

Concept Clearance for the Common Fund Human BioMolecular Atlas Program (HuBMAP)

Reissue of the Transformative Technology Development Funding Opportunity Announcement

Previous Funding Opportunity Announcement: [Transformative Technology Development for the Human BioMolecular Atlas Program \(UG3/UH3 Clinical Trial Not Allowed\) RFA-RM17-025](#)

The vision for the Common Fund's Human BioMolecular Atlas Program (HuBMAP) is to catalyze development of a framework for mapping of the human body at high resolution to transform our understanding of tissue organization and function. The realization of this vision will be achieved by: 1) Accelerating the development of the next generation of tools and techniques for constructing high resolution spatial tissue maps that quantify multiple types of biomolecules either sequentially or simultaneously; 2) Generating foundational 3D tissue maps using validated high-content, high-throughput imaging and omics assays; 3) Establishing an open data platform that will develop novel approaches to integrating, visualizing, and modelling imaging and omics data to build multi-dimensional maps, and making data rapidly findable, accessible, interoperable, and reusable by the global research community; 4) Coordinating and collaborating with other funding agencies, programs, and the biomedical research community to build the framework and tools for mapping the human body; and 5) Supporting pilot projects that demonstrate the value of the resources developed by the program to study individual variation and tissue changes across the lifespan and the health-disease continuum.

To achieve this vision, the Consortium will scale-up the range of tissues, technologies, data management, and its community engagement activities throughout the duration of the program. The HuBMAP program uses a pipeline of initiatives to support technology development across its lifecycle [more details [here](#)]. The Transformative Technology Development (TTD) initiatives are designed to support early-stage (TRL1-4) technology development, and development of technology from the formulation stage to validation in the lab. If successful, TTD projects can compete for funding for later-stage development through the Rapid Technology Integration and Expanding the Pipeline Initiatives.

The first TTD FOA was issued in December 2017 with the plan to reissue biennially. Four awards were supported in 2018, each of which addresses unique challenges in the HuBMAP program: 1) comprehensively measuring the nascent transcriptome of individual cells, 2) improving the spatial resolution of lipid mass spectrometry, 3) reducing the background for FISH imaging, and 4) increasing the throughput of integrated proteomic and transcriptomic imaging.

With the rapidly changing single cell analysis landscape, there are several emerging technologies that NIH Program staff believe would complement and potentially accelerate the progress of the Consortium. For example, the program has not supported technologies that analyze chromatin, epigenomics, protein post-translational modifications, biomineralization or polysaccharides at the single cell level or that develop models and frameworks for 3D dynamic microenvironments, integration of multiscale imaging data, or exogenous biomolecules in human biospecimens. This FOA reissue will maintain the same format as the previous one, but will have an updated research focus, consistent with current interests. This FOA falls within the scope of the original program concept cleared by the Council of Councils in January 2016.