

# Connecting with Industry

Campus research programs bring together scientists and leaders from industry, government, and business associations as well as faculty from distinct academic disciplines. Their collaborations speak to the heart of our mission as a land-grant university – to innovate, and to transfer knowledge for the common good.

## **NEW DEVICE LINKS ACTIVITY LEVEL TO HEALTH OUTCOMES**

Getting an effective workout means knowing exactly how much energy and effort your body is expending. A team of scientists headed by Patty Freedson, chair of the Department of Kinesiology at UMass Amherst, is partnering with researchers and industry-leaders from around the country to develop a device that can obtain long-term measures of free-living physical activity using a wide range of sensors in a single unit. Their work is being funded by a four-year, \$2.1 million grant from the Exposure Biology Program of the National Institutes of Health's Genes, Environment, and Health Initiative.

The new device will include an accelerometer to measure body motion, a ventilation sensor to record characteristics of breathing, and a sensor to determine if the activity takes place indoors or out. The team is also designing statistical processing methods that combine all of the sensors' data to estimate the type of physical activity and the amount of energy expended. At the end of the term of the grant, the team expects to have an instrument ready for use in the field.



*Kinesiologists, engineers, and mathematicians at UMass Amherst are partnering with industry leader Actigraph and research firm Response Applications to build a better way to measure how physical activities shape our health.*



**Patty Freedson, Kinesiology professor and chair**

**“During the last 10 years, my research has focused on developing methods to capture and interpret movement assessed with wearable devices.” Freedson says.**

“This project moves the field forward by incorporating several sensors into one small unit. With the added sensors, we will improve our ability to quantify physical activity doses and thus better understand how much activity is needed for specific health outcomes.”

To develop the instrument, the UMass Amherst researchers are working with a private firm, Response Applications LLC of New Hampshire. In addition, the campus’s Office of Research Liaison and Development helped the team establish a partnership with industry leader Actigraph LLC. A physical activity monitor company based in Florida, Actigraph hopes to manufacture the device following its development in Freedson’s laboratory.

In addition to Freedson, the UMass Amherst team includes Professor JOHN STAUDENMAYER, Mathematics and Statistics, and Professor JANE KENT-BRAUN, Kinesiology. Other team members are Professor ROBERT GAO, Mechanical Engineering, now at the University of Connecticut, HAROLD GREELY, from Response Applications, and DAVID BASSETT, Exercise, Sport, and Leisure Studies, at the University of Tennessee.

