OBJECTIVES/GOALS: The A2CPS was funded by the National Institutes of Health (NIH) Common Fund to identify biomarkers and their collective biosignatures (combination of several biomarkers) that predict susceptibility or resilience to the development of chronic pain. METHODS/STUDY POPULATION: The A2CPS includes 2-Multisite Clinical Centers (10 recruitment sites and 6 data collection sites), 1-Clinical Coordinating Center, 1-Data Integration and Resource Center, 3-Omics Data Generation Centers, and representation from the NIH. The A2CPS will recruit a large cohort from 2 different surgical interventions, total knee arthroplasty (n\textasciitilde1800) and thoracotomy (n\textasciitilde1800). This observational study will collect candidate and exploratory biomarkers across the following domains: clinical pain, fatigue, function, sleep, psychosocial, genomics, proteomics, metabolomics, lipomics, pain sensitivity, and brain imaging. Data will be collected before and up to 3 months after surgery to determine factors that predict chronic pain at 6 months. RESULTS/ANTICIPATED RESULTS: Recruitment started in 2021 following standard operating procedures and is ongoing at both Multisite Clinical Centers. The A2CPS will provide an example of collaborative, multidisciplinary efforts in establishing a data repository consisting of biopsychosocial markers that will be available to the research community to test novel hypotheses. This presentation will describe the conceptual design, study aims, biomarker selection, protocol standardization and study implementation for the A2CPS. An update on study progress and data completeness will be presented. Final results will be reported after study completion which is anticipated by 2024. DISCUSSION/SIGNIFICANCE: Identifying biomarkers and biosignatures that predict high- versus low-risk for the transition to chronic pain will inform future clinical trials, identify novel therapeutic targets, and advance personalized pain treatment strategies; ultimately transforming the prevention and treatment of chronic postsurgical pain.