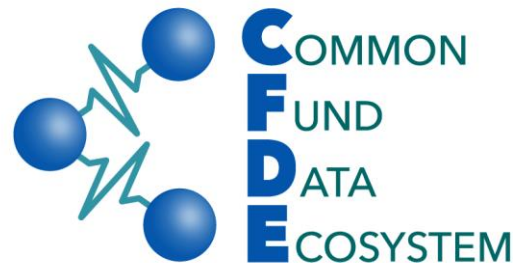


Decoding the Data Ecosystem
CFDE Training Center

Digital Scavenger Hunt

Allissa Dillman, PhD



What we will do today

Learn to navigate the various CFDE pages:

1. <https://commonfund.nih.gov/dataecosystem>
 - Information about CFDE as a whole and a snapshot of the different funded programs
2. https://cfdeknowledge.org/r/kc_landing
 - Information about the kinds of data in each program as well as curated and precomputed analysis of data
3. <https://data.cfde.cloud/>
 - CFDE workbench tools, chatbot, workflows, use cases, and more

Participate in the Scavenger Hunt:

- Learn more about the CFDE programs and types of data found in each
- Find and use specific CFDE tools and data
- Identify new information for potential follow-up explorations

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Exploring the NIH CFDE

Common Fund Data Ecosystem (CFDE)

For the Public

Health Relevance
Science Highlights
News & Announcements

For Researchers

Funding Opportunities
Frequently Asked Questions
Funded Research
Program Publications
Scientific Meetings

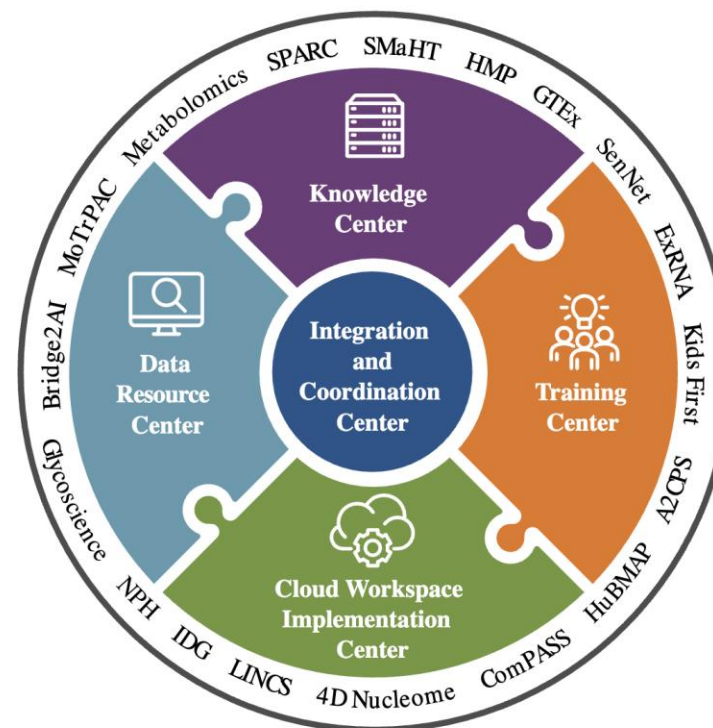
Get Program
Updates



Program Snapshot

The **Common Fund Data Ecosystem (CFDE)** aims to enable broad use of Common Fund data to accelerate discovery. CFDE is organized around five Centers that integrate data, resources, and knowledge from many Common Fund Programs. The resources created by the Centers will empower the research community to use Common Fund data sets for novel scientific research that was impossible before.

Click on the infographic below to learn more.



Program Updates

Check out the CFDE Training Center's new podcast series [Decoding the Data Ecosystem](#) !

Oak Ridge Associated Universities (ORAU) to develop CFDE Training Center

Texas Advanced Computing Center (TACC) received award to develop Cloud Workspace

Icahn Mount Sinai and UC San Diego to Establish a Data Integration Hub

Enhance your research using Common Fund datasets

CFDE Received Approval to Launch a Second Phase!

Visit the CFDE Information Center

Your gateway to the CFDE portal, technical documentation, training, and more.

[Link to Portal](#)

<https://commonfund.nih.gov/dataecosystem>

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Who is participating in CFDE?

The screenshot shows the Common Fund Knowledge Center (KC) landing page. At the top, there is a navigation bar with links: Search, Home, Searchable options, Programs, Analyses, Documentation, Webinars, and Help. The main header features the KC logo and a description: "The Knowledge Center (KC) integrates data and knowledge generated by ground-breaking research programs in the NIH Common Fund Ecosystem. Use the KC to see curated and precomputed analyses of data within and across Common Fund projects." Below this is a search bar with the placeholder text "Search gene, phenotype, tissue or disease" and a suggestion "Try BDH2 Bipolar disorder". The "Learn" section is divided into two parts. The first part, "14 COMMON FUND PROGRAMS", lists various research programs: 10 Genomes, A2CPS, BRIDGEAI, exRNA, Glycoscience, GTEx, HuBMAP, IDG, Kids First, LINCS, Microscopy Workbench, ToTrPAC, SenNet, and SPARC. The second part, "1 DATA ECOSYSTEM", lists various data types: EPIGENOMICS, GENOMICS, GLYCOMICS, GLYCOPROTEOMICS, KINOMICS, LIPIDOMICS, METABOLOMICS, MULTI-OMICS, and PROTEOMICS (Omics); SPATIAL MULTI-OMICS, SPATIAL PROTEOMICS, SPATIAL TRANSCRIPTOMICS, and TRANSCRIPTOMICS; BIOFLUID, CELL, CONNECTIVITY, DISEASE, DRUG, GENE, GENOMIC REGION, LIPID, METABOLITE, ORGAN, PATHWAY, and PROTEIN (Entities); and SPECIES, THERAPEUTIC, TISSUE, TRANSCRIPT, VARIANT, and EXRNA.

https://cfdeknowledge.org/r/kc_landing

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What types of data are contributed?

CFDE Programs

**4DN**
4D Nucleome (4DN)
<https://www.4dnucleome.org/>

Description The 4D Nucleome program (4DN) aims to understand the 3D organization of DNA in the nucleus, how it varies over time and in different cell types, and its role in health and disease.

Omics Epigenomics Genomics Transcriptomics

Entities Cell Disease Genomic Region Species

Data Resources Explore 4DN datasets through the [4D Nucleome Data Portal](#) or the [CFDE Workbench](#).

More >

**A2CPS**
Acute to Chronic Pain Signatures (A2CPS)
<https://a2cps.org/>

Description The Acute to Chronic Pain Signatures (A2CPS) project seeks to identify biomarkers and signatures of risk and resilience to the transition to chronic pain after surgery.

Omics Genomics Lipidomics Metabolomics Proteomics Transcriptomics

Entities Connectivity Gene Lipid Metabolite Protein Transcript

Data Resources A2CPS is currently generating data; stay tuned for results.

More >

Filter data

Omics

- ☐ Check / Uncheck all
- ☒ Epigenomics
- ☐ Genomics
- ☐ Glycomics
- ☐ Glycoproteomics
- ☐ Kinomics
- ☐ Lipidomics
- ☐ Metabolomics
- ☐ Multi-omics
- ☐ Proteomics
- ☐ Spatial Multi-omics
- ☐ Spatial Proteomics
- ☐ Spatial Transcriptomics
- ☐ Transcriptomics

Entities

- ☐ Check / Uncheck all
- ☐ Biofluid
- ☐ Cell
- ☐ Connectivity
- ☐ Disease
- ☐ Drug

https://cfdeknowledge.org/r/kc_programs

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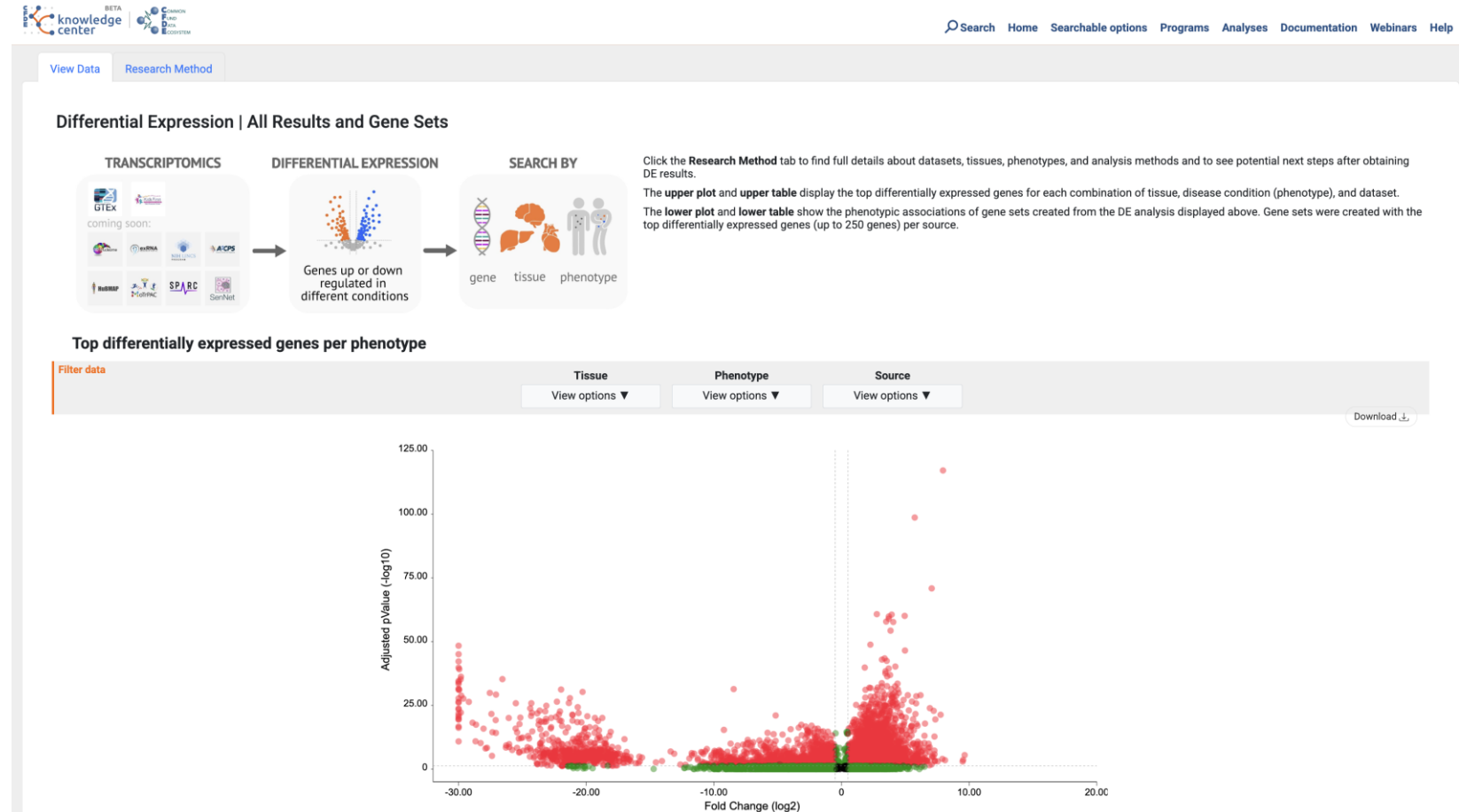
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How can people interact with the data?



https://cfdeknowledge.org/r/kc_dge_top_20?q=1&source=kc_diffexp

Common Fund

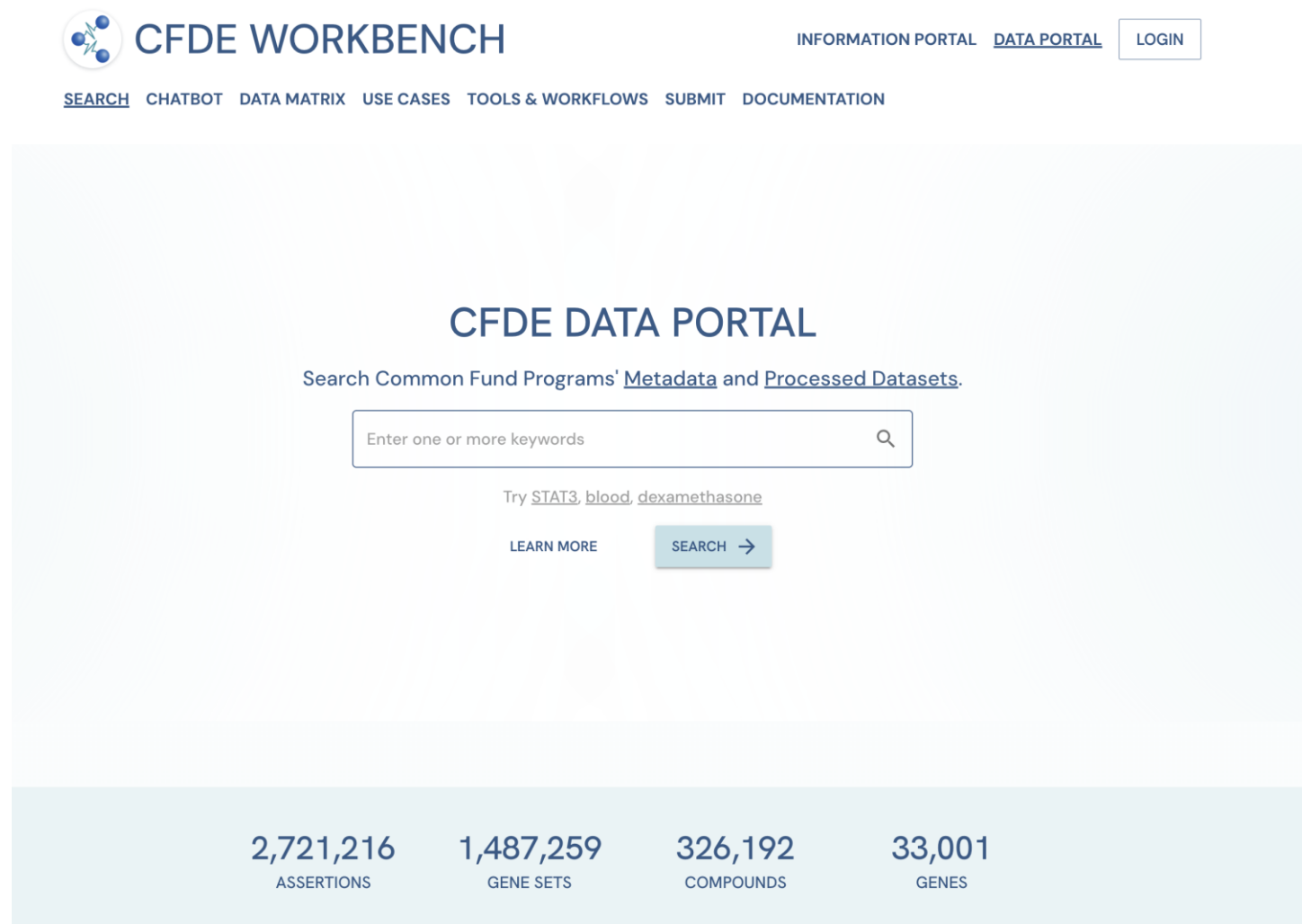
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Data Ecosystem

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How can people interact with the data?



The screenshot shows the CFDE Workbench Data Portal. At the top, there's a navigation bar with the CFDE logo, the text "CFDE WORKBENCH", and links for "INFORMATION PORTAL", "DATA PORTAL", and "LOGIN". Below this is a secondary navigation bar with links: "SEARCH", "CHATBOT", "DATA MATRIX", "USE CASES", "TOOLS & WORKFLOWS", "SUBMIT", and "DOCUMENTATION". The main content area is titled "CFDE DATA PORTAL" and includes a search bar with the placeholder text "Enter one or more keywords". Below the search bar, there's a suggestion: "Try [STAT3](#), [blood](#), [dexamethasone](#)". There are two buttons: "LEARN MORE" and "SEARCH →". At the bottom, a statistics bar displays four metrics: "2,721,216 ASSERTIONS", "1,487,259 GENE SETS", "326,192 COMPOUNDS", and "33,001 GENES".

CFDE WORKBENCH

INFORMATION PORTAL [DATA PORTAL](#) [LOGIN](#)

[SEARCH](#) [CHATBOT](#) [DATA MATRIX](#) [USE CASES](#) [TOOLS & WORKFLOWS](#) [SUBMIT](#) [DOCUMENTATION](#)

CFDE DATA PORTAL

Search Common Fund Programs' [Metadata](#) and [Processed Datasets](#).

Enter one or more keywords

Try [STAT3](#), [blood](#), [dexamethasone](#)

[LEARN MORE](#) [SEARCH →](#)

2,721,216	1,487,259	326,192	33,001
ASSERTIONS	GENE SETS	COMPOUNDS	GENES

<https://data.cfde.cloud/>

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What are researchers currently doing?

**CFDE WORKBENCH**

[INFORMATION PORTAL](#) [DATA PORTAL](#) [LOGIN](#)

[HOME](#) [CF PROGRAMS](#) [CFDE CENTERS](#) [PARTNERSHIPS](#) [TRAINING & OUTREACH](#) [PUBLICATIONS](#) [WEBINARS](#) [WHAT'S NEW?](#)

[INFO](#) > [PUBLICATIONS](#)

CFDE Associated and Common Fund Programs' Landmark Publications

☒ Centers ☒ DCCs ☒ Landmark ☒ R03s

Diwan R, Gaytan SL, Bhatt HN, Pena-Zacarias J, Nurunnabi M. 2024. Liver fibrosis pathologies and potentials of RNA based therapeutics modalities. *Drug Delivery And Translational Research*. 14(10):2743-2770. <https://www.doi.org/10.1007/s13346-024-01551-8>

[PubMed](#) [DOI](#) [R03](#)

[Animals](#) [Liver Cirrhosis](#) [Rna](#) [Lipid Nanoparticle](#) [Rna Therapeutics](#) [Mrna](#) [Nanoparticles](#) [Drug Delivery Systems](#) [Sirna](#) [Humans](#) [Liver Fibrosis](#)

Beaven E, Kumar R, An JM, Mendoza H, Sutradhar SC, Choi W, Narayan M, Lee YK, Nurunnabi M. 2024. Potentials of ionic liquids to overcome physical and biological barriers. *Advanced Drug Delivery Reviews*. 204:115157. <https://www.doi.org/10.1016/j.addr.2023.115157>

[PubMed](#) [PMC](#) [DOI](#) [Export Citation](#) [R03](#)

[Administration, Cutaneous](#) [Biological Barrier](#) [Ionic Liquid](#) [Ionic Liquids](#) [Local Delivery](#) [Noninvasive Delivery](#) [Drug Delivery Systems](#) [Systemic Delivery](#) [Humans](#)

Fisher JL, Wilk EJ, Oza VH, Gary SE, Howton TC, Flanary VL, Clark AD, Hjelmeland AB, Lasseigne BN. 2024. Signature reversion of three disease-associated gene signatures prioritizes cancer drug repurposing candidates. *Febs Open Bio*. 14(5):803-830. <https://www.doi.org/10.1002/2211-5463.13796>

[PubMed](#) [PMC](#) [DOI](#) [Export Citation](#) [R03](#)

[Gene Expression Profiling](#) [Cancer](#) [Drug Repositioning](#) [Glioblastoma](#) [Animals](#) [Glioblastoma](#) [Gene Expression Regulation, Neoplastic](#) [Gene Signature](#) [Mice](#) [Brain Neoplasms](#) [Transcriptomic Signature](#) [Xenograft Model Antitumor Assays](#) [Transcriptome](#) [Antineoplastic Agents](#) [Neoplasms](#) [Cell Line, Tumor](#) [Drug Repurposing](#) [Humans](#)

Gjoni K, Pollard KS. 2024. SuPreMo: a computational tool for streamlining in silico perturbation using sequence-based predictive models. *Bioinformatics (oxford, England)*. 40(6). <https://www.doi.org/10.1093/bioinformatics/btae340>

[PubMed](#) [PMC](#) [DOI](#) [Export Citation](#) [R03](#)

<https://info.cfde.cloud/publications>

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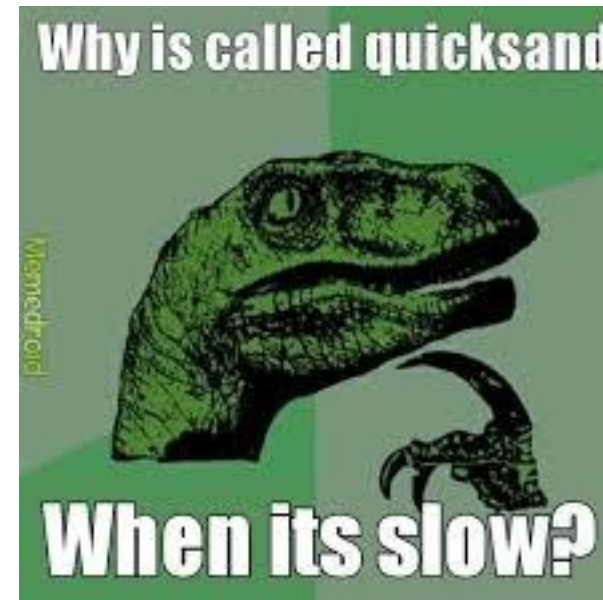
Center

Instructions

- Participants will be assigned to teams of two
- Teams will have 20 minutes to work through the Digital Scavenger Hunt
 - The last question is open-ended: asking participants to find an interesting observation from their favorite dataset
- Answers will be reviewed together as a group with demonstration
 - A different team will get called on to answer each question
 - There will be an opportunity to share the interesting observations
- General Q&A



Q & A Time!



Please Take Our Survey



<https://orausurvey.ora.u.org/n/CFDEscavengerhunt.aspx>

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