



Stimulating Peripheral Activity to Relieve Conditions (SPARC)

Peripheral nerves, the nerves outside of the brain and spinal cord, make connections with and influence the function of every organ in the body. Neuromodulation of organ function could be a paradigm-shifting way of treating a variety of disorders and/or conditions. However, the underlying biology and potential mechanisms of action for neuromodulation therapies are poorly understood, and implantation points are chosen by trial and error. This uncertainty leads to unwanted side effects, as well as variability in clinical trial outcomes and responsiveness to treatment; it also hinders efforts to develop better devices. The design of more effective neuromodulation therapies requires knowing exactly what nerves must be stimulated and how they must be stimulated to achieve the desired effect on organ function. It also requires knowing exactly what nerves must be avoided to prevent unwanted side effects.

The Common Fund's SPARC program—Stimulating Peripheral Activity to Relieve Conditions—has the central goal of providing a basic understanding of the peripheral nervous system to catalyze development of new or more efficacious therapies based on neuromodulation of end-organ system function. It strives to address the following challenges identified by government, academic, and industry experts:

Challenges

- › The need for integrated functional/anatomical neural circuit maps
- › The development of next-generation tools to accelerate research
- › The need for ongoing partnerships between the NIH, U.S. Food and Drug Administration (FDA), and industry





NIH's Solution

The SPARC program will capitalize on recent advances in technology—and anticipated new technology developments facilitated by the program—to deliver detailed, predictive functional and anatomical neural circuit maps in multiple internal organs or organ systems.

These maps will be directly leveraged to develop and pilot novel electrode designs, with corresponding stimulation protocols and minimally invasive surgical procedures, to improve existing neuromodulation therapies or pursue new indications.

Concurrently, the SPARC program will develop next-generation tools for visceral nerves (optogenetics, stimulating/recording electrodes, cell-type specific tracing, etc.)—tools needed to achieve the aims in the initiatives described above.

Finally, the SPARC program will forge partnerships with industry, FDA, and funded teams to create new human data sets, link investigators to existing data sets, and explore the utility of existing therapeutic devices to address new indications.

Contact Information

To learn more about this program and future Funding Opportunity Announcements, please contact **SPARC program staff**: NIH-CF_SPARC@mail.nih.gov. You may also visit the NIH Common Fund SPARC website: <http://commonfund.nih.gov/sparc/index>.

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