of intermediates of SPM synthesis pathways and end-product SPMs in the plasma of patients with peripheral artery disease (PAD). METHODS/STUDY POPULATION: A cross-sectional sample of 52 patients with PAD was recruited at the San Francisco Veterans Affairs Medical Center. PAD was defined as the presence of claudication symptoms and an ankle-brachial index <0.9, or a history of revascularization for claudication. Patients were excluded if they were taking immunosuppressive medications, had a severe acute illness (infection, surgery, illness, critical limb ischemia) within the last 30 days, or had severe hepatic, renal, or nonvascular inflammatory disease. Intermediates of SPM synthesis pathways and end-product SPMs were measured in plasma samples of patients by liquid chromatography-tandem mass spectrometry. RESULTS/ANTICIPATED RESULTS: The average age of the cohort was 69 ± 6.3 and patient comorbidities reflected common comorbidities associated with PAD (hypertension 96%, hyperlipidemia 87%, diabetes mellitus 42%, coronary artery disease 34%). Rutherford categories, measurements of PAD symptom severity, ranged from 0 to III (0 10%, I 40%, II 27%, III 23%). Three EPA products were measured: 18-hydroxyeicosapentaenoic acid (18-HEPE), resolvin E1 (RvE1), and resolvin E2 (RvE2). 18-HEPE, an intermediate of SPM synthesis, was detectable in the plasma of every patient (median: 105 pg/mL, IQR: 54.9–195), whereas the SPM end-products, RvE1 and RvE2, were only detectable in 6 and 10 patients, respectively. In total, 7 DHA products were measured: 14-hydroxydocosahexaenoic acid (14-HDHA), 17-HDHA, resolvin D1 (RvD1), resolvin D2 (RvD2), protectin D1, protectin DX, and maresin 1. The intermediates 14-HDHA (median: 6546 pg/mL, IQR: 3329–12061) and 17-HDHA (median: 644 pg/mL, IQR: 340–1056) were detectable in the plasma of every patient. However, the end-products RvD1, RvD2, protectin D1, protectin DX, and maresin 1 were identified in less than half of the cohort. DISCUSSION/SIGNIFICANCE OF IMPACT: We report the presence of several intermediates of SPM synthesis pathways (18-HEPE, 14-HDHA, and 17-HDHA) in every patient but the presence of SPM end-products in only a limited portion of the cohort. These results suggest that some patients with PAD may have a deficit of SPMs. Further investigation is required to better understand the role of SPMs and mediators of resolution of inflammation in PAD.

2549

Characterizing the expression kinetics of HIV-1 envelope protein

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OBJECTIVES/SPECIFIC AIMS: Characterize the expression kinetics of HIV-1 Envelope and their relationship to virus production at the cellular level. METHODS/STUDY POPULATION: In vitro and ex vivo laboratory analyses. RESULTS/ANTICIPATED RESULTS: Initial studies addressing the kinetics of cell surface. Envelope (Env) expression reveal that Env expression to peaks on day 2 post infection. Next steps include a series of experiments to compare the kinetics of Env cell surface expression with broadly neutralizing antibody (bNAb)-mediated ADCC and the characterization of virus production kinetics in this same context. To be maximally effective, ADCC elimination of infected cells should occur before peak Env expression. DISCUSSION/SIGNIFICANCE OF IMPACT: Potent bNAbs to HIV-1 recognize vulnerable sites on the HIV-1 Envelope (Env) protein and are of great clinical interest due to their potential use in the prevention and treatment of HIV-1 infection. Their effectiveness depends not only on the neutralization of viral infectivity, but also on the elimination of productively infected cells via antibody-dependent cellular cytotoxicity (ADCC). On a cellular level, ADCC dynamics are determined by the timing and level of Env expression on the surface of HIV-infected cells. This study aims to delineate the expression kinetics of HIV-1 Envelope and their relationship to virus production. We expect that it will provide new insights into the utility of bNAb-mediated ADCC in treating and possibly curing HIV-1 infection; therefore results might have substantial impact on future HIV treatment strategies.

2433

Community forums as a channel for communicating with the public and to influence perceptions of cancer clinical trials

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OBJECTIVES/SPECIFIC AIMS: Cancer clinical trials (CCTs) are vital tools in the advancement of cancer prevention and treatment. Yet, only 3%–5% of eligible patients enroll in CCTs. Low participation can be attributed, in part, to poor communication as well as a lack of awareness and understanding about CCTs. In order to increase participation in trials, interventions should foster meaningful communication about cancer prevention and CCTs, especially between medical professionals and members of the community. Community forums provide a channel to communicate about cancer with members public and to educate prospective participants about CCTs. Thus, our goal was to evaluate the efficacy of hosting community forums about cancer in order to educate the public and influence perceptions of CCT participation. METHODS/STUDY POPULATION: During the Spring of 2016, participants (n = 51) who attended a community forum about CCTs completed a pretest and post-test survey assessing their understanding and perceptions of CCTs. RESULTS/ANTICIPATED RESULTS: Results from the pretest to post-test survey revealed a significant positive increase ($p = 0.01$) in participants' attitudes toward cancer clinical research as well as marginally significant increases in participants' perceived subjective norms ($p = 0.06$) about participating in CCTs and the perceived personal relevance ($p = 0.06$) of clinical research participation pretest and post-test. DISCUSSION/SIGNIFICANCE OF IMPACT: Findings suggest that community forums about cancer and CCTs could lead to an increased awareness and understanding of CCTs among members of the population and could be useful channels for cancer interventions.

2350

Creating a comprehensive municipal inventory of common ragweed (*Ambrosia artemisiifolia*) to predict allergenic pollen exposures

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OBJECTIVES/SPECIFIC AIMS: One of the key difficulties in predicting allergenic pollen exposures has been a lack of information on source plant location and abundance. However, the increasing availability of spatially explicit data from remote sensing offers new opportunities to create comprehensive inventories of allergenic pollen producing plants. METHODS/STUDY POPULATION: In this study, we use a spatially oriented field survey to map common ragweed (*Ambrosia artemisiifolia*) in Detroit, MI, USA. We then combine this with remote sensing imagery and LiDAR to predict ragweed presence and potential pollen production across 344 km^2 of Detroit. Finally, we compare this with measurements of airborne pollen concentrations collected throughout the city. RESULTS/ANTICIPATED RESULTS: Our initial results show that ragweed is present in ~2% of the city, and its presence and abundance are strongly associated with demolished building ($p < 0.001$). The uneven distribution of ragweed plants across the city leads to substantially higher pollen concentrations in neighborhoods where more buildings have been recently demolished. DISCUSSION/SIGNIFICANCE OF IMPACT: Our approach offers an effective way to quantify allergenic pollen production, airborne concentrations, and exposures across a large metropolitan area. This in turn provides insight on how to best reduce airborne pollen concentrations: in this case, by changing post-demolition land management practices.

2456

Cutaneous lupus erythematosus patients have increased circulating myeloid-derived suppressor cells with immunosuppressive properties

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OBJECTIVES/SPECIFIC AIMS: MDSCs are potent suppressors of T cell function, and have been recently found to be implicated in skin diseases driven by T cell dysregulation. However, the function of MDSCs in CLE is poorly understood. We sought to characterize the MDSC population in the peripheral blood of DLE patients and evaluate their ability to suppress autologous T cells. METHODS/STUDY POPULATION: All patients were recruited through the UT Southwestern Cutaneous Lupus Registry. PBMCs from 32 CLE patients and 16 age-matched and gender-matched controls were analyzed using flow cytometry. Monocytic MDSCs were identified by the phenotype of CD14+ HLA-DR neg/low. Furthermore, autologous MDSCs and T cells were purified from CLE PBMCs (n = 4) and co-cultured at different ratios of these cells. T cell function was measured by secretion of IFN-γ by ELISA. RESULTS/ANTICIPATED RESULTS: Monocytic MDSCs in CLE PBMCs (median: 2.04%, IQR: 0.67%–5.07%) were significantly higher compared with healthy control PBMCs (median: 0.5%, IQR: 0.1%–1.07%, $p = 0.002$). Although not significant on subset analysis, patients with CLE limited to the head and neck had the highest levels of MDSCs. CLE MDSCs (n = 4) were found to suppress

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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.

2042

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) $\geq$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 $\pm$ 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.

2269

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.

2327

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,

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