OBJECTIVES/SPECIFIC AIMS: Obesity is a rapidly growing epidemic and long-term interventions aimed to reduce body weight are largely unsuccessful due to an increased drive to eat and a reduced metabolic rate established during weight loss. Previously, our lab demonstrated that exercise has beneficial effects on weight loss maintenance by increasing total energy expenditure above and beyond the cost of an exercise bout and reducing the drive to eat when allowed to ad libitum (relapse). We hypothesized that exercise’s ability to counter these obesogenic-impetuses are mediated via improvements in skeletal muscle oxidative capacity, and tested this using a mouse model with augmented oxidative capacity in skeletal muscle.

METHODS/STUDY POPULATION: We recapitulated the exercise-induced improvements in oxidative capacity using FVB mice that overexpress lipoprotein lipase in skeletal muscle (mLPL). mLPL and wild type (WT) mice were put through a weight-loss-weight-regain paradigm consisting of a high fat diet challenge for 13 weeks, with a subsequent 1-week calorie-restricted medium fat diet to induce a ~15% weight loss. This newly established weight was maintained for 2 weeks and followed with a 24-hour relapse. Metabolic phenotype was characterized by indirect calorimetry during each phase. At the conclusion of the relapse day, mice were sacrificed and tissues were harvested for molecular analysis.

RESULTS/ANTICIPATED RESULTS: During weight loss maintenance, mLPL mice had a higher metabolic rate (p = 0.0256) that was predominantly evident in the dark cycle (p = 0.0001). Furthermore, this increased metabolic rate was not due to differences in activity (p = 0.2877) or resting metabolic rate (p = 0.4881). During relapse, mLPL mice ingested less calories and were protected from rapid weight regain (p = 0.0035), despite WT mice exhibiting higher metabolic rates during the light cycle (p = 0.0421). DISCUSSION/SIGNIFICANCE OF IMPACT: These results highlight the importance of muscular oxidative capacity in preventing a depression in total energy expenditure during weight loss maintenance, and in curbing overfeeding and weight regain during a relapse. Moreover, our data suggest that the thermic effect of food is responsible for the differences in metabolic rate, because no differences were found in activity or resting metabolic rate. Additional studies are warranted to determine the molecular mechanisms driving the ability of oxidative capacity to assist with weight loss maintenance.

OBJECTIVES/SPECIFIC AIMS: To describe the first release of Duke’s myResearchHome portal for researchers, and 2) the methods and results of adoption strategies implemented as part of this portal. Through methods described previously (cite ACTS poster, 2016), the myResearchHome portal team conducted a needs assessment to determine priorities for inclusion in the tool. Based on results of that assessment, the “minimal viable product” launched in June 2016 included the following features, organized into 9 distinct widgets: Access to all web-based research applications; ability to find and request research services; at-a-glance view of financial, protocol, and salary distribution information; access to financial and personnel reports; access to status of agreements and patents; access to CTSA-supported navigation services; visibility into required training and expiration dates; listing of announcements relevant to researchers; customized links to portal and CTSAs; and financial and personnel reports. The portal was developed using Ruby on Rails™, with a REACT grid framework. The development team, internal to Duke University, followed industry-standard best practices for development. After the initial release, the team employed several strategies to ensure awareness and adoption. Although written communications were an important factor for awareness, the presentations and hands-on sessions proved most important. RESULTS/ANTICIPATED RESULTS: Use of the portal was directly related to in-person outreach efforts. There were small spikes after written communications, but strategies such as presentations, hands-on demonstrations, training sessions, and faculty meetings garnered the steadiest adoption rates. As of early January 2017, almost 3000 users have interacted with the portal, with numbers rising steadily. There are an estimated 10,000+ faculty, staff, and trainees engaged in research at Duke. DISCUSSION/SIGNIFICANCE OF IMPACT: To maintain high adoption rates with the research community, engagement strategies must be ongoing. In addition to frequent in-person demonstrations, updates via written communications, and attendance at events, the portal team will employ a key adopt strategy—engaging the researchers in ongoing needs assessments. By maintaining the portal’s relevance to the needs of the research community, the tool can better improve the efficiency of research at a large academic medical center.