

OSC (Common Fund)



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Concept Clearance: Reissue (RFA-RM-17-025)

Transformative Technology Development for the Human BioMolecular Atlas Program (UG3/UH3 Clinical Trial Not Allowed)

Objective: To support transformative technologies that will significantly expand throughput, multiplexing, and discrimination of biomolecules in human tissues for comprehensive mapping of individual cells and their context in human tissues.

Estimated Funds Available: \$1.5M per year

Award Project Period: 2 years UG3 phase; 2 years UH3 phase

Council Action: Vote on continued support of Transformative Technology Development for HuBMAP

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Concept Clearance: Reissue (RFA-RM-17-027)

Tissue Mapping Centers for the Human BioMolecular Atlas Program (U54 Clinical Trial Not Allowed)

Objective: To establish state-of-the-art Tissue Mapping Centers (TMCs) that will generate high-resolution, high-content, multiscale maps of non-diseased human organs and systems.

Estimated Funds Available: \$4M per year

Award Project Period: 4 years

Council Action: Vote on continued support of Tissue Mapping Centers for HuBMAP

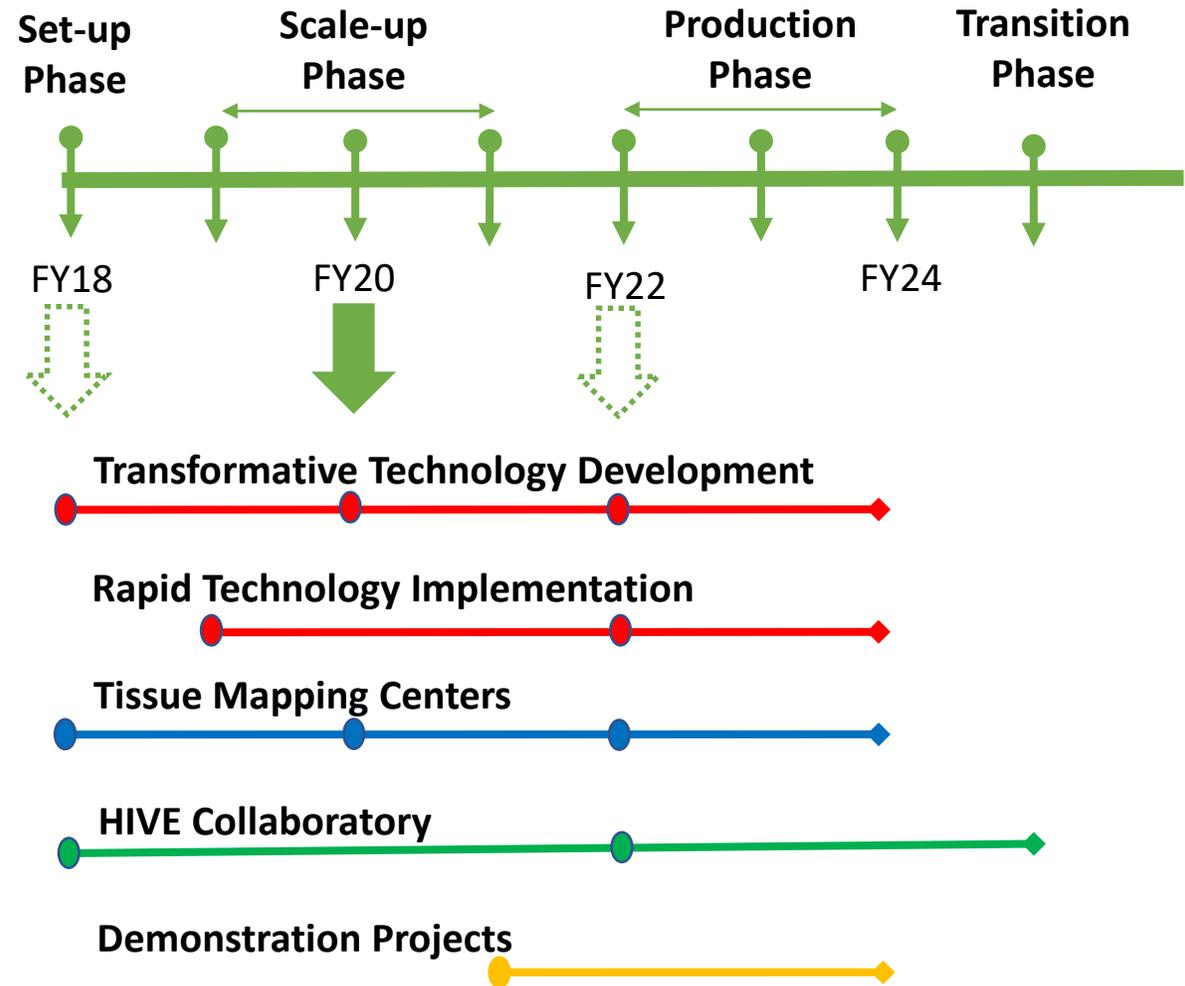
Goals and Initiatives of HuBMAP



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Catalyzing the development of a **comprehensive atlas of cellular organization** in human tissues that will elucidate the principles of organization-function by:

1. Accelerating the development of the **next generation of tools and techniques** for constructing high resolution spatial tissue maps
2. Generating **foundational 3D tissue maps**
3. Establishing an **open data platform**
4. **Coordinating and collaborating** with other funding agencies, programs, and the biomedical research community
5. Supporting **projects that demonstrate the value** of the resources developed by the program

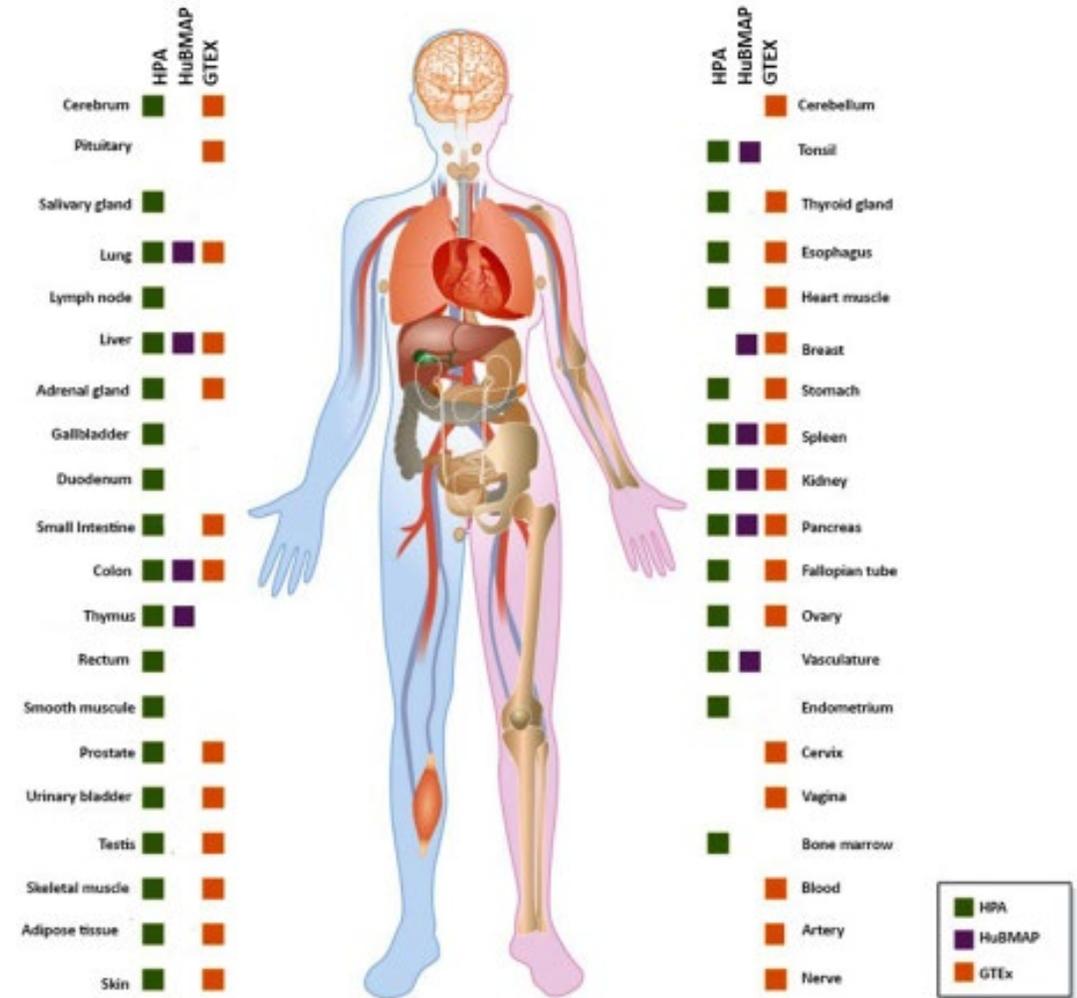


Opportunities for new TTD and TMC Awards



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- **Rapidly Evolving Field:** Accelerating and incorporating promising new technologies through biennial RFAs is central to future-proofing the work of the program.
- **Scaling up Tissues and Donors:** HuBMAP started with the 10 most studied tissue types from less than 50 donors. We are committed to expanding the number of tissues by growing the number of TMCs every 2 years for a more comprehensive and robust view of the human body.
- **Coordination & Collaboration:** Working in partnership with other programs to support complementary technologies and datasets will create synergies and broaden impact.



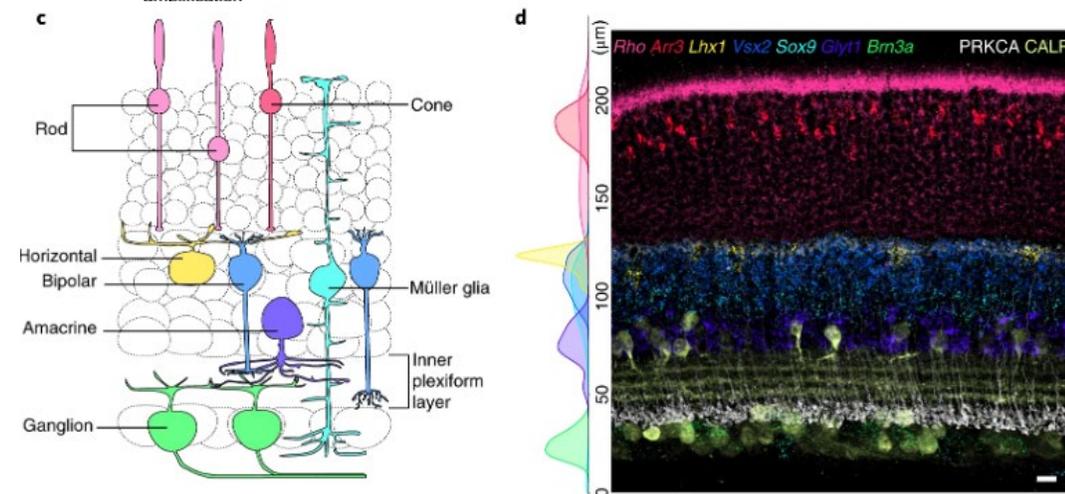
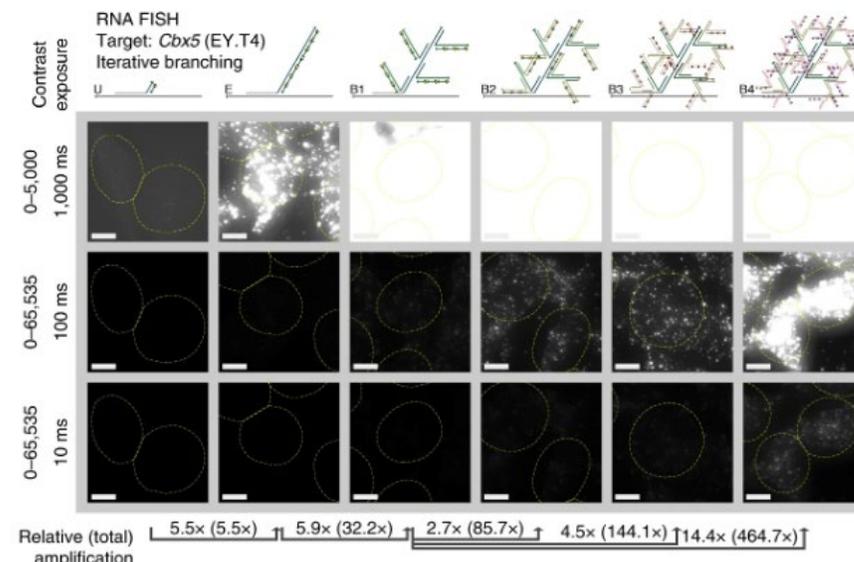
Adapted from Uhlén et al. Mol Syst Biol 12:862 (2016)

Reissue of TTD FOA in FY20



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- **Goal:** Continue to accelerate proof-of-principle demonstration and validation of promising tools, techniques and systems that can transform the science of human tissue mapping.
- **Focus:** High impact, broadly applicable technologies the Consortium is not currently using that will significantly enhance collection or analysis of spatially-resolved, multiplexed biomolecular information from individual cells and their context in human tissues.
- **Stage of Development:** Proof-of-principle not yet shown in mammalian tissues.
- **Metric of Success:** Publication-quality human tissue maps from validated technologies.



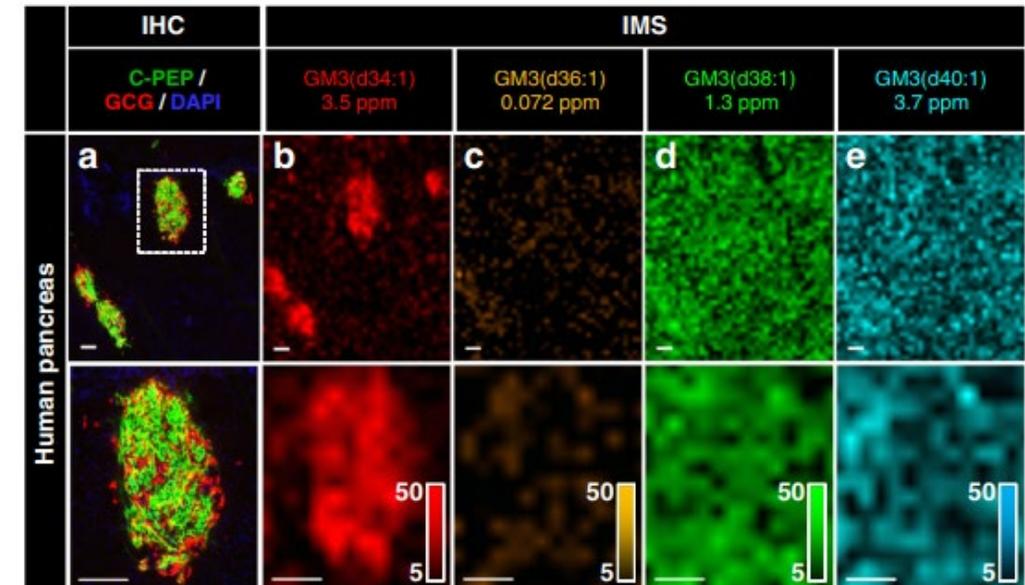
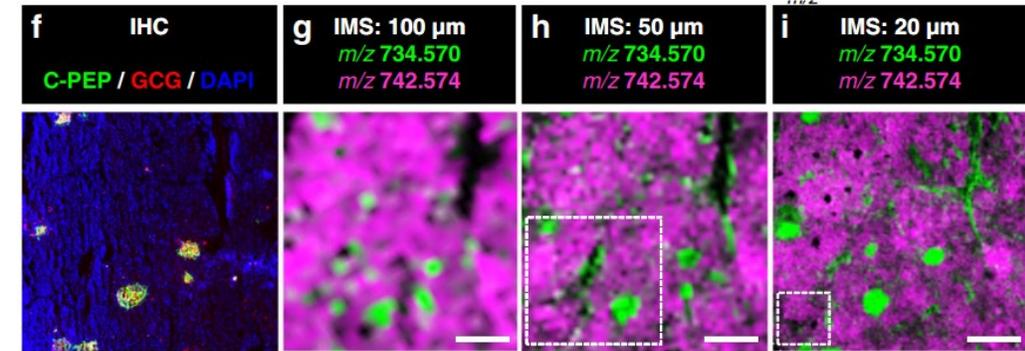
Example from FY18 TTD: Kishi et al. Nature Methods, 16, 533 (2019)

Reissue of TMC FOA in FY20



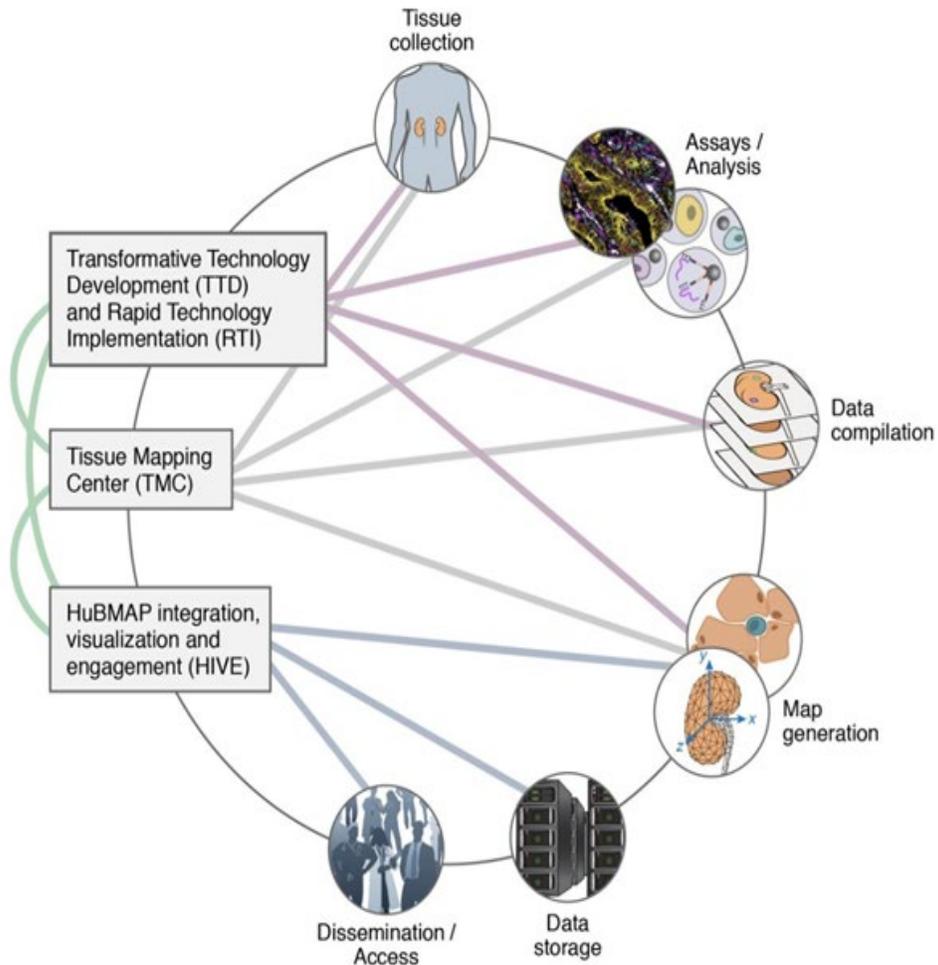
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- **Goal:** Expand Consortium's ability to generate high-resolution, high-content, multiscale maps of non-diseased human organs and systems by funding state-of-the-art centers for new tissue types.
- **Approach:** Bring organ-specific expertise together with multiple spatial-resolved assays and data scientists to build 3D maps that provide insight into tissue structure – function relationship.
- **Stage of Development:** High quality source of tissue, validated assays, and analysis pipeline.
- **Metric of Success:** FAIR datasets, tools, and analytical pipeline that are re-used by the wider research community.



Example from FY18 TMC: Prentice et al. Diabetologia, 62, 1036 (2019)

Questions?



HuBMAP Consortium, Nature (in press)

Summary

- Setup phase (first year) has been successful; now entering the scale-up phase of the program
- Rapidly evolving field – opportunity to grow a more diverse and future-ready pipeline
- Expanding TTDs will accelerate technology development for a more comprehensive view of tissues
- Expanding TMCs will provide much richer datasets in less well studied tissues
- HuBMAP is committed to internal and external collaboration and building synergies

More information about HuBMAP:

- <https://commonfund.nih.gov/HuBMAP>