The Origin and Development of the NIH Pharmacogenetics Research Network (PGRN)

From a Gleam in the Eye to Graduation

1998 - 2020

Ronald Krauss, UCSF
and the last Chair of the NIH PGRN
Understanding Individual Variations in Drug Responses: From Phenotype to Genotype

Location: NIH Campus, Bethesda, MD
Start Date: 6/9/1998 8:00 AM
End Date: 6/10/1998 4:30 PM

- Executive Summary
- Background
- Recommendations
- Roster
- Attendees

Executive Summary

The working group recommended that NIGMS stimulate research in the area of pharmacogenetics/pharmacogenomics by: 1.) soliciting grant applications to examine the fundamental mechanisms underlying individual variations in drug responses, and 2.) establishing a resource database of polymorphic variants for proteins known to be essential in determining individual responses to drugs. The group emphasized the importance of relating a phenotype for a drug response to a genotype, in order to determine the functionally important sequence variants.
PGRN - Conception (RFA, 1999)

PHARMACOGENETIC RESEARCH NETWORK AND DATAE

Release Date: December 22, 1998
RFA: GM-99-004
National Institute of General Medical Sciences
National Heart, Lung, and Blood Institute
National Human Genome Research Institute
National Institute of Environmental Health Sciences
National Institute of Mental Health
National Institute on Alcohol Abuse and Alcoholism

Public Briefing Date: March 19, 1999
Letter of Intent Receipt Date: April 30, 1999
Application Receipt Date: July 27, 1999

PURPOSE

The purpose of this request for applications (RFA) is to stimulate formation of a network of Research Groups of investigators and development of a public Pharmacogenetic Database, which will become available to the scientific community for use as a research tool. The study of pharmacogenetics and pharmacogenomics presents opportunities to researchers working at levels ranging from the most molecular to the most clinical, in the fields of pharmacology, physiology, genetics, genomics, medicine, epidemiology, statistics, bioinformatics, and computational biology. It would be desirable to bring investigators with these backgrounds together in a research framework, so that functional variation in proteins and genes that play essential roles in determining drug responses can be studied, interpreted, and related to clinical research situations in a rapid and efficient manner.
PGRN Birth Announcement

First Awards Made in NIH Effort to Understand How Genes Affect People's Responses to Medicines

Tuesday, April 4, 2000, 12:00 p.m. EDT

Diet, environment, and lifestyle can all influence how a person responds to medicines—but another key factor is genes. The National Institute of General Medical Sciences, the National Institute of Environmental Health Sciences and other components of the National Institutes of Health are sponsoring a nationwide research effort to understand how a person's genetic make-up determines the way a medicine works in his or her body, as well as what side effects the person might be prone to developing.

"The outcome of pharmacogenetics research has the potential to improve the health of all Americans, by making the medicines of today and tomorrow safer and more effective for everyone," said Dr. Rochelle Long, a pharmacologist at NIGMS who spearheaded the pharmacogenetics initiative.
PGRN-I Getting to know each other
Project Period: April 2000 to August 2005
Funding: $140 million (funded largely by the National Institute of General Medical Sciences and the National Heart, Lung, and Blood Institute, with additional support from the National Cancer Institute, the National Library of Medicine, the National Institute of Environmental Health Sciences, and the National Human Genome Research Institute).

Number of Centers: 12
Number of Individual Research Grants: 1
Publications in Scientific Journals: more than 380
Genetic Variations (Single Nucleotide Polymorphisms or SNPs) in Database: more than 1 million
PGRN-II  2005-2010: Growing up

SPONSORS:
NIGMS
NHLBI
NHGRI
NCI
NIEHS
NLM

Primary Sites:
Brigham and Women's Hosp.
Children’s Hosp. Oakland
Indiana Univ.
Mayo Foundation
Stanford Univ.
St. Jude
Children’s Hosp.
UCSF
Univ. of Chicago
Univ. of Florida
Univ. of Maryland
Vanderbilt Univ.
Washington Univ.

NIH Pharmacogenetics Research Network

www.nigms.nih.gov/pharmacogenetics
www.pharmgkb.org
PGRN-III 2010-2015: Many new faces
PGRN-III Launch: Retreat 2010

It’s so big!
Class of PGRN-III
PGRN-III: Productivity booming!
Complementary Unbiased Approaches in Zebrafish and in Human Populations to Dissect Genetic Determinants of the Human QT Interval

Abstract

Recording action potentials and propagation in embryonic zebrafish

Validating genes discovered in the zebrafish screen via association with the human QT interval

NOS1AP, identified as a regulator of human QT by GWAS, modulates zebrafish action potentials

Exposing mutant fish embryos to an L<sub>B</sub> blocker identifies lines with aberrant drug responses

APD and arrhythmias with reduced zKCNH2, ortholog of HERG, and the sodium channel inactivation inhibitor ATXII

PGRN-III  Show and tell
Further growth and development: moving to PGx Implementation

Michael Belted Caldwell Galloway
Marshfield, Clinic, WI

The Pharmacogenomics Research Network Translational Pharmacogenetics Program: Overcoming Challenges of Real-World Implementation

AR Shuldiner1,2, MV Relling3, JF Peterson4,5, JK Hicks6, RR Freimuth6, W Sadee7, NL Pereira8, DM Roden4,9, JA Johnson10 and TE Klein11; for the Pharmacogenomics Research Network Translational Pharmacogenetics Program Group

Pharmacogenetics — Tailoring Treatment for the Outliers
Janet Woodcock, M.D., and Lawrence J. Lesko, Ph.D., F.C.P.
PGRN-Riken Center for Genomic Medicine
Leveraging the power of GWAS
Cruising with the PGRN
PGRN-IV 2015-2020: - Reaching Maturity:

- Supported research – NIGMS funded 3 P50 Centers, an R01, and a Hub
- Facilitated collaborations and interactions by establishing a **membership** program
- Provided **research resources** to the pharmacogenomics research community
- Held monthly web-based **Research In Progress Seminars**
- Established and maintained new **website**
- Organized biannual **scientific meetings** with ASHG and the American Society for Clinical Pharmacology & Therapeutics
PGRN Resources

Research In Progress Seminars

2nd Friday of each month
http://www.pgrn.org/rips.html

October Featured Investigator

Debbie Nickerson, PhD
Professor of Genome Sciences
Adjunct Professor of Bioengineering
PGRN-IV Hub: the administrative home and transition to the future

Welcome to the Hub

Your home for the Pharmacogenomics Research Network (PGRN)

Join the PGRN

The mission of the Pharmacogenomics Research Network (PGRN) is to catalyze and lead research in precision medicine for the discovery and translation of genomic variation influencing therapeutic and adverse drug effects.

All individuals interested in pharmacogenomics research may apply.
The Hub of the Hub – Kathy G.
THE EXPANDING UNIVERSE of Pharmacogenomics

Organized by the Pharmacogenomics Research Network (PGRN)

Monday, October 17, 2016
Tuesday, October 18, 2016
Vancouver, Canada

The agenda includes the following sessions:

- Session 1: Innovative Approaches for Pharmacogenomic Discovery
- Session 2: Pharmacogenomics in Drug Discovery
- Session 3: Technologies in Pharmacogenomic Studies
- Session 4: Panel Discussion: Issues for Clinical Implementation of Pharmacogenomics
- Session 5: Pharmacogenetics in a Human Evolution Context

The full agenda and registration information can be found at www.pgrn.org
39 posters displayed
175 attendees
4 trainee award winners

October 19, 2017
Orlando, FL
2nd PGRN Symposium with ASHG

The Pharmacogenomics Research Network (PGRN) presents:
2018 PGRN-ASHG Meeting

The Genomics of Drug Response from Discovery to Implementation

Monday, October 15, 2018, 1pm - 6:30pm
Tuesday, October 16, 2018, 8am - 4pm
(including a joint session with ASHG from 1pm - 4pm)

San Diego Convention Center
San Diego, California

Registration fee: $25

More information and registration at pgrn.org/ashg-2018
2019 PGRN Poster Session @ ASHG Annual Meeting

Congratulations!

Trainee Award Winners

Honorable Mention
2020: Graduation from NIH
Class photos 1
Class Photos 4
With thanks to Dan Roden for photos

Hamlet’s Castle
Elsinore, Denmark

Where are we - and what are we doing there?