



2018-2019 NIH CAP Company Descriptions and Technology Descriptions

<p style="text-align: center;">Orono, Maine https://sites.google.com/view/activas-diagnostics</p>	<h3 style="margin: 0;">Activas Diagnostics</h3> <p style="margin: 0;">Medical Devices</p>
<p>Technology Name: Medical Sleep Device</p> <p>Technology Description: Device technology and algorithm solutions record and apply signal processing for periodicity, patterning and respiratory-movement coupling. R&D was supported by DoD SBIR Phase I (W81XWH-10-C-0188) and NIH DA024806; NSF 0450339; NASA MSGC EP-16-01, and pre-Phase II funding from Maine Technology Institute. Algorithms and analysis methods present home tracking monitoring of MCI/AD at early stages when intervention and treatment are more effective. Another key advantage of this technology over existing methods is the fact that it eliminates the need for hospitalization for sleep tests, which have to be conducted in foreign environments.</p> <p>Company Description: Activas Diagnostics has developed a medical, home-based, patented mattress device and wireless software system that both matches actigraphy capabilities while delivering new metrics that correlate to sleep disorder and daytime cognitive function. The mattress device is a portable, wireless, sleep monitoring device that can be easily run overnight in the home, but has no wearable components, does not touch the patients skin directly and, thereby, does not disrupt sleep. Most importantly, little effort in setup or removal of the device is required by the MCI-diagnosed person, family or other caregivers.</p>	
<p style="text-align: center;">Bloomington, Indiana https://www.aeonimaging.com</p>	<h3 style="margin: 0;">Aeon Imaging</h3> <p style="margin: 0;">Medical Devices</p>
<p>Technology Name: Digital Light Ophthalmoscope - Low Vision</p> <p>Technology Description: Aeon Imaging’s ophthalmic imaging technology removes unwanted scattered light from an image by synchronizing laser- or LED-line illumination to a CMOS rolling shutter detector. Unlike traditional confocal apertures, the CMOS rolling shutter can be controlled electronically through software at real-time frame rates, permitting rapid detection of scattering defects in the deeper layers of the retina.</p> <p>Company Description: Aeon Imaging, LLC, was founded by Dr. Ann Elsner specifically with the vision of providing cost-effective imaging technology for the detection and management of eye disease and vision research. The company’s primary strategic goal is to provide researchers and clinicians the tools they need to increase patient access to eye care.</p>	



<p>Madison, Wisconsin http://www.amebagone.com</p>	<p>Amebagone Medical Devices</p>
<p>Technology Name: Dicty</p> <p>Technology Description: Dicty, are naturally-occurring beneficial amoebae, deployed to eat bacteria, thereby preventing infections. Dicty make enzymes to break down biofilms that protect bacteria. Preliminary data show Dicty are safe for plants and animals. Dicty are organic, long-acting, and able to eradicate dozens of bacterial species across a range of environments.</p> <p>Company Description: AmebaGone develops novel antibacterial treatments using beneficial amoebae called Dicty, which eat bacteria to prevent infections. AmebaGone owns two broad issued patents that protect applications in agriculture, industry, and medicine. AmebaGone has been vetted in two field trials, secured >\$3.5M in non-dilutive funding from sources including the NIH, NSF, USDA and State of Wisconsin, and won the Life Sciences category of the 2018 Wisconsin Governors Business Plan Competition.</p>	

<p>Weston, CT https://www.applikatetechnologies.com/</p>	<p>Applikate Technologies Medical Devices</p>
<p>Technology Name: Clearing Histology with Multiphoton Microscopy (CHiMP)</p> <p>Technology Description: CHiMP is based on a very rapid, proprietary tissue processing protocol that enables imaging of intact samples. CHiMP also comprises proprietary tissue cassettes, a specialized tissue processor, and a state-of-the-art, high-speed multiphoton microscope that has been developed specifically for CHiMP. CHiMP includes specialized image viewing software developed to aid in remote consultation of large image data sets. The commercial application of this technology is as a replacement for traditional pathology processing and for whole slide imaging for the production of digital images from wax-embedded slides.</p> <p>Company Description: Applikate Technologies is developing the paradigm-shifting tissue processing and imaging technology CHiMP, which stand for Clearing Histology with Multiphoton Microscopy. CHiMP enables rapid processing and direct-to-digital imaging of intact tissue samples. CHiMP does not utilize wax embedding or slicing of tissue, greatly reducing the required time, labor and per-sample cost. After initial morphological evaluation, all the tissue remains available for DNA analysis and/or immunohistochemistry. Direct-to-digital imaging eliminates expensive and time-consuming scanning of slides for remote viewing and specialist consultation. CHiMP yields superior images, with thinner effective sections and none of the artifacts associated with traditional physical slices.</p>	



<p>San Diego, California http://arisanthera.com</p>	<p style="text-align: center;">Arisan Therapeutics Pharmaceuticals</p>
<p>Technology Name: Arenavirus antiviral</p> <p>Technology Description: We have developed novel arenavirus optimized lead compounds that are highly potent (low to sub nanomolar), broad-spectrum (potent against all arenavirus hemorrhagic fever inducing species tested) drug-like (13-17 hr 1/2 lives in rodents with no observed tolerability issues) that are compatible with oral administration. Our candidate compound could represent a first-in-class arenavirus antiviral as there are no approved drugs for the treatment of arenavirus hemorrhagic fever (AVHF). These lead compounds represent our most advanced program. We look forward to their continued development and our flagship commercialization efforts as we advance our antiviral therapeutic and diagnostic programs into later stage development.</p> <p>Company Description: Arisan Therapeutics is prosecuting two distinct SBIR funded preclinical therapeutics programs for the development of small molecule antivirals with broad-spectrum activity within i) the arenavirus family or ii) the Ebola virus genus. In partnership with LamdaGen we are also developing a novel localized surface plasmon resonance (LSPR) diagnostics platform for rapid, highly sensitive point-of-care diagnostics for emerging infectious diseases including arenavirus (specifically Lassa virus), Ebola virus, dengue, Zika and others. Our novel oral drugs and highly sensitive diagnostics will provide early detection and optimal treatments to improve outcomes and reduce outbreaks of these emerging and neglected infectious diseases.</p>	

<p>Morrisville, North Carolina http://www.attagene.com</p>	<p style="text-align: center;">Attagene Research Tools</p>
<p>Technology Name: Drug discovery and preclinical evaluation</p> <p>Technology Description: Attagene FACTORIAL is the first technology platform allowing quantitative parallel assessment of multiple signaling pathways in living cells. Our product line comprises cell-based FACTORIAL assays enabling profiling responses of multiple transcription factors, nuclear receptors, and GPCRs. The assays provide simple signatures for the identification of perturbed biological processes and cell systems. We offer streamlined, cost-effective solution to the evaluation of drug candidates and environmental chemicals.</p> <p>Company Description: Attagene Inc. is a life science company that develops innovative solutions for the evaluation of pharmaceuticals and environmental chemicals. The company provides research services for the industry, academia, and regulatory agencies.</p>	



Berkeley, California http://TURNAROUNDHEALTH.COM	Berkeley Analytics Healthcare IT
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Technology Name: ALIVE-PD (Pre-Diabetes)

Technology Description: Alive-PD is an electronically delivered intervention to help reverse Pre-Diabetes, without the cost of human coaches. Weekly e-mail, web and smartphone contacts throughout a year provide assessments, individualized behavior change activities, performance tracking, and coaching, leading to gradual improvements in diet, exercise and weight. A randomized trial showed significant reductions in blood measures of diabetes risk. Alive-PD is critical to the companys future; we have invested substantially, while our core business is growing less profitable. It is readily configurable to other diseases such as heart disease, and to overall wellness promotion, through its effective engagement methodologies and its low cost.

Company Description: Berkeley Analytics has long been a leader in developing and analyzing scientifically based dietary and physical activity assessments (print and on-line), our core business. Hundreds of health researchers have been our clients, with our instruments cited in many scientific papers. Other clients include NASA, which used our dietary assessments to track the health of astronauts on the International Space Station. More recently, based on this expertise, we have developed web-based and smartphone-based, algorithm-driven interventions supporting diet and activity behavior change, including for diabetes prevention. Our purpose has been to go beyond research, to make a large-scale difference in public health.

Skillman, New Jersey http://www.biotillion.com	BioTillion Healthcare IT
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Technology Name: RFID based sample tracking

Technology Description: We can wirelessly track the locations of sample boxes in a freezer. We also provide a temperature map of the freezer by recording the temperature at each box location (typically at hundred points) this can be used to assess freezer health. We can also map the location of vials in a sample box without removing frost and ice that would prevent a barcode reader from operating. We also provide a guided access technology for efficiently finding, placing, moving and removing samples.

Company Description: We have developed RFID based technologies for tracking biological samples in-situ in ultra-low temperature freezers. This includes mapping sample locations in a sample box and tracking sample boxes in an ultra-low temperature freezer without opening the freezer.



<p>Pasadena, California http://www.biovinc.com</p>	<p>BioVinc Pharmaceuticals</p>
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Technology Name: Novel therapeutic approach for bisphosphonate-related osteonecrosis of the jaw

Technology Description: Osteonecrosis of the jaw (ONJ) is a severe oral complication typically described in some cancer patients or in osteoporosis patients treated with therapies including nitrogen-containing bisphosphonates (NBPs). ONJ can significantly affect patients life quality, but preventive and effective treatment modalities do not exist. Our team has identified certain small molecules that can remove potent antiresorptive NBPs from the jaw and significantly prevent ONJ-like lesions in a mouse model. IND enabling studies for the clinical use of this exciting new therapeutic opportunity are in progress. Clinical development of a proprietary product for this unmet medical need would therefore establish the company as a key innovator and allow it to leverage its expertise further in pharmaceutical development.

Company Description: BioVinc has leveraged a Bisphosphonate Bone Targeting Platform Technology to identify Therapeutic and Diagnostic leads for several Unmet Medical Needs. A key development focus is a new therapy to treat and prevent the rare but debilitating bone disease, Osteonecrosis of the Jaw, which is associated with the use of several important drugs for bone diseases. There is currently no treatment for this severe dental lesion except painful debridement and antibiotic therapy which is weakly effective, presenting a clear unmet medical need. The therapy developed at BioVinc is currently under development as an orphan drug and regulatory advisors have now been enlisted to facilitate the completion of the final stages of preclinical development.

<p>Cerritos, California http://www.bivacor.com</p>	<p>BiVACOR Medical Devices</p>
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Technology Name: Total Artificial Heart, Mechanical Circulatory Support

Technology Description: The BiVACOR TAH is a cardiovascular device designed to replace the entire function of a failing human heart. It is a latest generation device that uses magnetic levitation technology to suspend a single, wear-free spinning disc, in wide, blood friendly clearances to provide long-term reliability and hemocompatibility.

Company Description: The BiVACOR is a total artificial heart designed to take over the complete function of a patients failing heart.



<p>Minneapolis, Minnesota https://www.blueskydesigns.us/</p>	<p>BlueSky Designs Medical Devices</p>
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Technology Name: Powered Mounting and Positioning technology

Technology Description: Pow!r Mounts are easy to use accessible robotic mounting and positioning systems. They enable people with disabilities to independently move devices attached to their wheelchair, table or bed, including speech devices, tablets, laptops, and trays. Pow!r mounts come in multi-joint or hybrid systems, with one power joint. They are operated by switches. Aides use a simple built-in keypad to use and program it. You can move between custom target positions and adjust individual joints. A switch-activated app controls the Multi-joint system. You can program groups of target positions for different devices. It is rich with features, but simple to operate.

Company Description: BlueSky Designs develops assistive technologies that enable people with and without disabilities to do things more easily and independently. Their innovative line of accessible and powered mounting and positioning technologies enable a person to move devices attached to their wheelchairs, beds or workstations where and when they need to. BlueSky manufactures and sells the Mount'n Mover, the most independently accessible wheelchair mounting system available. We work with regional vendors to manufacture custom components and assemble them in-house. We sell and support our products directly and through resellers, worldwide. Our team continues to develop innovative and breakthrough technologies through SBIR funding.

<p>Ithaca, New York http://www.carrerabio.com</p>	<p>Carrera Bioscience Diagnostics</p>
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Technology Name: Biotech

Technology Description: Carrera Bioscience is developing a hepatitis loop mediated isothermal amplification (HEP-LAMP) platform for the detection of HAV, HBV, HCV, HDV and HEV in serum or plasma samples for the diagnosis of acute clinical infections. In addition to the actual HEP-LAMP assays, plasma/sera sample preparation kits are being trialed. The goal with sample preparation is to select the kit that can be used to effectively isolate viral DNA and RNA in low resource settings. The ability to diagnose hepatitis in environments where electricity and medical centers are limited would be quite beneficial to all of us.

Company Description: A forward-thinking biotechnology company developing cutting edge diagnostic assays. We strive to synergize biotechnology and collaborative engineering to develop novel molecular diagnostics and biosensors.



Vienna, Virginia http://www.cel-sci.com	CEL-SCI Corporation Biotechnology
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Technology Name: Preclinical studies of PG70 LEAPS peptide vaccines for rheumatoid arthritis

Technology Description: CEL-SCI's vaccine for RA with the "Ligand epitope antigen presentation" (LEAPS) technology uses peptide based vaccines incorporating 1) a disease peptide epitope linked to 2) another peptide which directs toward either a Th1 or Th2/Treg response depending upon the second peptide selected. The second peptide category is referred to as a T Cell Binding Ligand (TCBL) or Immune Cell Binding LIgand (ICBL). These conjugates are able to initiate or modulate (an ongoing) antigen specific immune response depending on the ICBL used.

Company Description: CEL-SCI is dedicated to research and development directed at improving the treatment of cancer, autoimmune and other diseases by using the immune system. CEL-SCI is currently focused on the development of the following product candidates and technologies: 1) Multikine, an investigational immunotherapy under development for the potential treatment of certain head and neck cancers; and 2) L.E.A.P.S. (Ligand Epitope Antigen Presentation System) technology, or LEAPS, with CEL-4000, its first vaccine product candidate for the potential treatment of rheumatoid arthritis (RA). Both products are subject to the US FDA Investigational New Drug (IND) review and approval process before commercial sales in the US.

Stony Brook, New York http://www.captivoice.com	Charmtech Labs Education
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Technology Name: Capti Voice / Accessible computer interaction

Technology Description: CCapti enables teachers and students to assemble any reading materials into easy to use playlists that they can read and/or listen to. Capti provides AI-based supports to help students develop active reading strategies, improve their vocabulary, and keep up with reading. So, Capti is learning with the students and is adapting for them. Our vision for Capti is to become a Personal Assistant for reading (think Siri for reading). We are working on innovative supports such as personalized text simplification, automated reading level assessments, natural language interfaces, human voice-over recording and analysis, etc.

Company Description: We are reinventing reading to enable authentically inclusive education. Our mission is to empower people to process information more effectively. Our product is Capti Voice - a reading assistant personalizing learning for students of all abilities and helping students keep up with their reading.



<p>Portland, Oregon http://www.chemica.com</p>	<p>Chemica Technologies Agriculture</p>
<p>Technology Name: Fiber Scaffolding for Effective Removal of Diverse Hazardous Chemicals from Water</p> <p>Technology Description: Chemicas drinking water purification technology combines high surface area adsorbent material with chemically intelligent ligands which selectively attract and trap hazardous/toxic contaminants found in drinking water.</p> <p>Company Description: Through innovative surface and material chemistry we are creating novel materials to help protect human health and our environment.</p>	

<p>West Lafayette, Indiana http://concordancehealth.com</p>	<p>Concordance Health Solutions Healthcare IT</p>
<p>Technology Name: Smart Med Reminder</p> <p>Technology Description: The Smart Med Reminder System is a patient-friendly reminder and monitoring system for prescription medications. Features include: Easy-to-use device and mobile applications dispensed with the original prescription and automatically programmed for the patient. Reminds patients to take their medication then records and reports each dose taken. Transmits medication taking data to an online database to share medication-taking behavior with patients and their providers, caregivers, and payers, creating accountability for the patient and enabling others to encourage and support them. Flexible reporting of patient or population metrics in HIPAA-compliant formats. Cutting edge patient engagement features based on modern principles of behavioral economics. The data capture and transmission function creates a platform for monitoring medication adherence to optimize dosing, oversee care, and create incentives for better adherence.</p> <p>Company Description: Concordance Health Solutions offers products and services to improve patient medication adherence in partnership with pharmacies, payers, and healthcare providers. Our products are inexpensive, simple, and fit seamlessly into a patients lifestyle. The Smart Med Reminder is a low-cost, high-tech but easy-to-use medication reminder and monitoring system that combines several proven intervention modalities to optimize medication taking and improve patient-provider-payer coordination of care. The scalable, data-rich platform is adaptable to many drug dosing/packaging forms.</p>	



<p>San Jose, California http://www.drw-ltd.com</p>	<p>Diagnostics for the Real World Medical Devices</p>
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Technology Name: Point-of-care diagnostic tests

Technology Description: DRW has introduced the SAMBA II diagnostic platform in 2016. The latest innovate product is a HIV-1 Semi-Quantitative Whole Blood test that will run on the existing SAMBA platform. This test allows for the determination of viral load using a whole blood sample, as the test contains leukocyte depletion step within the cartridge. This eliminates the need for the use of a centrifuge at the point-of-care, which is currently required to process whole blood into plasma.

Company Description: Diagnostics for the Real World, Ltd. (DRW) develops and manufactures diagnostics products that are rapid, simple, cost-effective, and significantly more sensitive than currently available tests for infectious diseases. DRW is focused on developing diagnostic technology for resource-limited settings in the developing world.

<p>San Diego, California https://www.digitalproteomics.com</p>	<p>Digital Proteomics Research Tools</p>
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Technology Name: Alicanto

Technology Description: While antibody discovery from a natural immune response is a decades old concept, Alicanto is innovative in its focus on functional therapeutic antibodies circulating in blood. Current technologies for antibody discovery seek to find the B-cell that produces the potent antibody. In the average human, there are only 4 antibody-producing cells per uL of blood, with most antibody-producing B-cells residing in the bone marrow, spleen, and the lymph nodes. In contrast, there are 4×10^{16} antibodies, which are actively targeting foreign molecules, in the blood. Alicanto enables more efficient antibody therapeutic discovery from human survivors.

Company Description: Digital Proteomics develops unique antibody sequencing and discovery services by employing advanced algorithmic and machine learning methods to enable more efficient and effective antibody therapeutic development. Alicanto is our novel antibody discovery platform that identifies target-specific antibodies from serum. Alicanto uses high-throughput technologies to select high affinity antibodies without requiring time-consuming and inefficient cell selection, fusions, or cloning. Alicanto can be applied to discover monoclonal antibodies from rabbits, llamas, goats, and humans. With over 50 years of bioinformatics expertise across proteomics, genomics, and transcriptomics, we strive to help our partners and collaborators push the boundaries of their science.



<p>Reno, Nevada http://www.dxdiscovery.com</p>	<p>DxDiscovery Diagnostics</p>
<p>Technology Name: Point-of-care immunoassay for early diagnosis of pertussis</p> <p>Technology Description: Pertussis is one of six diseases targeted by DxDiscovery’s immunoassay R&D pipeline. All current pertussis diagnostics are restricted to reference labs and take 2-6hrs (large hospitals) or 2-7 days (all other settings). DxDiscovery’s innovation is our development of a point-of-care pertussis LFIA ideal for pediatrician offices, urgent care clinics, and small hospital ERs. This LFIA will disrupt the status quo by providing immediate test results (<20min) so treatment can start during the patient’s first healthcare visit. Advantages include: speed, ease of use, lower per run cost, lack of expensive equipment, and no waiting to run patient samples in batches</p> <p>Company Description: DxDiscovery is a diagnostics company focused on creating rapid, point-of-care immunoassays for infectious diseases. The company was spun out from the University of Nevada, Reno (UNR) labs of Drs. AuCoin and Kozel (company founders). Our mission is to reduce the global burden of infectious disease by developing sensitive, specific, affordable diagnostics. Our approach is to i) discover biomarkers, ii) generate monoclonal antibodies (mAbs), iii) develop immunoassay-based diagnostics, especially lateral flow immunoassays (LFIAs), and iv) license the IP to established IVD companies for ultimate product manufacture and sale.</p>	

<p>Jessup, Maryland http://www.dynaflow-inc.com</p>	<p>Dynaflow Healthcare IT</p>
<p>Technology Name: Microbubble Enhanced High Intensity Focused Ultrasound in Cancer Treatment</p> <p>Technology Description: The innovative two-way coupled Eulerian-Lagrangian approach enables our software product to accurately predict the treatment outcome using microbubble-enhanced HIFU. The will have a major impact on the new developments in the HIFU treatment of deep-seated solid tumors. The product enables the exploration of a wide range of parameters to select optimized design or settings for a particular application and thus helps streamline therapy design by reducing the time and efforts required to find suitable protocols. Medical researchers working for clinicians and medical device manufacturers will be able to determine optimal ultrasound frequencies and intensities for targeted therapeutics deliveries and imaging.</p> <p>Company Description: Dynaflow, Inc. provides quality research and development services and products in fluid dynamics and material sciences. As a leader in the fields of gas liquid interface dynamics, bubble dynamics, cavitation, fluid structure interactions and erosion dynamics, we</p>	



offer services and products for the naval and marine, automotive, energy, chemical, environmental and food and agriculture industries. We pursue an inter-disciplinary approach to problems and have strategic collaborations with federal agencies, commercial enterprises and universities.

San Francisco, California www.enablebiosciences.com	<h2>Enable Biosciences</h2> Research Tools
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Technology Name: Research and Clinical Diagnostics

Technology Description: Our ADAP antibody detection technology is 10,000x more sensitive than standard tests, while only requiring standard molecular biology equipment. These technological features enable the detection of disease in the treatment-efficacy-critical earliest stages and lower the barrier to adoption in clinical settings. Our first products are focused on type 1 diabetes and HIV antibody screening and the platform can potentially be used for any antibody associated disease.

Company Description: Enable Biosciences develops world-leading ultrasensitive and highly specific antibody detection assays for both research and clinical use that enable ultra-early diagnosis empowering earlier and more precise therapeutic intervention for optimal personal health outcomes.

New York, New York https://www.envisagenics.com/	<h2>Envisagenics</h2> Healthcare IT
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Technology Name: SpliceCore: A Cloud-Based Software Platform to Translate Alternative Splicing Events into Therapeutic Targets Using RNA-seq Data

Technology Description: Envisagenics SpliceCore integrates AI with its proprietary database of 5M splicing events and patient clinical meta-data to identify therapeutic points of intervention to treat diseases caused by splicing errors. Our algorithms can identify splicing errors reproducible across patients, predict the impact of these errors on protein structure and function, and determine if the error can be rescued by antisense or small molecule therapeutics to treat the disease. Coupled with high performance computing, SpliceCore efficiently processes massive amounts of RNA-seq data and identifies novel targets with the greatest therapeutic potential to accelerate development of life saving drugs.

Company Description: Envisagenics integrates high performance cloud computing and Artificial Intelligence to accelerate therapeutic development. Our SpliceCore platform analyzes massive



amounts of RNA-seq data to identify RNA splicing errors, the cause of at least 370 human diseases. Using our platform, we identify splicing errors relevant to a disease and that can be modified with antisense or small molecule drugs to treat the disease. SpliceCore can be leveraged across the drug development process from target identification to biomarker discovery and patient stratification for clinical trials. Envisagenics develops therapeutic assets internally and through milestone-based research agreements with biopharma companies.

<p>Boston, Massachusetts http://frameshift.io</p>	<p>Frameshift Labs Healthcare IT</p>
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Technology Name: Genomic data management and visualization

Technology Description: Frameshift Genomics is developing a web-based platform to streamline organizing and managing large genomic sequencing projects. State-of-the-art, interactive data visualization techniques enable general trends in the data, metadata and attached phenotypic data to be quickly assessed and correlations and patterns identified by users from diverse areas of expertise. Promoting such rapid data exploration enables users to quickly formulate and test hypotheses without demanding expertise in computational techniques. The platform additionally provides access to our powerful, real-time web apps for varied genomic analyses, operating on distributed data, e.g. stored in the cloud, on local servers, or both.

Company Description: Frameshift Genomics develops software to organize, manage, and analyze genomic data. We make extensive use of data visualization techniques, and real-time data analysis, to enable meaningful genomic analysis to be undertaken by a wide range of users.

<p>Sudbury, Massachusetts</p>	<p>Genuity Medical Devices</p>
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Technology Name: Medical Devices

Technology Description: While advanced non-invasive imaging techniques are currently used to guide endovascular brain aneurysm repairs, these modalities lack the spatial resolution to visualize therapeutic device features. High-resolution, catheter-based imaging modalities are commonly used in coronary and peripheral interventions, but cannot access the small and tortuous neurovascular vessels. To address these issues, Genuity LLC has developed and demonstrated a new generation high-resolution imaging device for cerebrovascular imaging, named high-frequency optical coherence tomography (HF-OCT) and a micro-imaging **catheter named Vis-N.**



Company Description: Genuity LLC is a medical device startup company developing innovative solutions for highly effective, high-resolution, cerebrovascular imaging solutions for the guidance of endovascular procedures for the brain aneurysm repair. Non-invasive imaging, such as X-ray angiography and computed tomography (CT), are the primary imaging modalities used in the clinic to provide perioperative guidance for aneurysm repair procedures, however, they lack sufficient resolution to adequately assess device-vessel interaction. The goal of Genuity's Phase 2 SBIR program is to advance to commercialization a reduced-size, high-resolution, imaging probe, compatible with neurovascular microcatheter delivery tools and capable of imaging while navigating the tortuous cerebrovascular anatomy.

Madison, Wisconsin https://www.godiagnostic.com	GoDx Diagnostics
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Technology Name: Rapid Point of Need Diagnostic for Gastrointestinal Pathogens

Technology Description: We are developing a technology for rapidly detecting and identifying the DNA and RNA of multiple microbes at the point-of-need without a laboratory. The commercial applications include in vitro diagnostic of infectious pathogens, and tests for pathogens in food, water or animals. One specific application is the development of FDA-cleared, CLIA-waived in vitro diagnostic for gastrointestinal pathogens that cause infectious diarrheal diseases.

Company Description: GoDx is a startup company in Madison, Wisconsin that was founded with the vision to let everyone know their health now. Our mission is to democratize diagnostics by developing rapid, simple diagnostics that can be used anywhere at the point-of-need. We are currently developing a rapid and simple diagnostic test for the detection of infectious pathogens at the point-of-care so that a patient can be treated in real time by a healthcare provider to improve patient care and patient satisfaction, and reduce hospital costs.

Richmond, Virginia http://www.gpbscientific.com	GPB Scientific Healthcare IT, Diagnostics
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Technology Name: High-throughput Cell Isolation for Cell & Gene Therapy

Technology Description: GPB uses microfluidic deterministic lateral displacement ("DLD"), a precisely designed micropost array, to achieve highly efficient biological separations elegantly and gently. Apheresis blood and simple buffer flow at very low pressure through the DLD, where cells larger than the target size (e.g., white cells) are passively deflected from smaller cells (e.g, red cells and platelets). This is achieved with virtually no cell loss or damage, unlike current methods. The DLD outputs to sterile containers the white-cell product separated from waste, allowing a walkaway process and no operator-dependency for the cell product to be selected.



Company Description: GPB Scientific is developing a closed/automatable cell isolation system for cell therapies, displacing today's centrifuge-based systems that lose 30-50% of the cells needed to make a therapy. Our system will broaden patient access, reduce cost and deliver more consistent/higher-quality cell material - enabling lower cost, more reliable and shorter cell therapy manufacturing. GPB is engaged in discussions with both pharmaceutical and equipment manufacturers for trials to support regulatory approval and codevelopment programs. We anticipate revenues from a mix of license fees and later product sales, with potential strategic partnering/acquisition to drive deployment.

Marietta, Georgia http://www.inlighta.com	<h2>Inlighta Biosciences</h2> Diagnostics
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Technology Name: Drug development

Technology Description: The developed platform technology leads to design MRI contrast agents that specifically target to various major biomarkers that advance current bloodpool MR imaging to molecular imaging. These MRI probes exhibit unique capabilities including disease bio-marker dependent imaging contrast enhancement and desirable penetration of tumor tissue and endothelial boundary. Their capabilities in obtaining temporal and spatial distribution and quantifying biomarker levels and changes are major advances in disease diagnosis/staging, and devising effective treatment strategy. The lead product is a targeted MRI contrast agent for Collagen enable detection of various fibrosis organs and liver cancers.

Company Description: Inlighta is developing MRI contrast agents.

Saint Louis, Missouri http://kalocyte.com/wordpress/	<h2>KaloCyte</h2> Biotechnology
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Technology Name: ErythroMer

Technology Description: ErythroMer is a first-in-class nanoparticle-encapsulated human hemoglobin, which mimics the vital oxygen-carrying functionality of RBCs and can be freeze-dried for long-term storage. ErythroMer features a donut-shaped nanoparticle that emulates the vital oxygen-carrying functionality of red blood cells (RBCs). Its synthetic outer membrane and surface area allow for physiologically realistic gas exchange. The synthetic polymer shell is "immune-silent", inert and carries no blood antigens, eliminating the need to type and cross-match as with stored blood. ErythroMer can be freeze-dried or "lyophilized", for a much longer shelf life than stored blood. It is covered by issued U.S. patents that specify composition of matter, method of preparation, and use as an O2 carrier.



Company Description: KaloCyte, Inc. is a St. Louis-based healthcare biotech startup company located in the Cortex Innovation Community, a vibrant 200-acre innovation hub and technology district near Washington University where its original development began. KaloCyte was founded by a distinguished team of researchers in nanofabrication bioengineering and medicine, with support from the BioGenerator Fundamentals program. KaloCyte has demonstrated proof of concept for ErythroMer, a freeze-dried synthetic red blood cell substitute envisioned for use when stored blood is unavailable, unsuitable or inadequate. KaloCyte is supported by \$5M in NIH and DoD grant awards and \$800K of venture capital funding.

<p>Newton, Massachusetts http://karyopharm.com</p>	<p>Karyopharm Therapeutics Pharmaceuticals</p>
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Technology Name: SINE compounds

Technology Description: Karyopharm's agent shows particular promise for lupus since it is potent, orally bioavailable, centrally active, and is expected to be well tolerated. This project aligns with the business plan of the company as Karyopharm Therapeutics Inc. is focused on the discovery and development of novel first-in-class drugs directed against nuclear transport targets for the treatment of life-threatening diseases with inadequate treatment options, such as lupus. We anticipate the value and impact of this project to lie in improved survival and quality of life for patients with lupus. Additionally, learnings from the development of this agent, which is one of the first drugs in the SINE class, may be applicable to other SINE agents and potentially for the development of other lupus treatments.

Company Description: Karyopharm Therapeutics is a clinical-stage pharmaceutical company focused on discovery, development and commercialization of novel first-in-class drugs directed against nuclear transport and related targets for the treatment of cancer and other major diseases. Our primary focus is on developing novel, small molecule Selective Inhibitor of Nuclear Export, or SINE, compounds that inhibit the nuclear export protein XPO1. Our lead SINE compound selinexor is being evaluated in multiple late-stage clinical trials in patients with hematologic and solid tumor malignancies. In addition to selinexor, we are also advancing a pipeline of novel, oral drug candidates, including verdinexor as an anti-inflammatory agent



<p>State College, Pennsylvania http://www.keystonenano.com</p>	<p>Keystone Nano Pharmaceuticals</p>
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Technology Name: Ceramide NanoLiposome

Technology Description: KNs Ceramide NanoLiposome (CNL) is the first in class approach to using a short chain, synthetic Ceramide to treat cancer. Ceramide has four complementary methods of action that down regulate cancer cells while leaving normal cells alone. Ceramide is not a traditional oncology drug as it is a lipid and a cell messenger. KN is producing a custom GMP product to determine a maximum tolerated dose and to explore efficacy. Previous animal testing has shown CNL very effectively treats more than a dozen types of cancer and we anticipate several cancers will be better treated with CNL.

Company Description: Keystone Nano (KN) is an emerging biopharmaceutical company operating at the convergence of nanotechnology and life sciences. KN is developing new products for oncology marketplace that total more than \$130 billion worldwide and are growing at 7.4% per year. More specifically, KN is developing 3 different approaches to cancer therapy with products that address several poorly treated cancers in markets that total more than \$35 Billion per year worldwide. The company is especially interesting as it is developing never before tested cancer therapies leveraging current oncology discoveries commercialized with efficient development processes.

<p>Denver, Colorado http://www.kwjengineering.com</p>	<p>KWJ Engineering Medical Devices</p>
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Technology Name: Wearable Noninvasive Blood Alcohol Monitor

Technology Description: We are developing a wrist-worn transdermal alcohol monitor (with smart watch functionality) to measuring blood alcohol levels across several groups of customers: health conscious consumers, abstinence maintenance in treatment and criminal justice/law enforcement.

Company Description: KWJ Engineering is involved in basic R&D, applied R&D and product development for health, safety and environmental applications of gas sensors. KWJ has commercial activity in these areas through its EcoSensors brand and its spin-off company, SPEC Sensors LLC.



<p>San Francisco, California www.mandalmed.com</p>	<p>MandalMed Pharmaceuticals</p>
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Technology Name: MM-003 for heart attack recovery

Technology Description: Our main focus is development of MM-003, a high affinity protein inhibitor of galectin-3, for cardiac fibrosis after non-fatal MI, which has an annual incidence in the US and Europe of more than 2 million. Animal models show that post-MI treatment with MM-003 for one week greatly reduces fibrotic remodeling that leads to heart failure. No agents are currently approved for treatment of cardiac fibrosis, and no galectin-3 inhibitors have been approved for use. Although two other companies are testing galectin-3 inhibitors, their therapeutic targets are liver and pulmonary fibrosis and like MM-003, their inhibitors are not orally active.

Company Description: MandalMed is a biotechnology company located in San Francisco developing innovative therapeutic products that stem from breakthroughs in innate immunity and glycobiology. The Company's primary focus currently is development of a human protein inhibitor of galectin-3 for treatment of the damaging cardiac fibrosis that occurs after myocardial infarction (MI), which is largely funded by an NIH Fast Track SBIR award. MandalMed is seeking Series A funding to obtain an IND and perform a Phase I clinical trial of the biologic. There are no drugs currently approved specifically for cardiac fibrosis, which represents a potential market of billions of dollars.

<p>Santa Monica, California https://www.maxbiopharma.com/</p>	<p>MAX BioPharma Pharmaceuticals</p>
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Technology Name: Oxysterol Therapeutics

Technology Description: Our technology, Oxysterol Therapeutics, is an innovative platform used to create new therapies in orthopedic medicine and cancer. Using naturally occurring compounds as our starting point, we chemically enhance their activity with select structural changes. It is our goal to commercialize safe, effective, and orally available drugs of relatively low cost.

Company Description: MAX BioPharma, Inc. is a pre-IND biopharmaceutical company developing new therapies based on proprietary lipid molecules, namely oxysterols, to address unmet medical needs in orthopedic medicine and cancer. We have invented new osteogenic molecules that target mesenchymal stem cells in vivo to affect the formation of new bone tissue, with applications in spinal fusion, non-union fractures, repair of maxillofacial and cranial bone defects and osteoporosis. In addition, The Company has defined an anti-tumorigenesis strategy



based on inhibition the Hedgehog (Hh) pathway. The Hh pathway is highly activated in an unregulated manner in many human cancers.

Salt Lake City, Utah	<h2>Microsurgical Innovations</h2> <p>Medical Devices</p>
<p>Technology Name: Anastomosis is the connection of the vessels within a body.</p> <p>Technology Description: Conventional microsurgical vessel anastomosis is hand suturing the two cut ends of an artery or vein together using ultrafine techniques with the assistance of an operating microscope. This technique requires specialized training, is time consuming, is expensive when considering doctor and operating room time, and is subject to a great degree of human error (10% reoperations). Reduced overall surgical time is beneficial to all the stakeholders including patients, surgeons and hospitals as it reduces cost and improves patient outcome. The proposed device outperforms manual suturing techniques, reducing the surgical time required and associated complications. Additionally, it is the first product applicable to both arterial and venous anastomosis.</p> <p>Company Description: The technology at the center of this proposal has been developed at the University of Utah and has been licensed to Microsurgical Innovations Inc (MSI), a recent spin-out company from the University. MSI product development is led by Dr. Jay Agarwal, Associate Professor of Surgery and Dr. Bruce Gale, Professor of Mechanical Engineering. The objective of MSI is to develop a biodegradable vascular coupling device (VCD), which would replace the hand suturing technique currently used to connect arteries and veins in microvascular and macrovascular end-to-end vascular repair surgeries.</p>	

Hayward, California http://microvi.com	<h2>Microvi Biotech</h2> <p>Biotechnology</p>
<p>Technology Name: Bioremediation of Organic Compounds</p> <p>Technology Description: The contamination of the water resources in the United States with hazardous organic compounds continues to pose serious and widespread risks to public health and safety. In contrast to conventional physical or chemical technologies for hazardous organic compounds such as air stripping and activated carbon, our technology degrades the hazardous organic compounds into harmless byproducts instead of producing a concentrated secondary waste stream. Moreover, our technology offers significant reductions in energy and maintenance costs compared with chemical or UV oxidation. Flexibly designed as both an in-situ and ex-situ treatment option, this new technology offers reliable performance across a range of dynamic</p>	



operating conditions to achieve simultaneous degradation of hundreds of hazardous organic compounds.

Company Description: Microvi Biotech Inc. combines materials science and microbiology to development novel bioprocessing technologies for the water, wastewater and renewable chemical industries.

<p>Winston Salem, North Carolina https://miyazakienterprises.com/</p>	<p>Miyazaki Enterprises Medical Devices</p>
<p>Technology Name: Miya Model, A Vaginal Surgery Simulator</p> <p>Technology Description: The Miya Model is a complete female pelvic anatomy model. It consists of a pelvic frame and multiple replaceable anatomic cartridges. The model incorporates a number of features to simulate surgical experiences including lifelike skin and life-sized organs, realistic cutting and puncturing tensions, palpable landmarks, and a pressurized vascular system that bleeds. The Miya Model provides access and visibility, enabling supervising physicians and credentialing committees with access and video capabilities. The model is modular as all of the parts are easily replaceable. Thus, if a part is cut, it can easily be replaced for the next simulation.</p> <p>Company Description: Miyazaki Enterprises LLC is focused on creating and implementing education solutions for issues found with Gynecologic training. The Miya Model surgical simulator is designed to allow OB/GYN learners and educators to have a hands-on surgical training experience without unnecessary stress or risk to patients. An improved educational environment is bolstered with educational curriculum and assessment tools created by Miyazaki Enterprises to create a total training ecosystem for Medical Students, OB/GYN Residents and Practicing Physicians.</p>	

<p>Morgantown, West Virginia http://modulationtherapeutics.com/default.html</p>	<p>Modulation Therapeutics Incorporated Pharmaceuticals</p>
<p>Technology Name: Melanoma Targeted Radiotherapeutic</p> <p>Technology Description: MTI-201 takes advantage of a DOTA conjugated targeting ligand to deliver a cytotoxic payload Ac-255 to melanoma cells while sparing normal cells which do not express melanocortin 1 receptor (MC1R). The initial phase I clinical trial will be performed in uveal melanoma, a disease which currently has few treatment options. We anticipate that this</p>	



agent has the potential to be used in combination with checkpoint inhibitors for the treatment of metastatic uveal and cutaneous melanoma. This program has shown robust pre-clinical efficacy and is funded by a Phase II SBIR contract to initiate a phase I clinical trial.

Company Description: Modulation Therapeutics (MTI) is an early discovery, research and translational drug development company, which the founders spun out of the Moffitt Cancer Center as part of Moffitts initiative to commercialize on-site research. MTI recently relocated to incubator space, in Morgantown, WV with angel funding from the WVU Health Sciences Innovation Fund. The company is currently focused on development of i) MTI-101, a novel drug with a first-in-class mechanism of action for the treatment of relapsed myeloma and ii) MTI-201, a Actinium-225 (Ac-255) labeled peptide that demonstrates high affinity and specificity for melanocortin 1 receptor (MC1R) for the treatment of melanoma.

<p>Chicago, Illinois http://www.nanobiotherapeutics.com</p>	<p style="text-align: center;">Nanobiotherapeutics Pharmaceuticals</p>
<p>Technology Name: Albumin based nanoparticles and anti-inflammation</p> <p>Technology Description: Our drug platform is albumin nanoparticles (spherical, 120 nm in diameter) that can entrap any hydrophobic small molecule (such as piceatannol, a natural derivative of resveratrol) and deliver it specifically to highly activated neutrophils. Uncontrolled inflammation is the hallmark of several of the devastating diseases such as sepsis and reperfusion/ischemia induced myocardial injury. The major goal is to generate powerful nano drugs based on albumin nano platform that will combat both acute and chronic inflammatory diseases. Using subtle chemical modifications, we plan to introduce selective tissue targeting capability, enhance stability and loading capacity of the albumin nano particles.</p> <p>Company Description: Nanobiotherapeutics Inc. (2016) is a subsidiary of Cell Biologics, founded by Dr. Asrar Malik (President/CEO) and Dr. Prasad Kanteti (VP/CSO). The company has rented lab and office space at the UIC incubator facilities in Chicago. While Dr. Malik is the President and CEO and the overall in charge of the company, Dr. Kanteti is in charge of developing nano drugs that meet FDA approval, developing strong commercialization and regulatory path. Ms. Jeanne Chang is the CFO. The mission is to target uncontrolled and unwanted inflammation, the underlying cause of many acute and chronic diseases using albumin nano-particle entrapped anti-inflammatory drugs.</p>	



<p>Dublin, Ohio https://www.navidea.com/</p>	<p>Navidea Biopharmaceuticals Diagnostics</p>
<p>Technology Name: Quantitative Imaging Diagnosis of Rheumatoid Arthritis</p> <p>Technology Description: 99mTc-tilmanocept was purposefully designed to bind with high affinity to the macrophage mannose receptor (CD206). Rheumatoid arthritis (RA) is characterized by massive infiltration of CD206+ macrophages into the synovial spaces of joints. These synovial macrophages directly drive the destruction of joints. Navidea has completed Phase 1/2 trials employing Tc99m-tilmanocept as a new quantitative diagnostic agent for RA and is staged complete Phase 3 trials. This effort with tilmanocept and completion of Phase 3 trials provides Navidea with an excellent runway for tilmanocept approval. This effort in turn also provides Navidea with a therapeutic platform for RA.</p> <p>Company Description: Navidea Biopharmaceuticals, Inc. is a leader in precision medicine with immuno-targeted products designed to help identify the sites and pathways of undetected disease and enable better diagnostic accuracy, clinical decision-making, targeted treatment and, ultimately, patient care.</p>	

<p>West Lafayette, Indiana https://novilytic.com/</p>	<p>Novilytic Medical Devices</p>
<p>Technology Name: Blood Collection and Processing</p> <p>Technology Description: First generation products enable the filtration of blood into plasma with a simple wicking action that requires no power source. The second generation products will add affinity complexes to enable point-of-care analysis.</p> <p>Company Description: Novilytic card collect and process blood samples at home or in the doctor's office without needles or centrifuges. The samples are ready for shipment by standard mail without coolants and are stable for weeks at ambient temperature.</p>	



Austin, Texas http://www.omegaoptics.com	Omega Optics Medical Devices
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Technology Name: Portable Bio and Biochemical sensing devices

Technology Description: Over the last several years, Omega Optics has developed, prototyped and patented a platform technology of novel lab-on-chip Photonic Crystal Spectrometer for Laser Absorption Spectroscopy. Our on-chip sensor technology brings to market a unique combination of highly sensitive sensor equipment in handheld form factors and, as such, has applications in many different markets. For example, we have demonstrated world-leading performance of explosive trace detection and air sensing and monitoring under laboratory conditions. Our technology is poised to disrupt several markets in the defense, homeland security and industrial markets. We currently seek a \$5-10 million investment from corporate partners and/or private investors in order to scale our technology and accelerate time-to-market.

Company Description: Since its initiation in 2001, Omega has been actively involved in optical communications/interconnects/sensors research/development work where arrays of products have been developed from internal R&D and SBIR/STTR efforts. Polymer based planar light-wave circuit, DWDM and silicon nano-photonics for integrated optics and chemical and biological sensing are core technologies of Omega Optics.

Rockville, Maryland www.oncoimmune.com	OncoImmune Biotechnology
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Technology Name: CD24Fc

Technology Description: Host tissue injuries caused by HSCT conditioning chemotherapy and/or total body irradiation regimens leads to the release of damage-associated molecular patterns (DAMPs), and innate immune activation of antigen-presenting cells via DAMPs is the key initiating step that drives GVHD and other autoimmune indications. The CD24-Siglec G pathway plays a critical role in discriminating DAMPs from pathogen-associated molecular pattern (PAMPs). To our knowledge, CD24Fc is the only inhibitory DAMP receptor capable of shutting down inflammation triggered by DAMPs and no drug is available that targets host inflammatory response to tissue injuries.

Company Description: OncoImmune is a privately-held, clinical-stage biopharmaceutical company developing novel immunotherapies for cancer, inflammation and autoimmune disease. OncoImmunes lead asset, CD24Fc, is a novel therapeutic that regulates host inflammatory response to tissue injuries and which has broad implications in the pathogenesis of autoimmune diseases, cancer and graft-versus-host disease (GvHD). CD24Fc is currently in Phase II clinical



testing for the prophylaxis of acute GvHD following myeloablative allogeneic HSCT. Based on the work of its scientific founders, OncoImmune also has a pipeline of pre-clinical immunotherapy assets with a focus on solid tumor targeting monoclonal antibodies, cancer vaccines, and immunotherapy-related adverse events.

San Diego, California http://www.orprotherapeutics.com	<h2>OrPro Therapeutics</h2> Biotechnology
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Technology Name: Development of modified human thioredoxin as an inhaled biologic therapeutic for cystic fibrosis

Technology Description: Thioredoxin-1 is a human protein present within cells and secreted on epithelial surfaces that functions as a natural, selective protein disulfide bond-reducing enzyme with extracellular mucus viscoelasticity-normalizing, anti-inflammatory and pathogen defense-enhancing properties. Theradux technology improves on native thioredoxin by enabling it to bind epithelial targets, thereby blocking the potential for systemic uptake and increasing duration of extracellular activity. This novel mechanism avoids undesirable cross-talk with intracellular thioredoxin signaling and may enable therapies for a range of important disease indications associated with extracellular inflammation and obstructive mucus.

Company Description: OrPro Therapeutics, Inc. (San Diego, CA) is developing a non-systemic biologic drug platform for treatment of diseases with unmet need of the lung and other epithelial surfaces characterized by chronic infection, inflammation and obstructive mucus. The company's core technology was licensed exclusively from National Jewish Health (NJH, Denver, CO), the leading US respiratory hospital, with key patent-protected improvements (the Theradux platform) developed in-house. OrPro is pursuing a platform/product strategy that creates options for in-house commercialization of selected opportunities with revenue-generating out-licensing of other indications. OrPro's lead product ORP-100S is in mid-preclinical development for cystic fibrosis and bronchiectasis.

Edmonds, Washington www.orthocareinnovations.com	<h2>Orthocare Innovations</h2> Medical Devices
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Technology Name: Prosthetics, Orthotics, and Rehabilitation technologies

Technology Description: System of sensors, artificial intelligence software and adjustable brace that optimize the walking ability of persons with hemiparesis following stroke.



Company Description: Orthocare Innovations mission is to advance and commercialize patient-centric, cutting-edge Prosthetic, Orthotic, and Rehabilitation technologies. We serve individuals with physical disabilities and their providers of care by understanding their daily challenges and applying innovative thinking to create clinically relevant solutions that restore mobility, improve outcomes, and enhance patient care with precision and clinical efficiency.

Arlington, Texas http://www.progenitec.com/home/	Progenitec Biotechnology for Healthcare, Diagnostics
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Technology Name: Wound monitoring system

Technology Description: The innovative aspect of this technology is its ability to detect pH on discarded wound dressings to indicate the healing, non-healing condition or infection of the wound. The pH is seen as a color map on the detector and is unaffected by blood and tissue debris. By correlating the pH scale and map, the user can determine the wound healing status. One of the unique selling points of this device will be its affordability and ease of use for not only clinicians and nurses, but also patients.

Company Description: In its early days, Progenitec undertook research and development contracts on projects studying as well as improving the biocompatibility of medical devices. Over the past decade, the company has expanded the scope to develop medical devices that monitor wound healing, inflammation, infection, and regeneration. We have also developed many medical devices which include non-invasive diagnostic imaging probes, portable imagers, and stem cell isolation kits. In addition to this, going forward, the company plans to develop systems that can detect and treat various cancers.

Pasadena, California www.protabit.com	Protabit Healthcare IT
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Technology Name: ProtaBank AI Platform

Technology Description: Applying AI and machine learning to the design of valuable protein molecules, particularly antibodies and protein therapeutics. Industrial enzyme targets would be next in importance.

Company Description: Protabit LLC engineers proteins for industrial, agricultural, and healthcare applications. The company's platform technology is being developed via a strategic partnership with the Monsanto Company. Protabit's protein engineering approach combines computational modeling with high-throughput screening and directed evolution to expand the diversity of protein sequences that can be explored to produce novel proteins.



<p>Greenville, South Carolina http://www.purilogics.com</p>	<p>Purilogics Research Tools</p>
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Technology Name: High-capacity Multimodal Anion-exchange Membranes for Purification of Biologics

Technology Description: Biotherapeutics are in high demand for treating such severe and chronic conditions as cancer and cardiovascular and autoimmune diseases. Despite the increasing public demand, the rapid pace of product development is outpacing production capacity. In this SBIR project, Purilogics, LLC is developing single-use multimodal anionexchange (MMAEX) membrane column products (Puri™-MQ) that have a high capacity for removal of impurities from biologic products with fast processing speeds and without desalting or dilution operations. It will simplify the current purification processes and increase the production capacity and manufacturing flexibility. Puri-MQ will be our first product into bioprocessing market. We expect to obtain our brand recognition and acquire more resources to launch other products through sales of Puri-MQ columns.

Company Description: Purilogics™ provides high-speed single-use and disposable membrane chromatography columns for biopharmaceutical companies to increase the productivity of biologics purification dramatically.

<p>Tallahassee, Florida http://www.quarrybio.com</p>	<p>QuarryBio Research Tools</p>
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Technology Name: Covalent Labeling Mass Spectrometry

Technology Description: Mass spectrometry holds the potential for quickly generating large volumes of high resolution binding studies for drug development. However, current approaches require expensive equipment and specially trained scientists, limiting their adoption as a tool for binding studies. QuarryBios technology overcomes these challenges through the use of a molecular label that can be readily detected via mass spectrometry. The label is simple to use, and requires no specialized equipment or training. Now provided on a fee-for-service basis, this technology will eventually be offered via kit sales, providing the unique opportunity to allow studies to be performed in any standard lab.

Company Description: QuarryBio has developed a novel analytical method that provides information for biologic drug researchers as they decide which early stage drug candidates to advance for further development. This technology is currently offered on a fee-for-service basis, where clients send samples to QuarryBios lab for analysis. Because this research is performed prior to animal or human testing, there are no FDA or regulatory requirements involved. In addition to receiving SBIR funding, QuarryBio has demonstrated the commercial viability of our



technology via paid contracts with 9 biotechnology/pharmaceutical companies for over \$300,000 in revenue, and has raised over \$400,000 in angel investment.

<p>Baltimore, Maryland http://www.robinmedical.com/</p>	<p>Robin Medical Medical Devices</p>
<p>Technology Name: Tracking System for MRI</p> <p>Technology Description: As MRI is highly sensitive to motion, current practice is based on the prevention of motion during scanning. In young children this commonly requires full sedation or general anesthesia, which are time consuming, costly, and are associated with significant risks. The innovation of our technology is that rather than preventing motion, it enables routine MRI scanning in the presence of motion.</p> <p>Company Description: Robin Medical is a medical technology incubator company founded in 1996 by physicians and engineers from Israel and from Baltimore, Maryland. Our main focus is in the field of MRI tracking systems. Our primary product, the EndoScout tracking system, enables tracking position and orientation of sensors within MRI magnets in real time. It was developed during the years 2001-2004 with SBIR grant support and is FDA cleared to guide any surgical procedure under MRI. The technology has been recently refined to enable the detection of motion of head during brain scan to enable motion artifacts elimination in MRI.</p>	

<p>Portland, Maine https://www.rockstepsolutions.com/</p>	<p>RockStep Solutions Healthcare IT</p>
<p>Technology Name: Climb</p> <p>Technology Description: The innovation of Climb is in the fact that the whole is greater than the sum of the parts, and the platform offers future lab capabilities. Climb is a fully integrated solution that spans a broad range of functionality normally covered by several disconnected point solutions. It is pure-cloud, easy to on-board, and includes smart lab functionality of IoT streaming attached to machine learning. The whole is bigger than the sum of the parts and the platform, Microsoft Azure, is one of the most advanced cloud systems in the world.</p> <p>Company Description: RockStep Solutions provides a collaboration platform, called Climb, for managing pre-clinical research operations from experimental design to data collection, aggregation, and delivery. RockSteps customers include pharmaceutical, biotechs, universities, government labs and contract research organizations who are struggling with spreadsheets or legacy tools for managing crucial research data and operations. Climb is a pure cloud SaaS</p>	



solution with annual subscription licenses that runs on laptops and mobile devices. Climb includes advanced technologies such as machine learning and IoT device management. As a cloud solution, Climb eliminates the need for organizations to maintain their own expensive IT infrastructure and internal IT support.

San Jose, California http://sciogeninc.com/	Sciogen Biotechnology
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Technology Name: Novel Influenza Vaccine

Technology Description: Sciogen is utilizing its proprietary E. coli technology for the development of influenza and RSV vaccines. The technology is highlighted by its exceptionally short production circle. Furthermore, it allows for the production of non-glycosylated vaccine that is safer and more effective.

Company Description: Sciogen is a preclinical stage biopharmaceutical company focused on the development of biologicals for the prevention and treatment of respiratory viral infections. Our product development pipelines include candidate RSV vaccines, seasonal and pandemic influenza vaccines, and antibody-based therapeutics for influenza and RSV. We are highly experienced in the research and development of biologicals in particular on process development, analytical developments, and preclinical evaluation of biologicals.

Saint Louis, Missouri http://www.sentiAR.com/	SentiAR Medical Devices
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Technology Name: Using Augmented Reality To Make Cardiac Ablation Procedures Simpler and Safer

Technology Description: SentiAR is developing the first augmented reality (AR) platform to allow intraprocedural 3D holographic visualization of a patients anatomy in interventional procedures along with onboard navigation controls that allow the physician to change their image viewing perspective hands free.

Company Description: SentiAR, Inc. is a venture-backed software device spinout of Washington University, developing the first augmented reality (AR) platform to allow intraprocedural 3D holographic visualization of a patients anatomy in interventional procedures. Initially focused on the Electrophysiology lab, SentiARs mission is to assist physicians achieve faster, more precise catheter ablation procedures to treat cardiac arrhythmia.



<p>LaGrange, Kentucky www.SequelaBiotech.com</p>	<p>Sequela Diagnostics</p>
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Technology Name: Diagnostic test for chronic kidney disease

Technology Description: Limitations in the diagnostic approach for identifying and staging CKD delays patient management and care. This results in increased healthcare costs and decreased patient outcomes. This technology is an innovative tool that provides substantial evidence to aid physicians in making a clear diagnosis. Unlike serum creatinine, no baseline is necessary to warrant a positive result, additionally, there are no known comorbid conditions, medications, or other variable that influences the serum levels of proUGN. This novel biomarker and its indicated use for CKD overcomes many of the shortcomings seen in serum creatinine.

Company Description: Sequela, Inc. is a biotechnology company dedicated to developing novel diagnostic and therapeutic products for various pathological processes. Our current corporate objective is to produce and market a 96-well serum biomarker capture ELISA allowing for increased diagnostic efficiency of CKD (chronic kidney disease). The kit would be designed to monitor high-risk patient population groups such as diabetes, hypertension, certain hereditary or autoimmune disorders, or those taking nephrotoxic medications. A single positive test on one visit would indicate a high likelihood of CKD, and an early referral to the nephrologist would be warranted.

<p>Malvern, Pennsylvania http://www.shifabiomedical.com/</p>	<p>Shifa Biomedical Corporation Pharmaceuticals</p>
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Technology Name: Development of Oral Small Molecule PCSK9 Antagonist

Technology Description: Our goal is to develop novel orally cholesterol lowering drug. Our target is the protease proprotein convertase subtilisin-like kexin 9 (PCSK9). PCSK9 controls the degradation of LDL receptor (LDLR) in the liver and thereby contributes to cholesterol homeostasis. PCSK9 is synthesized as a precursor protein that undergoes processing. Secreted PCSK9 binds to the LDL-receptor (LDLR) and chaperones it to the degradation pathway. We identified nanomolar orally active small molecule PCSK9/LDLR antagonists and demonstrated its efficacy in animal model. Currently, we are undertaking the required work for the proof of concept and safety assessment to advance the lead toward clinical trials.

Company Description: Shifa Biomedical Corporation (Shifa) is an incubator of ideas for the development of drugs and related technologies. It has much of the expertise essential for the rational design of small molecule drugs, including expertise in protein crystallography,



computational chemistry, medicinal chemistry, combinatorial chemistry, protein biochemistry, molecular biology and biochemical, cell-based, and virtual screening. Shifa is being led by an internationally-known team of scientists, with considerable expertise in early-stage pharmaceutical discovery. The most advanced programs at Shifa are focused on the development of drugs for the treatment of dyslipidemia.

<p>San Ramon, California http://www.possibilitiesforchange.com/</p>	<p>Silicon Kidney Medical Devices</p>
<p>Technology Name: iBAP</p> <p>Technology Description: The iBAP is an intravascularly implanted medical device encapsulating pancreatic islets providing a functional cure of T1D. The iBAP utilizes the silicon nanopore membrane (SNM), which possesses enhanced mass transport and immunoprotection capabilities in comparison to industry standard polymeric membranes.</p> <p>Company Description: Silicon Kidney LLC is developing a novel silicon nano pore membrane (SNM) technology for use in hemodialyzers for treatment of end-stage renal disease (ESRD). Also since the SNM technology is a platform technology, Silicon Kidney LLC is exploring various other applications, including a bioartificial pancreas for treatment of diabetes.</p>	

<p>Atlanta, Georgia http://simplec.com</p>	<p>SimpleC Healthcare IT</p>
<p>Technology Name: Care360 Platform</p> <p>Technology Description: We provide are personalized audiovisual care programs, based on established behavioral therapies that are tailored to each individuals care and behavioral needs and profile. If there is a change (e.g., care needs or schedule), then this feeds back into our system and results in an adjustment of the therapeutic show(s). This cycle repeats on a regular basis or as needed so that interventions remain in synchrony with the care and behavioral needs they are designed for.</p> <p>Company Description: SimpleC delivers personalized therapies to seniors wanting to maintain independence at home through use of a digital platform.</p>	



<p>Annapolis, Maryland http://www.simquest.com/</p>	<p>SimQuest Healthcare IT</p>
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Technology Name: Technology Assisted Medical Training

Technology Description: The vascular surgery platform (open arterial anastomosis) and the endovascular access and upsizing project (both Phase II SBIR's) bring technological breakthroughs to surgical training and assessment of performance in virtual and augmented reality spaces. The training need/deficiency for vascular surgery and endovascular access is well documented in the academic surgical world and presents a serious risk to patient care needs, particularly in trauma and combat, both in the USA and globally. Repetitious practice on SimQuest's platform with real time performance assessment metrics and adaptive learning would not only serve a patient care and safety need, but pave the way for our other disruptive technologies.

Company Description: SimQuest is an R&D company that creates virtual and augmented reality and haptic technologies to bridge the gap from what is experientially available in medical training and what is needed for safe medical practice. We have a specific focus on interventional medicine i.e. surgery, interventional cardiology, etc. SimQuest continues to receive R&D funds and grants from several branches of the Federal Government and has amassed a stable of significant cutting edge assets. SimQuest is seeking to commercialize its advanced prototypes in 5 specific areas to bring these technologies to a needy global market, leading with two NIH funded SBIR projects.

<p>Princeton, New Jersey http://www.soligenix.com</p>	<p>Soligenix Biotechnology</p>
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Technology Name: SGX942 as a treatment for oral mucositis in head and neck cancer patients

Technology Description: Soligenix Inc.s IDR platform represents a novel and innovative approach to therapeutically modulating the immune system by targeting innate immunity to treat infection and tissue damage. The drug has been tested in 84 healthy volunteers and 111 patients. SGX942 is the lead product candidate for Soligenix and currently in a Phase 3 clinical trial targeting the treatment of severe oral mucositis in head and neck cancer patients undergoing chemoradiation therapy. While current devices for oral mucositis are palliative, SGX942 addresses the underlying dysfunction giving rise to severe oral mucositis. The US/EU market potential in this indication is estimated at >\$500M/yr.

Company Description: Soligenix, Inc. is a late-stage biopharmaceutical company focused on developing and commercializing products to treat rare diseases where there is an unmet medical need. Soligenix has two areas of focus: 1) a therapeutics segment dedicated to the development



of products for orphan diseases and areas of unmet medical need such as cutaneous T-cell lymphoma, oral mucositis, pediatric Crohns disease, acute radiation enteritis, and 2) a vaccines/biodefense segment to develop vaccines and therapeutics for military and civilian applications in the areas of ricin exposure, acute radiation syndrome, and emerging and antibiotic resistant infectious disease.

Woodinville, Washington https://www.springstar.net	SpringStar Other
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Technology Name: Adutodissemiation for control of mosquitoes

Technology Description: Autodissemiation draws gravid, container-breeding female mosquitoes to a device that mimics a breeding or resting site. They contact and acquire a minute dose of a low-risk slow-acting insecticide, which they then deposit in breeding sites where eggs are laid. The deposited insecticide inhibits development of the juvenile stages of the both the insecticide carrier and non-carriers, preventing them from reaching adulthood. By conscripting mosquitoes to do the work, autodissemiation circumvents the need for widespread application of pesticides and excessive use of man-power, while being more effective at controlling mosquitoes and the diseases they carry.

Company Description: SpringStars goal is to develop novel, effective and safe pest control products based upon real science. We started with a simple idea - make pesticide-free green products that really worked and meet the demands of todays environmentally-conscious consumer. We are now one of the top innovators in the industry, bringing a complete line of products to market. Rigorous product development and testing has created products that can be counted on to eliminate pests without fear of toxic side effects or damage to the environment. Our BioCare, BioGlue, and Trap-N-Kill brands support our vision.

Lutz, Florida http://www.Transgenex.com	Transgenex Nanobiotech Pharmaceuticals
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Technology Name: Anticancer drug development

Technology Description: TGN has developed and is commercializing a fiber-inspired smart Scaffold (FiSS) platform that can generate patients tumors on a petri dish from biopsy cells, which also amplifies the cancer initiating stem cells (CSC) that play key roles in cancer drug resistance and metastasis. Thus far, TGN has commercialized the FiSS technology for (CSC)targeted drug discovery and currently conducting clinical studies using FiSS 3D tumoroid-based drug response profiling (In India and USA). Using FISS with our molecular engineering



expertise, the company has generated and characterized several novel anti-CSC drug molecules of already FDA approved parent drugs. Our main focus at the moment is to further develop and commercialize at least one of these novel molecules via the quicker and cheaper 505 (b)(2) regulatory route.

Company Description: TGN is a small company focussed on development and molecular engineering novel forms of on the market (FDA approved) to target cancer stem cells. Novel forms of three different cancer stem cells fighting drugs have been generated and submitted and patented. Early IC50 results have shown that the novel forms are more potent than their parent molecules. TGN also use its FISS (Fiber Inspired Smart Scaffolding) technology to proliferate cancer stem cells and grow 3D tumeroids to test the efficacy of the drug under development.

<p>Boston, Massachusetts http://www.ursureinc.com</p>	<p>UrSure Diagnostics</p>
<p>Technology Name: Point of Care Tenofovir Adherence Test</p> <p>Technology Description: We are developing a diagnostic test that is a Lateral Flow Immunoassay dipstick paired with a smartphone scanner to quantify results. The innovative aspects of our technology are:--The novel monoclonal antibodies we developed with high sensitivity/specificity for our target drug.--A diagnostic test that is significantly cheaper (2% of current offerings), delivers faster results (minutes vs days or weeks), requires no additional technology to operate (can be used anywhere in the world), and is painless (urine vs blood test)Our tests will give access to adherence monitoring technology that patients and providers never would have gotten with current offerings.</p> <p>Company Description: UrSure makes urine tests that measure adherence to medications. Our tests are point of care, affordable, painless, and disposable so they can be deployed anywhere in the world. Our first drug target is tenofovir which is taken by millions worldwide for HIV prevention and treatment.</p>	



<p>Barneget Light, New Jersey http://vasadebio.com/</p>	<p>Vasade Biosciences Pharmaceuticals</p>
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Technology Name: Cardiovascular Disease

Technology Description: C90, the AC5 inhibitor used in this investigation, is a novel carbocyclic nucleoside analog possessing a metal chelating functional group. It acts through simultaneous binding at the AC5 P-site and through chelation to one of two magnesium atoms in the enzyme active site. Currently, as a carbocyclic nucleoside analog, C90 is resistant to hydrolytic digestion in the gastrointestinal tract thus making this compound a viable candidate for development as an orally administered therapeutic agent. Furthermore, there is little toxicity as even a dose of 180 mg/kg was well tolerated in rodents.

Company Description: Vasade Biosciences, Inc. was founded by Drs. Stephen and Dorothy Vatner, who have over 50 years experience in cardiovascular research at Harvard Medical School and Rutgers University. They developed a mouse with adenylyl cyclase type 5(AC5) disruption, a longevity model with increased exercise performance and protection against cardiovascular disease, obesity, diabetes and cancer. Vasade Biosciences developed a pharmacological inhibitor of AC5, C90. As a first step for clinical translation C90s protection against myocardial infarction and coronary artery reperfusion injury was demonstrated. After clinical trials, Vasade will look towards large pharmaceutical companies or venture capital to develop and market the drug.

<p>Portland, Oregon https://www.virogenomics.com</p>	<p>Virogenomics BioDevelopment Biotechnology</p>
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Technology Name: DRQ for treatment of Secondary Progressive MS

Technology Description: DRQ is a second generation recombinant protein that retains the potent immunomodulatory activity of RTL1000, a soluble partial MHC class II construct that mimics the natural T cell receptor (TCR) ligand specific for the HLA-DR2/MOG-35-55 peptide complex present on antigen presenting cells. RTL1000 was manufactured and tested in an FDA-sponsored Phase 1 clinical trial in MS subjects in 2007-2009 that demonstrated safety and tolerability. DRQ would be uniquely applicable for treatment of Secondary Progressive MS that currently affects ~200,000 individuals in addition to many other central nervous system diseases and inflammatory conditions.

Company Description: Virogenomics BioDevelopment, Inc. (VBD) is a privately held Oregon-based small business that was spun out of Oregon Health & Science University (OHSU) and Virogenomics, Inc. (VG). VBD's business strategy is to identify and obtain rights to early-stage technologies and then manage and develop these technologies for drug discovery and development. Artielle Immunotherapeutics was spun-out of VG for the development of RTL1000



and the autoimmune technology and is managed by its active investors; Sanderling Ventures (San Mateo, CA) and Reference Capital Management (Portland, OR). VBD is collaborating with Artielle on the development of DRQ, the second-generation molecule to RTL1000.

Marshall, California https://www.irisvision.com	Visionize Medical Devices
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Technology Name: Vision Enhancement

Technology Description: We have developed algorithms with which we reprogram off-the-shelf virtual reality hardware into a wearable portable platform that transforms the visual lives of low vision patients.

Company Description: Provide devices and training to improve vision for the low vision community. Assist macular degeneration, retinitis pigmentosa, glaucoma and other visual disorders.

Albuquerque, New Mexico http://visionquest-bio.com/	Visionquest Medical Medical Devices
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Technology Name: Auto-detection Software for Plasmodium Infection in Retinal Exams

Technology Description: VisionQuest has developed a Malarial Retinopathy (MR) detection system, ASPIRE, a device that integrates our software for a fully automatic detection of MR using retinal images, captured with a low-cost, easy to use, and portable retinal imaging camera. The use of ASPIRE will improve the positive predictive power for cerebral malaria (CM) and thus alert caregivers to look for other non-CM conditions when MR is not present. ASPIREs key innovation is in the use of automatic MR screening to confirm the diagnosis of CM. ASPIRE fills the need for improved MR diagnostics in the malaria market through low-cost, easy to use, retinal imaging and artificial intelligence enabled detection software, eliminating the need for an eye specialist to perform indirect ophthalmoscopy.

Company Description: VisionQuest Biomedical conducts research and development of software products for automated screening of eye diseases using image analysis of retinal fundus images. Our primary product for diabetic retinopathy screening is under FDA evaluation in the US and being commercialized in Mexico with regulatory approval. Secondly, we have a commercial software product for automated analysis of retinal image quality. We have been working on a number of research technologies in the same field, which we intend to commercialize in near future.



<p>Nashville, Tennessee http://www.volumetrix.co</p>	<p>VoluMetrix Medical Devices</p>
<p>Technology Name: Non-Invasive Venous Waveform Analysis (NIVA) in patients with Heart Failure (HF)</p> <p>Technology Description: NIVA (Non-Invasive Venous waveform Analysis) uses a unique physiologic measurement (thevenous waveform), and proprietary algorithm incorporated into a wearable wristband device (VasaWatch), for hemodynamic volume assessment in outpatients with HF. The VasaWatch consists of a piezoelectric crystal that captures venous waveform signals on the volar aspect of the wrist, a control panel that amplifies, records, and transmits the signal to a dedicated device which computes a fast Fourier transformation (fFT) of the signal followed by a proprietary summation algorithm of the frequency amplitudes to provide a NIVA signal.</p> <p>Company Description: VoluMetrix is a Nashville based Company that develops products based on venous waveform analysis. We specialize in real time interaction between physicians and engineers for rapid transition from device iteration to clinical experimental testing and back to device optimization.</p>	

<p>Austin, Texas http://www.windmillcvs.com</p>	<p>Windmill Cardiovascular Systems Medical Devices</p>
<p>Technology Name: TORVAD</p> <p>Technology Description: The Toroidal Ventricular Assist Device (TORVAD) is an implantable blood pump that uses a new pumping paradigm to deliver synchronous, pulsatile flow with low shear to support patients with end-stage heart failure. The pump has been designed as a full-support, long-term, implantable device capable of producing up to 8 L/min of blood flow with a 30 mL stroke volume. The TORVAD synchronizes with the heart to preserve aortic valve flow and maintain cardiac output autoregulation. The TORVAD also measures of blood pressure using motor current, which can be used to manage patients medications and pump flow rates.</p> <p>Company Description: Windmill Cardiovascular Systems, Inc. has developed a new pumping paradigm to deliver synchronous, pulsatile, low-shear flow to support patients with end-stage heart failure. The Toroidal Ventricular Assist Device (TORVAD) has the potential to reduce the high adverse event rates associated with current VADs, which could increase market penetration and improve the survival and quality of life for patients.</p>	



<p>South San Francisco, California http://www.zenflow.com</p>	<p>Zenflow Medical Devices</p>
<p>Technology Name: Spring System for permanent relief of urinary obstruction related to benign prostatic hyperplasia (BPH)</p> <p>Technology Description: The Spring System consists of a self-expanding, single-wire nickel titanium (nitinol) coil implant designed to permanently relieve BPH-related urinary obstruction, a flexible transurethral delivery system, and an imaging system. We developed this solution to meet the long-standing clinical need for a safe, effective, cost-efficient, office-based BPH therapy that provides durable symptom relief in a single procedure without side effects.</p> <p>Company Description: Zenflow is developing the Spring System, a novel minimally invasive therapy designed to relieve urinary obstruction related to BPH (enlarged prostate). This condition causes life-altering frequent and urgent urination for over 30 million men in the US and 500 million men worldwide, representing a \$30 billion global opportunity. The Spring System is designed to permanently relieve symptoms in a simple and cost-effective ten-minute procedure performed in the urologist's office.</p>	