

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

Reissue of the Tissue Mapping Center Funding Opportunity Announcement

Previous Funding Opportunity Announcement: [Tissue Mapping Centers for the Human BioMolecular Atlas Program \(U54 Clinical Trial Not Allowed\)](#)

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 Tissue Mapping Center (TMC) initiative is designed to establish state-of-the-art centers that will generate high-resolution, multi-parameter, 3D biomolecular maps of non-diseased human organs, and organ systems. Successful centers will build, benchmark, and standardize a pipeline for generating, validating and analyzing data from multiplexed, high-throughput imaging and omics technologies.

The first TMC FOA was issued in December 2017 with the plan to reissue biennially. Five awards were supported in 2018, that are generating data from specific organs using complementary assays: 1) endothelial tissue using FISH, RNAseq, ATACseq, 2) colon using RNAseq, ATACseq, and multiplexed immunofluorescence, 3) lung and kidneys using RNAseq, FISH, and multiplexed immunofluorescence, 4) spleen and thymus using RNAseq, FISH, and multiplexed immunofluorescence, and 5) kidney and liver using various mass spectrometry techniques.

As the GTEx program has exemplified, understanding human variation is enhanced by studying a wide range of tissues across many donors. NIH staff recognizes there are many less studied tissues than the ones currently examined by the Consortium and believe that by supporting a broader range of projects, the value of the datasets generated by HuBMAP will be significantly enhanced. 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.