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**Highly oil-producing microalgae selected through directed-evolution on a microfludic chip** TROY MESTLER, ANDRE ESTEVEZ-TORRES, GUILLAUME LAMBERT, ROBERT H. AUSTIN, Princeton University — Some species of photosynthetic microalgae produce signi?cant amounts of oil which can be easily converted to diesel fuel. However, as it stands today, biodiesel is signi?cantly more expensive than fossil fuels. We wish to improve the oil yield and production rate of a single species of microalgae through directed evolution. We propose to utilize our microfabication technology to create microhabitats to control the nutrient environment of the species, monitor oil production through Raman Spectroscopy, and punish colonies of algae which have low oil yield. We believe this process will produce a mutant species with a high oil yield.

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