meta-analysis. A secondary goal was to compare brain alterations in metabolically healthy (MHO) and unhealthy (MUO) obesity. METHODS/STUDY POPULATION: Source data were peer-reviewed studies reporting locations of gray-matter alterations in group-average, case-control contrasts (obese vs. non-obese) cohorts, performed in a whole-brain, voxel-wise manner. Both voxel-based morphometry and voxel-based physiology studies were included. Three coordinate-based meta-analyses were performed: Pooled (MUO + MHO), MHO, and MUO. RESULTS/ANTICIPATED RESULTS: Thirty-two studies reporting a total of 50 case-control contrasts (MHO, 23; MUO, 27) met inclusion criteria, representing 3,368 participants (obese, 1,781; non-obese, 1587). The pooled analysis yielded 8 cerebral foci (3 nuclear, 5 cortical) in regions implicated in reward-seeking, cognitive, and interoceptive behaviors. MHO yielded 7 cerebral foci (4 nuclear, 3 cortical), partially overlapping Pooled results, with similar behavioral loadings. The MUO pattern was distinct, with 3 cerebellar and 1 occipital foci. DISCUSSION/SIGNIFICANCE: Brain alterations occurred reliably in obesity. The dominant pattern (Pooled & MHO) involved cerebral reward-system circuits, evident even in metabolically healthy obesity. Cerebellar alterations occurred exclusively in metabolically unhealthy obesity, a pattern previously reported in metabolic syndrome.

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Connecting computational models of reading to the brain in post-stroke alexia

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OBJECTIVES/GOALS: Many left hemisphere stroke survivors have a reading disorder (alexia), which is experienced as decreasing well-being. Therapies produce inconsistent results, demonstrating a need for treatment response predictors. We are investigating neural correlates of reading computational models to identify biomarkers to improve therapeutic outcomes. METHODS/STUDY POPULATION: Artificial neural network models of reading, mapping between orthography (visual word form), phonology (auditory word form), and semantics (word meaning), are trained to read single words at a healthy, adult capacity. The models are independently damaged to reflect the individual orthography-to-semantics, semantics-to-phonology, and orthography-to-phonology deficits of a sample of left hemisphere stroke survivors (n = 85). These deficits are measured with cognitive tests assessing the intactness of mappings between representations. Model damage is enacted by removing percentages of the connections between representations. For each type of deficit, the percentages of links removed are entered into a voxel-based lesion symptom mapping analysis to identify areas of cortex associated with that mapping. RESULTS/ANTICIPATED RESULTS: We anticipate that the neural correlates of model layers will be localized to a mostly left-lateralized network. Increased damage to the links between semantics and phonology in the model will likely be related to lesions involving the left posterior superior temporal sulcus and inferior frontal gyrus (IFG). Damaged orthography-to-semantic links will be related to the left fusiform gyrus (FG) and

IFG. Finally, damage to the orthography-to-phonology links will be related to the left FG and superior temporal gyrus. DISCUSSION/SIGNIFICANCE: Mapping components of language models onto the brain will improve our understanding of the neural networks supporting language processing. Identifying these neural correlates may also produce biomarkers that can be used in predicting reading impairment at the acute stage or optimizing therapy in the chronic stage of stroke.

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The Effect of Regional Anesthesia on Breast Cancer Recurrence

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OBJECTIVES/GOALS: To determine the impact of regional anesthesia (RA) on rates of breast cancer recurrence, breast cancer specific mortality, post mastectomy pain syndrome, and chronic opioid use among patients who received regional anesthesia during primary breast cancer surgery. METHODS/STUDY POPULATION: Study population: Patients who underwent primary breast cancer surgery at Emory University and among a national patient cohort. Methods: This is a retrospective analysis of patients who underwent primary breast cancer surgery. Invasive breast cancer specific survival & breast cancer-specific survival will be estimated using Kaplan-Meier method and compared among patient groups. Cox proportional hazards will be utilized to estimate the unadjusted & adjusted risk of breast cancer recurrence and breast cancer-specific mortality between the two groups. RESULTS/ANTICIPATED RESULTS: We will present on our work comparing rates of breast cancer recurrence among patients who received regional anesthesia compared to patients who did not. DISCUSSION/SIGNIFICANCE: This study aims to establish the effect of regional anesthesia on breast cancer recurrence, breast cancer specific mortality, post mastectomy pain syndrome, and chronic opioid use following primary breast cancer surgery.

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Effects of Dietary Nitrate Supplementation on Vascular Function in Individuals with Prediabetes

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OBJECTIVES/GOALS: Impaired vascular function, a subclinical marker of cardiovascular disease, has been identified in prediabetes. Dietary nitrate supplementation has been shown to improve vascular function. However, this has not been studied in prediabetes. The purpose was to determine the effects of dietary nitrate on vascular function in prediabetes. METHODS/STUDY POPULATION: Five individuals with prediabetes (4 men, 1 woman; 55 ± 17 yr; HbA1c = 5.8 ± 0.2) participated in a double-blind, placebo-controlled, repeated measures study. Participants were randomly assigned to a 3-day nitrate supplementation (nitrate-rich beetroot juice, 12.9 mmol, 140 mL), or a placebo supplementation