

Presenting Companies - International Cancer Cluster Showcase 2019

Kernal Biologics, Inc. is a Cambridge, MA-based, seed-stage synthetic biology company developing onco-selective messenger RNAs (mRNAs) for cancer immunotherapy. We have developed an mRNA therapeutic technology that exploits a unique feature of malignant transformation to ensure expression only in cancer cells. We study translation landscapes of cancer cells and train our AI model to extract sequence features of mRNA that confer cancer cell specific activity. Our lead mRNA is fully onco-selective (differentiates cancer cells from healthy ones) and oncolytic (kills cancer cells). This cell-killing is immunogenic, triggering a powerful, widespread and durable immune response, like vaccine, to prevent relapses or recurrences. Initially, we are going after AML and NSCLC, with 600M and 6.1B serviceable, obtainable markets, then plan to expand into other malignancies. Kernal's team has expertise in immuno-oncology, synthetic biology, and deep learning. Kernal won MassChallenge Boston and MassConnect and as a member of MIT Startup Exchange, received 2 Golden Ticket awards (Amgen) and a "Technology in Space" prize from CASIS, NASA and Boeing.



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Vaccibody is a leader in the field of individualized cancer neoantigen vaccines. A phase I/IIa trial is enrolling patients with locally advanced or metastatic melanoma, NSCLC, clear renal cell carcinoma as well as urothelial or squamous cell carcinoma of the head & neck. 16 patients have been enrolled so far. The combination of Vaccibody's neoantigen vaccine with Nektar's CD-122-biased agonist, NKTR-214 will be tested under a collaboration agreement with Nektar Therapeutics. The lead program VB10.16 is a therapeutic DNA vaccine against HPV16 induced pre-malignancies and malignancies. The first-in-human study evaluates the safety and immunogenicity in women with high grade cervical intraepithelial neoplasia and shows positive 12 months data in Ph IIa. VB10.16 will be tested in combination with Roche's checkpoint inhibitor atezolizumab in advanced cervical cancer in collaboration with Roche.



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Chimeric Therapeutics (established October 2015) has developed a CAR-T therapy with a novel MOA for solid tumors which has potential alone & in combination with other agents. The target of the CAR-T is upregulated in multiple solid tumors & presents unique broad application opportunities. Extensive expression studies confirm the target is highly and selectively upregulated in human solid tumors. Preclinical proof of concept has been obtained in three different cancer models (including autochthonous, syngeneic & orthotopic models) demonstrating safety and efficacy. Additional studies support a therapeutic window. Development of a companion biomarker & further safety & efficacy studies in combination with existing cancer therapies are ongoing, & clinical trials envisaged in Q1 2020. A fully closed automated system for CAR-T manufacturing has been developed.



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Website under development

ISOMA Therapeutics, LLC, is a clinical stage therapeutics company developing the next generation of personalized glioblastoma multiforme (GBM) treatments. ISOMA leverages the power of the ISOMATYPE platform, a novel molecular stratification assay to identify subsets of patients that may respond more favorably to immunotherapies.



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Memo Therapeutics, a spin-off of ETH Zurich, deploys its proprietary microfluidic single-cell technology platform Dropzylla™ for the discovery of antibodies in proprietary and partnered projects. This single-cell-based platform enables the direct functional screening of recombinant antibody repertoires. Our I-O program targets an inhibitory receptor expressed in the tumor microenvironment by cells of the innate and adaptive immune system such as NK cells, CD8⁺- and CD4⁺ TILs. This target was only recently validated in animal studies by a competing approach. Our lead antibodies were selected to activate both the innate and the adaptive immune system and show clear functional superiority compared to benchmark antibodies. Their dual mode of action is expected to lower the risk of resistance and may present an attractive treatment modality in anti-PD1 therapy refractory patients.



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AbilityPharma is a clinical-stage biopharmaceutical company developing ABTL081, a first-in-class oral targeted anticancer compound causing cell death by autophagy. The phase 2 trial (80 patients) evaluates ABTL0812 (at RP2D) as first-line therapy in endometrial cancer and in sqNSCLC in combination with paclitaxel and carboplatin. The interim analysis shows clearly beneficial trends, increasing the response rate compared to chemotherapy alone. The clinical trial includes leading institutions in Spain and France. A US IND has been opened at FDA with protocols approved for endometrial, lung and pancreatic cancer trials. ABTL0812 has been granted Orphan Drug Designation (ODD) for neuroblastoma, pancreatic cancer and for biliary tract cancer by FDA and EMA. The rights for Greater China were granted to SciClone Pharmaceuticals, in a territorial license agreement signed in April 2016.



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Oncoinvent AS is developing innovative radionuclide-based cancer treatments building on the extensive experience of two of the founders, Dr. Roy Larsen and Prof. Øyvind Bruland. Larsen and Bruland are the inventors of the first FDA and EMA approved alpha-emitting pharmaceutical Xofigo® (Bayer AG), as well as of the beta-emitting radio-immunotherapeutic product candidate Betalutin® (Nordic Nanovector ASA). Oncoinvent's lead candidate, Radspherin®, is an alpha-emitting radioactive microsphere suspension, designed for treatment of metastatic cancers in body cavities. Radspherin® has been shown to cause a significant reduction in tumor cell growth and has the potential to treat several forms of metastatic cancers. During 2019 Radspherin® will be entering Ph I development for ovarian and colorectal cancer in patients with peritoneal carcinomatosis in Europe.



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Cytosolix is developing novel small molecule oncology drugs that target a universal biomarker of solid tumors' acidity. Cancers generate a uniquely acidic microenvironment due to their highly glycolytic metabolism, which differentiates solid tumors from surrounding, healthy tissues. Our platform technology, Tumor Activated Permeability (TAP) Therapy, produces weakly-acidic derivatives of *known* oncology drugs, increasing their uptake by cancer cells while dramatically restricting their uptake by healthy cells. As a result, our technology may allow significantly higher dosing of known highly toxic oncology drugs, substantially improving efficacy and survival outcomes, particularly when dosing is limited due to patient safety concerns. In pilot studies, of six different oncology drugs, the TAP platform improved tumor selectivity by ~100-fold *in vitro*, translating to dramatically greater therapeutic indices, *in vivo*. TAP is the only oral-compatible tumor-targeted drug platform, compatible with 90% of small molecule oncology drugs and can target nearly all solid tumor indications, enabling Cytosolix to develop safer and more effective treatments for up to 95% of cancer patients. TAP is patent-pending and TAP-derivatives are novel compositions with fresh and exclusive IP. Cytosolix aims to raise \$3.5M (seed funding) to complete lead development for top pipeline priorities and to select candidates for clinical development, for which we plan to raise ~\$30M in Series A funding.



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NeoPhore is an immunotherapy company developing small molecule inhibitors of DNA mismatch repair (MMR). NeoPhore's approach includes combination therapy with PD1 checkpoint antibodies & other approaches. NeoPhore has multiple preclinical small-molecule MMR inhibitor programs & aims to develop these into the clinic. Our lead inhibitor targets MLH1, which extensive validation has shown to be an essential genetic enhancer of PD1 checkpoint immunotherapy. We are also pursuing a differentiated backup program targeting other components of the MMR pathway.



NeoPhore is seeking funding for development towards clinic, strategic biopharma partners to accelerate preclinical development efforts for the MLH1 program & R&D collaborations with 3rd parties, offering key enabling technologies in immuno- oncology, cancer genomics & translational medicine capabilities.

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Virion Therapeutics, LLC, is a science driven company developing innovative immune-based treatments for virally-associated cancers and chronic viral infections. Our vaccines, ChiVax and ChiVax-gD, represent novel and highly effective platforms to induce potent and sustained T cell-mediated immune responses against transformed or infected cells, thereby allowing us to target common diseases with unmet medical needs. Each component comprising our chimeric vaccine candidates has completed pre-clinical testing that allow for their translation into clinical trials for a number of different indications. Guided by our scientific and management expertise, these platforms may help cure such devastating diseases as HPV-induced cancers and chronic Hepatitis B infections.



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eTheRNA immunotherapies is a clinical-stage company delivering innovative cancer immunotherapies from its proprietary mRNA-based TriMix platform. eTheRNA's goal is to commercialize these immunotherapies to deliver long lasting clinical remission to cancer patients. eTheRNA was established in January 2013 as a spin-off from the VUB university in Belgium and is backed by international life science investors. The TriMix platform, on which eTheRNA's immunotherapies are based, comprises three mRNAs encoding proteins (caTLR4, CD40L and CD70) that work to deliver optimal activation of dendritic cells. These cells behave as immune response mediators and mobilize the immune system to attack cancer cells through inducing a T-cell response. Clinical proof of concept for TriMix-based immunotherapies has been established through an extensive dataset demonstrating clear clinical benefits in advanced melanoma patients.



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BioInvent International AB (OMXS: BINV) is focused on the discovery and development of novel and first-in-class immuno-modulatory antibodies to treat cancer. The Company's lead program BI-1206, is currently in Phase I/II for non-Hodgkin lymphoma and chronic lymphatic leukemia. BioInvent's pre-clinical portfolio is focused on targeting key immune suppressive cells and pathways of the tumor microenvironment, including regulatory T cells, tumor-associated myeloid cells and mechanisms of antibody drug-resistance. The Company has a strategic research collaboration with Pfizer Inc., and partnerships with Transgene, Bayer Pharma, Daiichi Sankyo, and Mitsubishi Tanabe Pharma. BioInvent generates near-term revenues from its fully integrated manufacturing unit producing antibodies for third parties for research through to late-stage clinical trials.



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Bryologyx is developing a new class of proprietary drugs to enhance the response rates and treatment durability of cancer immunotherapies. The company's initial compound, bryostatin-1, has unique potential in combination with cancer immuno-therapies to amplify the immune response and improve treatment outcomes by increasing tumor antigen density and immune recognition. BryoLogyx's program capitalizes on extensive bryostatin-1 research at NIH and an exclusive license from Stanford to the first practical, scalable process for producing synthetic bryostatin-1, its analogs and its use in treating all cancers. Bryostatin-1 is a complex natural product that has generated intense scientific interest at the NIH and elsewhere, but whose development has been limited until now by supply. BryoLogyx is leveraging and building on this research, which includes safety data from more than 1,100 patients, treated in NCI trials, as well as the NCI's ongoing interest in bryostatin-1 in immuno-oncology, to accelerate its development programs. Bryostatin-1 is expected to enter Phase 1b in 2020 to enhance tumor antigen expression for the treatment of hematologic cancers.



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Carisma Therapeutics is pioneering the development of CAR macrophages, a disruptive approach to immunotherapy. Our technology leverages advances in macrophage biology, chimeric antigen receptor engineering and adoptive cellular therapy for the treatment of human disease. Our unique therapeutic approach uses CAR technology to endow human macrophages with the ability to recognize specific targets and triggers macrophage phagocytic and antigen-presenting functions to attack cancer.



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Biomunex is a biopharmaceutical company focused on providing cutting-edge immuno-therapeutics through the discovery and development of bi- and multi-specific antibodies. Its pipeline includes antibodies in early development and disruptive discovery programs for immuno-oncology that will soon reach clinical stage. Biomunex' next-generation proprietary BiXAb[®] platform allows the discovery and development of differentiated bi- and multi-specific antibodies in a cost- and time-effective manner. After a first licensing agreement with a major pharmaceutical company, Biomunex is building upon its technology to partner with other international players. Headquartered in Paris, France, the company is currently establishing a US office in Cambridge, MA



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Valo Therapeutics' immunotherapy platform (PeptiCRAd) utilizes its proprietary oncolytic adenoviruses as adjuvants to deliver cytotoxic T cell immune responses to tumor peptide antigen(s). The platform is highly flexible & adaptable as PeptiCRAd complexes to any tumor antigen can be generated by absorption of peptides to the surface of adenovirus particles. Preclinical animal models have demonstrated dramatic T cell responses specific to the PeptiCRAd peptides & first in man clinical trials in combination with CPI are expected in 2019. PeptiCRAd promises cost-effective, patient-specific neoantigen vaccination.



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Bioarray Genetics developed the world's first stratification test (BA100) for Triple Negative Breast Cancer (TNBC), which affects nearly 20% of breast cancer patients and has the lowest overall response and survival rates. BA100 will inform Oncologists if their patient will achieve a pathological complete response (pCR) to the standard-of-care neoadjuvant chemotherapy. By combining the BA100 Stratification Test with on-market complementary diagnostics such as *BRCA1/2* mutations and PD-L1 expression, an Oncologist can decide which treatment is best for their patient at the time of diagnosis. Bioarray is currently considering strategic commercial partners for the TNBC total care approach, which combines results of genomic profiling by BA100 with *BRCA1/2* and PD-L1 in a comprehensive TNBC Total Care Report. Bioarray utilizes its growing database of clinical, genomic and transcriptome data to develop life-changing algorithms to solve areas of unmet medical need and empowering treatment decisions.



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Vironika, LLC is an early stage drug discovery company dedicated to developing novel drugs to block deadly tumor viruses from forming cancers. Unlike any other existing treatments, Vironika's technology platform include small molecule inhibitors that target viral proteins which will eliminate tumor viruses in their latent hidden and lytic forms. In addition, Vironika utilizes unique viral components to develop novel gene therapy approaches.



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KisoJi's KisoSeek innovative antibody-based platform is used to engineer multi-specific antibodies for generating high performance antibody therapeutics. It uses next generation sequencing and proprietary algorithms to identify antibodies with unique target specificity using transgenic mouse platform to create high quality single-domain antibodies. It uses extensive antibody engineering to create multifunctional, multi-specific antibodies (KisoBody) to maximize anti-tumor efficacy (tumor antigen targeting with checkpoint inhibition). This approach allows targeting of difficult targets such as GPCR's that have been intractable to standard approaches. KisoJi's first targets are dopamine receptors that are selectively expressed in cancer stem cells that are resistant to existing anti-cancer therapeutics. Another target is a key regulator of cancer cell metabolism that affects metastasis of tumor cells and cancer stem cells. KisoJi develops in-house products from its proprietary platform and is seeking partners for funded pipeline creation and downstream co-development.



KisoJi

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RS Research (based at Biopôle) is a pharmaceutical company developing next generation nanomedicines based on innovative drug delivery platforms for targeted cancer therapy. RS Research has developed two platforms for targeted drug delivery with worldwide patents. The platforms carry multiple copies of the drug and a targeting moiety for directing the assembly to tumor tissue. The company currently has a pipeline of 5 drug candidates originated from these 2 platforms. The leading candidate RS-0139 has completed pre-clinical phases and received IND approval to start phase-1 trials, planned for Q3 2019.



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Oncoheroes Biosciences is focusing on childhood cancers who are rare diseases and industry has so far disregarded the development of specific pediatric cancer drugs. Due to insufficient specific therapies for children with cancer, pediatric oncologists are forced to adjust adult cancer treatments for childhood cancer. From up to 120 approved drugs, around 30 have been used off label in children but only 15 have pediatric use information in their labeling. Moreover, only 4 treatments designed specifically for pediatric cancer have been approved by the FDA. For these reasons, Oncoheroes was born to focus only on pediatric oncology drug development. Our current strategy is to prioritize projects related to pediatric cancer types that have the highest prevalence and the worse prognosis. We are developing and actively scouting for potential new generations of highly-targeted drugs for subsets of populations and tumors on: Diffuse Intrinsic Pontine Glioma (DIPG), Medulloblastoma, Acute Myeloid leukemia, Neuroblastoma, Rhabdomyosarcoma, Ewing's Sarcoma, Osteosarcoma



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Organizing Partners International Cancer Cluster Showcase 2019

Mass Medical Angels (MA2) is a seed stage investor group exclusively focused on life science and healthcare investments. Our mission is to bring more clinical tools to the marketplace, while attaining superior returns for our investors. To do this, we provide financing and mentoring to early-stage life-science companies so that they can obtain further funding, reach positive cash-flows or get acquired. MA2 members are carefully vetted for their deep expertise around the health sciences. Many of them have been researchers, clinicians, venture capitalists, executives, consultants, engineers, bankers or attorneys. They bring a willingness to support early stage companies to further our mission. In addition, we draw on our deep relationships with the institutions in Boston healthcare supercluster, the leading healthcare innovation center in the world. They provide additional resources, including deal flow, expertise and advisors for the companies we work with.



Mass Medical Angels | MA2

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The Oncopole brings together various stakeholders to work on this structuring project. This partnership is a unique co-creation with an inclusive idea development and implementation process which involved over 50 experts from the scientific community collaborating over the past year to identify its priorities. Recognizing the range of resources and infrastructures currently available as well as the strategic positioning of many researchers here in Québec, this project will strengthen, to the patient's benefit, the research and innovation ecosystem. The Oncopole mobilizes the community around a shared vision: to create a flagship hub in oncology, internationally recognized for its cohesiveness, effectiveness and avant-garde approach; to enable the incubation and creation of companies that will capitalize on innovation; to generate direct positive benefits for patients; to position cancer care in Québec among the best in the world in terms of clinical outcome, patient experience and system efficiency.



ONCOPOLE
MOBILISER. INNOVER. GUÉRIR.

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The Wistar Institute is the nation's first independent institution devoted to medical research and training. The Wistar Institute has evolved from its beginnings as an anatomical teaching museum to its present-day status as an international leader in basic biomedical research. In 1972, The Wistar Institute was designated a National Cancer Institute Cancer Center in basic research, a distinction it holds to this day. Wistar discoveries have led to the development of vaccines for rabies, rubella, and rotavirus, the identification of genes associated with breast, lung, and prostate cancer, and the development of monoclonal antibodies and other significant research technologies and tools.



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Oslo Cancer Cluster is an oncology research and industry cluster dedicated to improving the lives of cancer patients by accelerating the development of new cancer diagnostics and treatment. Organized as national non-profit member organization, the 90+ members represent the entire value chain including academic research institutes, university hospitals, start-ups, biotech and international Pharma companies. The cluster is advancing a growing pipeline of preclinical and clinical stage assets with strength in cancer immunotherapy and precision medicine.



OSLO CANCER
CLUSTER

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OBN is the UK's largest and most innovative not-for-profit R&D membership organization for Life Sciences with over 400-member companies, ranging from start-ups through to unicorns and Big Pharma, and is the most national of all the UK membership groups. Our goal is to create and develop an environment that nurtures the emergence and growth of innovative and successful Life Sciences companies and new products / services by providing unrivalled opportunities for networking, partnering, purchasing, training, advising and advocacy activities. OBN's four distinct and differentiated flagship events (BioTrinity, BioForward BioSeed, & OBN Awards) are a *series* of major events where each satisfies a specific need but *together* address all the various & critical requirements of the life sciences sector.



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Mass Medical Angels



ONCOPOLE



Medicen is the competitiveness cluster of the Paris Region and one of Europe's largest clusters in Life Sciences and Healthcare. Founded in 2005, it offers a unique forum connecting all the key stakeholders: leading research institutes, innovative SMEs, hospitals, incubators, large companies and territorial authorities. Medicen goal is to increase the attractiveness of the Paris region, strengthen the international competitiveness of the health sector and develop the economic growth of its members in strategic markets through collaborative innovation. With 300 members and more than 200 innovative SMEs, Medicen is a unique gateway to innovate with Paris Region actors. Medicen is structured around 5 major technological areas:



- In vitro diagnostics
- Diagnostic and interventional imaging systems
- Regenerative Medicine and biomaterials
- ICT for Health
- Translational medicine

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Biocat acts as a strategic agent and catalyst in the construction of the Catalan healthcare and life sciences ecosystem. Its mission is to establish liasons between all the stakeholders of the BioRegion (companies, research groups and entities, hospitals and innovation support structures) to transform knowledge and technology into economic growth and to create a social impact. Biocat was created in 2006 at the behest of the Government of Catalonia and the Barcelona City Council to provide a joint strategy for the Catalan biosciences sector as the foundation of a new economy based on knowledge and innovation.



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Biopôle is a unique life sciences park hosting a vibrant community of world-renowned industry players and research institutes, based in Lausanne (Switzerland) at the heart of the Swiss Health Valley. Biopôle offers a world-class combination of modern infrastructure, added value services, a life sciences incubator StartLab, over 134,000 sqm/1,440,000 sq ft of living space and community engagement where all partners can thrive and bring science to life. While it is open to all therapeutic areas, the main focus of Biopôle is on developing innovative solutions in the fields of oncology, immunology and personalized medicine. These solutions can cover a wide spectrum, from diagnostics to therapeutics, medical devices, nutrition and digital health. Biopôle works with both industry and academia to ensure that there is communal knowledge and appreciation of what projects they are pursuing and where there might be opportunities for synergies and collaboration.



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