



*The Common Fund*

# **Common Fund Concept Clearance: Illuminating the Druggable Genome (IDG) Cutting Edge Informatics Tools FOA (reissue)**

Council of Councils

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# IDG: Cutting Edge Informatics Tools (CEITs)



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**Concept Clearance:** Reissue (RFA-RM-18-011)

**Cutting Edge Informatics Tools for Illuminating the Druggable Genome (U01 Clinical Trial Not Allowed)**

**Objective:** Draw expertise into the IDG program to support development and deployment of models to help the community predict biological role of understudied proteins.

**Funds Available and Anticipated Number of Awards:** \$1.4M per year in FY22 and FY23; 2-3 awards

**Award Project Period:** 2 years

**Council Action:** Vote on continued support of Cutting-Edge Informatics Tools for Illuminating the Druggable Genome

# OSC (Common Fund) Illuminating the Druggable Genome (IDG)



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- Goal of the IDG Program – catalyze research to improve our understanding of the properties and functions of proteins that are currently not well studied within commonly drug-targeted protein families.
- Three protein families identified to contain adequate numbers of understudied members (few or no publications, lack of R01 funding) and are well-established druggable families with high potential to impact human health once disease associations are made – **ion channels, GPCRs and kinases**

## Timelines

### Pilot Phase – (2014-2017)

1. integrate information into a single informatics site
2. technology development to enable determination of protein function and therapeutic potential at scale

### Implementation Phase – (2017-2023)

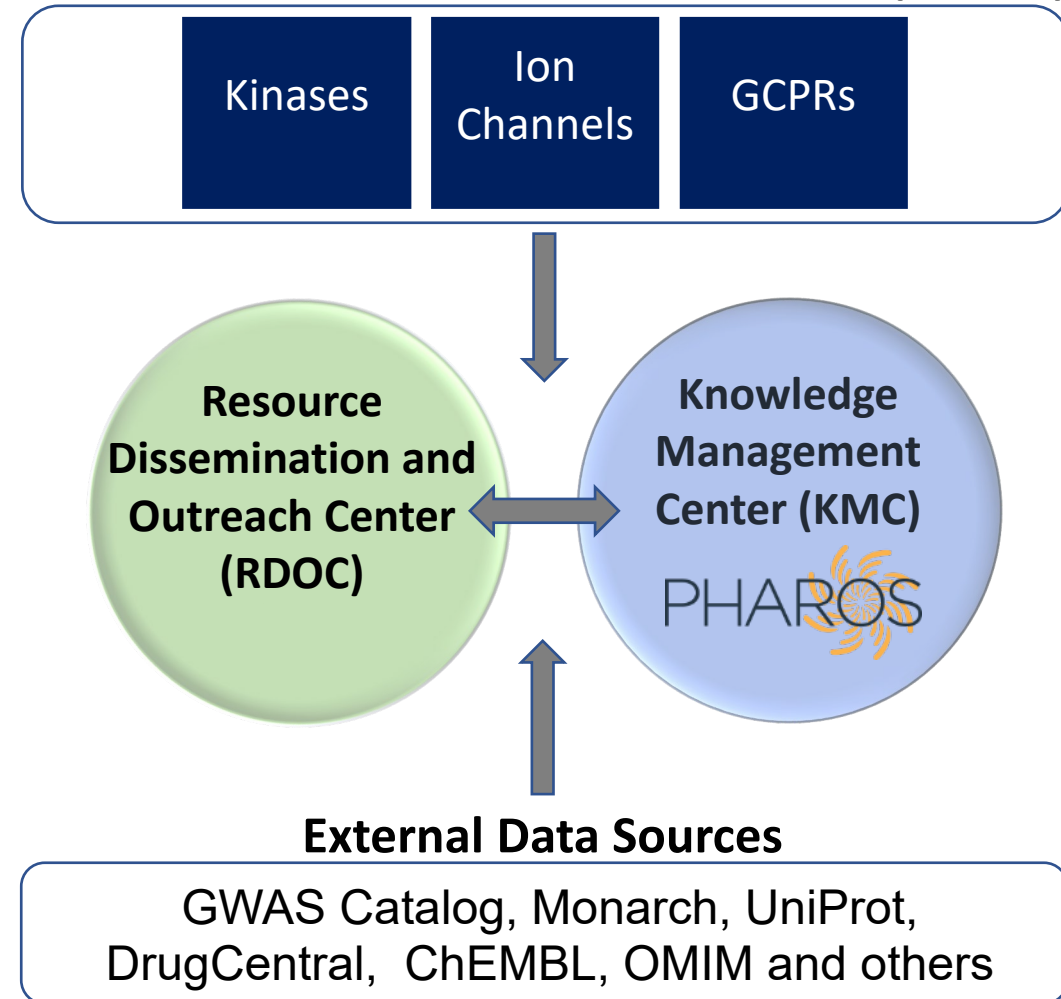
1. Identify biochemical, cellular, or animal model phenotypes
2. Enable further investigation of these proteins by providing reagents and tools
3. Generate, maintain, and facilitate the use of, a minable knowledgebase.

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## Data and Resource Generation Centers (DRGCs)



•**Cutting Edge Informatics Tools (CEIT) Awards** - FOA issued in 2018 to deploy tools to enhance the community's ability to process, analyze, and visualize data around the understudied proteins.

•**R03 Pilot Projects** – FOA issued in 2018, 2019 and 2020 to support the generation of preliminary data and tools around eligible understudied protein(s) to:

- elucidate function in the context of human disease
- support R01 applications and/or drug discovery projects

•**Commercializing Understudied Proteins from the Illuminating the Druggable Genome Project (SBIR and STTR)** – Current FOA to initiate early research leading to the commercialization of assays or products.

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**RFA-RM-18-011:** support for development and deployment of tools to better process, analyze, and visualize data around understudied proteins.

Three 2-year awards in FY2019 – significant enhancements to Pharos, the IDG target knowledgebase and associated query tools

- A Data Analytics Framework For Mining The Dark Kinome
  - Kannan and Kochut (UGA)
  - *organizing and presenting sequence and phylogenetic relationships of kinases*
- Illuminating the Druggable Genome by Knowledge Graphs
  - Robinson (Jackson Lab), Mungall (UC Berkeley) and Oprea (UNM)
  - *leveraging deep expertise in relevant ontologies to build knowledge graphs for computations*
- Reactome IDG Portal: Pathway-based Analysis And Visualization Of Understudied Human Proteins
  - Wu, (OHSU), D'Eustachio (NYU), and Stein (Ontario Institute for Cancer Research)
  - *creating effective summaries of pathway-based information*

## Cutting-Edge Informatics Tools for Illuminating the Druggable Genome

### Rationale for Reissue:

Draw expertise into the IDG program to support development and deployment of models to help the community predict biological role of understudied proteins.

- a. need for larger diversity of informatics expertise
- b. more effectively use current Pharos data
- c. deployment of AI, ML, and causal models to determine protein function

### Complementary Activity:

NOSI - administrative supplements for non-IDG investigators to support the incorporation of single-cell data into Pharos.

- a. expertise for the incorporation of single cell data into Pharos within the IDG program
- b. identified as a priority by the community and our External Program Consultants

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