

National Institute of **Diabetes and Digestive** and Kidney Diseases

The NIDDK Cooperative Centers of Excellence in Hematology (CCEHs)

Research focus:

- multidisciplinary investigations into gene structure and function;
- cellular and molecular mechanisms involved in the production, maturation, and function of blood cells; and
- development of strategies to treat nonmalignant hematologic diseases.

The CCEHs:

- generate investigative resources that are made available to the broader research community.
- involve integrated teams of investigators from a wide range of disciplines,
- share specialized equipment, and
- serve as regional or national resources.

Importantly, the CCEHs:

- support pilot and feasibility programs that fund small projects aimed at generating preliminary data for inclusion in larger NIDDK grant applications
- Host short-term enrichment activities.

CONTACT

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Research Aims: To advance research in stem cell and transplantation biology.

Services Available:

Large numbers of highly enriched Populations of hematopoietic cells from normal donors' marrow, blood, and mobilized blood including CD34+ cells (95% pure, 5 million for \$600). Canine cells also available.

Viral Vectors & Gene editing tools:



High titer AV, AAV, lenti, retro, and foamy virus vectors: siRNA, shRNA, CRISPR/Cas9, ORFeome editing tools

Canine large animal preclinical model and specific disease (MDS) model.

The proliferative demand on regenerating tissue in large long-lived dogs approximates that of patients. Caninespecific reagents enhance the model. IACUC approved protocols provided.

Specialized Mouse Services:

Breeding NSG, NRG, and NOD/SCID mice; generating humanized mice, imaging mice, and providing technical and mouse handling services.

Clonal Tracking Service:



http://sharedresources.fredhutch.org /core-facilities/cceh-administration

NIDDK Sponsored Cooperative Hematology Specialized Core Centers www.cceh.io

FRED HUTCH CURES START HERE®



Provides molecular assays for tracking genetic signatures.

Center of Excellence in Molecular Hematology

A Center of Molecular Developmental Hematopoiesis

The Children's Hospital Harvard Medical School

Research Aims: To provide state-of-theart services for generating models of human hematologic disorders.

Cores Available:

Mouse Embryonic Stem(ES) Cell and Gene Targeting Core

Generation of gene KO/KI and transgenic mice for non-malignant hematology research. Helps in the design of conventional and conditional gene targeting projects, transgenesis, and use

of the CRISPR/cas9 system for gene modification.



Zebrafish Core

Facility provides state-of-the-art systems for housing, breeding, and doing experiments with zebrafish, an emerging vertebrate model system.



Stem Cell Engineering and Analysis State-of-the-art hiPSC production, QC, expansion, banking and distribution, genome editing, high-content confocal

imaging, chemical genetics screening, flow cytometry, cell sorting, hands-on training, and consultation services.



http://zfrhmaps.tch.harvard.edu/cemh/

IU-CCEH IU-COOPERATIVE CENTER OF EXCELLENCE IN HEMATOLOGY

Research Aims: To advance research in regulation of human and murine hematopoiesis at the level of hematopoietic stem and progenitor cells. **Cores Available:**

Experimental Mouse Resources Core provides immunodeficient and genetically modified mice for multiple in vivo HSC/HPC functional assays



Flow Cytometry Core provides flow cytometric services and genomic and proteomic analysis at the single cell level



Optical Microscopy Core provides services in high resolution optical microscopy & imaging



Angiogenesis Core validates in vitro and in vivo assays of cells involved in angiogenesis necessary for hematopoiesis





Center for Iron and Heme Disorders

Research Aims: To advance research in iron and heme disorders.

Cores Available:

Iron and Heme Core analyzes biological for porphyrin, heme content, heme biosynthetic enzyme activity and metals such as Iron (and other) by ICP-MS.



Mutation Generation and Detection Core designs and produces custom TALEN and CRISPR-Cas9 DNA nucleases for targeted genomic mutations in standard and non-standard model organisms.



Metabolomics Core Metabolomics Core LC-MS and GC-MS metabolomics, lipidomics and isotope tracer analysis.



We support investigators in the field of non-malignant hematology through workshops, pilot and feasibility programs, and career development.



http://cihd.cores.utah.edu/

UNIVERSITY OF UTAH







Yale Cooperative Center of Excellence in Hematology

YCCEH

Research Aims: To apply innovative, emerging technologies to normal and perturbed hematopoiesis.

Cores Available:

Cell Preparation and Analysis Core

Provides access and training in: In vitro hematopoiesis Assays Primary Human CD34+ cells Genetic Library Service High Titer Virus Service iPSC Service **CRISPR** Service

Imaging Core

Provides access and training in: Confocal, 2-photon STED, In vivo imaging facility – 2-photon CINEMA – spinning disk, TIRF, SIM FACS Facility: Imaging Flow Cytometry (Amnis Imagestream), PALM/STORM, and Automated timelapse imaging.



Animal Modeling Core

Provides access and training in: Xenografting into Immunodeficient Mice (NSG, NSG-S, MISTRG), Humanized "BLT" Mice, Transgenic and Knockout Mice (CRISPR), Syngeneic murine in vivo hematopoiesis assays, Tissue harvest and analysis service.



See our website for more details:

http://medicine.yale.edu/labmed/ycceh/