

# Collections from *Nature Protocols*



**In 2023, *Nature Protocols* launched four new collections (on organoids, neural probes, cognitive neuroscience frameworks and neurostimulation) to help readers navigate our content and highlight areas of particular current interest.**

At *Nature Protocols*, we have always appreciated the challenges with finding exactly the right protocols for your lab. As our scope has recently expanded to cover content across all areas of the biological, chemical and clinical sciences, it can be time-consuming to browse through our full archive when looking for a new method. We see the benefit in grouping content under thematic umbrellas (called **collections**) and providing a continuously updated landscape of best-in-class research practices within each specific field. In 2009, we recognized the growing importance of stem cell research and published a collection on stem cells, which we updated regularly for a decade. Then, in 2019, we launched two new collections on **genome editing** and **green chemistry**, as these were areas of growing interest that we predicted would expand further. We invited other Nature Portfolio journals to contribute articles to these collections and, together, we update the content each year.

Of course, other journals in the Nature Portfolio have also set up cross-journal collections on a wide range of topics, which each contain a few of our Protocols. For example, there are collections on **antimicrobial resistance**, **cancer evolution**, **protein–lipid interactions**, **super-resolution microscopy**, **extracellular vesicles**, **bioelectronic interfaces**, and several specialized stem cell collections (for example, on **translational stem cell research** and **clinical use of stem cells**), which have superseded our own stem cell collection. Additionally, all of the Nature-branded journals collaborate on annual collections to showcase content that is relevant to the Nobel Prizes in Physiology/Medicine and Chemistry, such as the collections on **ancient DNA** and **click chemistry** from 2022. However, as these collections contain large volumes of content from so many different journals, they are not particularly useful for

finding protocols, specifically. So, for our most recent collections from 2023, we only selected content published in *Nature Protocols* – mostly Protocols, but also methods-focused Reviews, Perspectives and Consensus Statements. These collections are intended to improve the visibility and findability of our content, in a way that keyword-based searches often fail to provide.

Our collection on **organoids** was motivated by the fast-paced improvements in our ability to recapitulate, in small cultured systems, whole organ features. Organotypic culture models are increasingly complex and refined, and can be used to gain valuable insight into intercellular signaling, drug response, development and immune response. Our collection includes protocols for growing and characterizing organoids from a wide variety of cell types (including **brain**, **kidney**, **liver**, **pancreas**, **heart**, **placenta**, **intestine**, **bile duct**, **prostate**, **skin**, **breast**, **lung**, **blood vessel** and **patient-derived cancer cells**), and for **co-culturing systems** with bacterial populations. Complex 3D culture systems also provide better readouts of interventions, whether using genetically or otherwise engineered systems.

The other three collections from 2023 focus on neuroscience. They support standardization initiatives by highlighting, for example, **performance tests for the characterization of neural interface electrodes**, and guidance on the preparation required to adopt Neuropixels probes for **recording neuronal spiking activity in patients**. Our collection on **neurostimulation** was motivated by the substantial amount of related content published in *Nature Protocols*. Optogenetics, in particular, has seen impressive technological and methodological improvements in recent years, and approaches to stimulate neuronal populations are increasingly used as precision tools to **modulate networks of cells**. It is likely that a research group using optogenetics will be interested in expanding their projects to include different applications or an alternative neurostimulation approach, whether **all-optical** or triggered using **focused ultrasound**, and the collection should help them to do this.

Our **neural probes** collection covers the fabrication and use of implantable bioelectronic

devices, which enable the recording of electrophysiological parameters and the interrogation of neural circuits in both animals and humans. The material is related to that covered in the neurostimulation collection, as both involve studying neural cell behavior in vivo. The main criteria that determine whether an article is a better fit for the neural probes or the optogenetic stimulation collection is whether the core of the work describes the fabrication of an implantable device or the delivery of an input that induces a measurable change in output. Neural probes can deliver stimuli yet are often used to record neuronal signals, whereas neurostimulation approaches focus on inducing specific changes in signaling.

The collection on **cognitive neuroscience frameworks** includes Consensus Statements, Perspectives and Protocols for both the gathering and modeling of human neural data and covers transcranial **electrical** and **magnetic stimulation**, **functional magnetic resonance imaging** and integrated **robotics** (among other neurotechnological approaches). As technologies move from the bench to the clinic and enter population-wide studies, the standardization of procedures and reporting standards becomes increasingly important, as does raising awareness of the lack of regulatory frameworks around the use of human **neural data**.

The response from the relevant communities has been positive so far. We have seen an increase in submissions and proposals in these fields, with authors specifically referring to the collections. Further methods-focused collections are currently being compiled (including a collection on methods reporting in primary research) and we hope these will improve the discoverability of our content. If you find a collection that you like, let us know and feel free to suggest new content that might be relevant. Please also feel free to suggest topics for future collections. For researchers who are interested in new methods and techniques across a wide range of disciplines, you can also join our **'protocols and methods' community forum**, with blog posts from editors and authors from *Nature Protocols*, *Nature Methods* and *Nature Reviews Methods Primers*, among others.

Published online: 19 December 2023