

# Common Fund Venture Space – Concept Clearance

Douglas M. Sheeley, Sc.D.

Acting Director, Office of Strategic Coordination (OSC)

January 25, 2024



National Institutes of Health

*Office of Strategic Coordination – The Common Fund*

# Common Fund – Venture Space

**Objective:** Support the development and application of **novel, high-risk, short-term initiatives** responsive to the needs of multiple ICOs that have potential for significant impact within the scientific community.

**Anticipated Funds Available:** \$5M per year per initiative; approximately \$60M total per year by 2026

**Initiative Duration:** no more than 3 years for each individual initiative

**Council Action:** Vote for approval of the Venture Space concept

# Venture Space

*“Amazing things with modest funding”*

Venture will enable Common Fund support of **ICO-driven, high-risk, short-term** initiatives.

- Adds flexibility to implement CF mission quickly, through small, innovative programs

Prioritized by ICO Director Venture Board, with final approval by DPCPSI and NIH Directors

Criteria:

- Emphasis on **innovation** and **speed**
- Projects should be **high-risk** with **potential for major impact**

Features of Venture Space projects:

- Brief funding, no more than **3 years**
- Clearly defined goals with **go/no-go milestones**
- **Flexible approach** to funding mechanisms and project timelines
- **Smaller scale, higher risk**
- **Nimble, responsive** – fast implementation, streamlined management

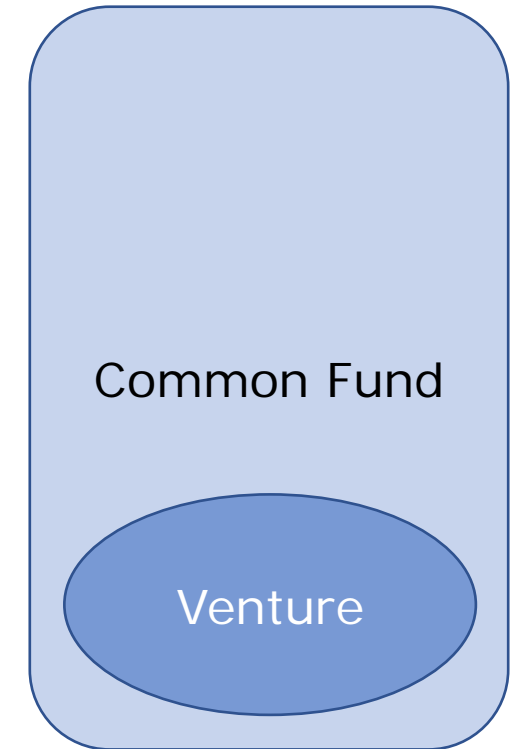
# Venture Space Criteria

## Proposals must meet Common Fund criteria:

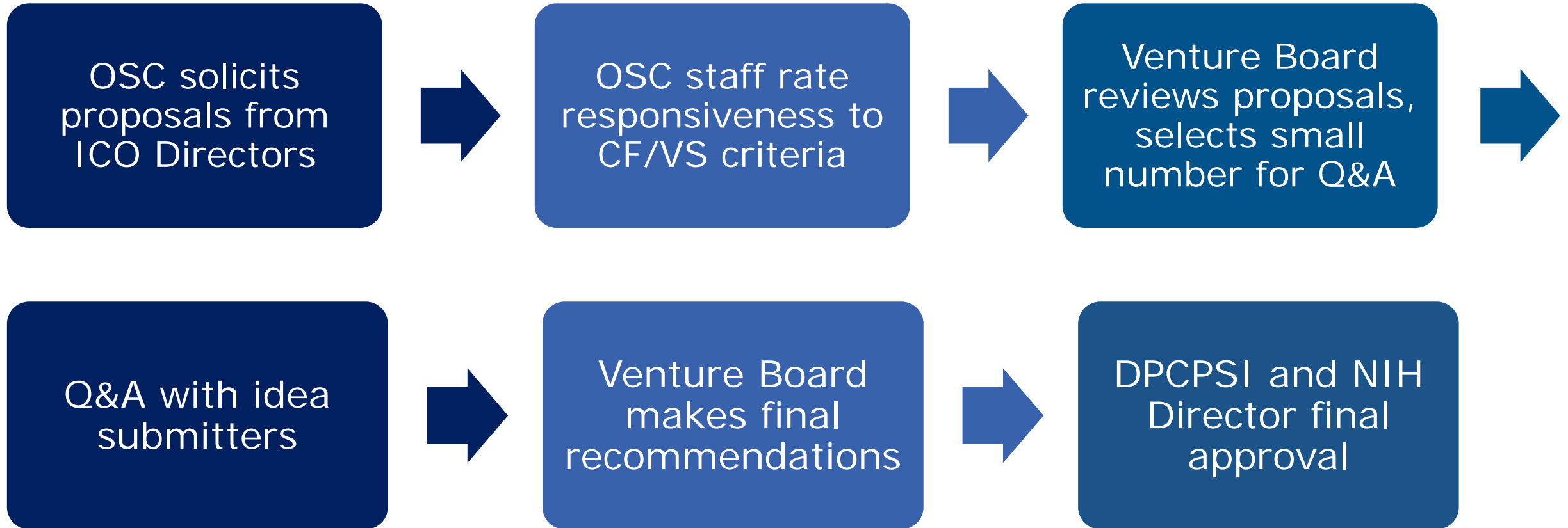
- **Transformative** - has exceptionally high and broadly applicable impact
- **Catalytic and Milestone-driven** - has clear goals and milestones
- **Synergistic** - will add value to ICOs
- **Cross-cutting** – is relevant to multiple ICOs
- **Novel and Innovative** - has a high level of innovation and novelty

## Proposals must meet additional Venture Space criteria:

- **High-risk/High-impact** - has high-risk with the potential for scientific impact
- **Rapid Launch** - is amenable to rapid implementation
- **Clear Outcome within Three years** - has clear, achievable outcomes in three years or less



# Venture Space Initiative Selection



# New Venture Initiative: Development of Oculomics Imaging Technologies for Systemic Diseases

## Background and Goals:

Ocular imaging technologies provide:

- Direct, in vivo measurements of biomarkers
- Wide application to disease
  - neurodegenerative, metabolic, renal, inflammatory, and cardiovascular diseases

Issues limiting clinical utility: lack of specificity and sensitivity

Emerging imaging technologies provide

- 1) superior resolution and image depth
- 2) functional measurements: electrical activity, blood flow, redox state, and metabolic rates
- 3) Chemical specificity: water, protein, lipid, and collagen/elastin content

Imaging Tech + Machine Learning => Clinically useful biomarker identification for a range of diseases

**This Venture Space initiative will support development and application of novel, noninvasive, and accessible ocular imaging technologies to identify systemic disease biomarkers with high sensitivity and specificity.**

# New Venture Initiative: Development of Oculomics Imaging Technologies for Systemic Diseases

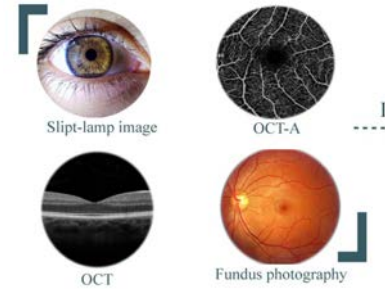
## Anticipated Work Products:

- Development and translation of:
  - Non-invasive imaging technologies
  - ML algorithms
- Identification of novel & clinically relevant biomarkers.
- Products will be matured for future clinical validation of biomarker and disease detection.

## Impact:

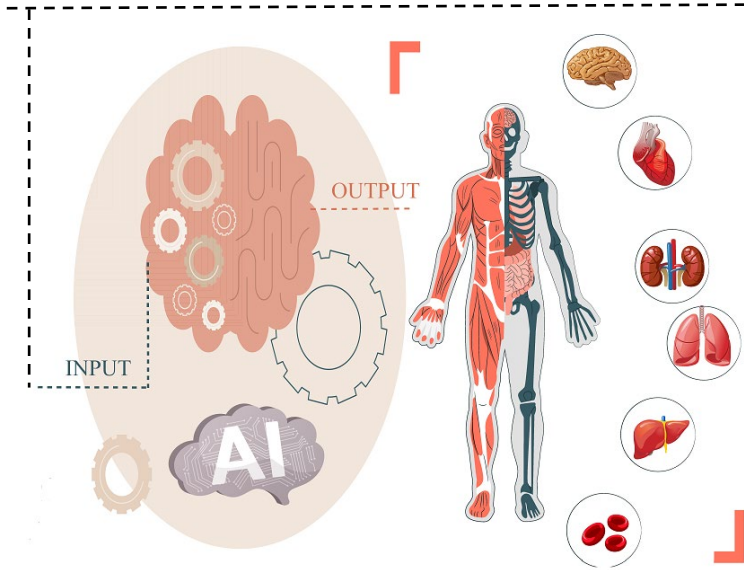
- Improved screening, diagnosis, and monitoring of a wide range of diseases
- Enabling new discoveries at scale: widespread use in research and clinical settings.

### Classical Imaging Technologies



### Example New Imaging Technologies

adaptive optics OCT (AO-OCT)  
AO two-photon microscopy  
scanning Laser Ophthalmoscope  
spectral Domain-OCT  
super-resolution ultrasound localization  
microscopy  
visible-light OCT  
opto-acoustic techniques  
terahertz imaging  
retinal hyperspectral imaging



Modified Image from: Li, H.; Cao, J.; Grzybowski, A.; Jin, K.; Lou, L.; Ye, J. Diagnosing Systemic Disorders with AI Algorithms Based on Ocular Images. Healthcare 2023, 11, 1739.

# New Venture Initiative: A Systems Biology Data Model

## Background and Goals:

### **Many NIH-supported multi-omic analyses in humans:**

- Multiple tissues with deep phenotyping
- Rich datasets siloed in different platforms

### **Urgent need to enable integrated view of human disease**

- molecular, phenotypic, clinical, and outcomes data

### **NIH Accelerating Medicines Partnership (AMP)**

- Many ICs participate
- Robust but independent datasets for different diseases and tissues
- Starting point / Test case for an ecosystem for integrated analyses

### **This Venture Space initiative would develop a systems biology data ecosystem, across separate data platforms through a single portal.**

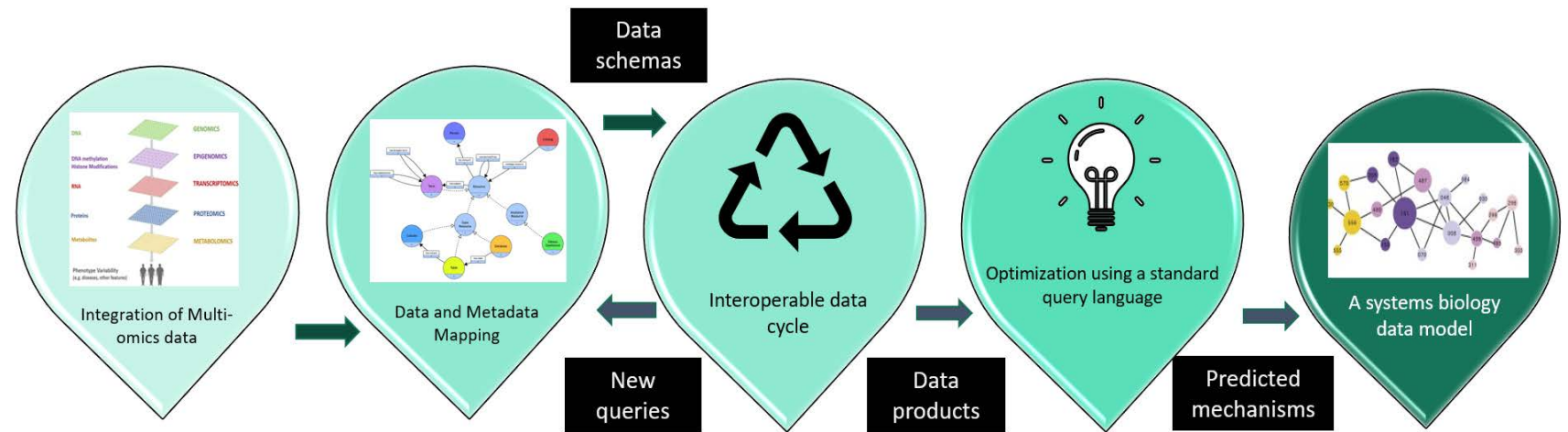
- Explore mechanistic hypotheses across different tissues
- Identify shared mechanisms
- Link to patient phenotypes in chronic diseases



# New Venture Initiative: A Systems Biology Data Model

## Anticipated Work Products:

- Centralized system architecture for federated data sharing
- Computational Framework and query language for Systems Biology
- A Proof of Concept (POC) study
- Effective modes of visualization



## Impact:

- Robust data portal and computational resources to query across data ecosystem
- Establish a foundation to drive:
  - Biological insights
  - More precise and personalized patient care

# Council Action: Vote for approval of the concept for Venture Space



[commonfund.nih.gov](https://commonfund.nih.gov)



@NIH\_CommonFund



National Institutes of Health

*Office of Strategic Coordination – The Common Fund*