

Seed Central tech showcase & networking event January 11, 2018



See next pages for information about companies and presenters.





Rijk Zwaan is a plant breeding company. We develop new vegetable varieties and sell the seeds produced from them all over the world. We tap into the rich diversity nature offers us, and combine it with our extensive market knowledge and state-of-the-art techniques. Around 2,800 highly motivated employees in 30 different countries find it both fun and rewarding to work on creating value-added products and services for our partners every day. Three families own approximately 90% of Rijk Zwaan. The remaining 10% of the company is owned by a large group of employees through the employee share scheme. Every year, each colleague has

the chance to buy share certificates and hence to participate financially in Rijk Zwaan.





John Selep, President AgStart jselep@agstart.org / +1 916-835-1736 presenting:

The Verde Innovation Network for Entrepreneurship (The VINE) http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=25273

AgStart has a five-year history as the Sacramento-Davis region's Ag-and-Food technology business incubator program. In conjunction with the University of California Division of Agriculture and Natural Resources, AgStart is a sponsor and founding member of the Verde Innovation Network for Entrepreneurship (The VINE), a California state-wide network of incubators and innovation centers supporting entrepreneurs in Ag-&-Food technology. Like a grapevine, the VINE will link existing clusters of innovation resources across California, and will enable entrepreneurs anywhere in the state to connect with the mentors, advisors, collaborators, and other resources they need to be successful.





OPEN INNOVATION Renee Lafitte
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The DowDuPont Agriculture Division combines the strengths of DuPont Pioneer, DuPont Crop Protection and Dow AgroSciences, providing growers around the world a robust research pipeline across germplasm, biotech traits and crop protection products.

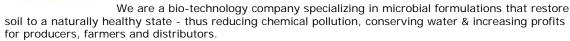
We are applying CRISPR-Cas as an advanced plant breeding tool to develop seed products for greater environmental resiliency, productivity and sustainability. As an early adopter and a leading developer of CRISPR-Cas technology for agricultural applications, we are on track to commercialize a next generation of waxy corn product by 2019, pending field trials and applicable regulatory reviews.

Our **Open Innovation platform** is designed to invite wider and deeper collaboration with public and private scientists and innovators around the world. We are committed to collaborating with others to realize the full potential of CRISPR-Cas and other innovative technologies for agriculture.

Learn more about DuPont Pioneer's Open Innovation platform at https://openinnovation.pioneer.com Learn more about CRISPR-Cas in agriculture at https://crisprcas.pioneer.com











Ai Oikawa, CEO/CSO AOikawa@afingen.org +1 150 290 8845 www.afingen.org

Afingen, Inc., a startup from Lawrence Berkeley National Laboratory, has been developing a series of synthetic biology tools to improve the beneficial traits of agricultural crops. Afingen's previous research projects with switchgrass demonstrated that a simple new biotechnology platform had enabled healthy, robust plants to grow more rapidly with enhanced root development, high biomass and seed yields, and reduced lignin in selected cell walls. We are currently transferring this novel biotechnology platform from switchgrass to other forage and grain crops to enhance biomass yields and improve the quality. For more information, please visit www.AFINGEN.org.





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At Amaryllis Nucleics, we have developed the most efficient approach for RNA-SEQ library synthesis - helping solve a global issue in genomics. RNA sequencing is the fastest growing segment in genomics - vital for cutting-edge cancer diagnostics, pharmaceutical development, and food security. These hurdles pose significant impediments to advancements in genomics as well as reproducibility of research.

Our technology breaks down barriers by cutting time and cost and providing high accuracy and strandspecificity — empowering researchers and accelerating important discoveries in genomics. We provide end-to-end RNA-SEQ services and RNA-SEQ library perpetration kits that no competitor can match.





Lloyd M. Kunimoto CFO lloyd@amforainc.com www.amforainc.com

Amfora Inc. is a venture funded biotech start-up focused on addressing the rapidly growing global demand for meat, dairy, and plant-based protein. Amfora is

developing feed crops with enhanced nutritional content to improve the efficiency and sustainability of meat and dairy production, and food products with enhanced protein content to address the growing consumer demand for plant-based protein.







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Amphasys was founded in 2012 as a spin-off from Axetris AG, a company of the Leister group. The company focuses its activities in developing and marketing a novel, chip-based single cell analysis technology. Amphasys'

mission is to simplify, speed up and miniaturize complex cell analyses and move them to the point-of-use, which may be outside well-equipped research and analytical laboratories. The basic technology has been developed in 2004 in collaboration with the Swiss Federal Institute of Technology Lausanne (EPFL). Consequently, several years of research with different cell types

proved that the technology is suitable for a wide array of applications. So far, two of the most promising fields turned out to be analysis of pollen and milk. Amphasys is a speedily growing high tech company dedicated to reinventing single cell analysis and applying it to industrial production processes.





Jeremy Warren
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Astrona Biotechnologies is producing an easy-to-use, hand-held pathogen detection device that can be deployed on-site at every phase of food production from field to table. Our device uses our proprietary technology to detect the RNA of the pathogens allowing for the detection of bacteria, viruses and fungi without the need for a culturing step. The determination of pathogen presence can be obtained in 1 hour, much faster than current methods in which companies can wait days to receive their food safety testing results.





david.sypnieski@project-athena.com +1 916 599 9598 http://project-athena.com Bill Mitchel, Chief Marketing & Business Officer billm@project-athena.com / +1 415 999 9680

David Sypnieski, Founder & CEO

Land, food, water, and energy are earths essential natural resources used to power the world and our lives. However, the data of these resources is disaggregated, inaccessible, hard to utilize, thus making it of little or no use for enterprise and industrial business intelligence. Athena removes the friction from accessing and utilizing this data by processing and normalizing the vast amounts of public data and integrating it with private data through our business intelligence application. Our proprietary dynamic ontological model of land, food, water, and energy resources maps the relationships between these four primary resources creates invaluable business intelligence.



BIT

Ashish Malik
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Bee Vectoring Technologies is developing a disruptive crop production tool that helps farmers increase yields and improve the marketability of their crops in a sustainable and responsible way. The company is combining the benefits of biological crop protection products, which in recent years have emerged as alternatives to chemicals, with delivery to crops using bees which will become a viable application alternative to spraying. This unique and proprietary process enables a targeted delivery of crop controls to replace traditional crop spraying, resulting in better yields, superior quality and less impact on the environment without the use of water or disruptions to labor.







Troy Lionberger, PhD, Senior Manager, Technology Development troy.lionberger@berkeleylights.com / +1 (734)730 5983 www.berkeleylights.com

Berkeley Lights (BLI) is a California startup that has created an advanced single cell biology platform that couples a light-driven, cell positioning technology with microfluidics to dramatically accelerate a wide variety of complex biological workflows. BLI's fully automated platform, Beacon™, is being applied to applications ranging from the discovery and development of therapeutic antibodies and synthetic biology to, most recently, agricultural technology. In this talk, I will introduce our platform technology and the advanced capabilities we



have developed for areas outside of the agricultural space and explain how we are beginning to apply these capabilities to crop science applications.



Dr. Susan Turner, Senior Vice President – Research sturner@bioconsortia.com +1 530 400 8783 www.bioconsortia.com

Harnessing the benefits of the plant microbiome to improve crop productivity. Microbial development pipelines feature in the R&D operations of all major and most medium-sized seed and Ag input companies. Despite this intense interest, the discovery process remains challenging due to the vast diversity of microbes present in any environment and the complexity of plant, microbe and environmental interactions.

BioConsortia, Inc., addresses these issues through its patented Advanced Microbial Selection (AMS) process which uses a directed-selection approach for rapid and targeted identification of microbial consortia for crop improvement. The process utilizes iterative rounds of plant-microbe selection to evolve and select for microbes that are both inherently capable of plant colonization and contribute to plant growth.



Edwin J. Reidel, PhD
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CID AgTech is a full-service supplier of instruments for high throughput, non-destructive measurements and automated handling/assay of plants/seeds to the academic, breeding, and farming sectors.

CID AgTech was formed because its founders recognized the value of being the first distribution channel in North America for plant phenotyping and robotics tools. We work consultatively with clients to define the best available solution for their technical challenge. We offer expertise, experience, and credentials in the plant sciences, computer science and engineering. In addition, we can handle installation, service, and support locally – saving the time and expense of dispatching technicians from overseas.



Sebastian Schultheiss Managing Director sebastian.schultheiss@computomics.com www.computomics.com



Computomics' data analysis experts offer custom services for next-gen sequencing projects - from crop science to metagenomics.

Crops: We parse large genomic data sets for plant breeders, deliver breeding recommendations, and provide molecular biology insight to reduce crop area requirements.









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Delair is a leading French company in the professional drone market. Delair offers complete UAV solutions, including hardware, software and services for the agriculture, geospatial, transportation, energy, petrochemical, security and defense industries. With Delair, manufacturers benefit from powerful decision-support solutions based on aerial observation. Delair is represented in 80 countries with a global ecosystem of distributors and operators.



Kimothy L. Smith, DVM PhD EVP and Chief Science Officer Ksmith@excitepcr.com / +1 (202) 344-5138 www.excitepcr.com

ExcitePCR Corporation is developing the FireflyDXTM family of molecular diagnostic systems, portable devices offering rapid sample-to-result detection in less than 30 minutes using real-time polymerase chain reaction (PCR) chemistry. FireflyDX devices will be capable of multiplex assays and utilize single-use, disposable cartridges for lab-quality results at the Point-of-Need and Point-of-Care (PON / POC). The FireflyDX systems combine sample lysis, purification, realtime PCR analysis, and reporting of results. FireflyDX devices will be applicable to use in clinical and molecular diagnostic settings, agricultural screening in domestic sectors and developing countries, PON / POC monitoring of pathogenic outbreaks.



Alex Schultink, Founder and CEO alex@fortiphyte.com / +1 517 420 2955 www.fortiphyte.com

At Fortiphyte we identify natural disease resistance traits to accelerate the development of disease resistant crop varieties. Using disease resistant crops reduces the need for chemical controls, thereby improving the productivity, safety, and environmental sustainability of agriculture. We recently developed a tomato variety that is immune to the bacterial pathogens Xanthomonas and Pseudomonas. Our platform is applicable to all crop species and most plant pathogens, including fungi and nematodes, and we're seeking collaborations with seed companies interested in developing disease resistant crop varieties.





Patrick Zelaya Founder & CEO patrick@HeavyConnect.com +1 (831) 595-2329 www.heavyconnect.com

The HeavyConnect platform allows farming operations to streamline documentation of workflows reducing errors and wasted time. HeavyConnect subscribers use the HeavyConnect app on their existing mobile devices to collect and document accurate operational data and sync it with their office staff. The result is greater compliance with current Food Safety regulations and lower operational cost.





HUDSON RIVER Ferdinand Los, Chief Scientific Officer ferdinand.los@hudsonriverbiotechnology.com +31.6.4397.7427 www.hudsonriverbiotechnology.com

Hudson River Biotechnology (HRB) is a biotech company focused on improving crop productivity and quality for our customers. To this end, we employ novel breeding techniques to increase yields or introduce innovative traits. For example, we employ our SuRE target identification platform and CRISPR technology to increase the content of a specific compound or improve pest resistance. HRB was founded in 2015 and is located in the Netherlands. We collaborate with Wageningen University, are linked to StartLife Wageningen, and in 2015 received a prestigious Horizon 2020 grant from the EU to support our R&D program.



Stephen Young Co-Founder stephen@innovanutra.co / syoung@ucdavis.edu www.innovanutra.co

InnovaNutra Inc. is a 2015 Delaware registered C-corp with three employees. The company has its roots to the University of California, Davis. The company, funded by the National Science Foundation, is focused on developing bio-based

formulations for the food, agriculture and personal care industries that improve shelf-life of susceptible natural ingredients and provide consumer friendly labels.





Steve Nyikos Sales Director N.America/Asia steve.nyikos@lemnatec.com +1 425 785 3700 www.lemnatec.com

LemnaTec has been developing research platforms for digital plant phenotyping since 1998. Combining sophisticated software systems for data collection, image processing, and data analysis, with highly reliable hardware platforms, LemnaTec has become the global leader in this sector.

LemnaTec now introduces the new automated Germination Scanalyzer that images, stores, and analyzes your seeds to monitor their germination. The system is modular to match user requirements for throughput and capacity and can be installed in a climate controlled environment.





Alex Sparks Client Executive Alex.Sparks@douglasScientific.com +1 619 323 9018 www.lgcgroup.com

LGC Genomics offers an extensive selection of molecular biology laboratory services to accelerate your science utilizing our integrated tools. We strive to be a key partner to our customers from the early stages of genomic research including marker-assisted selection, breeding programs, QC and Pathology to get you to your final plant or seed selection. This is done by providing a wide variety of Genomics Testing Services, Genomics Reagents and Instrumentation products for DNA extraction, Sequencing, PCR and Genotyping.





Kiho Cho, DVM, PhD Founder and CSO kcho@logos4n.com +1 530 902 6596 www.logos4n.com

Logos4ⁿ was created to revolutionize genome information systems and their applications. The company name symbolizes its mission, which is to enlighten society by logic of the true nature and power that comes from dynamic configuration of A/C/G/T (4 to the nth power [n = number of nucleotides]). Logos4ⁿ focuses on developing protocols, computation algorithms, and systems for genetic surveillance of all life forms by exploiting individual-specific and dynamic genome information systems. Logos4ⁿ's Genetics Surveillance Technologies will support applications in a range of species (*e.g.*, plants, animals, humans, microbes) and fields, such as plant/animal breeding, pharmacogenomics, diagnostics, forensics, and fundamental biology.





Alan Perlstein
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Miraculex is an ag-biotech, developing technology to mass-produce the best tasting and healthiest natural sweeteners in the world – "Protein Sweeteners". Miraculex is using hydroponics & molecular biology to produce these proteins natural and recombinant that can be used for the medical, industrial and consumer markets.



Pheronym

nematodes.

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Pheronym uses pheromones from nematodes (microscopic roundworms) to control agricultural pests. Our first product, Nemastim, significantly improves the efficacy of beneficial nematodes, which are already in the market for insect control. Nemastim makes beneficial nematodes more effective (up to 5x) by telling them to search for new insects to infect. Beneficial nematodes are treated with Nemastim and then the activated nematodes are sprayed on the field. Since we can control nematodes, our second product in the pipeline targets plant parasitic nematodes, Pherocoat, our second product, is a seed coat product that protects young plants from plant parasitic





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PhytoAB Inc. located in Redwood City California, is a contract research organization and plant antibody R&D based services and products supplier. We are specializes in antibody production for plant research usage. We offer primary antibodies for different species of plant, mainly including Arabidopsis thaliana, rice, maize, beans, tomato and potato etc. Meantime, we also have secondary antibodies, and customized antibody production service. In addition, we also distribute seed germination pouches for seeds, roots and stress studies. PhytoAB is committed to providing scientists and researchers with the best customer experience and high quality products.







Karsten Temme, CEO +1 415 987 4408 www.pivotbio.com

Pivot Bio has developed a revolutionary suite of products that deliver nutrients on demand for row crops. Core to these products is ON Technology - the first microbes that fix nitrogen for corn, wheat, rice and other cereals. During the past five growing seasons, Pivot Bio has tested and proven a new approach to crop fertility that improves consistent nutrient availability throughout the growing season. In 2018, early adopters and partners will have the opportunity to test Pivot Bio's initial products.





Teri Slack Business/Product Development Lead Tslack@plexense.com +1 530 204 0938 www.plexense.com

Plexense is a biotech company that develops sensitive and simple assays to be used as tools for crop management and food safety. ACCEL ELISA™ offers up to 100x sensitivity over conventional assays with a simple 2-step method and easy integration into existing lab equipment. Current ACCEL ELISA™ products include kits that screen for Streptomycin, Oxytetracycline, Aflatoxin B1, and Aflatoxin M1. With our fully automated option, performing bio-

assays for small molecule detection has never been easier. Plexense is currently working to develop assay kits to screen for citrus greening disease, pesticides and hormones.





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Ravata delivers reagents like CRISPR to embryos with 100X the speed and 10X the efficiency of today's standards.



Edwin Grappin CEO, edwin.grappin@screenseed.com +336 29 68 93 34 www.screenseed.com

ScreenSeed accelerates the discovery of new solutions to optimize crop yield for the seed industry. ScreenSeed is a high-throughput phenotyping platform dedicated to the study of germination. Based on optical technologies and machine learning algorithms, it continuously monitors thousands of experiments. This is a powerful solution to screen a very large number of active compounds or traits and therefore to discover high-value innovations for the seed industry.

ScreenSeed is a French start-up currently under development and we are looking for partners to test one of our prototypes.







Jeffrey Verpaalen, Regional Sales Head jeffrey.verpaalen@seedprocessing.com / +1 831 319 7092 / www.seedprocessing.com

Seed Processing Holland (SPH) is a leading seed processing equipment manufacturer and we have a wide range of post harvesting equipment from small lab size models for R&D sites to high-capacity machines for processing sites. Equipment solutions for activities such as; seed threshing, extraction, drying, priming, germination testing, cleaning, conditioning, pelleting, and treating. SPH has its US office in Salinas CA with local technical support.





Dr. Nissim Yonash, Co-Founder & CEO yonash@seedwiz.com / +1 415-726-8993 / www.seedwiz.com

Seedwiz is a platform which enables the farmers to select the optimal seed variety. The GIS based platform, powered by cutting edge query algorithms, calculates the genetic potential of hundreds of varieties combined with location, environmental conditions, growing season, means of production, market

segment preferences, resistance to diseases and more. The product properties are being uploaded to Seedwiz database by the seed companies and distributors using an online uploading interface. Overall, Seedwiz generates a situation of improving business opportunities for farmers, distributors and seed companies.



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California. The company utilizes proprietary technology to develop, build and sell custom chemical sensors that provide solutions of great value to multiple industries. Because the sensors are miniaturized, inexpensive and require minimal power, they can be widely distributed and embedded in complex systems. SensIT is a member of the UC Davis Venture Catalyst DRIVE program and Inventopia with separate production and prototyping facilities headquartered in Davis, California.





Charles Pick, President

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seqID specializes in advanced genomic technologies for the agriculture sector. We work with the world's leading plant and animal breeders to source the newest technologies and we work with genomic technology companies to find agricultural markets for their innovations. Our goal is to advance genomic technology to allow the agricultural industry meet the demands of an ever growing global population.







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Since 1985, we have been developing products for and with our customers. In AgBio, picking single seeds, purifying DNA, seed phenotyping and monitoring germination using Synchron systems will enable you to automate your process from batch to data. From multiple batches with multiple seed types, the SeedPicker processes each seed batch into individual seeds for DNA extraction, germination and seed phenotyping. Our DNA extraction system purifies DNA up to 40,000 samples per day using semi-serial processing, rather than traditionally on a liquid handling robot. Using robotics in combination with automated imaging and analysis, our Germinator systems can fully automate the monitoring and analysis of germination processes.





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TerrAvion is the largest volume commercial provider of aerial imagery for agriculture. TerrAvion offers a combination of the lowest prices, frequent visits throughout the season, reliable and quick delivery, as well as integration with leading agronomy platforms. TerrAvion's imagery is used by agronomists and growers on millions of acres to assess moisture, fertility, pest, and disease issues, and to inform other key agronomic decisions. TerrAvion and its fixed winged program is the leader in providing imagery suited to guide a modern precision ag program, allowing growers to make the most informed decisions and get the highest return on their investments.





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TeselaGen's award-winning Synthetic Evolution™ information technology platform provides a seamless design-to-delivery solution for Ag-Tech, Industrial Biotech and Medical Biotech companies. TeselaGen's approach includes full optimization and automation, and best of breed DNA modification technologies coupled with advanced analytics and program management.



TeselaGen's patented automated protocol generation software is under exclusive license from Lawrence Berkeley National Laboratory in all fields of use. The core technology is used by thousands of researchers worldwide. The Synthetic Evolution™ Design, Build, and Test modules feed the Evolve machine learning pipeline that optimizes product development and radically shortens time to market.



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Tule installs a proprietary hardware sensor in farm fields to help growers make irrigation decisions. They provide growers with field-scale crop water use measurements (i.e., actual evapotranspiration), water stress forecasts and irrigation recommendations. Tule has sensors installed in over 1000 farm fields throughout California. working with some of the largest grape growers and almond growers in the state, as well as growers of corn, tomatoes and other crops.

Tom Shapland, PhD, is CEO and Cofounder of Tule (pronounced "too-lee"). He has a BS in Viticulture and Enology, a MS in Horticulture & Agronomy, and a PhD in Horticulture and Agronomy from UC Davis.







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Vibe is bringing the big-data revolution to the seed and grain industry for better quality, cost control and safer food.

Our grain analyzer is based on machine vision and analytics to measure, count, classify, visualize and report grain size, shape and color. Within 30 seconds the instrument provides absolute and objective results, that are both precise and reproducible. The complementary cloud-based software provides additional applications for grain research and development, business operations and quality control. We serve leaders in the grain supply chain by providing a great product, excellent customer service and fair business practices.





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A new platform technology for plant diagnostics.

XTB Laboratories, a startup from the University of California, Davis, created a tool that "sniffs out" plant disease before it can be seen. "This would allow companies and farmers to identify diseased plants and trees and remove them before they blight the whole field or orchard", says Cristina Davis, co-founder and chief science advisor of XTB Laboratories. She explains that diseased plants emit odors

unique to each disease, and XTB's technology analyzes samples of air near the plants to detect plant disease. This technology can detect a broad rand of plant diseases across multiple crops.

Yolo Robotics

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Yolo Robotics is developing small autonomous platforms to harvest high-value, labor-intensive crops to alleviate the labor shortage. We are a hybrid team of cutting-edge academics and industry-seasoned engineers. Our systems use deep learning to mimic human decision making and soft robotics to safely handle produce. Yolo Robotics' key differentiator is the architecture; we discovered economic and technical advantages to using large numbers of robots with smaller workspaces. Distributed automation like this disrupts conventional agricultural production by creating a plethora of labor. Our multi-robot systems provide persistent, individualized attention to each plant - the natural next in precision agriculture.

