Common Fund Venture Space – Concept Clearance

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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**

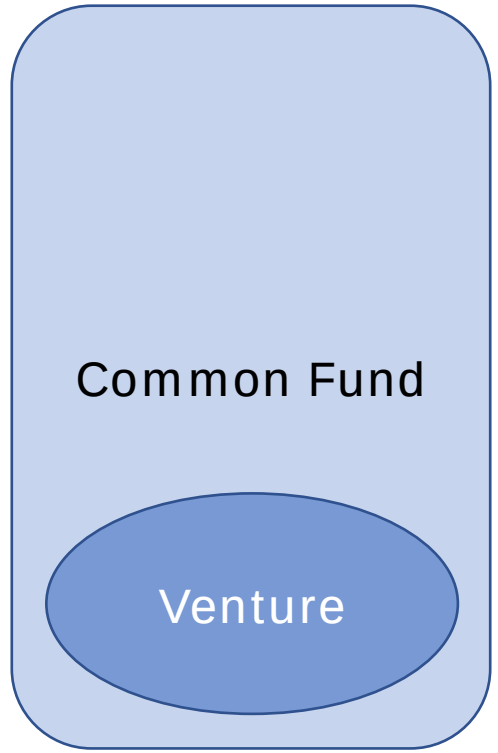
Features of Venture Space projects:

- 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:

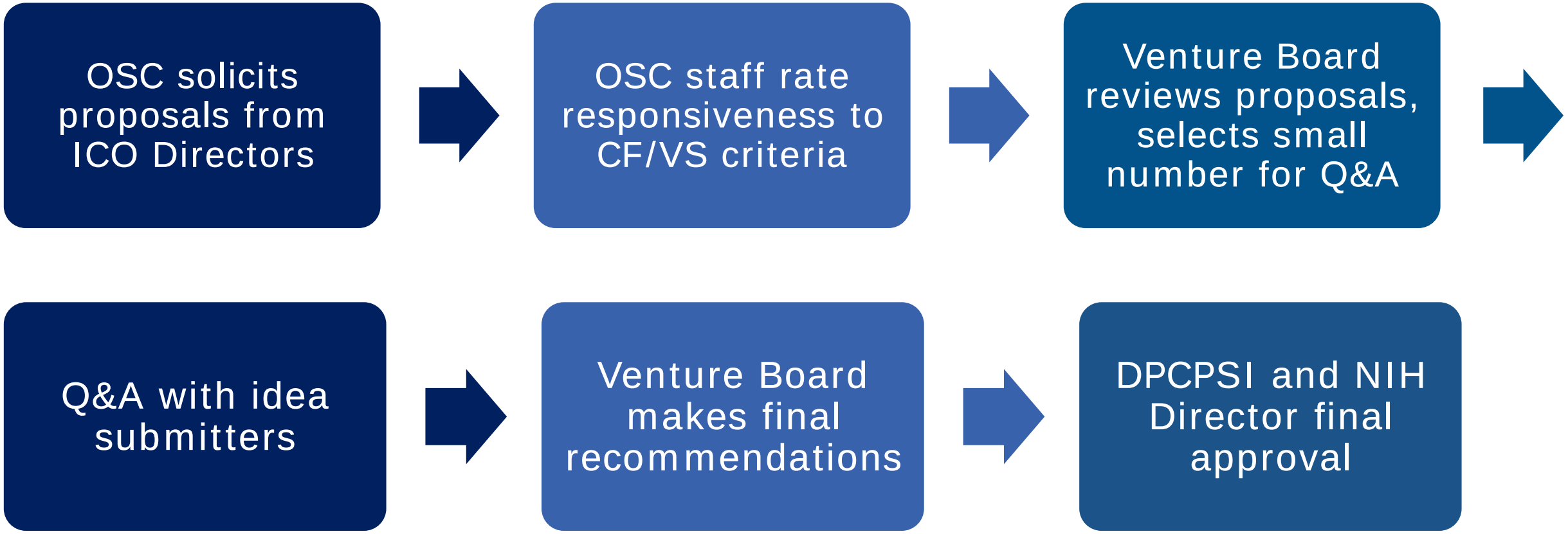
- **Transformative** - has exceptionally high and broadly applicable impact
- **Catalytic and Milestone-driven** - has clear goals and milestones
- **Synergistic** - will add value to ICOs
- **Cross-cutting** – is relevant to multiple ICOs
- **Novel and Innovative** - has a high level of innovation and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

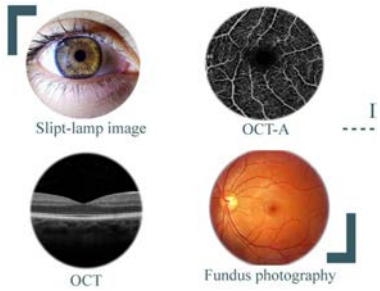
Anticipated Work Products:

- 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:

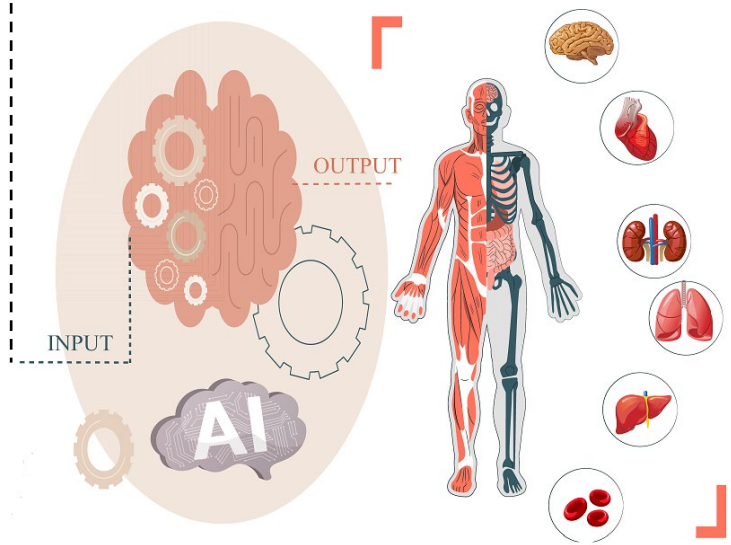
- Improved screening, diagnosis, and monitoring of a wide range of diseases
- Enabling new discoveries at scale: widespread use in research and clinical settings.

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

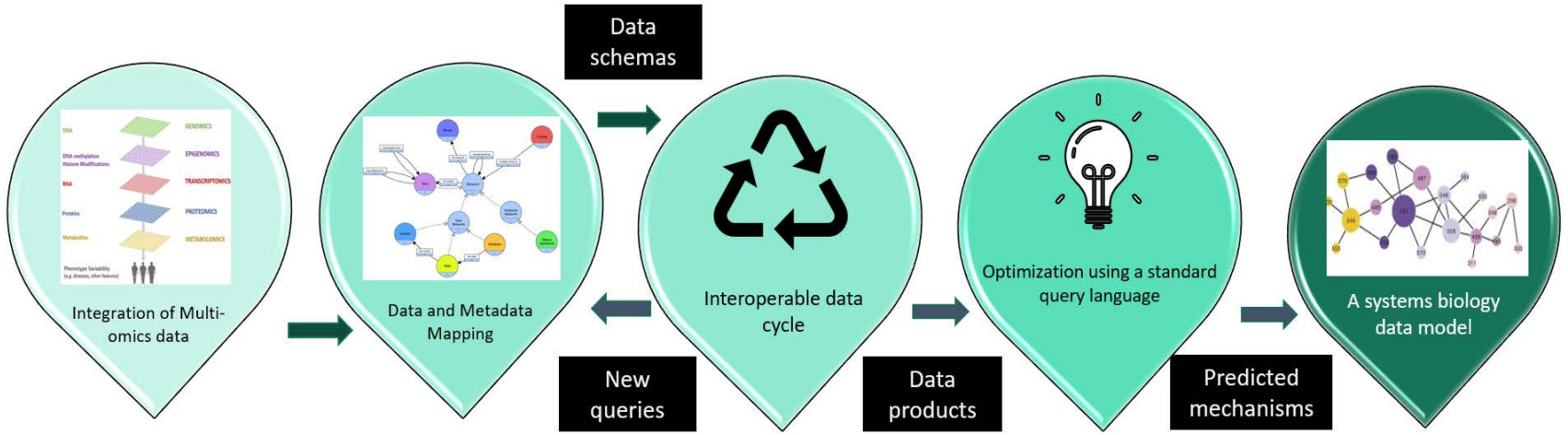
This Venture Space initiative would develop a systems biology data ecosystem, across separate data platforms through a single portal.

- 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

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