

**Concept Clearance for the Common Fund Stimulating Peripheral Activity to Relieve
Conditions Program (SPARC)
Funding Opportunity: Targeted Needs to Achieve SPARC Program Goals**

Peripheral nerve stimulation to modulate organ function is rapidly developing as a therapeutic approach to a wide range of conditions. Clinical studies, often using a purely empirical approach, have yielded both promising successes and puzzling failures, highlighting an urgent need for clear mechanistic targets with a rational basis in anatomy and physiology. The SPARC program was launched in response to this need, with the goal of catalyzing the development of next-generation peripheral neuromodulation, or “bioelectronic medicine”, by providing access to high-value datasets, maps, and predictive simulations.

SPARC comprises five interdependent initiatives, supporting anatomical, physiological, and transcriptomic data collection across multiple organ systems (1), development of new sensing and stimulating technologies (2), data-rich clinical studies (3), and an online Data and Resource Center with core functionalities of data management, map synthesis, and computation and simulation (4). In association with the NIH-wide HEAL initiative, a recently launched SPARC initiative supports anatomical and functional characterization of neurovisceral circuits carrying pain signals (5).

The program has substantial accomplishments to date, most notably in neurogastroenterology, neurocardiology, biosensor development, and the promotion of data FAIR-ness (Findability, Accessibility, Interoperability, and Reusability), and has become the focal point of a multidisciplinary research, engineering, and increasingly, clinical ecosystem. To further the goals of the SPARC program and improve upon existing accomplishments, in FY20 the NIH SPARC team proposes to solicit applications through notices to the community to address specific program needs that will be identified through gap analysis of existing activities versus program goals by NIH program staff, feedback from external program consultants, and consensus of specific needs by the SPARC consortium. Examples of such targeted needs include: connecting disparate data types for accurate visualization (map-making) and simulations across organ systems, species, and sexes; and improving precision of modulation and sensing of nerve and organ activity. Addressing these needs will accelerate and enhance the characterization of novel neuromodulation targets. These activities fall within the scope of the original program concept cleared by the Council of Councils in June 2014.