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Langhorne, PA • 19047-1810
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TLX 846671 (ECOGEN)

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Amount	\$120
Fee Category	3M
Type of Fee	Amendment
Date Check	10/10/86
Date Completed	10/10/86
By:	S. Kimberley

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September 2, 1986

Ms. Judy Joustra
Nuclear Materials Office
Section B
King of Prussia, PA

Dear Ms. Joustra:

This is a request by Ecogen Inc. to amend our radioisotope usage license #37-20949-01, docket #030-22140, reference #29-20-847-01.

We request the use of the following isotopes in the amounts listed below:

<u>Isotope</u>	<u>Amount stored on premises</u>	<u>Amount used in individual experiment</u>
⁴⁵ Ca	5 mCi	10 uCi
³⁶ Cl	10 mCi	10 uCi
⁸⁶ Rb	20 mCi	10 uCi
⁴² K	25 mCi	10 uCi

In addition, we have applied to the state for a radioisotope usage license for ²²Na and ⁴⁸V to be used in the following amounts:

²² Na	1 mCi	10 uCi
⁴⁸ V	5 mCi	10 uCi

All isotopes listed above will be used to study ion transport in cells in culture in aqueous solution.

Appropriate safety procedures will be used including:

1. Use of isolated isotope-use rooms separated from the rest of the laboratory. remove most laboratory personnel from casual exposure.

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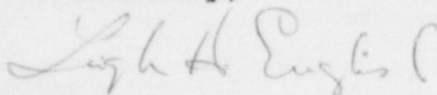
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2. Limit amount of isotope to 10 uCi/experiment.
3. Use of gloves, glasses, lab jackets when handling isotopes.
4. Use of protective plexyglass shielding to separate experiment from the investigator.
5. Use of absorbant bench cover to control spillage.
6. Constant monitoring of isotopes in use by benchtop monitor followed by post-experiment wipe test.
7. Use of disposable experimental equipment to avoid introduction of isotope into general laboratory equipment.
8. Storage area for concentrated isotopes and radioactive waste.
9. Film badge monitoring of all individuals exposed to the isotopes.

I also request that my name, Dr. Leigh English, Research Scientist, be included on this license as the investigator in charge of these isotopes. I am familiar with the practical use of these isotopes and have published several articles in which they were used. These are listed on my enclosed resume. I received technical training in the use of radioisotopes throughout my university education. Specific courses involving isotope handling included three graduate level courses in biophysics, and three graduate research courses in positron annihilation physics.

Would you please inform us of any further documents that may be required by your office to amend our license.

Sincerely,



Leigh H. English, Ph.D.
Research Scientist

LHE:bsm

cc B.C. Carlton
B.L. Levinson

Leigh H. English
Ecogen Incorporated
2005 Cabot Blvd. W.
Langhorne, PA 19047

PRESENT POSITION

Research Scientist, Ecogen Inc., March 1, 1986-Present.

EDUCATION

B.S. With Honors in Entomology, Cornell University, May 1976.

Graduate Special Student in Biochemistry, Cornell University, January 1977- August 1977.

Ph.D., Department of Entomology, North Dakota State University, May 1980.

S.T.M., Harvard University, (Concentration in Ethics, Science and Society), November 1982.

Postdoctoral Research Fellow, Harvard University, Department of Biochemistry and Molecular Biology, July 1981-June 1, 1985.

AWARDS AND HONORS

U.S. Department of Agriculture Predoctoral Training Award.
September 1977 -August 1980.

National Institutes of Health Postdoctoral Training Grant. June 1983 - June 1985.

PREVIOUS POSITIONS

Research Associate, Tufts University School of Medicine, Department of Physiology, June 1985-February 1986.

United States Department of Agriculture, Metabolism and Radiation Research Laboratory, Fargo, North Dakota. Co-op Student Fellow, September 1977 - August 1980.

Cornell University, Department of Entomology. Research Assistant, May 1976 - December 1976.

Ohio State Environmental Protection Agency. Summer Intern, 1974.

PROFESSIONAL SOCIETIES

Entomological Society of America
American Registry of Professional Entomologists, Certified in
Physiology/Biochemistry
American Association for the Advancement of Science
Nominated member of the American Society of Biological Chemists (1986)

SCIENTIFIC PUBLICATIONS

1. Tingey, W.M., J. Bergman and L.H. English. 1976. Potato flea beetle and potato leafhopper control on mineral soil-grown potatoes by foliar sprays. *Insecticide Acaricide Reports* 2, 65-66.
2. English, L.H. 1980. Stimulation of the sodium-potassium activated adenosinetriphosphatase by 20-hydroxyecdysone in cultured insect cells. U.S. Copyright Registration TX 650-218.
3. English, L.H. and E.P. Marks. 1981. Beta-(2-furyl)-acryloyl phosphate hydrolase activity in insect cell surface membranes. *Biochem. Biophys. Res. Commun.* 101, 775-783.
4. English, L.H., B.K. Magelky, and E.P. Marks. 1984. 20-Hydroxyecdysone-induced changes in the cell volume of lepidopteran cells associated with population dynamics. *In Vitro* 20, 71-78.
5. Yeh, L-A., L. Ling, L.H. English, and L.C. Cantley. 1983. Phosphorylation of the (Na,K)ATPase by a plasma membrane bound protein kinase in Friend erythroleukemia cells. *J. Biol. Chem.* 258, 6567-6574.
6. English, L. H., I.G. Macara, and L.C. Cantley. 1983. Vanadium stimulates ouabain-sensitive Rb⁺ uptake and blocks Friend cell erythropoiesis. *J. Cell Biology.* 97, 1299-1303.
7. Cantley, L., L-A. Yeh, L. Ling, J. Schulz, and L.H. English. 1983. Characterization of a plasma membrane kinase which specifically phosphorylates the (Na,K) pump. In: Structure and Function of Membrane Proteins (F. Palmieri, ed.) Elsevier-North Holland and Biomedical Press, 73-79.
8. Cantley, L., P.M. Rosoff, R. Levenson, I.G. Macara, L-A. Yeh, L. Ling, and L. English. 1985. Na⁺ and Ca²⁺ fluxes and differentiation of transformed cells. In: Calcium in Biological Systems (R.P. Rubin, G. Weiss and J. Putney, eds.) Plenum Press. 173-178.
9. English, L.H., L.C. Cantley, 1984. Characterization of monovalent ion transport systems in an insect cell (Manduca sexta embryonic cell line CHE). *J. Cell. Physiol.* 121, 125-132.
10. English, L.H., J. Epstein, L. Cantley, D. Housman, and R. Levenson. 1985a. Transfection of a ouabain resistance gene: Inducible K⁺ transport. *J. Biol. Chem.* 260, 1114-1119.
11. English, L.H., J. Epstein, L. Cantley, D. Housman, and R. Levenson. 1985b. Ouabain treatment induces an amiloride-sensitive K⁺ transport system in cells transfected with the ouabain resistance gene. In: The Sodium Pump. (I.M. Glynn and J.C. Ellory, eds.) The Company of Biologists Ltd. 193-196.
12. English, L.H. and L.C. Cantley, 1985. Delta endotoxin inhibits Rb⁺ uptake, lowers cytoplasmic pH, and inhibits a K⁺ ATPase in *Manduca sexta* CHE cells. *J. Memb. Biol.* 85, 199-204.
13. English, L.H., B. White and L. Cantley. 1985. Comparison of the Na⁺ pump and the ouabain resistant K⁺ transport system with other metal ion transport ATPases. In: New Insights Into Cell and Membrane Transport Processes (G. Poste and S.T. Crooke, eds.) Plenum Press, New York) 294-259.
14. English, L.H. and L.C. Cantley. 1986. Delta endotoxin is a potent inhibitor of the (Na,K)ATPase. *J. Biol. Chem.* 261, 1170-1172.

15. English, L.H., B. White, and L.C. Cantley. 1986. Membrane biochemistry of the ouabain resistant K^+ transport system. In: N.I.H. Symposia on Membrane Transport Processes. Academic Press. In Press.

16. English, L.H. and Schulz, J.T. 1986. Measurement of the Na pump in isolated cells. In Methods in Enzymology. In Press.

IN PREPARATION

17. Yeh, L-A., I. Macara, L.H. English, and L. Cantley. 1986 A decrease in (Na,K)ATPase phosphorylation parallels the decrease in ouabain-sensitive $^{86}Rb^+$ pumping during Friend cell erythropoiesis. In Preparation.

18. Schulz, J.T., English, L. H. White, B. Hauan, M., and Cantley, L. 1986. Biochemistry of the ouabain resistant K^+ transport system. In Preparation.

ECOGEN inc.

2005 Cabot Boulevard West
Langhorne, PA 19047-1810

9/16

Ms. Judy Joustra
Nuclear Materials Office
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