autologous activated T-cells in a dose-dependent manner. DISCUSSION/SIGNIFICANCE OF IMPACT: In this cross-sectional study of patients of the UT Southwestern Cutaneous Lupus Registry, we observed differences in the levels of MDSCs among PBMCs of CLE patients Versus healthy controls. CLE patients had significantly higher levels of MDSCs, which could be explained by the presence of an inflammatory state in this group. Furthermore, CLE MDSCs were able to suppress autologous T cells, showing that these cells are functionally patent in CLE blood. Their up-regulation in CLE blood may represent the body's response to limiting disease severity, since most patients had mild disease activity.

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CYP2C19*2 and PON1 Q192R polymorphisms are associated with platelet reactivity to clopidogrel in Puerto Rican Hispanics with cardiovascular disease

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OBJECTIVES/SPECIFIC AIMS: High on-treatment platelet reactivity (HTPR) with clopidogrel imparts an increased risk for ischemic events in adults with coronary artery disease. Although more potent antiplatelet agents are available, clopidogrel remains the most commonly used P2Y12 inhibitor in Puerto Rico. Platelet reactivity varies with ethnicity and is influenced by both clinical and genetic variables; however, no clopidogrel pharmacogenetic studies with Puerto Rican patients have been reported. Therefore, we sought to identify clinical and genetic determinants of on-treatment platelet reactivity in a cohort of Puerto Rican patients with cardiovascular disease. METHODS/STUDY POPULATION: We performed a retrospective study of 111 Puerto Rican patients on 75 mg/day maintenance dose of clopidogrel. Patients were allocated into 2 groups: Group I, without HTPR; and Group II, with HTPR. Clinical data was obtained from the medical record. Platelet function was measured ex vivo using the VerifyNow® P2Y12 assay and HTPR was defined as P2Y12 reaction units (PRU) ≥230. Genotyping of CYP2C19, ABCB1, PON1, PY2R12, B4GALT2, CES1, and PEAR1 was performed using Taqman® Genotyping Assays. RESULTS/ANTICIPATED RESULTS: The mean PRU across the cohort was 203 ± 61 PRU (range, 8–324), and 42 (38%) patients had HTPR. One in four individuals carried at least 1 copy of the CYP2C19*2 variant allele. Hematocrit and PON1 p.Q192R variant were inversely correlated with platelet reactivity ($p < 0.05$). Multiple logistic regression showed that 27% of the total variation in PRU was explained by a history of diabetes mellitus, hematocrit, CYP2C19*2, and PON1 p.Q192R. Body mass index (OR = 1.15; CI: 1.03–1.27), diabetes mellitus (OR = 3.46; CI: 1.05–11.43), hematocrit (OR = 0.75; CI: 0.65–0.87), and CYP2C19*2 (OR = 4.44; CI: 1.21–16.20) were the only independent predictors of HTPR. DISCUSSION/SIGNIFICANCE OF IMPACT: In a representative sample of Puerto Rican patients with cardiovascular disease, diabetes mellitus, hematocrit, CYP2C19*2, and PON1 p.Q192R were associated with on-treatment platelet reactivity. These factors may identify a subset of patients at higher risk for adverse events on clopidogrel in the Hispanic population.

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Day-to-day association between alcohol use and physical activity in university students

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OBJECTIVES/SPECIFIC AIMS: The goal of the present study was to advance our understanding of how alcohol use may contribute to physical inactivity among university students by investigating this association at a day-to-day level. METHODS/STUDY POPULATION: In total, 57 university students (Mage = 20.27; 54% male) completed daily diary questionnaires using a cellphone application, which prompted them each evening to report minutes of moderate/vigorous physical activity engaged in, and number of alcoholic drinks consumed, as well as intended minutes of physical activity for the following day. Longitudinal mixed-level modeling was used to disentangle within person and between-person effects of alcohol use on physical activity behavior and intentions. Separate models were run to investigate lagged effects of previous day alcohol use. We controlled for sex and age in all models. RESULTS/ANTICIPATED RESULTS: Results indicated that participants' usual alcohol use (between-person) was not associated with physical activity behavior or intentions. At the within-person level, day-to-day variance in alcohol use was negatively associated with both physical activity behavior ($\gamma = -0.34$, $p = 0.003$) and intentions to engage in physical activity the following day ($\gamma = -0.70$, $p < 0.001$). The lagged model indicated that previous day alcohol use negatively predicted PA behavior ($\gamma = -0.33$, $p = 0.004$). DISCUSSION/SIGNIFICANCE OF IMPACT: Previous studies have largely been constrained to cross-sectional designs, and have surmised that there exists a positive association between alcohol use and physical activity due to trait-level differences between university students. We advance this literature by using ecological momentary assessment to investigate the within-person effects of alcohol use on physical activity at a day-to-day level while controlling for between-person variance. Contrary to existing literature, we found that on days when students consumed relatively more alcohol than they typically report, they: (a) report fewer minutes of physical activity on the same day, (b) plan to engage in relatively less physical activity on the subsequent day, and (c) engage in less physical activity on the subsequent day. By advancing our understanding of how alcohol use may curtail other health behaviors such as physical activity, we inform interventions that aim to target these behaviors in conjunction, or as part of a multiple behavior change intervention.

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Decoding/encoding somatosensation from the hand area of the human primary somatosensory (S1) cortex for a closed-loop motor/sensory brain-machine interface (BMI)

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OBJECTIVES/SPECIFIC AIMS: A brain-machine interface (BMI) is a device implanted into the brain of a paralyzed or injured patient to control an external assistive device, such as a cursor on a computer screen, a motorized wheelchair, or a robotic limb. We hypothesize we can utilize electrical stimulation of subdural electrocorticography (ECoG) electrodes as a method of generating the percepts of somatosensation such as vibration, temperature, or proprioception. METHODS/STUDY POPULATION: There will be 10 subjects, who are informed, willing, and consented epilepsy patients undergoing initial surgery for placement of subdural ECoG electrodes in the brain for seizure monitoring. ECoG will be used as a platform for recording high-resolution local field potentials during real-touch behavioral tasks. In addition, ECoG will also be used to electrically stimulate the human cerebral cortex in order to map and understand how varying stimulation parameters produce percepts of sensation. RESULTS/ANTICIPATED RESULTS: To determine how tactile and proprioceptive signals are integrated in S1, we will perform spectral analysis of the broadband local field potentials to look for increased power in specific frequency bands in the ECoG recordings while touching or moving the hand. To explore generating artificial sensation, the subject will be asked to perform a variety of tasks with and without the aid of stimulation. We anticipate the subject's performance will be enhanced with the addition of artificial sensation. DISCUSSION/SIGNIFICANCE OF IMPACT: Many patients might benefit from a BMI, such as those with stroke, amputation, spinal cord injury, or brain trauma. The current generation of BMI devices are guided by visual feedback alone. However, without somatosensory feedback, even the most basic limb movements are difficult to perform in a fluid and natural manner. The results from this project will be crucial to developing a closed loop motor/sensory BMI.

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Designing for dissemination: Characteristics of Clinical and Translational Science Award (CTSA) hubs as adopters of clinical and translational science innovation

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OBJECTIVES/SPECIFIC AIMS: The Clinical and Translational Science Award (CTSA) program is a national consortium of 50+ academic medical research centers charged with accelerating the translation of clinical research. In 2017, the NIH National Center for Advancing Translational Sciences anticipates total CTSA program funding of over $500M. The consortium's hub-and-spoke structure makes it a natural dissemination network, and the newest funding announcement makes dissemination of innovation across the consortium an explicit goal, but characteristics of CTSA hubs as adopters and transmitters of innovation are unknown. METHODS/STUDY POPULATION: A content analysis was conducted using data from CTSA hub Web sites (n = 64) and a structured coding taxonomy based on 6 constructs drawn from literature about diffusion of innovation in service organizations (Greenhalgh *et al.*, 2004): dissemination priority, institutional complexity, communication infrastructure,