagnostics.

Aptus.AI
Shaping unstructured data

Pisa – Italy
www.aptus.ai

medical devices **diagnostics** **AI**
digital imaging **cancer screening** **DSS**

Founding year: **2018**

Current stage: **early stage (prototype validation)**

IP**: patent applying**

Looking for funding: **€ 1.5 M, 3 years**

Aptus.AI mission is to streamline daily radiology workflows, providing production-ready, reliable, scalable and interoperable end-to-end artificial intelligence (AI) and machine learning solutions. Aptus.AI has developed a line of AI powered SaaS services for the analysis of structured and unstructured data (text, audio, images and video), based on proprietary deep learning technology applied to radiology workflows and imaging.
In particular, Aptus.AI is developing DeepMammo, an innovative Cloud solution supporting radiologists in early detection of breast cancer, applying image recognition and deep neural networks to detect cancer in mammograms.

Context
Breast cancer is the most frequent type of cancer among women, representing 25% of all the cancers. One woman out of 8 is affected by breast cancer along her life. In this context, prevention has been the only available option able, and early detection of cancer symptoms has proven to be crucial. Breast cancer screening (mammography) has therefore become a regular practice. In Italy, about 4 M women, 7% of the population, every year are subject to breast digital examinations.

Value Proposition
Resulting from more than 10 years of R&D in collaboration with universities and clinical centers, DeepMammo is an innovative cloud solution to support diagnostic imaging by identifying criticalities and anomalies in digital images coming from mammography. Using Aptus.AI artificial intelligence (AI) algorithms, DeepMammo will support imaging workflows augmenting radiologists performances, improving diagnostic precision, reducing daily workloads and therefore improving clinical practice while reducing costs. Finally, by reducing the cancer screening time and envisaging a personalized screening method, it simplifies and speeds up daily screening activities.
Most of the competitors are using AI for segmentation and image classification, while few are using AI for anomaly detection and mostly for different diseases than cancer. DeepMammo is based on proprietary deep learning technology (patent application under way) and, unlike the other competitors (i.e. AIDoc, Quantib, Qure.AI, Aidence, Kheiron Medical, Therapixel), is trained on multimodal data: images, metadata and reports. It is capable of processing digital breast tomosynthesis images and, being also trained on reports and clinical records, to produce a textual description of the image, linking each anomaly to a picture indicator on the digital image. Another key element of innovation is its AI explainability and transparency: the radiologist obtain a precise classification of cancer, but also a set of metadata and descriptive information that explain the choices of AI.
Aptus.AI closed two partner agreements and it is in negotiation stage with a major producer of digital imaging devices for radiology for DeepMammo.

Market overview
All AI in medical imaging market reports indicate an astounding growth over the next five years, with CAGR ranging 45-52% and expected values ranging $ 13-36 Bn by 2025, Americas and Europe accounting for about 70% of the global market. The market growth can be attributed to a range of factors, including advancements in imaging technologies, increasing deployment of AI in radiology, cardiology, ophthalmology, and pathology.

ChemICare
Pharma for calcium regulation

Novara – Italy
https://www.chemicare.it/

pharma **calcium-related rare diseases** **calcium metabolism** **orphan drugs**

Founding year: **2016**

Current stage: **advanced preclinical studies**

IP**: patents**

Looking for funding: **€ 1.5 M, 1.5 years**

ChemICare is a high-tech spin-off of the University of Piemonte Orientale (UPO) committed to the discovery and development of orphan drugs for patients affected by calcium-related genetic diseases. ChemICare's mission is the improvement of the quality of life of patients affected by different pathologies caused by Store Operated Calcium Entry (SOCE) hyper-activation, such as acute pancreatitis (AP) and a cluster of rare genetic diseases, such as Tubular Aggregate Myopathy (TAM), York Platelet Syndrome (YPS) and Stormorken Syndrome (STRMK).
ChemICare's efforts have resulted in the generation of a number of unique and potent inhibitors of the SOCE, able to restore calcium levels to physiological levels and thus representing a potential therapeutic treatment for people affected by calcium-related genetic diseases

Context
ChemICare targets a cluster of rare diseases currently without therapy and without ongoing clinical trials: Tubular Aggregate Myopathy (TAM), characterized by painful contractures and progressive skeletal muscle degeneration, York Platelet Syndrome (YPS), where the main hallmark is the abnormal bleeding, and Stormorken Syndrome (STRMK), a combination of the previous two pathologies. These three diseases are caused by gain-of-function mutations in Orai1 and STIM1, which lead to an abnormal increase in intracellular calcium levels. TAM incidence is still unknown, estimated at 1/250,000; STRMK estimated incidence in Western countries is 3 per million; YPS incidence is 2 per million.
Acute pancreatitis (AP) is an inflammatory life-threatening disorder with an incidence of 1/2000 per year. Mortality rate is still high (1.5%-4.2%). At present, there is no effective pharmacological treatment, the current management is only supportive with high risk of relapse, with high healthcare direct and indirect costs. Clinical trials are ongoing, but mainly regarding old and known drugs that are not disease-modifying agents.

Value Proposition
ChemICare designed, synthesized, patented, and pre-clinically tested new classes of SOCE modulators, showing to restore calcium to physiological levels. In vivo studies carried out on murine models demonstrated high potency, selectivity and efficacy, good metabolic stability, safety and low toxicity. All the experimental data obtained so far demonstrate that ChemICare molecules represent a breakthrough innovation in the field of pharmacological therapies for TAM, YPS, STRMK and AP. ChemICare is currently generating the last data necessary to completion of the preclinical regulatory dossier, paving the way for phase I and II clinical trials.

Market overview
TAM, STRMK, YPS represent a potential market of about 500-1000 patients per year, with € 200.000 as average cost per patient/year for supportive treatment. No drugs currently available. AP worldwide patient per year is about 1.7 M, treatment cost per patient/year is about € 3.000, no effective pharmacological treatment available. The incidence of AP is increasing worldwide due to an increase in rates of obesity and gallstones. According to Market Research Future, AP market is expected to register a CAGR of 5.91% to reach $ 7.3 Bn by 2025.

D-Heart
Medical grade smartphone ECG device

Genova – Italy
https://www.d-heartcare.com/

medical devices | portable ECG | telecardiology | homecare

Founding year: **2015**

Current stage: **growth (on the market)**

IP**: patents, registered trademark**

Looking for funding: **€ 5 M**

D-Heart is a biomedical start-up founded in 2015 that developed the first smartphone based, portable, hospital grade, 8 and 12-lead ECG device combining the usability required by the patient and the reliability of the ECG wanted by the doctor. Thanks to D-Heart innovative yet easy proprietary technology, users can wind up all the required cables in any order and with intuitive positioning. D-Heart app also shows the patient's own chest with electrodes placed, providing further simplicity and reliability. The result is a device as reliable as the one present in doctor's office always available, ready and simple to use. The user can rely on the 24/7 tele-cardiology service to get results quickly. Everything from the device, app and packaging is designed and share the same design principle that reflects the D-Heart brand: simplicity meets reliability.

Context
Cardiovascular diseases are the leading cause of death in the world and one of the main causes of disability (stroke and heart attack). In cardiology, multiple leads electrocardiogram (ECG) recording is the most simple, diffuse and cost-effective way to analyse the heart and detect irregularities that might lead to serious health problems, but traditional ECG recorders require intrusive skin preparation, professional fitting in the doctor's office and could not be used by individuals with no medical background. Wearable devices are often indicated as potential solution in monitoring physiological parameters, but using wearable devices to obtain concrete medical conclusions from the data they collect is still a challenge.

Value Proposition
D-Heart has designed the world's first portable, affordable, smartphone based ECG device that is as reliable as hospital ECGs but it can be used anywhere by anyone with no medical background. It allows anyone to perform a hospital-level ECG in total autonomy and to send the results to the 24/7 tele-cardiology service for a telereport in max 15 minutes. It connects via Bluetooth to the smartphone/tablet and the app guides the user step by step in recording the exam. A patented algorithm recognizes the chest of the patient and show the picture of the chest with colored marks to help the correct positioning of electrodes and cables. Thanks to its extreme portability it can be carried out by health professionals to patient's home for homecare visits.
D-Heart is the only ECG solution certified for homecare use able to diagnose myocardial ischemia from home, thanks to the 8/12 leads solution, allowing the identification of any heart problem, unlike apparently similar solutions, like Apple Watch, Alivecor, QardioCore, that use 1-6 leads solution, with limited ability to detect heart problems.
All D-Heart technology is validated, certified with the CE marking as a medical device for self-care use. In 12 months of sales, 2.700 devices were sold.

Market overview
The global ECG Market is expected to reach $ 6.7 Bn by 2023, with a CAGR of 5.6%. The global Tele Health market is estimated to be valued at $ 60 Bn in 2025, growing at a CAGR of 18% during 2020-2025, with the Tele-cardiology market estimated to be valued at $ 4 Bn.

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HuCare
E-Health enabling adherence to therapy

Florence – Italy
https://www.hu-care.com/

e-Health **therapy adherence** **patient relationship management** **clinical trial management system**

Founding year: **2015**

Current stage: **growth (on the market)**

Looking for funding: **€ 1 M**

HuCare mission is to bring the patient and the healthcare system on a secure platform to increase therapy adherence, embracing a new way of improving people's lives. It is an e-Health software company running a SaaS system made of a 3-in-1 platform, including a clinical trials management system (CTMS), a patient relationship management system (PRM), and a Covid-19 monitoring and tracking platform, to maintain general practioners safe and spread of the disease in control.

Context
According to WHO, increasing the effectiveness of therapy adherence is the most effective improvement on world's population health. Poor therapy adherence is estimated to contribute to nearly 200.000 premature deaths in Europe per year, with an estimated cost of about € 125 Bn. Physician relationship with patient is one of the cause for non adherence. It has been estimated that there is a 19% higher risk of non adherence among patients whose physician communicates poorly. Improved communication impacts also clinical trials, resulting in patients better compliance to therapy and increasing the success rate of trials. About 30% of all failed trials are due to patients' low therapy adherence and drop-out.
COVID 19 emergency led to a boost in the adoption of remote patient management system by physicians, in some countries becoming mandatory by law.

Value Proposition
HuCare developed an integrated platform, in line with new stringent regulations, to improve how healthcare system interacts with patients and thus therapy adherence. User experience, usability and low running costs are the key features of the developed system in respect to competitors, as witnessed by the customers number (600 doctors and 25.000 patients served). The three components in details, all GDPR complaint:

- patient relationship management system, including a registry, appointments taken directly by patient, lab times management, therapy reminder, telemedicine & video consultations, patient's diagnostic history, reports and invoicing;
- clinical trials management system, including easy setup of trial requests, real time results, direct contact with trial patient, direct responses, pill reminder & calendar. Runs on any smartphone, no setup required, easy to use for elderly and care givers. Reduction of more than 10% of trial costs thanks to lower number of patients required, large decrease of indirect follow-up costs and faster results. Lower running and limited startup costs enable smaller research centers to fill technological gap vs larger players, thus enlarging the clinical trial market. Particularly suitable for small CROs.
- COVID monitoring system; web app running since April 2020, used across 3 Italian regions and over 300 doctors. It allows geo-localization of symptoms to identify outbreaks and coordinate response across doctors and intervention units. Unlike other tracing apps, it doesn't trace the general public and doesn't interfere with privacy issues, tracing location and evolution of the pre-diagnosed cases.

Market overview
32.500 new clinical trials started in 2019 (CAGR 16-19: +4%). On average, all 4 phases of a clinical trial cost $56M. Just limiting to Italian market, small-medium CROs represents the 40% of the market, and physicians are about 70.000 between pediatricians and general practioners.

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M2TEST
MICRO MACRO TESTING

medical devices | diagnostics | osteoporosis | bone fragility | software as MD

Founding year: **2016**

Current stage: **growth (on the market)**

IP: **patents**

Looking for funding: **€ 1.8 M, 2 years**

M2TEST
Next generation of fragility fracture diagnosis

Trieste – Italy
https://www.bestest.it/

M2TEST Srl is an innovative start-up operating as SaaS (software as a service). The idea behind the project is BES TEST® (acronym for Bone Elastic Structure Test), a human bone structure analysis service for medical-scientific purposes. BES TEST is based on the simulation of application of forces on a virtual biopsy of the patient's bone architecture, obtained from radiographic images. BESTEST increases the likelihood of correctly quantifying the actual risk of osteoporosis-related fracture, providing a low cost complement to the tools currently in use and assuring a better management of the patients.

Context
Every year more than 9 M fragility fractures occur worldwide. The cause of this serious situation is that in many women (but also men) their bone fragility is not diagnosed in time, or the therapy is abandoned early or often not even prescribed. A research conducted by the International Osteoporosis Foundation (IOF) highlighted that often postmenopausal women lack the awareness of fracture risk, diagnosis and treatment are often late and arrive almost always after the first fracture.
Prevention is limited because there is no preventive diagnostic method. However, by acting early and effectively, fracture risk decreases by 50%. In that regard, measurement of bone mineral density (current gold standard) has limits, as the majority of fragility fractures happen in patients who do not have a relevant density deficit. It does not evaluate the elastic characteristics, and thus quality, of the bone micro-structure

Value Proposition
Bone mechanical resistance does not depend only on mineral content, but also and especially on the quality of the internal micro-architecture. This is related to the remodelling and mineralizing capabilities (bone turnover) and to the micro-damage build-up. M2TEST offers doctors an innovative tool for the evaluation of the elastic response of the bone structure, the BES TEST, a test providing a relevant support for clinical decisions, to-date missing. BES TEST is a diagnostic test (software as a medical device) which provides information on the quality of the bone in a simple way for the doctor and safe for the patient, based on the simulation of application of forces on a virtual biopsy of the patient's bone architecture, obtained from radiographic images.
Contrary to the high dose X-ray densitometry measurement, BES TEST can be used in prevention because it uses low dose radiographic images. It can be performed from a young age in total safety, allowing the detection of possible alterations of the bone structure at an early stage. It is repeatable several times in a year, so that the bone changes, either due to pathological conditions or therapeutic interventions, can be early evaluated after only 4-6 months, contrary to a minimum 18 months interval recommended between densitometry scans.
More than 2300 patients have already been examined with BES TEST.

Market overview
Over one third of the world fragility fractures occur in Europe. International Osteoporosis Foundation reports that every year, 2.7 M fractures occur across the EU6 nations (France, Germany, Italy, Spain, Sweden, UK) with an associated healthcare cost of € 37 Bn. This annual expenditure is predicted to increase by 23% (to € 47 Bn) by 2030. In US, the cost of osteoporosis-related bone breaks to patients, their families and the healthcare system was $ 52 Bn in 2018 corresponding to 2 M bone fractures.

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OaCP
Oncology and Cytogenetic Products

Cork – Ireland
https://www.oncology-and-cytogenetic-products.com/

medical devices **diagnostics** **IVD**
fast genetic diagnosis **oncology**

Founding year: **2017**

Current stage: **growth (on the market)**

IP**: patent**

Looking for funding: **€ 1.2 M, 2 years**

OaCP produces and sells proprietary CE-IVD approved chemical reagents that improve the DNA test efficiency, making possible to perform in situ hybridization tests reducing the test time from 3 days to only 2 hours while saving 50% of the overall test costs.
OaCP offers also a complete range of in situ hybridization probes and ancillaries.

Context
Cancer diagnosis requires genetic test to be accurate. Workflow of genetic diagnosis is made of tissue/sample collection, manual or semi-automatic execution of the protocol sample treatment, overnight DNA hybridization, results analysis output and report. All the procedure lasts 3 working days. The lack of efficiency of such tests is causing additional costs for patients and systems estimated about $ 96B per year in EU+US.

Value Proposition
OaCP developed and patented proprietary chemical reagents that act directly on DNA radically increasing the efficiency of genetic tests for cancer diagnosis (any type of cancer) and also potentially speeding up a variety of other DNA tests in other healthcare fields as well as in the vet field. With OaCP solution, time for genetic test is reduced from 3 days to only 2 hours (40 min the DNA hybridization step) and the cost per test is reduced by 50%, only considering costs of reagents saved, without additional changes in the lab instrument or training. OaCP system has been validated in large case control studies.
OaCP is selling both directly (in Italy) and by using distributors to hospitals and R&D centers, covering 15 countries globally with distribution agreements.
Few but big competitors own almost 85-90% of the marketshare (Dako, Abbott, Roche), but OaCP system allows 97% reduction of analysis time and 50% savings of related costs.

Market overview
The global IVD market size was valued at $ 60.8 Bn in 2019 and is expected to expand at a CAGR of 4.4% over 2020-2027. The global in situ hybridization (ISH) market size is projected to reach $ 1.3 Bn by 2025 from $ 0.9 Bn in 2020, at a CAGR of 7.4%. The increasing incidence and prevalence of cancer and genetic disorders and awareness about companion diagnostics tests in ISH are the major factors driving the growth of this market.

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PersImmune
Personalized Adoptive Cellular Therapy Targeting Neoantigens

San Diego – USA
https://persimmune.com/

pharma | cellular therapy | cancer | immunotherapy | personalized medicine

Founding year: **2010**

Current stage: **phase 1 clinical trial**

IP: **patent**

Looking for funding: **€ 12 M, 3 years**

PersImmune is a clinical-stage immunotherapy company whose mission is to provide cancer patients with optimized immunotherapy personalized on the basis of their own unique tumor signature. PersImmune's proprietary protocol, Personal Adoptive Cellular Therapy for Neoantigens (PACTN) identifies the DNA alterations present in the cancer cells of each patient and generates enriched, tested, highly-specific T-cells that effectively kill the patient's tumor cells. These are the patient's own cells, and are not edited or genetically engineered, provinfg far less side effects than from other methods of immunotherapy or from chemotherapy.

Context
Immunotherapy is one of the type of cancer treatment aiming to help the immune system fighting cancer. Several types of immunotherapy are used to treat cancer, such as immune checkpoint inhibitors, monoclonal antibodies, treatment vaccines, T-cell transfer therapy. The latter is a treatment that boosts the natural ability of T-cells to fight cancer. In this treatment, immune cells are taken from the tumor, selected or changed in the lab to better attack the cancer cells, grown in large batches, and put back into the body. T-cell transfer therapy may also be called adoptive cell therapy, adoptive immunotherapy, or immune cell therapy.
Targeted therapies are more benign and effective than radiation and chemotherapy, however tumor cells can escape by mutating.

Value Proposition
No two cancers are exactly alike; because of this, the same immunotherapy treatment that works for one patient may not work well in another. To address this issue, PersImmune has developed novel methodology to immunize autologous and allogeneic T-cells against patient-specific neoantigens by leveraging the genomic technology and expertise in T-cell biology. The product, PACTN (Personalized Adoptive immunotherapy by Cytotoxic T- lymphocytes Targeted to patient-specific neoplastic cell Neoantigens), is an infusion of T-cells, immunized with the patient's neoplastic cell neoantigens and expanded in vitro, that specifically recognize and destroy the patient's neoplastic cells while sparing normal tissue. The therapy is intended for intermediate or high risk acute myeloid leukemia (AML) patients who have received an allogeneic hematopoietic stem cell transplant and for patients with intermediate, high, or very high risk myelodysplastic syndrome (MDS) who have an inadequate response to standard therapy.
Commercialization of the complete PACTN manufacturing process (from identifying patient tumor-specific neoantigens through to selection and expansion of T-cells) as a means of generating effective personalized cancer immunotherapy is innovative, and there is no existing competition in this therapeutic niche.
Dose level 1 for MDS clinical studies was completed, preparing for submission phase 2 protocol for MDS patients. Phase 1 study for AML is under way.

Market overview
The global MDS market size is expected to reach $ 2.7 Bn by 2024, growing at a CAGR of 9.7% (MDS 20.000 new US cases/year, 30% high risk). The global AML market was valued at $ 700 M in 2018, and is estimated to be valued at $ 1.5 Bn in 2024, witnessing a CAGR of 14% (AML 20.000 new US cases/year, 50% relapse rate).

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Recornea
Securing your vision

Udine – Italy
https://www.recornea.com/

medical devices | ophthalmology | corneal implants | keratoconus

Founding year: **2015**

Current stage: **preclinical validation completed, clinical prototype validation close to begin**

IP**: patent, registered trademark**

Looking for funding: **€ 2.5 M, 2 years**

Recornea is a med-tech company in the field of ophthalmology developing innovative corneal implants. Recornea developed GROSSO® corneal implants, the first metallic ophthalmic medical device designed for the restoration of physiological shape of corneas in cases of pathological corneal shape deformations (PCSDs) with predictable visual outcomes. PCSDs primarily include keratoconus, a genetic disease that causes thinning and bulging of the cornea, corneal thinning post laser treatments and corneal aberrations post corneal transplants. GROSSO® device leads to uniform corneal reshaping as it remodels the entire cornea improving the quality of patients' life.

Context
Globally, 15.6 M patients in the world are affected by pathological corneal shape deformations (PCSDs), represented mainly by keratoconus (15.2 M) and then by corneal thinning after laser treatment and corneal aberrations after cornea transplant (about 450 k cases worldwide).
Current treatment of keratoconus entails two surgical procedures to both improve vision and stop progression of the disease. The incumbent devices are called intra-corneal ring segments and they do not reshape the cornea uniformly thus allowing the disease to progress, providing unpredictable visual outcomes and poor quality of vision.

Value Proposition
There is need for new devices to reshape the cornea uniformly, stop disease progression and improve vision of the patients. In that regard, Recornea designed, developed and patented GROSSO® implant, the first corneal metal implant to restore the physiological curvature of the cornea with clear and predictable clinical outcomes, that also makes easier the surgical procedure for ophthalmic surgeons.
In respect to current treatement of PCSDs using intra-corneal ring segments (AJL ophthalmic, Mediphacos), GROSSO competitive advantage is that the implant goes around the entire circumference of the cornea, being able to achieve uniform reshaping of the cornea that in turn will stop progression of the disease and also improve vision of the patients.
The GROSSO Implant has been already fully developed at an industrial scale through established industrial partnerships for the production in outsourcing.
In vivo preclinical studies have been has been performed proving that the GROSSO® device is able to impose its own curvature to the cornea and that a standard surgical procedure can be adopted to implant the GROSSO device into the corneal thickness. Clinical studies are under preparation and close to begin.

Market overview
The global market of PCSDs is about $ 9.4 Bn, corresponding to 15.6 M patients in 2020, mainly in Asian countries (2.1 M in EU plus US, $ 1.3 Bn). There are about 1 M new patients every year, with a market projection to reach $ 20 Bn by 2030.

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SurgiQ

Quality and capacity of care improvement through automatic planning

Genova – Italy
https://www.surgiq.com/

digital health | hospital resources optimization | AI | automatic planning | patient management

Founding year: **2016**

Current stage: **growth (on the market)**

IP: **patent, registered trademark, copyright**

Looking for funding: **€ 0.7 M, 1 year**

SurgiQ is a digital health platform helping hospitals to optimize the utilization of critical resources such as operating theatres, beds and staff.
SurgiQ makes clinical care processes more effective, less invasive and easier on patients, their families and healthcare teams by achieving targets and allowing priority-based scheduling for patients.
SurgiQ provides real-time tracking and artificial intelligence (AI) tools with the ability for dynamic reporting and planning of the patient's entire care assessment journey; from GP referral to post-treatment hospital discharge.
SurgiQ platform allows saving time and reaching a far more efficient delivery of care to all patients involved.

Context
Without proper planning tools, healthcare resources are used without a vision on future needs, with negative overall impact on quality of care, especially during pressure times (such as the Covid-19 outbreak). Even digitally mature hospitals tend to lack solutions to digitize the planning activity, which is usually delegated to individuals barely supported by custom-made, generally basic workaround. Large players (e.g. GE Healthcare) recently introduced business intelligence solutions focused on resource optimization, but those require major infrastructures, IT rework, and are quite expensive (more than € 5 M). Other vendors provide some business intelligence and dashboard tools, however poorly integrated with clinical needs.

Value Proposition
SurgiQ provides a two-fold product, made by a modern patient management solution (visual business process management) and an AI engine to provide automatic planning. The platform is flexible and easier to deliver. The used approach in innovative, not found on the market, resource-agnostic (independent from the resource being optimised) and multi-container, since it considers both key resources (e.g. the operating room space and staff) and ancillary ones (e.g. equipment). The clients describe their requirements and constraints and the AI solves the problem. The system provides huge performances, allowing to save time and resources (e.g. rehab hospital ICS Maugeri Nervi planning has been produced in less than 20 min compared to 2 hours with the previous approach). Today minor customization effort is needed, while in the future the process will be automated. The platform can be easily adapted to changing needs (e.g. COVID-19 features developed overnight).
Specialized resource scheduling solutions do exist, but they tend to be vertical, non-integrated platforms (LeanTaas - USA only, EdgeHealth - UK only). Competitive advantages of SurgiQ solution are the uniqueness of the technology, the capability to deliver it in a very short time at a competitive price, the quality of delivered solutions and customer support.
SurgiQ has clients in Italy and UK (hospitals), managing about 40.000 patients per year at client sites. SurgiQ is currently targeting three key areas (surgery, rehabilitation, ambulatory care).

Market overview
Currently, SurgiQ fits in the Operating Theatre Software Market, which is worth $ 1.8 Bn worldwide and expected to reach $ 3.4 Bn by 2022 at a CAGR of 11.2%.

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Teseo
Human-Centred innovation

Genova – Italy
https://www.teseo.tech/

healthy aging | healthtech | ambient assisted living | AI | IoT

Founding year: **2015**

Current stage: **early stage (ready-to-market)**

IP**: patent**

Looking for funding: **€ 0.4 M, 1 year**

Teseo, spin-off from the University of Genova, is active in the field of the Ambient Assisted Living (AAL) with remarkable know-how in relevant technologies (IoT, artificial intelligence, deep learning, cloud computing, blockchain), production management, marketing and sales. Teseo's main activity is the development of Kibi, a plug&play system allowing for an unobtrusive monitoring of a person's well-being, without interfering with his/her habits, and automatically alerting relatives or assistance centres in case of need.
Kibi is an intelligent wearable device conceived as a health assistant for seniors, allowing them to preserve their independence without renouncing to safety and wellbeing, thought also as a proactive motivator system.

Context
At present, home care of lonely, typically elderly, mostly self-reliant people needing some form of assistance for an extended period of time is provided by family members and/or specialized personnel. Assistive devices on the market offer partial solutions to very specific problems (for instance, falls detection or movements tracking only), with little interest in fostering independence and healthy aging.

Value Proposition
Teseo designed, developed and patented Kibi, a system to reinforce the user's independence and provide tools and actionable insights to caregivers, thus reducing their workload, making it more effective, promoting home and preventive care, remote assistance. Kibi is thought as a proactive motivator system where the comfort of a wearable device meets the ambient intelligence, making any pre-existing environments smart and ready for assistance for high quality ageing in place.
At hardware level, Kibi consists of a series of affordable, distributed devices and a wearable. Thanks to its innovative AI system, Kibi can: understand the level of well-being, based on habits and personalized parameters (Activities of Daily Living, ADL); recognize potentially dangerous situations and alert caregivers automatically; interact with the person to accumulate data for big data analysis and personalized tuning of system parameters. The data exchanged between the wearable unit, the distributed devices and servers are maintained in a cloud architecture and all inferences are managed offsite, in a GDPR complaint way.
Kibi competitors, such as Kontakt, GrampIT, Doro, Truesense, LocalCare and URMET focus on specific issues, while Kibi integrates a large set of features working sinergically. Kibi competitive advantages are represented by the use of state-of-the-art low-cost technologies, AI innovative techniques for classification and recognition of events and situations, and the very simple hardware setup, using a small number of sensors.
Teseo has already set collaborations with some strategic partners (system integrators, medical equipment providers, residential care homes).

Market overview
By 2050, the number of people over 65 is expected to grow by 22% worldwide, from 800 M today to 1.6 Bn. According to Market Research Future, the AAL market is expected to reach a market value of $ 13 Bn by 2027 at a 19% CAGR. Medical assistance systems are projected to be the fastest growing segment with 22% CAGR.

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U-Care Medical
Digital biomarker for acute kidney injury

Torino – Italy
http://u-caremedical.com/

medical device **acute kidney injury**
intensive care unit **AI**

Founding year: **2020**

Current stage: **early stage (prototype validation)**

IP**: patent**

Looking for funding: **€ 1 M, 1 year**

U-Care Medical provides real-time evaluation to predict acute kidney injury (AKI) by using innovative sensors and artificial intelligence algorithm based on patient urine output. AKI episodes are quite relevant in for intensive care units (ICU) patients, with high mortality rate.
The system provides a risk score of getting AKI within the next 12 hours, alerting doctors. This innovative approach is supported by many key opinion leaders, and developed in collaboration with Italian Nephrology Society and top Italian hospitals to conduct clinical trials.

Context
Within renal diseases, there's a large unmet clinical need, acute kidney injury (AKI), still representing a huge problem, occurring in about 10% of all hospitalized patients and 50% of ICU patients, leading to 10-fold increase of mortality rate. Healthcare costs within ICU associated AKI episodes are extremely high. AKI episode generates 3.5 additional days in the ICU bed. Compared with main ICU diseases, AKI generates the highest cost per patient, thus being the main driver of ICU expenditures. At present, doctors don't have reliable instruments to predict AKI before its onset, just a few chemical biomarkers assessing when AKI occurs. Indeed, such biomarkers provides discrete tests of urine and/or blood markers, and they are not automatic, thus requiring operator intervention. Some studies show that late and underestimated AKI diagnoses are respectively 43% and 54%, while avoidable AKI episodes count for 31%.

Value Proposition
By combining innovative sensors and artificial intelligence (AI) algorithm, U-Care Medical targets prevention of AKI episodes onset with real-time, continuous, operator-independent and accurate early-detection, more accurate than existing chemical biomarkers. The system is composed by a sensor set alongside the patient bed, monitoring the urine output. Diuresis trend over time is acquired and analyzed by AI algorithms. Such algorithms provides a risk score of getting AKI within the next 12 hours, by sending an alert to the doctors. The sensor gathers urine output data every 5 minutes and the software updates the AKI score every hour. The sensor can be easily set up in the patient bed with minimum effort. Therefore, U-Care Medical provides doctors a powerful and reliable instrument that predicts the onset of AKI as a real-time, automatic, high accurate and non invasive medical device.
U-Care Medical guarantees a 4x ROI for the healthcare provider within the first year of adoption, allowing high savings, reducing AKI episodes and related treatment, such as dialytic treatment, increased length of stay and kidney transplant.
Chemical biomarker competitors have both low accuracy and market penetration, and are currently used only for clinical research (Astute Medical, BioPorto Diagnostics). Urine monitoring devices competitors don’t include AKI prediction capability and they are more intrusive (Potrero medical, Output Medical Technology).

Market overview
In US, ICU patients with AKI episodes are 1.75 M per year, with high mortality rate. The corresponding annual expenditure due to AKI is $ 14.7 Bn per year. Hospitalization costs are very high (2.000€/per day per patient). It has been estimated that the avoidable costs due to late and underrated AKI diagnosis is $ 4.6 Bn annually (31% potential savings). ICU beds are 7.5 k in Italy, 120K in Europe, 95K in the US, 400K globally. ICU beds worldwide are increasing, also due to COVID-19 pandemic.

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ViroStatics

Developing novel compounds targeting cancers and viruses

Sassari – Italy
http://www.virostatics.com/

pharma **kinase targeted inhibitors**

oncology **infectious disease**

Founding year: **2005**

Current stage: **advanced preclinical studies**

IP**: patents**

Looking for funding: **€ 3 M, 1.5 years**

ViroStatics is a biopharmaceutical company dedicated to the discovery and development of small molecule drugs for the treatment of cancer and viral infections (HIV-associated malignancies).
ViroStatitcs is focused on novel, highly selective, host cell kinase targeted inhibitors. Over the years, ViroStatics has developed and patented (protection up to 2039) a robust pipeline of proprietary compounds for several distinct disease indications (aggressive tumours i.e. breast cancer, lung cancer, pancreatic cancer, lymphomas and HIV infection), characterized by their unique kinase selectivity, efficacy and safety profiles.
Lead compound VS2-370 showed differentiated efficacy and safety profile on aggressive tumours, in particular metastatic breast cancer, compared to competitors, targeting CDK4, CDK6 and CDK9 in a specific and synergistic fashion.

Context
Cyclin-dependent kinases (CDKs) are crucially involved in the regulation of cell division and proliferation. The inhibition of CDKs prevents cell proliferation and plays an increasingly important role in the treatment of cancers. Third-generation of CDK inhibitors (palbociclib, ribociclib and abemaciclib, which exhibit selectivity for CDK4/6) have received regulatory approval for the treatment of patients with breast cancer, while several others CDK4/6 inhibitors are in different phases of clinical trials as anticancer drugs. Although selective CDK4/6 inhibitors have demonstrated great effects in cancer treatment, drug resistance to CDK4/6 inhibitors has emerged and gradually increasing, requiring for second line regimens.
CDK9 plays a key role in controlling basal gene transcription. As transcriptional programs are dysregulated in cancer, CDK9 is an attractive target for anti-cancer therapies, and its modulation has been recently shown as a promising strategy to hamper the transcriptional machinery in tumors. CDK9 inhibitors are under evaluation in clinical trials.

Value Proposition
ViroStatics lead candidate VS2-370 is unique as it possesses allosteric CDK9 inhibitory activity in addition to CDK4/6 inhibitory activity in the same molecule, resulting in an optimal synergy of the two inhibitory pathways for efficacy, deliverable orally and continuously, effective against a range of aggressive tumors, including breast cancer resistant to approved CDK4/6i, beyond other CDK9i and CDK4/6i indications. This translates into high potency that, coupled with low toxicity due to moderate and selective CDK target engagement, results in a broad therapeutic index. VS2-370 is in vivo advanced preclinical stage, first target being metastatic breast cancer resistant to CDK4/6 inhibitors.

Market overview
Breast cancer is the most frequent cancer diagnosed worldwide in women, with an incidence of 11.6% in respect to the total of cancer casese in 2018. Breast cancer drugs market is expected to grow at a CAGR of 9.4% up to 2025. CDK4/6i is expected to be the fastest growing segment taking a 6 B$ market. In trials reported so far, at least 1/3 of patients recurred on CDK4/6 inhibitors within 2 years.