Avner Shenfeld, Hereditary Genet Curr Res 2018, Volume 7
DOI: 10.4172/2161-1041-C1-002

Activation of epigenetics passway for improving traits in different cultivars

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Improvement of agricultural methods and productivity is seen as one of the greatest challenges of the 21st century. In about two decades from now, the world population will be increased dramatically. This in turn will force food production to its limit. One potential solution for increasing food supply is by using epigenetics techniques. By applying moderate stress on plants plus specific selection process, we were able to apply phenotypic changes without affecting the plant genotyping. We, at Epigenetics, developed a non-GMO platform for improving seed traits, based on treatment and selection cycles. Results show an increase in yield potential of row crops, vegetables and ornamentals (Soybean, Corn, Pepper, Tomato, Chrysanthemum, Echinacea, Stevia and other). Indications show that Epigenetics treatment may expose a new source of genetic diversity through heritable epigenomic modifications. We concentrated our attention to the increased plant's growth and yield by manipulating genes that control the level of photosynthesis activity (photosynthetic rate). Increase energy supply (up to 80 to 100%) allows the plant to activate many new traits such as increase bio-mass, resistant to abiotic stress, resistance to herbicide side effects and better growth potential which associate with increased fruit to canopy fresh weight ratio. After activation of the epigenetics biochemical pass way, we introduced a selection process directed towards a chosen trait, toward biomass and yield increased. Our technology is blind to the origin of the plants: non-GM or GM, untouched their original properties while increasing their yield.

Figure 1: Effect of epigenetic treatment of soybean plants. First picture: control plant, next pictures: treated plants

Figure 2: Effect of epigenetic treatment of tomato plants. First picture: control plant, next pictures: treated plants

Biography

Avner Shenfeld is a founder VP, CTO, Chairman of the board and acting CEO of four start-ups that he founded. He earned his PhD in Biochemistry & Biophysics, from the Weizmann Institute of Science. He has proven experience at four biotech companies that he has founded since 1991 (Modus Biological Membranes Ltd., Lipogen Ltd., Lean-ex Ltd., and Epigenetics Ltd.,) all based on his own inventions, where he directed new products through all stages of development, clinical trials, approval and registration. His scientific activities covered many areas such as improving photosynthetic rates in different crops via epigenetics effects, metabolic diseases, anti-obesity drug, treatment of withdrawal symptoms from various addictions – structural changes in nerve cells, memory enhancement among elderly – effect of phospholipids on nerve cell membranes and development of a new diagnostic kit for clinical microbiology samples. His basic expertise is in cell membranes and lipids.