

PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION



RECIPIENT: Lygos

STATE: CA

PROJECT TITLE : Fermentative production of tricarboxylic acid cycle-derived chemicals using cellulosic sugars,

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001320	DE-EE0007565	GFO-0007565-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Lygos, Inc. to develop a low pH, anaerobic fermentation process that utilizes genetically engineered yeast to convert cellulosic glucose derived from non-food biomass into aspartic acid.

Activities associated with the proposed project would include the design and development of genetically engineered strains of the yeast *P. kudriavzevii*, development and testing of a bench-scale (15L volume or less) fermentation process using the genetically modified yeast, and chemical purification of aspartic acid from the fermentation broth. All work would be performed at the Lygos facility in Berkeley, CA within their existing laboratories that are purpose-built for the type of activities being proposed. The facility has all applicable permits in place, and would not need additional permits, licenses, or authorizations for the proposed activities.

Genetic modifications of *P. kudriavzevii* would involve selecting genes to up-regulate, down-regulate, introduce, or knockout in order to optimize the fermentation process by regulating the production of certain natural metabolites. No non-native metabolites are anticipated to be produced via the genetic modifications. The genetically engineered microbes that would be used fall under National Institute of Health (NIH) Biosafety Containment Level 1 (BSL-1), and would be handled and contained in appropriate laboratory space following established protocols that are consistent with federal, state, and local environmental regulations. Bio-safety cabinets would be used when appropriate. All yeast biomass and fermentation broth would be heat or chemically sterilized prior to disposal in accordance with NIH guidelines and all applicable regulations.

The proposed project would involve the use and handling of small quantities (<1L) of various hazardous materials including industrial solvents and chemicals. The Lygos facility is equipped to manage hazardous materials and has protocols in place for the handling and disposal of chemicals and waste. Company health and safety policies and protocols would be followed including employee training, personal protective equipment, and proper engineering controls.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410

(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Bioenergy Technologies Office
<http://energy.gov/eere/bioenergy>
This NEPA determination does not require a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 08/22/16

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Electronically Signed By Lori Gray Lori Gray Date: 8/22/2016
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager