National Cancer Institute

CENTER FOR GLOBAL HEALTH

International Research & Development Opportunities at NCI/NIH

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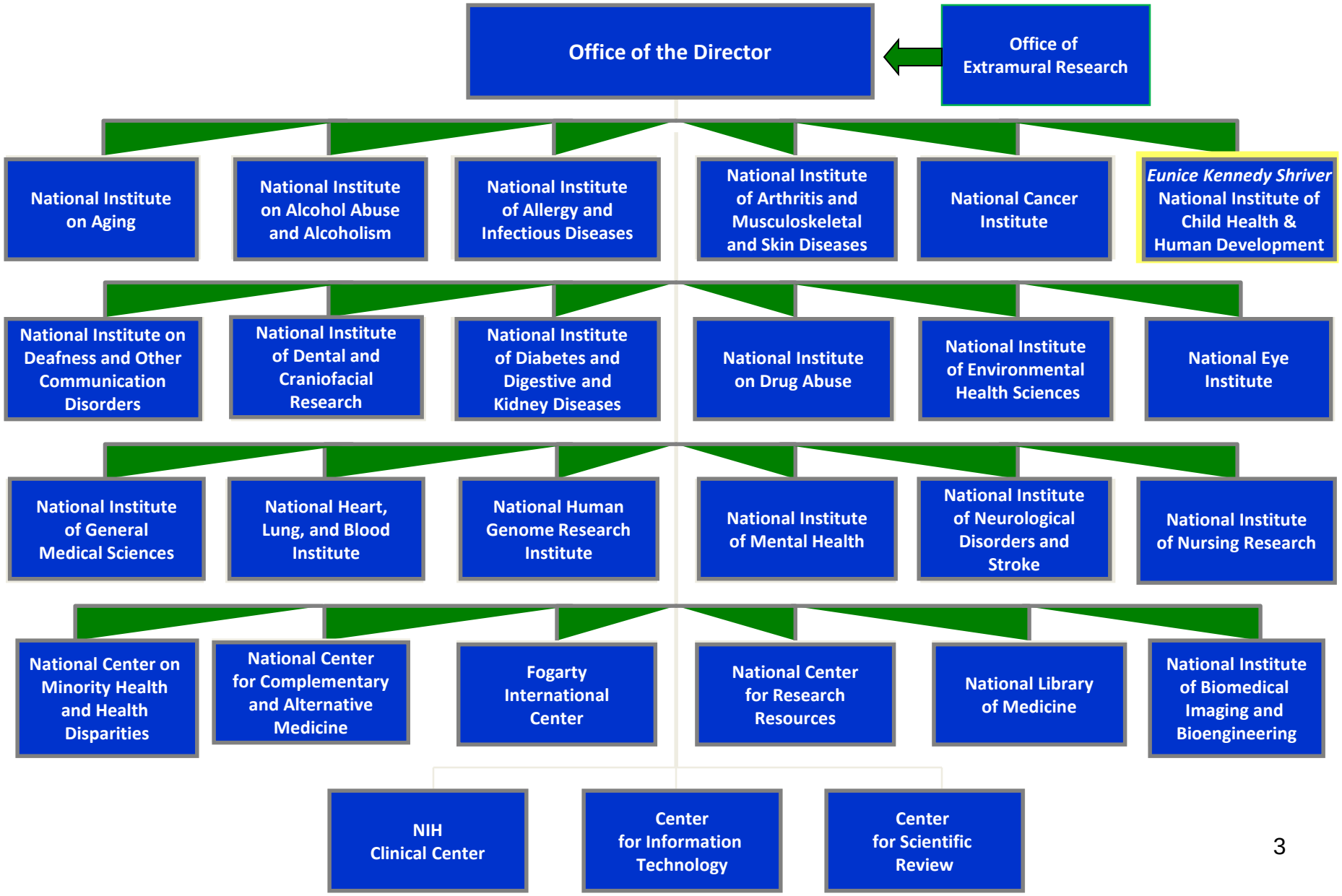
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

NIH: Steward of Biomedical & Behavioral Research

Science in pursuit of knowledge and the application of that knowledge to extend healthy life.

National Institutes of Health



Center for Global Health At-a-Glance

- The NCI Center for Global Health (CGH) was established in 2011 to:
  - Support NCI's goal to advance global cancer research
  - Build expertise and leverage resources across nations to address the challenges of cancer
  - Reduce cancer deaths worldwide

- **CGH collaborates with:**
  - U.S. government agencies
  - Foreign governments
  - International organizations
  - Non-governmental organizations (NGOs)
  - Pharmaceutical and biotechnology companies

NCI Research Opportunities

- **RFA-CA-13-015:** "Cancer Detection, Diagnostic and Treatment Technologies for Global Health (UH2/UH3)": http://grants1.nih.gov/grants/guide/rfa-files/RFA-CA-13-015.html

- **PAR-13-068:** "Feasibility Studies to Build Collaborative Partnerships in Cancer Research (P20)": http://grants.nih.gov/grants/guide/pa-files/PAR-13-068.html

- **NOT-TW-13-011: "**Technology and Outcomes in Low and Middle Income Countries (R21)": http://grants.nih.gov/grants/guide/notice-files/not-tw-13-011.html

Academic-Industrial Partnerships for Translation of in vivo Imaging Systems for Cancer Investigations (R01)

- This Funding Opportunity Announcement (FOA) encourages applications from research partnerships formed by academic and industrial investigators to accelerate the translation of either preclinical or clinical in vivo imaging systems and/or methods that are designed to solve a targeted cancer problem.
- The proposed imaging system/methods may include single or multi-modality in vivo imaging and spectroscopy systems, image-guided and drug delivery systems, image analysis, and related research resources.

NCI Training Opportunities

- **CGH Short Term Scientist Exchange Program:** http://www.cancer.gov/aboutnci/globalhealth/programs-activities/stsep

- **Intramural: NCI Center for Cancer Research (CCR) Basic/Translational and Clinical Training Programs:** http://ccr.cancer.gov/careers/
- **www.nci.gov/funding opportunities (Look NCI Divisions and search if applicable for international collaborations.**

- **Same applies to other NIH ICs (www.nih.gov)**

NCI Support to R&D

- The **Innovative Molecular Analysis Technologies (IMAT)** program was established to support the development, technical maturation, and dissemination of novel and potentially transformative next-generation technologies through an approach of balanced but targeted innovation.
- In support of its mission, the IMAT program utilizes a variety of investigator-initiated research project grant mechanisms while retaining a strong commitment to diversity and to the training of scientists and clinicians in cross-cutting, research-enabling disciplines.

NCI University-Industry Partnership

- The National Cancer Institute (NCI) established a partnership initiative in 2008, in response to a nationally recognized need to improve drug development processes and success rates, through enhanced collaboration among government, academia, life sciences companies, and non-profit research organizations. The initiative has culminated in the creation of the Partnership Development Office (PDO) at the Frederick National Laboratory for Cancer Research (FNLCR).
- Academic, government and private entities can partner with the Frederick National Laboratory for Cancer Research on shared goals.
- The role of the Partnership Development Office is to work with FNLCR staff to assist in building multi-disciplinary partnerships with academic, FFRDCs, industrial and private organizations. The goal of these collaborative agreements is to accelerate treatment for cancer and AIDS by bridging the gap between late discovery and early development of diagnostics and therapeutics, developing cross-cutting technology

NCI Global Consortiums

Scientist Exchange Programs

- *Goal:* To build global capacity for cancer research through the development of a highly-skilled network of researchers
- *Focus Area:* Providing partial support for training of scientists from low, middle, and upper-middle income countries in U.S. extramural laboratories and in overseas laboratories located in higher income countries

International Rare Cancers Initiative

- *Goal:* To increase international clinical trials for patients with rare cancers in order to boost the progress of new treatments for these patients
- *Focus Area:* Using innovative methodologies to answer research questions and identify and overcome barriers to international trials
- *Partners:*
  - Cancer Research UK
  - European Organisation for Research and Treatment of Cancer (EORTC)
  - National Cancer Research Institute (UK)

Other Global Consortia, cont.

International Collaboration in Clinical Trials

- *Goal:* To increase international collaboration in cancer clinical trials
- *Focus Area:* Maintaining an online portal designed to facilitate interactions between NCI-funded research teams and investigators outside the United States

Low Cost Technologies for Global Health

- NCI's Center for Global Health is working to increase the availability of low-cost, portable technologies for cancer diagnosis, imaging, and treatment in low- and middle-income countries (LMICs). The technical scope of our efforts is broad, but we are interested in several key specifications for the technologies we would like to see developed.

NCI/CGH supports development and validation of technologies with the potential to increase early detection, diagnosis, and non-invasive or minimally invasive treatment of cancer. Many of these technologies have the potential to be developed into low-cost, portable, point-of-care versions useful in resource-constrained settings, including the following examples:

In vitro diagnostics:

Lab-on-a-Chip (LOC)/ Paper-based microfluidics

Biosensors

Cytometry

Treatment:

New surgical devices

Cryotherapy

Laser therapy

High-intensity focused ultrasound (HIFU)

Photodynamic therapy

Imaging:

Digital

Optical

Spectroscopy

Ultrasound

The **Small Business Innovation Research (SBIR)** and **Small Business Technology Transfer (STTR)** Programs are NCI's engine of innovation for **developing and commercializing novel technologies** and products to prevent, diagnose, and treat cancer.

The **SBIR and STTR** are one of **the largest sources of early-stage technology financing** in the United States (domestic only).

TUBITAK supports a similar program in **Turkey.**

The **NIH Common Fund** encourages collaboration across the ICs while providing the NIH with flexibility to determine priorities for Common Fund support. To date, the Common Fund has been used to support a series of short term, exceptionally high impact, trans-NIH programs.

The NIH Intramural Research Program (IRP) comprises intramural programs embedded in 23 of the NIH Institutes and Centers and located on one or more of the NIH campuses.

The Intramural Research Program (IRP) trains physicians and scientists at the postdoctoral and clinical levels. We also train graduate and medical students, post-baccalaureate fellows, and summer students. Training occurs on our main campus in Bethesda, Maryland, as well as at our other campuses across the United States. Over 5,000 basic scientists and clinicians from the U.S. and around the globe call the National Institutes of Health (NIH) home for between one and five years, while they further their education and professional development. No other place in the world has such a concentration of laboratories and individuals focused on improving the health of humankind.

National Cancer Institute (NCI)

Center for Cancer Research (CCR)

CCR conducts basic and clinical cancer research and develops novel therapeutic interventions for cancer and HIV patients.

Division of Cancer Epidemiology and Genetics (DCEG)

DCEG conducts population and multidisciplinary research to discover the genetic and environmental determinants of cancer and new approaches to cancer prevention.

National Heart, Lung, and Blood Institute (NHLBI)

NHLBI performs scientific and clinical research to better understand the biology and clinical pathology of heart, lung, and blood diseases.

NCI's Center for Global Health Short-Term Scientist Exchange Program.

The Center for Global Health (CGH) Short-Term Scientist Exchange Program (STSEP) promotes collaborative research between established U.S. and foreign scientists from low, middle, and upper-middle income countries by supporting, in part, exchange visits of cancer researchers between U.S. and foreign laboratories. The visits vary in duration. Applications are accepted throughout the year, with application deadlines of June 1, September 1, December 1, and March 1. Candidates are notified of the funding decision within one month of these deadlines.

General Conditions

Candidates must have a Ph.D., M.D., or a certified equivalent degree, a minimum of one year postdoctoral experience in cancer research, and an invitation from a qualified host. *Persons holding U.S. permanent resident status ("green card") or a work visa are not eligible for this program*. Awardees must fulfill the visa requirements of the host country. **Awards are limited to visits of six months or less, and cannot be renewed or extended.** Shorter visits are given preference.

The STSEP follows NIH fellowship guidelines for subsistence allowance, generally split equally between NCI and either the home or host institution.

Eligibility Requirements

Non-U.S. Candidates Visiting U.S. Laboratories

Non-U.S. candidates applying to work in the U.S. must be from LMICs, as defined by World Bank.

Turkey is eligible

NIH's Fogarty International Center Programs in Europe:

U.S.-European cooperation has been a strong and vital component of the NIH research agenda. While a few activities take place under the auspices of bilateral programs, the majority of collaborations are initiated and carried out without the assistance of formal agreements. Together with NIH, a number of other European governmental organizations carry out the bulk of the world's publicly funded biomedical research, supporting scientific investigations of practically every aspect of human health.

Countries in Region

Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kosovo, Latvia, Lichtenstein, Lithuania, Luxemburg, Macedonia, Monaco, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Scotland, Serbia and Montenegro, Slovakia, Slovenia, Spain, Sweden, Switzerland**, Turkey,** United Kingdom, Vatican, European Commission

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NIH's Fogarty International Center Programs that might be competed in the near future applicable to Turkey:

Brain Disorders in the Developing World: Research Across the Lifespan

Contact: Dr. Kathleen Michels, brainfic@nih.gov

Global Infectious Disease Research Training Program (GID)

Contact: Dr. Barbara Sina, barbara.sina@nih.gov

International Cooperative Biodiversity Groups (ICBG)

Contact: Dr. Flora Katz, Flora.Katz@nih.gov

Medical Education Partnership Initiative (MEPI)

Contact: FICMEPI@mail.nih.gov

Stigma and Global Health Research Program (STIGMA)

Contact: Dr. Kathleen Michels, Kathleen.Michels@nih.gov

Current NIH Fogarty International Center Programs in Turkey:

International Mental Health and Developmental Disabilities Research Training Program Children's Hospital Corporation Munir, Kerim Turkey-Anakara University

NCD-LIFESPAN Global Mental Health Developmental Disorders Research Training Institute Children's Hospital Corporation Munir, Kerim includes Ankara University, Istanbul University **and Hacettepe University: Hilal Ozcebe, Univ. of Hacettepe, hilalozcebe@gmail.com**

Full Award: Development of an International Guide to Monitor and Support Child Development Yale University School of Medicine Forsyth, & Ankra University Medical School

NIH's National Institute of Biomedical Imaging and Bioengineering (NIBIB)

Scientific Program Areas:

The NIBIB is the newest of the NIH research Institutes and Centers. It was established to provide a research home for the development and application of new technologies and techniques for the delivery of health care in the 21st century. It brings together the research communities of biomedical imaging, bioengineering, the physical sciences and the life sciences to advance human health by improving quality of life and reducing the burden of disease. Learn more about the mission and history of the NIBIB. Learn about the NIBIB research program areas, including descriptions, staff contacts, relevant programs and study sections.

NIH's Priority Areas of Research in Biomedical Engineering and Imaging

- Biomaterials
- Sensors
- Biomedical Informatics
- Mathematical Modeling, Simulation and Analysis
- Structural Biology
- Magnetics, Biomagnetic and Bioelectric Devices
- Nanosystems; Platform Technologies
- Image Processing
- Surgical Tools
- Micro-Biomechanics
- Tele-health
- Molecular Imaging
- Image Guided Intervention
- Tissue Engineering

Bioreactors for Reparative Medicine (R43/R44)

Bioreactors for Reparative Medicine - SBIR Direct Phase II (R44)

Neuroscience Information Framework (U24)

In-vivo Methods for Assessing Placental Development and Function (SBIR) [R43/R44]

In-vivo Methods for Assessing Placental

Interdisciplinary Training and Career Development Bioengineering

To attract and train bright and talented researchers, the NIBIB provides support in a broad range of training programs. These include disciplinary programs to support and bridge areas of NIBIB relevance, multidisciplinary programs to promote the clinical translation of emerging technology, and interdisciplinary programs to train a new cadre of researchers working at the intersection of the biological and physical sciences. These programs are designed to support researchers throughout the career continuum, increase the number of clinician-scientists, and enhance the participation of underrepresented populations in biomedical imaging and bioengineering research.

NIH's National Center for Advancing Translational Sciences (NCATS)

NCATS is:

Facilitating other translational research activities supported by NIH.

Complementing research conducted in the private sector.

Reinforcing NIH's commitment to basic research.

One of NCATS' primary activities is to collaborate closely with the other NIH Institutes and Centers to establish its research priorities as well as to develop translational tools and resources that facilitate research across NIH.

NCATS unifies programs in the following three areas: **Clinical and Translational Science**, **Rare Disease Research and Therapeutics**, and **Re-engineering Translational Sciences**.

The Clinical and Translational Science Awards (CTSA) program, part of the NCATS Division of Clinical Innovation, supports a national consortium of medical research institutions working to improve the way clinical and translational research is conducted nationwide. CTSA institutions support innovative multidisciplinary team science, train investigators in clinical research, and foster dynamic research partnerships and collaborations to accelerate the translation of basic science into clinical treatments and improved patient health.

NIH/NCATS Rare Diseases Research:

Of the more than 6,500 rare diseases, there are effective treatments for fewer than 250. NCATS' research in this area fills critical gaps in the field of translation because rare disease research often garners little interest from the private sector. NCATS' Office of Rare Diseases Research in the NCATS Office of the Director coordinates and supports research on rare diseases at NIH. The Bridging Interventional Development Gaps (BrIDGs) program, part of the NCATS Division of Pre-Clinical Innovation, provides successful applicants developing therapeutic agents with access to critical resources in support of pre-clinical studies. The Therapeutics for Rare and Neglected Diseases (TRND) program, which is part of the NCATS Division of Pre-Clinical Innovation, encourages the development of new drugs for rare and neglected diseases

NIH/NCATS

Re-engineering Translational Sciences

Developing new treatments is complicated, costly and risky — less than 1 percent of compounds initially tested actually make it into a patient's medicine cabinet.

Many of the steps between basic scientific research and premarket clinical trials have been performed the same way for more than a decade and have not seen the benefit of the bold innovation that has characterized other branches of biomedical science.

Thus, the process for translating scientific discoveries into new tools and treatments is ripe for innovation.

Other International Research & Training Programs at NIH

- **Framework Programs for Global Health Innovation (FRAME Innovation**) will provide support to institutions in the U.S. and in low- and middle-income countries (LMICs) to build capacity within their institutions to develop broadly interdisciplinary, postdoctoral (or post-terminal degree) research training programs in global health directed towards encouraging innovation in health-related products, processes and policies.
- Interdisciplinary trainee teams should be challenged to identify critical health needs in LMICs that can be addressed through innovation, and carry out the underlying scientific research necessary to develop, validate, and test their concepts.
- **www.fic.gov/funding opportunities**
- **www.nih.gov (ICs) international research and training opportunities**

International Programs at NIH

- **Mobile Health: Technology and Outcomes in Low and Middle Income Countries** will support research on the development or adaptation of mobile health (mHealth) technology specifically suited for low- and middle-income countries (LMICs) and the health-related outcomes associated with implementation of the technology.
- The program aims to contribute to the evidence base for the use of mobile technology to improve clinical outcomes and public health while building research capacity in LMICs and establishing research networks in this area. In the context of this program, mHealth includes the use of mobile and wireless devices (cell phones, tablets, etc.) to improve health outcomes, health care services and health research. The mHealth technology that is developed or adapted in proposed projects can include external hardware and/or software components for mobile or wireless devices.

Other International NIH Programs

- This Funding Opportunity Announcement (FOA) invites new planning grant applications for the **Global Infectious Disease (GID) Research Program** from applicants at low- and middle-income research institutions (LMICs). The application should propose plans to develop a collaborative research program with a U.S. institution that will strengthen the capacity of the applicant institution to conduct infectious disease (excluding HIV/AIDS and select agents) research.

Example of a Successful NIH Application from Turkey

- The project is a NIH grant to support collaborative work between **Georgia Tech and Bogazici University in Turkey.**
- **Research Objectives:** The goal of this effort is the development of a safe and effective magnetic resonance imaging (MRI) catheter/guidewire system for cardiac catheterization. This grant application addresses an important safety problem of MRI induced heating associated with traditional catheters and guidewires with applications to the U.S. and worldwide.
- **Foreign involvement is for subcontract work at the Institute of Biomedical Engineering at Bogazici University** in Istanbul, Turkey which will focus on catheter prototype design, construction and testing.
- **The Turkish PI** will supervise a graduate student at Bogazici University who will also work on the project. In addition, during part of the proposed grant the PI and graduate students will be conducting research in the intramural program of NIH.
- **Excellent scoring**

Rationale High Scoring

- **Approach.** Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project.
- **Environment.** The scientific environment in which the collaborative work will be done contributes to the probability of success of the project.
- Institutional support, equipment and other physical resources available to the investigators in an adequate way.
- Proposal defined well the importance and the impact of the collaboration with another country. In this case Turkey.

Rationale High Scoring NIH-Turkey

- **Significance.** The project proposed addressed an important problem or a critical barrier to progress in the field.
- The Specific Aims (a critical element of any NIH application were all achievable within the duration of the project.
- **Investigator(s).** The **PI** in the U. S. and the **collaborators in Turkey** were all suited for the project. Including complementary and integrated expertise; the organizational structure proposed was appropriate for the project.
- **Innovation.** The application challenged and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches, methodologies, and instrumentation.

Grant Writing & Scientific Peer Review and Scientific Writing Workshops

- These workshops are developed as an effort to increase the level of biomedical and health research participation in the NIH programs among Low & Middle Income countries researchers.

- Increasing the participation of scientists from mid- to low-resource countries in the research grant process.

- Using competitive research as a tool to address global health issues.

International Technology Transfer & Technologies for LMICs Workshop

- NCI/CGH & NIH/OTT
- Patenting and licensing inventions
- Research Collaboration Agreements
- Clinical Trials Agreements
- Cooperative Research and Development Agreements (CRADAs)
- Technology Transfer Policy
- Monitoring, Enforcement, and Marketing
- International Partnerships
- Clinical Trials at NCI
- Technology Transfer Training Opportunities

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