



## Exceptional Researchers and LI-COR Imaging Systems Driving Results

### Spotlight on Dr. Robert Lewis

Robert Lewis, Professor and Leader of the Cancer Genes and Molecular Regulation Program at the Eppley Institute for Research in Cancer and Allied Diseases at the University of Nebraska Medical Center, has been an Odyssey owner and user for nearly 8 years.



"I don't know if we make the most novel use of your equipment, but we are certainly appreciative of it and its abilities. It does make life easier for us in a lot of ways."

*"The Odyssey allows us to do things so much easier."*

*- Dr. Robert Lewis*

Supported by 2 NIH grants, Dr. Lewis's lab of researchers is primarily focused on the ways in which cells sense and manage their nutritional status to affect cell fate. They work in 3 disease areas: cancer, obesity, and diabetes. All of the work in these areas focuses on some function of KSR1 (kinase suppressor of RAS 1) and KSR2.

One interesting discovery the lab has made is that KSR1 knockout mice are resistant to tumors caused by the RAS oncogene (30% of human tumors have activated RAS alleles). Much of RAS signaling goes through pathways that require KSR1 and/or KSR2. Dr. Lewis's lab is interested in pursuing the possibility of therapeutics that manipulate KSR1, or effectors of KSR1, and their

potential to affect tumors without affecting the patient.

Another interesting discovery they have made is that KSR2 knockout mice become obese and insulin resistant as adults even though they eat slightly less and are more active than their normal siblings. They are obese because they expend less energy. This provides a new avenue for the lab to explore: how cells make decisions on how to store and expend energy. Manipulating KSR2 and how it works can help researchers understand and identify new targets for manipulating obesity.

Dr. Lewis is hopeful that his lab and others can find utility for identifying targets for susceptibility in tumors and targets for the regulation of energy expenditure and glucose homeostasis.

The Odyssey has been an important instrument in the Lewis lab, where they use the Odyssey for Western Blot and In-Cell Western™ Assays (ICW). Dr. Lewis explains that the Odyssey has given them the ability to perform ICWs and kinetic/time-course experiments for the phosphorylation of ERK at a rate that would not be possible by traditional methods.

## LINKS

For more information about Dr. Lewis, visit the Lewis Lab webpage below:

<http://www.unmc.edu/eppley/lewislab/>

"We were able to do complex time-course experiments and quantify them and do them very accurately."

When asked what he particularly likes about the Odyssey, Dr. Lewis responded, "The Odyssey allows us to do things so much easier. The 2-color aspect of it and the quantitative nature, the linear nature, allows us to do our experiments much more accurately and quantitatively. Film is not accurate and those who argue they're quantifying proteins by densitometry of images on X-ray film are just not convincing."

"Plus, for a complex laboratory, being able to keep, organize, and store the data digitally in the computer, coming out of the Odyssey, is huge as opposed to having film stuck in notebooks everywhere, and having to go back and find them. The old ways of organizing data are substandard and can lead to misplaced data."

*Dr. Lewis's appreciation for the Odyssey, his nearly 8 years of using the system to advance his research, and his publications that have resulted, qualify him as one of LI-COR's Odyssey Experts.*

## PUBLICATIONS

### Publications resulting from work on the Odyssey:

1. Emanuele Giurisato, Joseph Lin, Angus Harding, Elisa Cerutti, Marina Cella, Robert E. Lewis, Marco Colonna, and Andrey S. Shaw; The Mitogen-Activated Protein Kinase Scaffold KSR1 Is Required for Recruitment of Extracellular Signal-Regulated Kinase to the Immunological Synapse; *Mol. Cell. Biol.* 2009; 29 (6) : 1554-1564.
2. Gina L. Razidlo, Heidi J. Johnson, Scott M. Stoeger, Kenneth H. Cowan, Tadayoshi Bessho, and Robert E. Lewis; KSR1 Is Required for Cell Cycle Reinitiation Following DNA Damage; *J Biol Chem* 2009; 284 (11) : 6705-6715.
3. Angela M. Fusello, Laura Mandik-Nayak, Fei Shih, Robert E. Lewis, Paul M. Allen, and Andrey S. Shaw; The MAPK Scaffold Kinase Suppressor of Ras Is Involved in ERK Activation by Stress and Proinflammatory Cytokines and Induction of Arthritis; *J. Immunol.* 2006; 177 (9) : 6152-6158.
4. Robert L. Kortum, Heidi J. Johnson, Diane L. Costanzo, Deanna J. Volle, Gina L. Razidlo, Angela M. Fusello, Andrey S. Shaw, and Robert E. Lewis; The Molecular Scaffold Kinase Suppressor of Ras 1 Is a Modifier of RasV12-Induced and Replicative Senescence; *Mol. Cell. Biol.* 2006; 26 (6) : 2202-2214.
5. Robert L. Kortum, Diane L. Costanzo, Jamie Haferbier, Steven J. Schreiner, Gina L. Razidlo, Ming-Hoi Wu, Deanna J. Volle, Toshiyuki Mori, Hiroshi Sakae, Nina V. Chaika, Oleg V. Chaika, and Robert E. Lewis; The Molecular Scaffold Kinase Suppressor of Ras 1 (KSR1) Regulates Adipogenesis; *Mol. Cell. Biol.* 2005; 25 (17) : 7592-7604.
6. Gina L. Razidlo, Robert L. Kortum, Jamie L. Haferbier, and Robert E. Lewis; Phosphorylation Regulates KSR1 Stability, ERK Activation, and Cell Proliferation; *J Cell Biochem* 2004; 279 (46) : 47808-47814.
7. Robert L. Kortum and Robert E. Lewis; The Molecular Scaffold KSR1 Regulates the Proliferative and Oncogenic Potential of Cells; *Mol. Cell. Biol.* 2004; 24 (10) : 4407-4416.

**LI-COR**®

Biosciences

4647 Superior St. • P.O. Box 4000 • Lincoln, Nebraska 68504 USA  
North America: 800-645-4267 • International: 402-467-0700 • FAX: 402-467-0819  
LI-COR GmbH (Germany, Austria, Switzerland, Czech Republic, Hungary, and Slovakia):  
+49 (0) 6172 17 17 771 • LI-COR UK Ltd.: +44 (0) 1223 422104 • [www.licor.com](http://www.licor.com)

LI-COR is an ISO 9001 registered company. © 2011 LI-COR Inc. Specifications subject to change. LI-COR, In-Cell Western, and Odyssey are trademarks or registered trademarks of LI-COR, Inc. All other trademarks belong to their respective owners.