

CAMBRIDGE, Mass., May 27, 2020

## Flagship Pioneering unveils: Invaio Sciences

- New company formed to reduce the use of pesticides globally by managing insect populations in more sustainable and targeted way

Flagship Pioneering, a unique life sciences innovation enterprise, today announced the unveiling of Invaio Sciences, a technology company that unlocks the potential of the planet's interdependent natural systems to solve pressing agriculture, nutrition and environmental challenges. Invaio Sciences has pioneered a novel approach to managing insect populations in a more sustainable and targeted way by controlling the nutritional function organ called an Obligate Microbial Symbiont (OMS) to alter insect health. This discovery, coupled with the deep understanding of the inner workings of insects by Invaio's diverse team of scientists, holds the potential to dramatically reduce the need for pesticide use globally – benefitting our agriculture, health and environment.

“By utilizing both human technology and nature's biology, Invaio is taking a novel approach to contemporary agricultural practices to dramatically reduce pesticide usage and substituting more sustainable, ecologically-based practices,” said Noubar Afeyan, Ph.D., founder and CEO of Flagship Pioneering. “This groundbreaking science with a variety of applications has the potential to achieve profound benefits in agriculture, human health and environmental sustainability.”

Insects—as pollinators, recyclers of nutrients, and food for other creatures—are essential for life on Earth. But insects are dying at an alarming rate due to factors such as climate change and the use of chemicals in farming. If society expects to feed the nearly 10 billion people projected to be alive in 2050, it is critically important to improve the health and performance of agriculturally vital insects.

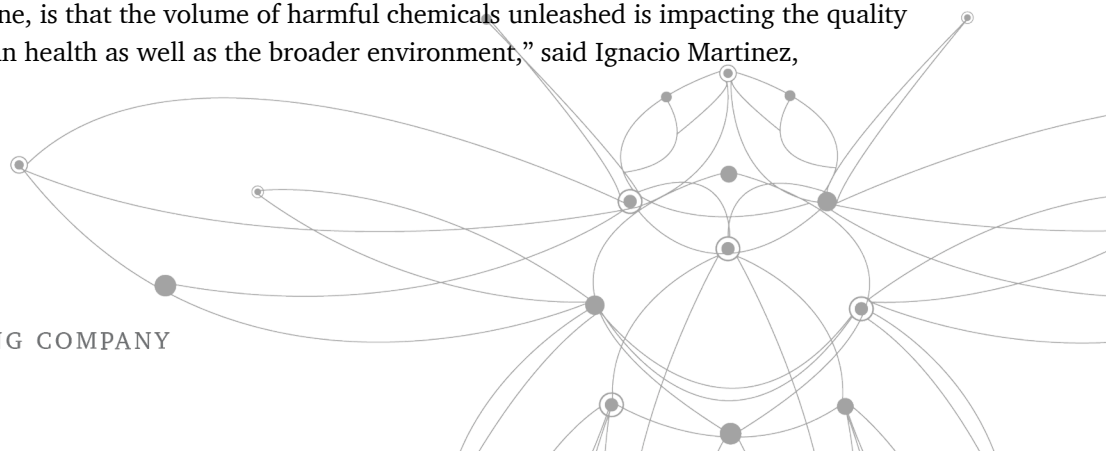
The physiology of insects is a game-changing area of discovery. Invaio Sciences is leading the way with a technology suite focused on Obligate Microbial Symbiont (OMS) as the gateway to modulating the health of agriculturally important insect populations. This can be accomplished by leveraging proprietary technologies which can deliver bioactive molecules to precise insect targets. Invaio's novel approach will revolutionize how society can manage insect population and health by, for example, supplying essential nutrients and vitamins lacking in the insect's diet, among other attributes.

“One of the enormous consequences that comes from the over one billion pounds of insecticides used every year in the United States alone, is that the volume of harmful chemicals unleashed is impacting the quality of the food supply and human health as well as the broader environment,” said Ignacio Martinez,

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Founding President and CEO and General Partner at Flagship Pioneering. “Through a focus on natural-based solutions and precision delivery and its connection to plant and soil health, Invaio’s revolutionary approach will refine agricultural practices in a far more sustainable and beneficial way.”

## **Precision Delivery: Physical and Biological Delivery Systems**

Through a focus on precision delivery, Invaio takes a more mindful approach to insect management. For biological delivery, Invaio leverages naturally derived systems that can be used to produce, protect and deliver a variety of active molecules – all biodegradable. The approach may also include a physical delivery system built upon proprietary 3D printed injection tips which deliver biological active molecules into a crop vascular system where they rapidly move throughout the plant for maximum protection.

“Innovation in traditional seed care technologies has reached its limits. Invaio’s innovation in precision delivery unlocks the uptake and translocation of delicate active ingredients,” said Robert Berendes, Ph.D., Executive Chairman of Invaio and executive partner at Flagship Pioneering. “This approach ensures that actives go only where they are needed, when they are needed, and in the amount, they are needed.”

## **Digital Technologies as part of the Integrated Solutions based approach**

As part of Invaio’s integrated solutions, the company is building a digital platform that integrates multiple disciplines (machine learning, artificial intelligence, data sciences, plant sciences and environmental sciences) to accelerate discoveries and reduce the sustainability impact of agriculture.

## **Lineage and Leadership Team**

Invaio built a diverse team with world-class capabilities and framed it around multidisciplinary sciences with systems thinking. Invaio’s multi-platform technologies leverage breakthroughs from diverse fields including human therapeutics, agriculture, environmental science, and advanced manufacturing. This vast industry experience ranging from agriculture, food systems, engineering, technology, biology, and ecology is led by:

- **Robert Berendes, Ph.D., Executive Chairman:** Robert joined Flagship Pioneering in 2014 as an advisory partner and in 2019 became an executive partner. Robert focuses on innovations that address sustainability in the agriculture and nutrition sectors. He currently serves as the chairman of Indigo Agriculture, CiBO Technologies and board member of Inari.
- **Ignacio Martinez, Founding President and CEO:** Ignacio joined Flagship Pioneering in early 2013 to lead the sustainability activities of the firm. He also focuses on entrepreneurial activities in life sciences more broadly, with a special interest in food, nutrition, and health. Ignacio is co-

founder and founding CEO of CiBO Technologies, Inari Agriculture and founding director at Indigo Agriculture.

- **Gerardo Ramos, Chief Scientific Officer:** Gerardo joined Invaio in 2018 after a long career in the life science industries in various senior R&D roles with Ciba Geigy, Novartis and Syngenta. During the last 10 years he served as the global Head of Crop Protection R&D at Syngenta where he was instrumental in building an unrivaled crop protection chemistry pipeline, a state-of-the-art R&D infrastructure and a world class team.

### **About Invaio Sciences**

Invaio Sciences is a multi-platform technology company that unlocks the potential of the planet's interdependent systems to address pressing agriculture, nutrition and environmental challenges. Founded by Flagship Pioneering in 2018, Invaio leverages discoveries from diverse fields including human therapeutics, agriculture, environmental science, and advanced manufacturing. The company's deep understanding of the physiology of insects and novel approach to managing insect populations in a more sustainable and precise way, promises to refine agriculture practices and reduce the need for pesticides globally. Invaio Sciences is dedicated to developing technology that's mindful of beneficials, bad for pests, and safer for us all. For more information, please visit: [www.Invaio.com](http://www.Invaio.com)

### **About Flagship Pioneering**

Flagship Pioneering conceives, creates, resources, and develops first-in-category life sciences companies to transform human health and sustainability. Since its launch in 2000, the firm has, through its Flagship Labs unit, applied a unique hypothesis-driven innovation process to originate and foster more than 100 scientific ventures, resulting in over \$30 billion in aggregate value. To date, Flagship is backed by more than \$3.3 billion of aggregate capital commitments, of which over \$1.9 billion has been deployed toward the founding and growth of its pioneering companies alongside more than \$10 billion of follow-on investments from other institutions. The current Flagship ecosystem comprises 39 transformative companies, including Axcella Health (NASDAQ: [AXLA](#)), Denali Therapeutics (NASDAQ: [DNLI](#)), Evelo Biosciences (NASDAQ: [EVLO](#)), Foghorn Therapeutics, Indigo Agriculture, Kaleido Biosciences (NASDAQ: [KLDO](#)), Moderna (NASDAQ: [MRNA](#)), Rubius Therapeutics (NASDAQ: [RUBY](#)), Seres Therapeutics (NASDAQ: [MCRB](#)), and Syros Pharmaceuticals (NASDAQ: [SYRS](#)). To learn more about Flagship Pioneering, please explore our website: [www.FlagshipPioneering.com](http://www.FlagshipPioneering.com).