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HOPE AT THE INTERFACE OF **BIOPHYSICS AND NATURE**

FOCUS: Developing a way to make very long chain fatty acids as therapies to treat macular degenerative diseases, male infertility, gait problems, and dry skin.

The work of Dr. Anderson's lab could result in four breakthroughs for human health, all of which may come from a plant or a honeycomb.

The compounds at the center of this work are very long chain saturated (VLC-SFA) and polyunsaturated (VLC-PUFA) fatty acids, which are only found in retinal tissues, skin, brain, and sperm. A mutation in the gene that encodes the protein that makes these fatty acids causes Stargardt-like macular dystrophy, which affects children, eventually

leading to blindness; while a different mutation causes spinocerebellar ataxia-34 (SCA34), a neurodegenerative disease that causes loss of balance in older persons. In addition, male infertility and dry skin often appear to be related to a loss or reduction of these fatty acids.

The saturated fatty acids can be obtained from beeswax and may be useful for treating SCA34 and skin diseases, but the polyunsaturated fatty acids must be chemically synthesized, though that

process would not be economically feasible in poorer areas of the world.

"The Harrington Discovery Institute team suggested we look into plants as a source for VLC-PUFA—and we discovered that a plant called camelina had been genetically engineered by British scientists to produce an exceptionally high level of omega-3 fatty acids," Dr. Anderson says. "We are collaborating with them to produce VLC-PUFA in camelina seeds. If successful, it could become a breakthrough for supplying the world with these fatty acids."

"I've never had a team like Harrington that wanted me to succeed, and was always there to help...from the financial aspects to the marketing aspects, to simply providing input."

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