

# A Second Space Age Spanning Omics, Platforms, and Medicine Across Orbit

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## The Space Omics and Medical Atlas (SOMA) and international astronaut biobank

Elijah G. Overby , JangKeun Kim, Braden T. Tierney, Jiwoon Park, Nadia Houerbi, Alexander G. Lucaci, Sebastian Garcia Medina, Namita Damle, Deena Najjar, Kirill Grigorev, Evan E. Afshin, Krista A. Ryon, Karolina Sienkiewicz, Laura Patras, Remi Klotz, Veronica Ortiz, Matthew MacKay, Annalise Schweickart, Christopher R. Chin, Maria A. Sierra, Matias F. Valenzuela, Ezequiel Dantas, Theodore M. Nelson, Egle Cekanaviciute, ... Christopher E. Mason  + Show authors

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Space Omics and Medical Atlas

INSPIRATION4 TEAM PEOPLE PARTNERS

## SpaceX Inspiration4

Inspiration4 was the first human spaceflight to orbit Earth with only private citizens on board. The Crew Dragon capsule *Resilience* launched on 16 September 2021 and landed on 18 September 2021.

For the mission we have collected and analyzed a comprehensive set of longitudinal multiomics data from the astronauts that span pre-, in-, and post-flight periods. These results and datasets are made available as a resource for all related biomedical and spaceflight research.

2911 Collections 1194 Processed samples 22 Assays 10 Timepoints



**a**

Samples	Assays	Timepoints			
		Pre-Flight	Flight	Post-Flight	Recovery
Whole Blood	Whole Genome Sequencing Clone Hemogenics Complete Blood Count (CBC) Dried Blood SmartRead RNA-seq	L-30 L-14 L-3	F01 F02	P01 P02 P03 P04	R+1 R+40 R+42 R+100
Breast	Cytokine/Chemokine Biomarker Panels Cardiovascular Biomarker Panel Comprehensive Metabolite Panel				
PMBCs	Single-Cell RNA-seq Single-Cell ATAC-seq Single-Cell T-Cell Viability Sequencing Single-Cell B-Cell Viability Sequencing				
Plasma	Proteomics Metabolomics cDNA cRNA				
EVNTs	Proteomics				
Dried Blood Spot	Hemogenics qPCR				
Monocyte	Metabolome Metametabolome				
Monocyte Derived	Metabolome Metametabolome				

**b**

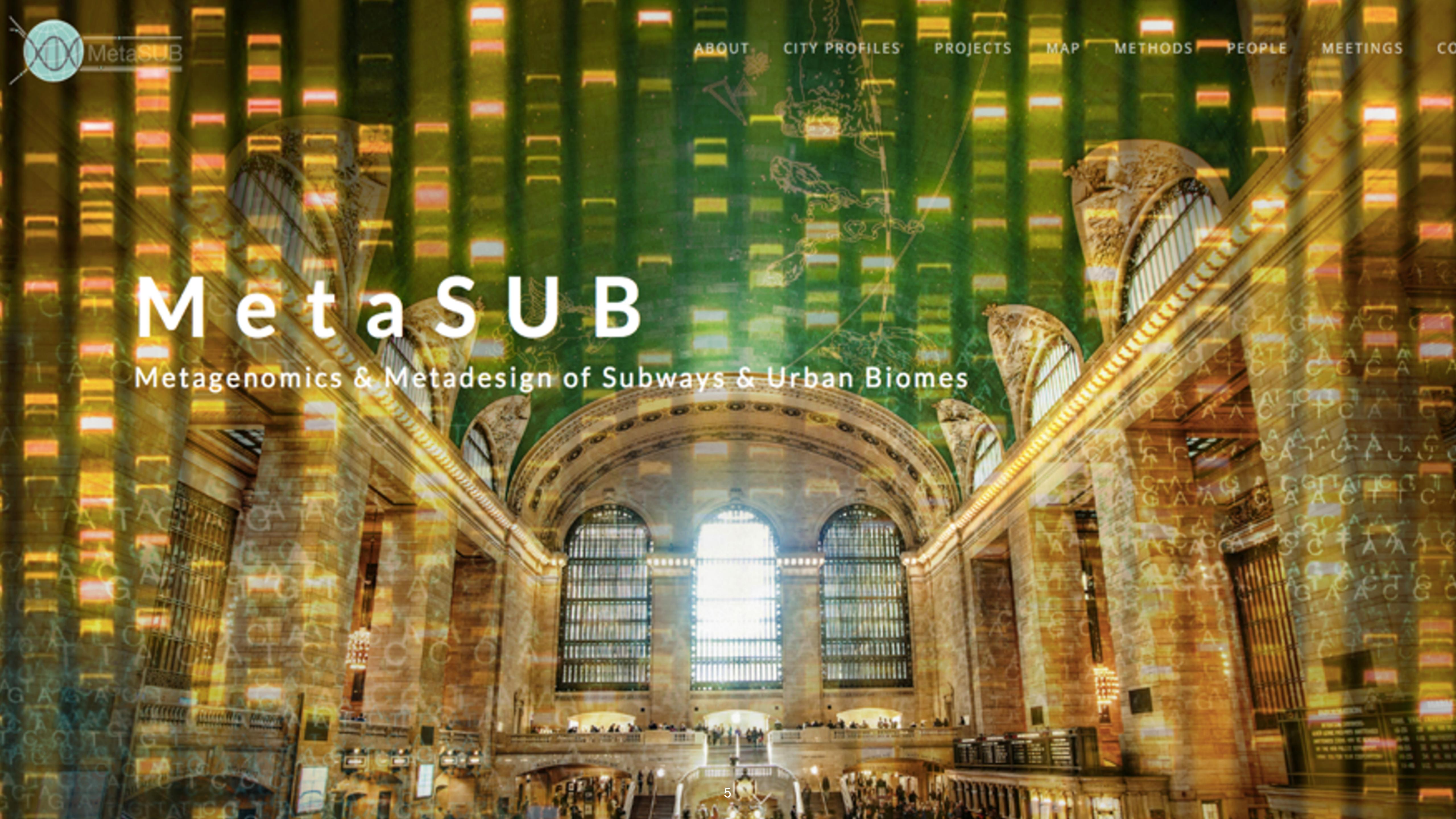
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Plasma	Proteomics Metabolomics cDNA cRNA				
EVNTs	Proteomics				
Dried Blood Spot	Hemogenics qPCR				
Monocyte	Metabolome Metametabolome				
Monocyte Derived	Metabolome Metametabolome				

**c**

Samples	Assays	Timepoints			
		Tissue Study	SOMA	Atmos. Changes	Assay Data From Prior Studies
Whole Blood					
Breast					
PMBCs					
Plasma					
EVNTs					
Dried Blood Spot					
Monocyte					
Monocyte Derived					

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