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(54) **Title**: COMPOSITIONS AND METHODS FOR PRODUCTION OF BIOFUELS

(57) **Abstract**: Provided is a method for producing C4 to C 14 fatty acids. The method entails providing genetically modified cells that express a heterologous animal TE-II and either a heterologous animal wild type FAS or a ΔTE-I-FAS. The TE-II and the heterologous wild-type or ΔTE-I-FAS are expressed as distinct molecules. The cells are cultured for a period of time, and the fatty acids are extracted either as free fatty acids or as glycerides from the cells and/or from the media in which the cells are cultured.