Technology Licensing Opportunity

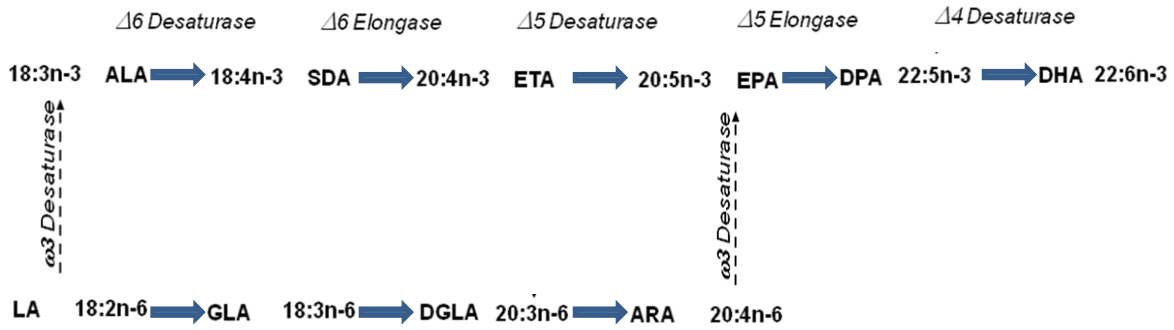
Non-Confidential Summary

Set of Genes for the Synthesis of Omega 3 Fatty Acids

ROI# 09-012

Opportunity:
Scientists at the University of Saskatchewan have isolated a novel and distinct desaturase and elongase genes that are capable of synthesizing VLPUFA in host organism.

Background:
Omega-3 emerged as a vital functional ingredient delivering significant heart health benefits. In 2007 cardiovascular diseases cost $431.8 billion in the U.S. alone pushing the growth of preventative medicine including functional foods. The growth helped omega 3 build a constant annual growth in demand of 21%. Fish oil is the traditional source of omega-3 and is unable to meet future demand due to depletion in resources therefore alternatives are currently being researched.



Invention:
The opportunity in the VLPUFA market provoked a race toward engineering the first oil crop with VLPUFA production ability. Synthesis of VLPUFA is a multistep process that involves desaturases and elongases. These enzymes are necessary for the addition of carbon to linoleic (v6-C18:29,12) and α-linolenic acid (v3-C18:3) to reach the beneficial 20-22 carbons molecules. Four different desaturases and elongases have been identified and tested from organisms capable of accumulating high levels of VLPUFA. The reported genes can be introduced into the targeted oil crop to assemble VLPUFA synthesis pathway

Industry Liaison Office
121 Research Drive, Suite 501
Saskatoon, SK, S7N 1K2
Tel: (306) 966-1465 | Fax: (306) 966-7806

Technology Licensing Opportunity

Non-Confidential Summary

Set of Genes for the Synthesis of Omega 3 Fatty Acids

ROI# 09-012

Researcher profile:

Xiao Qiu, Ph.D.
Associate Professor and Adjunct Research Officer, Plant Biotech Institute, National Research Council

B.Sc, M.Sc. Southwest University, China
Ph.D. University of Guelph, Canada

Recent publications

1. Mavraganis, I., Meesapyodsuk, D., Vrinten, P., Smith, M. and Qiu, X. 2010. A type II diacylglycerol acyltransferase from Claviceps purpurea with substrate preference towards ricinoleic acid, a hydroxyl fatty acid of industrial importance. Applied and Environmental Microbiology. 76: 1135-1142.
2. Meesapyodsuk D, Reed D, Covello P and Qiu X (2007): Primary structure, regioselectivity and evolution of the membrane-bound fatty acid desaturases of *Claviceps purpurea*. Journal of Biological Chemistry, 282: 20191–20199.
3. Wu, G., Truksa, M., Datla, N., Vrinten, P., Bauer, J., Zank, T., Cirpus, P., Heinz, E. and Qiu, X. 2005. Stepwise metabolic engineering of economically significant amounts of very long chain polyunsaturated fatty acides in plant seeds. Nature Biotechnology. 23: 1013-1017.

Patent Status:
Filed

Development Stage:
Isolated and functionally tested genes

For more information, please contact:

Zafer Dallal Bashi
(306) 966-5875
Zafer.bashi@usask.ca

Frank Su
(306) 966-1727
Frank.Su@usask.ca

Industry Liaison Office
121 Research Drive, Suite 501
Saskatoon, SK, S7N 1K2
Tel: (306) 966-1465 | Fax: (306) 966-7806