

tHybrid – New Sustainable Technology For Infertility

Executive Summary

In the last 100 years, humans acquire the ability to use insects to suppress pest insects in agriculture, food storage as well as public health problems.

The recently emerged gene editing technology enables precise genomic modifications thus opens new exiting possibilities and applications in research, medicine and agriculture. tHybrid harness genetic editing for the development of better, safer and more sustainable tools for insects pest control by insects.

The need

In recent years, the growing use of chemical insecticides gives rise to increasing occurrence of resistance, creating a vicious cycle leading to application of increasing amounts of chemicals and eventually their fast deprecation. Similarly, the onset of insect resistance to Bt crop varieties shorten their shelf life and soon necessitates the development of alternative products. Since the development of substitute products is costly and estimated in the hundreds of millions (USD), there is a need for a cost-effective solution to extend the shelf life of pesticides and Bt seeds by restoring their efficacy.

Effective pest control is also a significant challenge when it comes to disease-transmitting insects to humans and farm animals causing billions of dollars in damage and costs lives. In these insects, apart from the loss of effectiveness of pesticides, their use is limited in residential areas.

The release of sterile insects, is an increasingly used sustainable solution to control insect populations in farmland, forests, cities and ports currently being implemented in more than 30 countries on millions of hectares. In the last decade, it was shown that release of infertile insects, from the species that developed resistance, can reduce and even eliminate the resistant population (Tabashnick 2010; Alphey & Alphey, 2016).

tHybrid aim is to develop new CRISPR\Cas9 technology that will enable production of low fertile insects. That is, tHybrid will generate new insects lines that will be mass-reared by insect manufacturers for the use of pest control; release in field, greenhouses, forest and public areas.

tHybrid insects are likely to be fitter, more competitive and viable compared to insects produced by existing methods as they do not undergo irradiation, nor fed on antibiotics, thus reducing the amount of releases required.



tHybrid insects are not considered GMO in most of the world and are expected to undergo easier regulatory pathway compared to GMO insects – a feature that can also serve the growing edible insects industry that seeks solutions for exporting insect eggs and outsource their breeding to other countries.

tHybrid is applicable for vector control by producing competitive and infertile mosquitoes males for release to suppress the population and restore susceptibility to pesticides.

tHybrid insects can prolong the effective product lifetime of insecticides and Bt varieties by releasing fit, non-GMO tHybrid insects for the purpose of resistance maintenance - the released tHybrid insects, will suppress the resistant population while eliminating the resistant allele.

tHybrid technology is generic and has the potential to be used in a variety of organism groups such as nematodes, bumblebees and even mammals.

tHybrid founders led by Dani Neifeld, a passionate serial entrepreneur with more than 20 years of experience in Agri-tech, including establishment of two startups and leading them up for sale.

Danny is accompanied by Yotam Zach, an enthusiastic and hungry proactive partner with a strong background in biology, economics, an extensive familiarity with the agritech ecosystem and a former social entrepreneur.

Israel is at the forefront of agricultural technology and research, and tHybrid capable and experienced R&D team led by Dr. Ido Carmel will utilize this knowledge and capabilities.

We are currently in talks to expand the partnership to be a global and establishing scientific and business advisory board with leading figures locally and globally

We are in the process of building our scientific and business teams and labs.

tHybrid is currently at the funding stage for POC of our first product.

Dani Neifeld, CEO