

The University of Pittsburgh Cancer Institute

UPCI Academy

2015 Annual Report



UPCI Academy

upci.upmc.edu/UPCIAcademy/

Cancer is the number one cause of death for individuals dying under the age of 85 in the United States. If this problem is to be adequately addressed in the near future, we need to have the best and brightest scholars working on it. The UPCI Academy offers that chance to high school students with the motivation to go as deep as they can into a specific, focused question in science. They work on problems of substantial interest to their faculty mentors, assuring that they are deeply immersed in the substantive questions at the cutting edge of the known and the unknown.

We pair our scholars with extraordinary Principle Investigators and mentors across the University of Pittsburgh and its Cancer Institute. Thereby, we accelerate their growth as scientists and as individuals. The hands-on approach to their career development is an eye-opening experience that stays with them forever. They find themselves surrounded by individuals as curious as they are and ambitious to find a place in the world to create new knowledge. Furthermore, the work they do here has a chance to make a lasting impact on those affected by cancer. We also have made a commitment to those under-represented in the biomedical sciences including minorities and disadvantaged who do not have ready access to our facilities as well as to strengthening the strategic partnerships of the University of Pittsburgh, UPCI, and UPMC.

In this, our seventh year as a program, we witnessed the success of 57 scholars, the incorporation of a new site, the launching of the first International student in Cologne, Germany, the addition of new team members, a renewal in funding from the National Cancer Institute (NCI), the growth of our relationships with organizations throughout Pittsburgh, and the initiation of several new partnerships.

It is with great pleasure that we present our Annual Report for 2015 with deepest thanks to The University of Pittsburgh, UPCI, our community partners, our program team, and the scholars past and present who make us who we are. We are resolute and poised for the future where our best and brightest are prepared for meaningful careers in biomedicine – facing the problems of malignant disease.

A handwritten signature in black ink, appearing to read "Michael T. Lotze". The signature is fluid and cursive, with a large initial "M" and "L".

Michael T. Lotze, MD

Program Director

UPCI Academy 2015

“The [UPCI Academy] has definitely allowed me to grow and give me confidence to pursue a scientific career.”

*- Elizabeth Hung
UPCI Academy Scholar
2015*



UPCI Academy 2015

In This Report

- Who We Are.....4
- Our History.....5
- By the Numbers.....6
- Sites of The UPCI Academy.....9
 - Cancer Biology (CB) / Center for Integrated Oncology (CIO)*
 - Cancer Environment, Bioengineering, Imaging and Genetics (CEBIG)*
 - Computer Science, Biology and Biomedical Informatics (CoSBBi)*
 - Drug Discovery, Systems and Computational Biology (DiSCoBio)*
 - Tumor Immunology (TI)*
 - Women’s Cancer Research Center (WCRC)*
- Program-wide Activities.....17
- Final Presentations.....19
- Program Evaluation.....20
- Our Team.....22
- Our Partners.....24
- Appendices..... 25
 - Appendix A (UPCI Academy Boot Camp Agenda)*
 - Appendix B (UPCI Academy Keynote Schedule)*
 - Appendix C (CMU Day Itinerary)*
 - Appendix D (Weekend Activity and Talent Show Photos)*



Who We Are

The UPCI Academy was held from June 15—August 7, 2015.

"[The UPCI Academy] demonstrated how medicine and research can come together in a state of the art facility and with world renown faculty who were willing to sacrifice their time to educate high schoolers like me. I discovered not only biological phenomena but also the career of my dreams and have been given the tools and experiences to realize it."

- Adam Barsouk

UPCI Academy Scholar 2015

Our Mission

The University of Pittsburgh Cancer Institute (UPCI) Academy strives to provide cutting edge research and career preparatory experiences to a diverse group of highly motivated high school students who are pursuing higher education and careers in STEM fields, especially research and medicine.

Our Goals

- Increase our scholars' exposure to STEM careers, particularly those related to cancer care and research
- Deepen our scholars' understanding of topics pertaining to cancer care and research ranging from the hallmarks of cancer to biomedical informatics and systems biology
- Enhance the development of our scholars' research and communication skills
- Achieve diversity among our scholars by employing robust outreach to highly motivated high school students considered to be underrepresented in the biomedical sciences

Curriculum

In this eight-week summer program, scholars explore complex questions within a particular area of cancer research at one of six sites across The University of Pittsburgh campus. Approximately eighty percent of their time is spent working in the lab of a dedicated faculty researcher. The remaining time is spent receiving didactic instruction; touring facilities dedicated to clinical cancer care and research; participating in journal clubs; and attending cameo presentations by accomplished professionals in the field. At the end of the program, each scholar delivers a ten-minute oral presentation and participates in a poster symposium that reflects their findings in the lab.

UPCI Academy Sites

- Cancer Biology (CB) / Center for Integrated Oncology (CIO)
- Cancer Environment, Bioengineering, Imaging and Genetics (CEBIG)
- Computer Science, Biology and Biomedical Informatics (CoSBBI)
- Drug Discovery, Systems and Computational Biology (DiSCoBio)
- Tumor Immunology (TI)
- Women's Cancer Research Center (WCRC)

Our History

2009



- The UPCI Summer Academy for Cancer Careers is launched at The Hillman Cancer Center with an inaugural class of 5 scholars.

2010

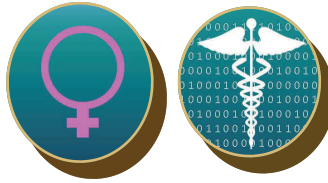
- 12 scholars are recruited for The UPCI Academy including the first two non-Pennsylvania residents to participate in the program.



- The National Cancer Institute (NCI) provides funding for the program as a supplement to UPCI's P30 Cancer Center Support Grant.
- Partnerships with Pittsburgh Public Schools, The University of Pittsburgh Office of Health Sciences Diversity, and The Jack Kent Cooke Foundation are forged to promote recruitment of individuals considered to be un-

derrepresented in the biomedical sciences.

2011



- The UPCI Academy expands to include the Computer Science, Biology and Biomedical Informatics (CoSBBI) Site as well as the Magee-Women's Research Institute (MWRI) Site.
- 26 scholars are recruited for the program.

2012

- The Doris Duke Charitable Foundation provides funding to support 10 scholars considered to be underrepresented in the biomedical sciences.
- 28 scholars are recruited for the program.



2013

- The Doris Duke Academy for Clinical Research is fully integrated into

The UPCI Academy.



- The Drug Discovery, Systems and Computational Biology (DiSCoBio) Site and the Tumor Immunology (TI) Site are added for a total of 5 sites.
- The MWRI Site is formally renamed The Women's Cancer Research Center (WCRC) Site.



- 52 scholars are recruited for the program including the first 3 to come from outside the U.S.

2014



- The Center for Health Equity Research (CHERP) Site and the Center for Integrated Oncology Cologne/Bonn Academy (CIO) Site are

added to the UPCI Academy for a total of 7 sites.

- 44 scholars are recruited for the program.



- Dr. Michael Lotze, Program Director, is awarded the Carnegie Science Award for Leadership In STEM Education.
- The UPCI Academy is nominated for Coro Pittsburgh's Martin Luther King Jr. Award for Distinguished Organizational Leadership.

2015

- The CHERP Site is replaced with the new Cancer Environment, Bioengineering, Imaging and Genetics (CEBIG) Site.



- 57 scholars are recruited for the program.
- The NCI CURE agrees to provide program funding for an additional 5 years.

Onward!

By the Numbers

To date, 224 scholars have participated in The UPCI Academy. Over the past seven years, our recruiting network has grown to span high schools from the local to international levels.

Local / State

Key: High School (Location), # of students who have participated in UPCI Academy



Avella Jr./Sr. High (Avella, PA), 1 • Barack Obama Academy of International Studies 6 -12 (Pittsburgh, PA), 1 • Brashear High School (Pittsburgh, PA), 1 • Burrell High School (New Kensington, PA), 1 • Central Catholic High School (Pittsburgh, PA), 6 • Council Rock High School South (Holland, PA), 1 • Dubois Area High School (Dubois, PA), 1 • Elizabeth Forward High School (Elizabeth, PA), 1 • Fox Chapel Area High School (Pittsburgh, PA), 8 • Fuchs Mizrahi School (Wexford, PA), 1 • Gateway Senior High School (Monroeville, PA), 5 • Hampton High School (Allison Park, PA), 1 • Hempfield Area High School (Greensburg, PA), 2 • Keystone Oaks High School (Dormont, PA), 1 • Montour High School (McKees Rocks, PA), 3 • Mt. Lebanon High School (Pittsburgh, PA), 4 • New-Hope Solebury High School (New Hope, PA), 2 • North Allegheny Intermediate High School (Wexford, PA,) 9 • North Allegheny Senior High School (Wexford, PA), 12 • North Hills High School (Pittsburgh, PA), 3 • Norwin High School (North Huntingdon, PA), 1 • Oakland Catholic High School (Pittsburgh, PA), 3 • Our Lady of the Sacred Heart High School (Coraopolis, PA), 2 • Parkland High School (Allentown, PA), 1 • Peabody High School (Pittsburgh, PA), 1 • Perry High School (Pittsburgh, PA), 1 • Peters Township High School (McMurray, PA), 1 • Pine-Richland High School (Gibsonia, PA), 2 • Pittsburgh Creative and Performing Arts (Pittsburgh, PA), 2 • Pittsburgh Science & Technology Academy (Pittsburgh, PA), 17 • Plum Senior High School (Plum, PA), 1 • Quaker Valley High School (Leetsdale, PA), 3 • Riverside High School (North Sewickley Twp., PA), 1 • Schenley High School (Pittsburgh, PA), 1 • Sewickley Academy (Sewickley, PA), 4 • Shadyside Academy (Pittsburgh, PA), 7 • South Fayette High School (McDonald, PA), 1 • South Side High School (Hookstown, PA), 1 • Springdale High School (Springdale, PA), 2 • Taylor Alderdice High School (Pittsburgh, PA), 16 • The Ellis School (Pittsburgh, PA), 5 • Upper St. Clair High School (Upper St. Clair, PA), 6 • Valley Forge Military Academy and College (Wayne, PA), 1 • Vincentian Academy (Pittsburgh, PA), 3 • Westinghouse High School (Pittsburgh, PA), 1 • Winchester Thurston High School (Pittsburgh, PA), 6

By the Numbers

National

Key: High School (Location), # of students who have participated in UPCI Academy

Absegami High School (Galloway, NJ), **3** • Adlai E. Stevenson High School (Lincolnshire, IL), **1** • Alabama School of Mathematics and Science (Mobile, AL), **1** • Allendale Columbia School (Rochester, NY), **1** • Annandale High School (Annandale, VA), **2** • Archimedian Upper Conservatory (Miami, FL), **1** • Culver Academy (Culver, IN), **1** • De Pere High School (De Pere, WI), **1** • Delbarton School (Montville, NJ), **1** • Dulaney High School (Timonium, MD), **2** • Eastern Regional High School (Voorhees, NJ), **1** • Fayetteville-Manilus High School (Manlius, NY), **2** • Flint Hill School (Oakton, VA), **1** • Fowler High School (Fowler, MI), **1** • Grassfield High School (Chesapeake, VA), **1** • Greater Egg Harbor Regional High School District (Galloway, NJ), **1** • Green Hope High School (Cary, NC), **1** • Gwinnett School of Mathematics Science and Technology (Lawrenceville, GA), **1** • H-B Woodlawn Secondary Program (Arlington, VA), **1** • Kamehameha Kapālama High School (Honolulu, HI), **6** • Marine Academy of Tech. and Environ. Sci. (Toms River, NJ), **1** • Mission San Jose High School (Fremont, CA), **1** • Montgomery Blair High School (Silver Spring, MD), **1** • Naperville High School (Naperville, IL), **1** • Oakton High (Vienna, VA), **1** • Orem High School (Orem, UT), **1** • Pflugerville High School (Pflugerville, TX), **1** • Pharr San Juan Alamo North High School (Pharr, TX), **1** • Poolesville High School (Clarksburg, MD), **1** • PSJA Southwest High School (Pharr, TX), **1** • Punahou High School (Hololulu, HI), **1** • Raleigh Charter High School (Raleigh, NC), **1** • Rampart High School (Denver, CO), **1** • Ridgewood High School (Ridgewood, NJ), **1** • St. Albans Academy (St. Albans, VT), **1** • St. Johns Academy (Houston, TX), **1** • Stuart Country Day School of the Sacred Heart (Princeton, NJ), **1** • The Black School (White Bear Lake, MN), **1** • Thomas Jefferson High School (Alexandria, VA), **4** • Trinity Valley School (Fort Worth, TX), **1** • Waltham High School (Waltham, MA), **1** • Woodson High School (Fairfax, VA), **6**



International

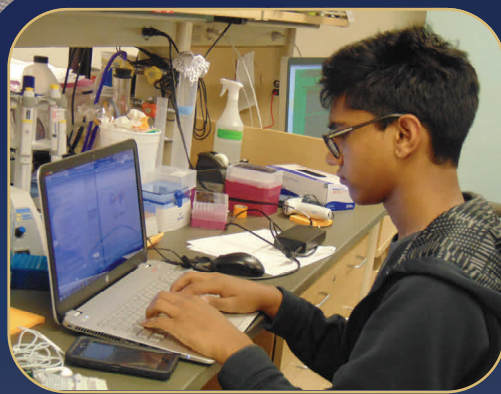
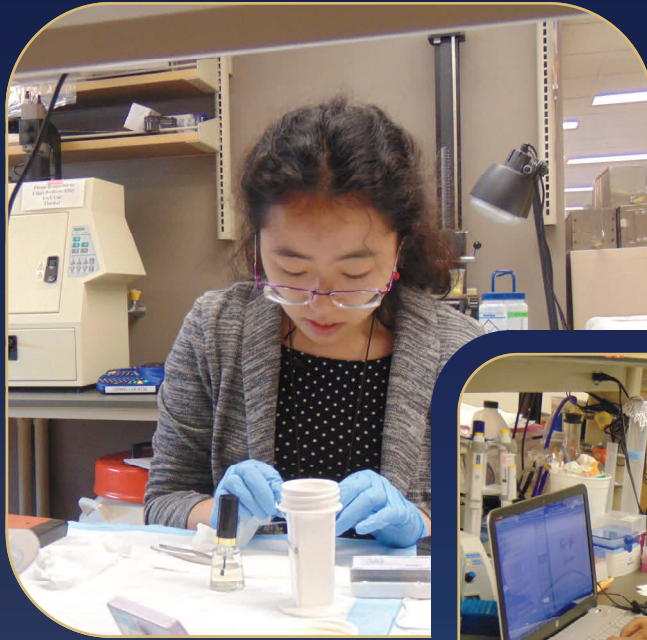
Astana, Kazakhstan, **2** • Georg-Buchner-Gymnasium (Cologne, Germany), **1** • Nazarbayev University (Astana, Kazakhstan), **1** • Oak House School (Barcelona, BN, Spain), **1**

By the Numbers

Colleges and Universities attended by UPCI Academy alumni.

Allegheny College • Boston University • Bryn Mawr College • California Institute of Technology (Caltech) • Carnegie Mellon University • Case Western Reserve • Chatham University • College of William and Mary • Columbia University • Cornell University • Creighton University • Duke University • Duquesne University • Erie Community College • Georgetown University • Harvard University • Haverford College • Heinrich-Heine-Universität • Indiana University • Indiana University of Pennsylvania • Lehigh University • Marietta College • Massachusetts Institute of Technology • Montclair State University • Mount Aloysius College • Nazarbayev University • Northwestern University • New York University • Olivet Nazarene University • Penn State University • Princeton University • Purdue University • Robert Morris University • Santa Clara University • Skidmore College • Spelman College • St. Bonaventure University • St. Louis University • Stanford University • Temple University • Tulane University • University of California Berkley • University of California Los Angeles • University of Chicago • University of Maryland • University of Notre Dame • University of Pennsylvania • University of Pittsburgh • University of Rochester • University of Southern California • University of Tampa • University of Virginia • University of Wisconsin, • Wake Forest University • Washington & Jefferson College • Washington University of St. Louis • Wellesley College • Yale University





Sites of The UPCI Academy



CB

“Over all, the UPCI [Academy] has impacted me in many ways. It gave me the opportunity to dive into real lab work, be exposed to many different professions, and learn a lot about cancer.”

- *Musharrat Anisha*
UPCI Academy Scholar 2015

Cancer Biology

Overview

Scholars at the CB site are introduced to key concepts in cancer biology such as tumor suppressors and oncogenes; cell signaling and growth factors; the role of metabolism and disordered mitochondrial mechanisms; the role of inflammation in cancer; the tumor microenvironment; and tissue invasion/metastasis.



Site Director

Michael T. Lotze, MD

Location

Hillman Cancer Center
5117 Centre Ave
Pittsburgh, PA 15213

CB Scholars 2015

Nicolás Amich Manero
Oak House School,
Barcelona, Spain

Musharrat Anisha
Absegami High School
Galloway, NJ

Adam Barsouk
Taylor Allderdice High School,
Pittsburgh, PA

Sarah Glatz
North Hills Senior High School,
Pittsburgh, PA

Sarah Hou
Adlai E. Stevenson High School,
Lincolnshire, IL

Elizabeth Hung
New Hope-Solebury High School,
New Hope, PA

Isabella Kopits
Stuart County Day School,
Princeton, NJ

Continued on Page 11

Syllabus

Program Literature: *The Biology of Cancer, 2nd Edition* by Robert A. Weinberg
Primary Journal articles and reviews

Topics:

- Basic Biology and Lab Techniques
- How to Present a Paper
- Overview of Cancer
- Tumor Viruses
- Oncogenes
- Growth Factors
- Cytoplasmic Signature
- Tumor Suppressors
- Cell Cycle
- Apoptosis
- Immortality / Senescence
- Tumorigenesis
- Genomic Integrity / Inherited Defects
- Heterotypic / TME
- Angiogenesis
- Metastasis
- Immunology Overview
- Tumor Immunology
- Rational Tx of Cancer

Cameos:

- *Richard Steinman, MD PhD*
Associate Professor
Department of Medicine,
Division of Hematology/Oncology
- *E. Michael Meyer*
Research Scientist
Manager, Flow Cytometry Facility
UPCI
- *Nikki Schmitt, MD*
Surgical Fellow
Department of Otolaryngology
- *Kathleen Dorritie, MD*
Assistant Professor
Division of Hematology/Oncology
- *Joseph T. Newsome, D.V.M.*
Research Associate Professor
Department of Pathology
- *Christa Lorenchick, MS*
Graduate Genetics Professional
UPMC Cancer Genetics Program
- *Brandon P. Reines, D.V.M.*
Associate Veterinarian
St. Francis Animal Hospital

Cameos and Tours Continued on Page 11



CB (continued) / CIO

“Going into the program, I did not know what to expect. I had no previous research experience and lackluster presentation skills...In all, I have gained recognition in the bioinformatics community and adopted professional level working skills.”

- Joshua Le

UPCI Academy Scholar 2015

CB Scholars 2015

Nikita Maheshwari

*Livingston High School,
Livingston, NJ*

Rida Merchant

*Mt. Lebanon High School,
Pittsburgh, PA*

Donovan Moore

*Winchester Thurston High School,
Pittsburgh, PA*

Yein Park

*Upper St. Clair High School,
Pittsburgh, PA*

Ashwin Reddy

*North Allegheny Senior High School,
Wexford, PA*

Fateemah Saleem

*Allendale Columbia School,
Rochester, NY*

Brianna Watson

*Pittsburgh Science & Technology
Academy, Pittsburgh, PA*

CIO Scholar 2015

Sarah Glatz

*North Hills Senior High School,
Pittsburgh, PA*

Cancer Biology and The Center for Integrated Oncology

Cameos (continued from Page 10):

- *Brian J. Karlovitz, D.O.*
Director of Clinical Operations
Mary Hillman Jennings Radiation
Oncology Center
UPMC Shadyside Hospital
- *Craig Byersdorfer, MD, PhD*
Assistant Professor
Department of Pediatrics
- *Linda B. Robertson, RN, MSN,
Dr PH*
Assistant Professor
Department of Medicine, Division of
Hematology/Oncology
- *Brenda Diergaarde, PhD*
Assistant Professor
UPCI
Cancer Epidemiology and Prevention
Program (CEPP)
Department of Epidemiology
- *Sheldon Bastacky, MD*
Professor
Department of Pathology
- *Carissa Low, PhD*
Assistant Professor
Department of Psychology
Department of Medicine, Division of
Hematology/Oncology

Tours:

- UPCI Retreat
- Animal Facility
- Radiation Oncology Suite
- Flow Cytometry Facility
- Operating Room
- Zebra Fish Facility

CIO Overview

The CIO site in Germany focuses largely on leukemias and lymphomas. Under the direction of Dr. Michael Hallek and Dr. Cornelia von Levetzow, five to six laboratories each host one to two scholars for a four-week program that mirrors the curriculum design at the UPCI Academy. In the summer of 2015, one CB scholar, Sarah Glatz, participated in the CIO Koln Bonn Academy.

CIO Website: www.cio-koeln-bonn.de/en/education/summer-academy

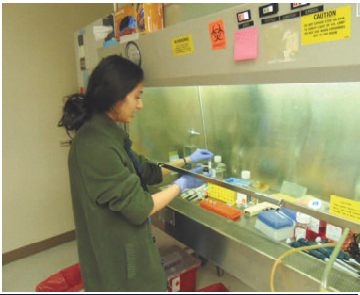


“Being able to see how cancer research works in addition to experiencing a new culture is something I could have only dreamed of doing.”

- Sarah Glatz

UPCI Academy Scholar

2015



CEBIG

Cancer Environment, Bioengineering, Imaging and Genetics

Site Director

Gary Thomas, PhD

Location

507 Bridgeside Point II
450 Technology Dr.
Pittsburgh, PA 15219

CEBIG Scholars 2015

Stephanie Araki

*Kamehameha Schools Kapalama,
Honolulu, HI*

Alyssa Bell

*North Hills Senior High School,
Pittsburgh, PA*

Hunter Crittenden

*Mt. Lebanon High School,
Pittsburgh, PA*

Patricia Donehue

*Pittsburgh Science & Technology
Academy, Pittsburgh, PA*

Madeline Lee

*Fayetteville Manilus High School,
Manilus, NY*

Shaylin Marn

*Kamehameha Schools Kapalama,
Honolulu, HI*

Zain Mehdi

*North Allegheny Senior High School,
Wexford, PA*

Anrey Peng

*North Allegheny Senior High School,
Wexford, PA*

Javier Perez

*Pharr-San Juan-Alamo Southwest
Early College High School,
Pharr, TX*

Leila Reines

*The Ellis School,
Pittsburgh, PA*

Miranda Thompson

*Pittsburgh Science & Technology
Academy, Pittsburgh, PA*

MaKenzie Wright

*Elizabeth Forward High School,
Elizabeth, PA*

Overview

At CEBIG, leading scientists from the Departments of Environmental and Occupational Health; Bioengineering; and Microbiology and Molecular Genetics collaborate to introduce scholars to interdisciplinary research that addresses the complex roles of the cellular and organismal environment (both internal and external), microbes, and genetics in the onset and progression of cancer.



Syllabus

Program Literature: *The Biology of Cancer, 2nd Edition* by Robert A. Weinberg
Primary Journal articles and reviews

Topics:

- Macrophages in Endometriosis
- Molecular Imaging
- Acrolein-induced lung injury
- Inflammation-associated lung cancer
- ABC-transporter structure-function
- Luciferase imaging quantification
- Control of p53 regulators
- liver cancer; Wnt signaling
- chemotherapeutic cardiotoxicity

Cameos:

- *George Leikauf, PhD*
Professor
Department of Environmental
and Occupational Health
- *Carolyn Anderson, PhD*
Professor
Department of Radiology

Tours:

- UPCI Retreat
- Center for Biologic Imaging
- Operating Room Observation Deck
- Zebra Fish Facility



CoSBBI

"I had such a great experience both academically and socially."

- *Nikita Maheshwari*
UPCI Academy Scholar 2015

Site Director

David Boone, PhD

Location

Dept. of Biomedical Informatics
5607 Baum Blvd
Pittsburgh, PA 15206

CoSBBI Scholars 2015

Arushi Bandi

*Pine-Richland High School,
Wexford, PA*

Albert Kim

*Gwinnet School of Mathematics,
Science, and Technology,
Suwanee, GA*

Jahn timer Kurukulasuriya

*Taylor Allderdice High School,
Pittsburgh, PA*

Joshua Le

*New Hope-Solebury High School,
New Hope, PA*

Ishan Levy

*Taylor Allderdice High School,
Pittsburgh, PA*

Olaoluwa Owoputi

*Plum Senior High School,
Plum, PA*

Mit Patel

*Absegami High School,
Galloway, NJ*

Lukas Schmit

*Winchester Thurston High
School, Pittsburgh, PA*

Sreeroopa Som

*Fox Chapel Area High School,
Pittsburgh, PA*

Xi Xu

*Fox Chapel Area High School,
Pittsburgh, PA*

Computer Science, Biology and Biomedical Informatics

Overview

Scholars at CoSBBI learn about the application of software and computational techniques involved in clinical and research problems covering a wide range of topics that include genomic and proteomic data mining; pharmacogenomics; image analysis; interface design; natural language processing; machine learning; and biosurveillance.



Syllabus

Program Literature: PLOS Computational Biology Collection
Primary Journal articles and reviews

Topics:

- Python Computer Programming
- Molecular Biology
- Bioinformatics
- Probability and Statistics
- Information Visualization
- Data Mining / Machine Learning
- User-Centered Design
- Pharmacogenomics
- Cancer Informatics
- Finding and Reading Research Papers
- Precision Medicine
- Clinical Decision Support
- Boolean Algebra & Logic
- Effective Communication with a Scientific Poster
- Protein-Protein Interactions
- Nursing Informatics
- Clinical Trials
- Journal Clubs
- Research Discussion

Cameos:

- *Xinghua Lu, MD/PhD*
Associate Professor
Department of Biomedical Informatics
- *Harry Hochheiser, PhD*
Assistant Professor
Department of Biomedical Informatics
- *Rich Caruana, PhD*
Senior Researcher
Microsoft
- *Ervin Sejdic, PhD*
Assistant Professor
Department of Bioengineering
- *Young Ji Lee, PhD, MS, RN*
Assistant Professor
Department of Health & Community Systems
- *Vanathi Gopalakrishnan, PhD*
Associate Professor
Department of Biomedical Informatics

Tours:

- Health Science Library
- Operating Room
- Pittsburgh Supercomputing Center
- Zebra Fish Facility



DiSCoBio

"UPCI was AMAZING, and I will always be grateful to it for introducing me into a whole new field of biology that I've never heard of before."

- *Maya AlMoussa*

UPCI Academy Scholar 2015

Site Director

Joseph C. Ayoob, PhD

Location

Biomedical Science Tower 3
3501 Fifth Avenue
Pittsburgh, PA 15213

DiSCoBio Scholars 2015

Maya AlMoussa

*Pittsburgh Science & Technology
Academy, Pittsburgh, PA*

Zongda Che

*Valley Forge Military Academy
Wayne, PA*

Keanu Davis

*Winchester Thurston High School,
Pittsburgh, PA*

Jungho Gong

*Alabama School of Mathematics
and Science, Mobile, AL*

Christopher L. Gonzalez Jr.

*Sewickley Academy Senior School,
Pittsburgh, PA*

Taylor Robinson

*The Ellis School
Pittsburgh, PA*

Anika Roy

*Gateway Senior High School
Monroeville, PA*

Raghu Venkatesh

*North Allegheny Senior High
School, Wexford, PA*

Drug Discovery, Systems and Computational Biology

Overview

The Drug Discovery, Systems and Computational Biology (DiSCoBio) Site on Pitt's Oakland campus is hosted by the Department of Computational and Systems Biology and the University of Pittsburgh Drug Discovery Institute. Here, scholars explore both computational and experimental approaches to cancer biology, drug discovery, and other fast-growing fields.



Syllabus

Program Literature: Primary Journal articles and reviews

DiSCoBio Website: www.discobio.pitt.edu

Topics:

- Introduction to Experimental Research
- Introduction to Computer Programming
- Introduction to Reading and Presenting Scientific Papers
- An overview of Computational Structural Biology
- An overview of Computational Genomics
- An overview of Drug Discovery
- An overview of Systems Biology
- An overview of Computational Bioimage Informatics
- Preparing Scientific Presentations

Cameos:

- *Visiting undergraduates from universities across the US*
Training and Experimentation in Computational Biology (TECBio)
Research Experiences for Undergraduates (REU)
- *PhD candidates from various Pitt and CMU departments*
CMU-Pitt PhD Program in Computational Biology (CPCB)
- *Thomas Kensler, PhD*
Professor
Department of Pharmacology and Chemical Biology
- *John Maier, MD, PhD*
Assistant Professor, Director of Research and Development
Department of Family Medicine
Group Leader, Tissue Diagnostics
University of Pittsburgh Drug Discovery Institute
- *Andreas Vogt, PhD*
Associate Professor
Department of Computational and Systems Biology
Group Leader, Small Organism Discovery
University of Pittsburgh Drug Discovery Institute

Tours:

- Operating Room Observation Deck
- Pittsburgh Supercomputer Machine Room
- University of Pittsburgh Drug Discovery Institute
- Zebra Fish Facility



TI

"I learned way more than I could have imagined both in the lab and outside the lab."

- *Kevelis Matthews-Alvarado*
UPCI Academy Scholar 2015

Site Director

Robert J. Binder, PhD

Location

Biomedical Science Tower
200 Lothrop St.
Pittsburgh, PA 15261

TI Scholars 2015

Charis Allen
Winchester Thurston High School, Pittsburgh, PA

Eishan Ashwat
South Fayette High School, McDonald, PA

Samuel Butler
Central Catholic High School, Pittsburgh, PA

Aditi Chattopadhyay
Upper St. Clair High School, Pittsburgh, PA

Timothy Im
Trinity Valley School, Forth Worth, TX

Sabrina Jones
Barack Obama Academy of International Studies,

Kevelis Matthews-Alvarado
The Ellis School, Pittsburgh, PA

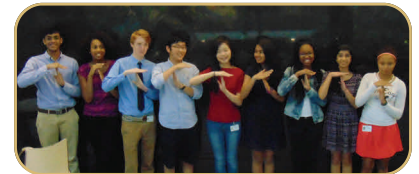
Mahima Reddy
Upper St. Clair High School, Pittsburgh, PA

Emily Xu
Raleigh Charter High School, Raleigh, NC

Tumor Immunology

Overview

Scholars at TI explore basic concepts in immunology as well as the dynamic interaction between the immune system and cancer. Scholars are introduced to research in areas of cancer immunology where they explore mechanisms underlying initiation of immune responses to cancers by defining key cellular and molecular components of an immune response and elucidating aspects of novel immunotherapies for cancer.



Syllabus

Program Literature: *The Biology of Cancer, 2nd Edition* by Robert A. Weinberg
Janeway's Immunobiology, 8th Edition by Kenneth Murphy
Primary Journal articles and reviews

Topics:

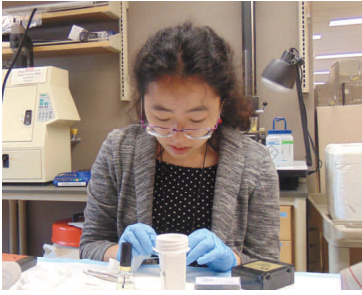
- Overview/Laboratory Introduction, Fundamental Biology: Macromolecules
- Basic Anatomy and Physiology, Cell Biology, Molecular Biology, Experimental Model Organisms
- Introduction to Cancer
- Hallmarks of Cancer
- Immunology-Innate: Cells, Systems, Receptors, Effector Mechanisms
- Immunology-Adaptive: Cells, Systems, Receptors, Effector Mechanisms
- Tumors, T cells, and the Immune System
- Immunosurveillance: History and Current Paradigms
- Tumor Antigens: Definition, History, Types, Rejection Antigens, T & B Cell Antigens
- Immune Cells and Cancer: Tregs, MDSCs, DCs, NK, Macrophages, Neutrophils
- Immune Evasion
- Immunotherapy: T cell and Antibody-based Approaches and Other

Cameos:

- *Dewayne Falkner*
Flow Facility Manager
Department of Immunology
- *Donna Beer Stolz, PhD*
Associate Professor
Department of Cell Biology

Tours:

- Center for Biologic Imaging
- Flow Cytometry Facility
- Operating Room
- Zebra Fish Facility Tour



WCRC

“Participating in [The UPCI Academy] has exposed me to the true nature of research and has taught me to balance short-term outcomes with long-term goals, resulting in a unique and valuable perspective that I can apply not only to the research lab, but to any setting.”

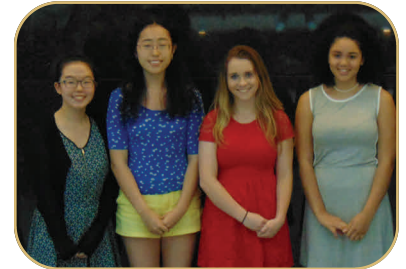
- Mahima Reddy

UPCI Academy Scholar 2015

Women’s Cancer Research Center

Overview

Scholars placed at the WCRC site were exposed to various aspects of research in women’s cancers. Their research projects centered on critical questions associated with breast and ovarian cancers utilizing patient samples and animal models.



Site Director

Yi Huang, PhD

Location

Magee-Women’s Research Institute
204 Craft Ave
Pittsburgh, PA 15213

WCRC Scholars 2015

Julia Donovan
*Waltham High School,
Waltham, MA*

Xiaoxi Gao
*Taylor Allderdice High School,
Pittsburgh, PA*

Jeewon Lee
*North Allegheny Senior High
School, Wexford, PA*

Deja Peterson
*Pittsburgh Science & Technology
Academy, Pittsburgh, PA*

Syllabus

Program Literature: Primary Journal articles and reviews

Topics:

- Breast cancer biology
- Ovarian cancer biology
- Molecular therapeutics
- Hormonal therapy resistance
- Breast cancer animal model
- Breast cancer pathology
- Lab Technique Workshop

- Experimental Design
- Lab Math
- How to Read a Scientific Paper
- Cancer Biology
- Molecular Biology
- Cell Biology
- Effective Communication Through a Scientific Poster

Cameos:

- *Susan Farabaugh, PhD*
Postdoctoral Fellow
Women’s Cancer Research Center
- *Rohit Bhargava, MD*
Professor
Department of Pathology
- *Michael Trang, PhD*
Associate Professor
Department of Developmental Biology

Tours:

- Health Science Library
- Operating Room
- Zebra Fish Facility

Program-Wide Activities

Boot Camp



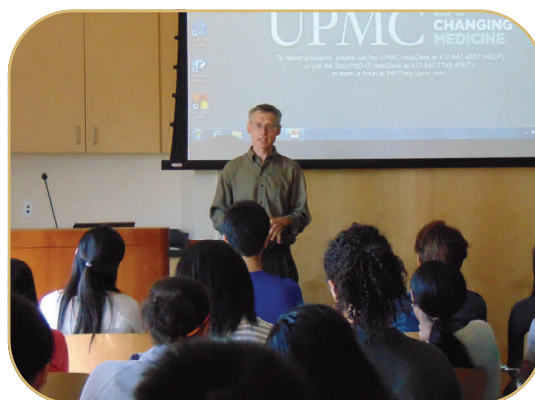
Each year, on the first day of the program, scholars meet at The Hillman Cancer Center for The UPCI Academy Boot Camp. Here, scholars go through an orientation which includes mandatory training sessions that authorize them to work in a lab. Rounding out the Boot Camp are basic lessons in research and ice-breaker activities that allows the scholars to become acquainted with one another.

Boot Camp Activities

- Student Registration
- Welcome to The UPCI Academy / The University of Pittsburgh
- Clip from *Cancer: The Emperor of All Maladies*
- Introduction to Sites and Site Directors
 - CB and CIO
 - CEBIG
 - CoSBBI
 - DiSCoBio
 - TI
 - WCRC
- UPCI Academy Expectations
- Evolution, Biology and Hallmarks of Cancer
- Chemical Hygiene and Blood-borne Pathogen Training
- Responsible Research and Record Keeping
- Giving a Memorable and Effective Presentation
- Group Photos and Icebreaker Activity

For the expanded Boot Camp Agenda, See Appendix A

Weekly Keynotes



This year, we piloted a Weekly Keynote Speaker Series in which scholars gathered every Wednesday morning from 8 - 10 AM to learn about ongoing research as well as how to build a successful career in science. Keynote speakers included faculty and staff from The University of Pittsburgh and local subject matter experts.

Keynote Topics

- Diversity Awareness
- Emerging Therapies in Breast Cancer
- Leadership and Purpose
- Biomedical Informatics and Relevant Career Paths
- Clip from *Cancer: The Emperor of All Maladies*
- Targeting Cancer through Drug Discovery
- Basics of Effective Science Communication
- The Immune System and How It Fights Cancer
- Intro to The University of Pittsburgh Admissions
- Estrogen and It's Role in Breast Cancer
- Bioengineering and Pathology in Cancer Research
- Zebra Fish Facility Tour

For the complete list of Keynote Speakers and Titles, See Appendix B

Program-Wide Activities

CMU Field Trip



On Wednesday July 22, 2015, scholars met at Carnegie Mellon University (CMU) where they had the opportunity to explore various specialties in science ranging from robotics to organic chemistry with CMU faculty. This field trip also gave scholars a forum in which they could gain experience discussing their own research projects with peers in the science community beyond The University of Pittsburgh.

CMU Field Trip Breakouts

- Cellular Imaging
- Chemical Biology of G Quadruplexes
- Computer Science/Philosophy
- Entertainment Technology Center/
Serious Play Conference
- International Genetically Engineered Machine (iGEM)
- Machine Learning
- Magnetic Resonance Imaging
- Robotics

CMU Field Trip Keynote Lectures

- The Landscape of Exponential Curves
William Scherlis, PhD
Director, Institute for Software Research (SCS/ISR)
- You Are What You Eat: The Evolution of Diet
Ann Gibbons
Contributing Writer, Science Magazine
Instructor, Dept. of English, CMU

For the expanded Boot Camp Agenda, See Appendix C

Weekend Outings



Scholars are invited to participate in a variety of recreational outings that supplement the regular programming. Social outings such as these give scholars a chance to bond and experience some of the cultural highlights of Pittsburgh. A select few activities were coordinated specifically for the nonlocal scholars participating in our residential program, but the majority of outings were open to all scholars

Weekend Outings

- June 20: Carnegie Museums of Art and Natural History and Razyzy Fresh Frozen Yogurt
- June 27: Annual UPCI Academy BBQ at The Becich Residence
- July 3: Pittsburgh Pirates v. Cleveland Indians at PNC Park
- July 4: Pittsburgh Riverhounds v. New York Red Bulls II at Highmark Stadium
- July 18: Pittsburgh Zoo & PPG Aquarium (For Dorm Scholars)
- July 19: Pitt Day at Kennywood Park
- July 25: UPCI Academy Day of Service
 - Morning: PurpleStride Pittsburgh 5k
 - Afternoon: Flowers for Patients Party
- August 2: Annual UPCI Academy Crab Party at The Lotze/Harvey Residence
- July 27: UPCI Academy Talent Show

For more pictures from the weekend activities and Talent Show program, See Appendix D

Final Presentations



Final presentations took place on Friday August 7, 2015. In the morning, each site hosted its own ceremony where scholars delivered their oral presentations after being introduced by their faculty mentors. Following the oral presentations, all scholars came together at The Hillman Cancer Center atrium to participate in a poster symposium open to the entire UPCI community. Posters were judged by faculty using a standard rubric that gauged the quality of the scholars' research, visual presentation, and oral communication.

Poster Symposium Winners



Nicolás Amich Manero
(CB)



Adam Barsouk
(CB)



Patricia Donehue
(CEBIG)



Zain Mehdi
(CEBIG)



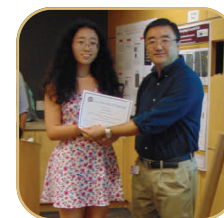
Sreeroopa Som
(CoSBBI)



Maya AlMoussa
(DiSCoBio)



Eishan Ashwat
(TI)



Xiaoxi Gao
(WCRC)

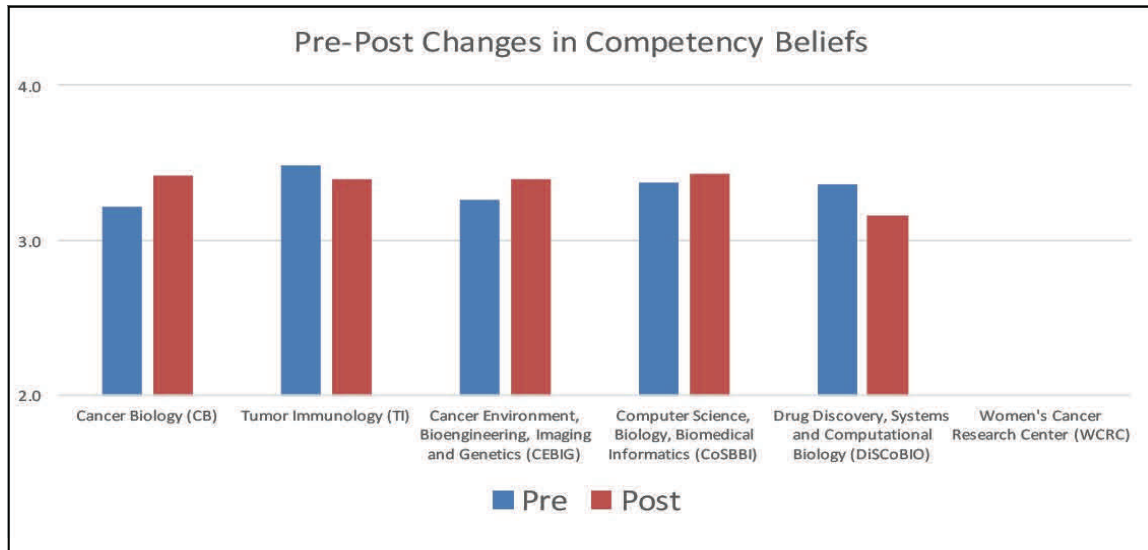
Program Evaluation

Pre/Post Evaluations

Scholars completed a standard survey that measured how capable they perceived themselves to be in science. This survey was administered two times: once at the beginning of the program and once at the conclusion of the program.

Results Below

Note: not all WCRC scholars were present when pre/post tests were administered, so results were inconclusive.

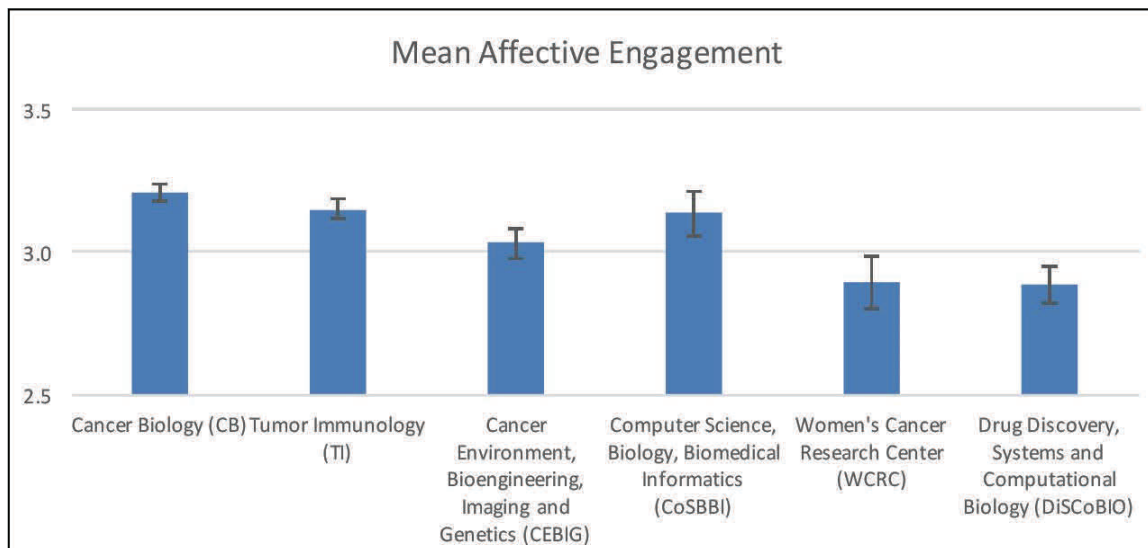


Weekly Evaluations: What drove these pre/post changes?

Scholars also completed a weekly standard survey that assessed their perceived Affective Engagement, Cognitive-Behavioral Engagement, and Perceived Success in their work. The survey was administered Wednesday mornings when scholars gathered for the weekly Keynote Sessions. Affective Engagement refers to scholars' general feelings toward the people and subject matter that comprise the learning experience at their respective sites. Scholars were asked to rate their agreement with multiple statements meant to assess this area ranging from Strongly Agree ("YES!") to Strongly Disagree ("NO!"). Each answer corresponded to a numerical value that was used to calculate the Mean Affective Engagement of scholars over the course of the program (YES! = 4, Yes = 3, No = 2, NO! = 1).

Example statement: "During the last week, I was excited."

Results Below

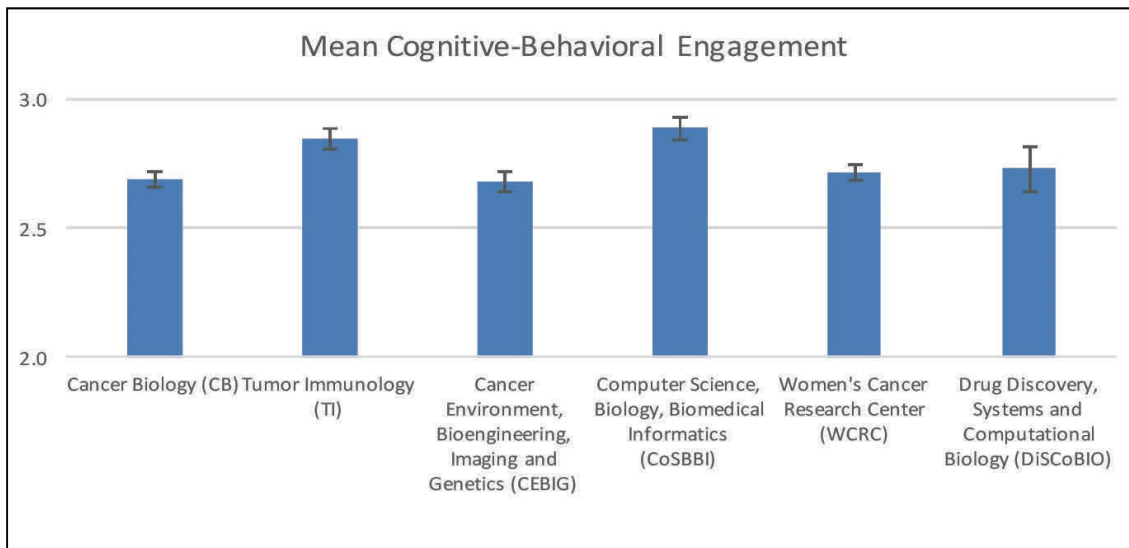


Program Evaluation

Cognitive –Behavioral Engagement refers to scholars’ level of intellectual investment in what they are learning and the conduct that results from it. Scholars were asked to rate their agreement with multiple statements meant to assess this area ranging from Strongly Agree (“YES!”) to Strongly Disagree (“NO!”). Each answer corresponded to a numerical value that was used to calculate the Mean Cognitive-Behavioral Engagement of scholars over the course of the program (YES! = 4, Yes = 3, No =2 , NO!=1).

Example statement: “During the last week, I was focused on the things that we were learning all of the time.”

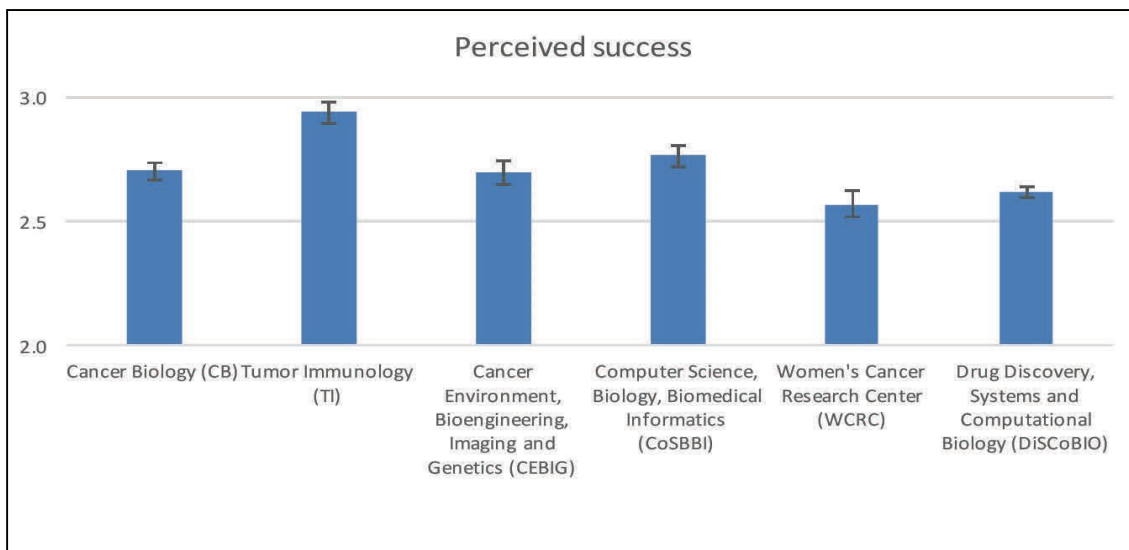
Results Below



Perceived Success refers to how well the scholars think their overall performance was in the previous week and how that performance compared to the other scholars at the specific site. Scholars were asked to rate their agreement with multiple statements meant to assess this area ranging from Strongly Agree (“YES!”) to Strongly Disagree (“NO!”). Each answer corresponded to a numerical value that was used to calculate the Mean Perceived Success of scholars over the course of the program (YES! = 4, Yes = 3, No =2 , NO!=1).

Example statement: “During the last week, I did everything well.”

Results Below



Our Team

Program Leadership

**Michael T. Lotze,
MD**

Program Director
CB Site Director

**Lindsay Surmacz,
BA**

Project Manager

**Gary Thomas,
PhD**

CEBIG Site Director

**David Boone,
PhD**

CoSBBI Site Director
WCRC Instructor

**Joseph C. Ayoob,
PhD**

DiSCoBio Site Director

**Robert J. Binder,
PhD**

TI Site Director

**Yi Huang,
PhD**

WCRC Site Director

**Maryann Donovan,
MPH, PhD**

Program Administration
Liaison



Our Team

Resident Advisors

This year, our team consisted of five resident advisors (RA's) who supervised scholars in the dorms, assisted with activity coordination, and provided guidance to scholars in preparing their projects. In addition to their primary role in the UPCI Academy, all RA's participated in the Student Undergraduate Research Program (SURP) within The University of Pittsburgh's School of Medicine.

Jarrold Ellis, University of Pittsburgh,

Paula Lee-Oesterreich, University of Pittsburgh

Jennifer Hall, Johns Hopkins University

Azfar Merchant, University of Rochester

Lindsey Spiker, State University of New York (SUNY) at Plattsburgh

Participating Principle Investigators

CB	Dr. Chris Bakkenist • Dr. Greg Delgoffe • Dr. Albert Donnenberg • Dr. Vera Donnenberg • Dr. Julie Eisman • Dr. Deborah Galson • Dr. Paola Grandi • Dr. Zong Sheng Guo • Dr. Charles Horn • Dr. Frank Jenkins • Dr. Li Lan • Dr. Arthur Levine • Dr. Patricia Opresko • Dr. Elke Pogge-von Strandmann • Dr. Linda Robertson • Dr. Laura Stabile
CEBIG	Dr. Fabrisia Ambrosio • Dr. Stephan Badylak • Dr. Aaron Barchowsky • Dr. Bryan Brown • Dr. Y.P. Peter Di • Dr. Andrew Wayne Duncan • Dr. George D. Leikauf • Dr. Patrick Thibodeau • Dr. Rocky Tuan • Dr. Justin Weinbaum
CoSBBI	Dr. Richard Boyce • Dr. Roger Day • Dr. Joyeeta Dutta-Moscato • Dr. Harry Hochheiser • Dr. Adrian Lee • Dr. Nolan Priedigkeit • Dr. Xinghua Lu • Dr. Ervin Sejdic • Dr. Bill Shirley
DiSCoBio	Dr. Emily Furbee • Dr. David Koes • Dr. Tim Lezon • Dr. Bing Liu • Dr. Filippo Pullara • Dr. Jose-Juan Tapia-Valenzuela • Dr. Lawrence Vernetti • Dr. Andreas Vogt
TI	Dr. Paul Monga • Dr. Michael Naelsnik • Dr. Melanie Scott • Dr. Walter Storkus • Dr. Allan Tsung • Dr. Dario Vignali • Dr. You Zhaoyang
WCRC	Dr. Adrian Lee • Steffi Oesterreich • Kyle Orwig

Supporting Team

Juraj Adamik • Thomas Andrews • Ivet Bahar • Sheldon Bastacky • Michael J. Becich • Michael Becich, Jr. • Tanja Bekhuis • Takis Benos • Shana Bergman • Jan Beumer • Kristina Buschur • Maria Chikina • Fernando Concha-Benavente • Brenda Diergaarde • Mike Ding • Rory Donovan • Kathleen Dorritie • Amie Draper • Sean Engel • Jim Faeder • Susan Farabaugh • Paul Feight • Arielle Fisher • Kelly Gentile • Eleanor Natalie Gibson • Sandra Gibson • Vanathi Gopalakrishnan • Rekha Gyanchandani • Kristia Hamilton • Sherry He • Christof Kaltenmeier • Brian Karlovits • Tiffany Katz • Tom Kensler • Andy King • Lauren Brooke Kinner • Megan Lambert • Hyokyeong Lee • Young Ji Lee • Alison Lithgow • Christa Lorenchick • Carissa Low • Brian Lu • Xinghua Lu • Gengkon Lum • John Maier • Kevin McCormick • E. Michael Meyer • Payal Mital • Ericka Mochan • Joan Neitznick • Joseph Newsome • Luong Nguyen • Zoltan Oltvai • Arturo Lopez Pineda • Jessica Poli • Brandon Reines • Katrina Romagnoli • Nicole Schapiro • David Schatz • Nikki Schmitt • Abigail Sedlacek • John Skoko • Justin Spiriti • Richard Steinman • Andy Stern • Nilgun Tasdemir • Lans Taylor • TECBio REU students • Gina Toy-Cutler • Michael Tsang • Jen Walker • Wenqian Wang • Bryan Webb • Tom Williams

Our Partners

Advisory Board

Shawn K. Butler, MA.....Director of Programs, The Pittsburgh Promise
Kevin Ashley, JD, PhD.....Professor, School of Law, University of Pittsburgh
Professor, Graduate Program in Intelligent Systems, University of Pittsburgh
Senior Scientist, Learning Research and Development Center (LRDC), University of Pittsburgh
Rebecca Cullen, BA.....Director of Young Scholars Program and Events, Jack Kent Cooke Foundation (JKCF)
Paula K. Davis, MA.....Asst. Vice Chancellor, Office of Health Sciences Diversity, University of Pittsburgh
Rhonda Graham.....Director of Professional Development, Pittsburgh Public Schools (PPS)
Laurie Heinricher, M.Ed.....Curriculum Director, Hampton Township School District
Chalis S. Henderson, MA.....Program Coordinator, The Fund for the Advancement of Minority Education (FAME)
Edwina Kinchington, PhD.....Educator, Body and Behavior Concentration (Biomedical technology),
Pittsburgh Science & Technology Academy (SciTech)
John G. Radzilowicz, Ed.M.....Adjunct Professor, Dept. of Physics and Astronomy, University of Pittsburgh
Adjunct Professor, Dept. of Early, Middle and Special Education, California University of Pennsylvania
Anthony G. Robins, PhD.....Director of Operations and Research, The Uzuri Think Tank, Robert Morris University
Morris E. Turner, Jr.....Program Manager, UPMC Center for Engagement and Inclusion

Major funding by...

The University of Pittsburgh

University of Pittsburgh Medical Center (UPMC)

National Cancer Institute (NCI)

Doris Duke Charitable Foundation (DDCF)

Jack Kent Cooke Foundation (JCKF)

With generous support by...

The University of Pittsburgh Departments of Bioengineering, Biomedical Informatics, Environmental and Occupational Health, Microbiology & Molecular Genetics, and Immunology

The University of Pittsburgh Drug Discovery Institute

The University of Pittsburgh Office of Science Education Outreach

The University of Pittsburgh Learning, Research and Development Center (LRDC)

The University of Pittsburgh School of Medicine

Magee-Women's Research Institute (MWRI)/ Women's Cancer Research Center (WCRC)

McGowan Institute for Regenerative Medicine

UPMC Center for Engagement and Inclusion

Carnegie Mellon University

The Center for Integrated Oncology

Coro Pittsburgh

Covestro

The Queen's Medical Center (Honolulu, HI)

Family House

The Fund for the Advancement of Minority Education (FAME)

The Pittsburgh Promise

Pittsburgh Public Schools

Pancreatic Cancer Action Network (PANCAN)

Ayoob Woodworks

Dave & Andy's Homemade Ice Cream

DJMaculate

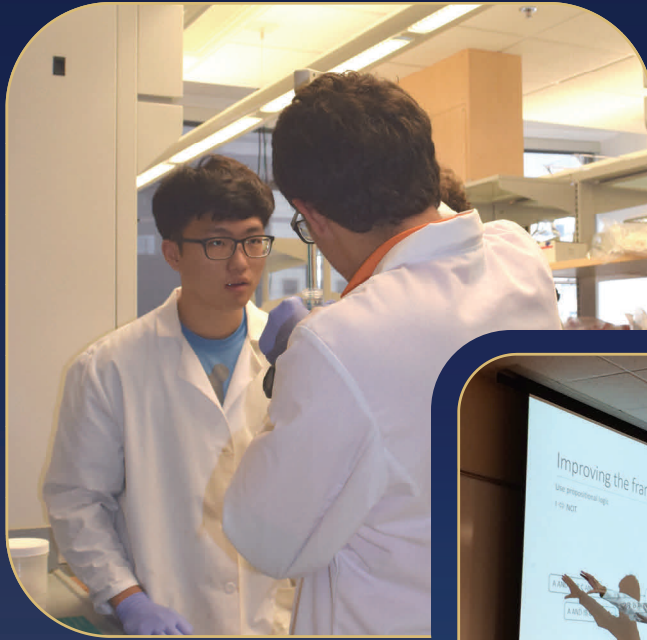
Kennywood Park

Keystone Café

Pittsburgh Zoo & PPG Aquarium

The Pittsburgh Pirates

The Pittsburgh Riverhounds



Appendices

Appendix A

University of Pittsburgh Cancer Institute (UPCI) Academy

Bootcamp

Monday, June 15, 2015

8:00 AM to 5:30 PM

Location: Hillman Cancer Center, Cooper Classrooms
5115 Centre Avenue, Pittsburgh, PA, 15232

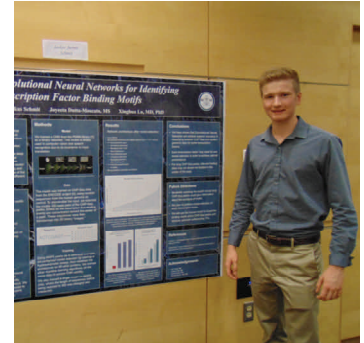
Agenda

Morning

- 8:00 am Student Registration
8:30 am Welcome to UPCI Academy - Dr. Michael Lotze
Welcome to The University of Pittsburgh School of the Health Sciences -
Dr. Saleem Kahn
8:45 am Clip from *The Emperor of All Maladies*
9:00 am Introduction to Sites and Site Heads
Cancer Biology (CB) and Center for Integrated Oncology (CIO) –
Dr. Michael Lotze
Cancer Environment, Bioengineering, Imaging and Genetics (CEBIG) –
Dr. Gary Thomas
Computer Science, Biology, and Biomedical Informatics (CoSBBI) –
Dr. Michael Becich
Drug Discovery, Systems and Computational Biology (DiSCoBio) –
Dr. Joseph Ayoob
Tumor Immunology (TI) –
Dr. Robert Binder
Women's Cancer Research Center (WCRC) –
Dr. Yi Huang, Presented by Dr. Steffi Oesterreich
9:30 am UPCI Academy Expectations – Lindsay Surmacz, Project Manager
10:00 am Break
10:30 am Evolution, Biology and Hallmarks of Cancer – Dr. Michael Lotze

Afternoon

- 11:30 am Lunch
12:45 pm Chemical Hygiene and Blood-borne Pathogen Training – Frank J. Pokrywka
2:15 pm Responsible Research and Record Keeping – Dr. Joseph Ayoob, Dr. David Boone
3:00 pm Giving a Memorable and Effective Presentation – Dr. Judy Cameron
4:00 pm Move to Atrium and Break
4:30 pm Group Photos and Icebreaker Activity
5:30 pm Dismiss



"Everyday, I was surrounded by creative and intelligent students and mentors who all supported and pushed me to do what is the most challenging, cutting edge, and rewarding work I have ever done. After completing this program, I know I have more experience and, consequently, a greater understanding of real-world science than a classroom could possibly provide. Also, thanks to my research in deep learning applied to genomics at The UPCI Academy, I have had opportunities to continue my trajectory far beyond the scope of a single summer, and I believe this will shape my future career."

- Lukas Schmit

UPCI Academy Scholar 2015

Appendix B



"After the eight weeks, to be able to successfully complete my research project/poster and present it to a panel of other professors allowed me to not only test my knowledge but understand the significance of relaying the science from inside the laboratory to those outside of it. My time in The UPCI Academy has allowed me to take part in a field of science that I may never have gotten the chance to explore, and if I had a choice to be a part of it again, I would immediately say YES!"

*- Rida Merchant
UPCI Academy Scholar*

UPCI Academy 2015 Keynote Speaker Schedule

June 17

Diversity Awareness Workshop

Paula K. Davis, MA

Assistant Vice Chancellor, Office of Health Sciences Diversity, University of Pittsburgh

Mario C. Browne, MPH, CHES

Director, Office of Health Sciences Diversity, University of Pittsburgh

June 24

Emerging Therapies In Breast Cancer

Nancy Davidson, MD

Director, University of Pittsburgh Cancer Institute (UPCI)

Leadership and Purpose

Michael Sider-Rose, PhD

Senior Director of Programs and Learning Development

Coro Center for Civic Leadership (Coro Pittsburgh)

July 1

Biomedical Informatics and Relevant Career Paths

Michael J. Becich, MD, PhD

Professor and Chair, Dept. of Biomedical Informatics (DBMI), University of Pittsburgh

Excerpt from PBS miniseries *Cancer: The Emperor of All Maladies*, Episode 1

July 8

Targeting Cancer Through Drug Discovery

Andy Stern, PhD

Director of Novel Therapeutics, Drug Discovery Institute, University of Pittsburgh

Basics of Effective Science Communication

John Radzilowicz, Ed.M.

Adjunct Professor, Department of Physics and Astronomy, University of Pittsburgh

Adjunct Professor, Department of Early, Middle and Special Education,

California University of Pennsylvania

July 15

The Immune System and How It Fights Cancer

Robert J. Binder, PhD

Associate Professor, Department of Immunology, University of Pittsburgh

Intro to The University of Pittsburgh Admissions

Holly Hickling

Academic Community Engagement Advisor, University Honors College, University of Pittsburgh

Alexandra Bortot McCrossin, Assistant Director

Office of Admissions and Financial Aid, University of Pittsburgh

July 22

Estrogen and Its Malcontents in Breast Cancer

Steffi, Oesterreich, PhD

Professor, Department of Pharmacology and Chemical Biology, University of Pittsburgh

July 29

Bioengineering and Pathology in Cancer Research

Partha Roy, PhD

Associate Professor of Bioengineering and Pathology, University of Pittsburgh

August 5

Zebrafish and Facility Tour

Michael W. Tsang, PhD

Appendix C

UPCI Academy CMU Visit

July 22, 2015

7:30 AM Refreshments

8:00 AM Introductions, Welcome from Joseph Robertson, Porter Hall 125 C (a classroom humanities building).

8:15 AM Keynote Lecture **Estrogen and its Malcontents in Breast Cancer** Steffi Oesterreich, PhD Women's Cancer Research Center; Magee Women's Research Institute; University of Pittsburgh Cancer Institute

9:00 AM CMU Opening Lecture: **The Landscape of Exponential Curves.** William L Scherlis, PhD; Professor, Director, Institute for Software Research (SCS/ISR) · Director, PhD Program in Software Engineering; School of Computer Science

10:00 AM Break and Travel on Campus to one of Six Sites with about 8-10 scholars/site

10:30-12:00 Noon 5-minute Presentations from Scholars to CMU Professors, Postdocs, Students (Suggested Grouping; about 10 scholars per group; each bring single sheet of your question; data-name, PI and email)

CoSBBI: Computational Biology.....Diana Marculescu, PhD Hamerschlag Hall; First Floor

DiSCoBio: Drug Discovery and Systems Biology.....Natasa Miskov-Zivanov, PhD; Hamerschlag Hall, A level

Hillman 1: Immunology.....Gordon S. Rule, PhD; Andy Norman, PhD; Room 409 in Mellon Inst.

Hillman 2/WCRC: Cancer Biology, breast cancerWei Wu, PhD; CBD, GHC 7405

Tumor Immunology: Tumor Immunology....Jason M. D'Antonio, Ph.D. 5000 Forbes Ave., Doherty Hall 1322

CEBIG 1: Biomedical Engineering.....Tzahi Cohen-Karni, PhD (Steven Chase, PhD); Porter Hall 125 C

CEBIG 2: Cancer; Measuring biomarkers.....Mohamed Ramadan, PhD; Mellon Institute Room 814

12:00-1:30 PM Picnic Lunch; backup plan for inclement weather-in Porter Hall

1:30-2:15 and 2:30-3:15 PM Tours of Special Areas of Endeavor at CMU

Machine Learning William Cohen, PhD; 8217 Gates and Hillman Centers (1:30 only)

Computer Science/Philosophy Dept.....Peter Spirtes, PhD 135 D Baker Hall

RoboticsLaura Herlant and Siddhartha Srinivasa, PhD Newell Simon Hall 4502

Entertainment Technology Center.....Ralph Vituccio (Porter Hall 125 C)

Serious Play Conference (Risk Reduction HIV Video Game)Lynn Fiellen-Yale (2pm only- Room D-Cohon Student Center)

Cellular ImagingAlan Waggoner, PhD; Mellon Institute 2nd Floor

Chemical Biology of G QuadruplexesBruce Armitage, PhD; Mellon Institute Board Room (MI 434)

International Genetically Engineered Machine (iGEM)..Diana Marculescu, PhD; Natasa Miskov-Zivanov, PhD Cheryl Telmer, PhD; Mellon Institute 2nd Floor

Magnetic Resonance ImagingChien Ho, PhD; 6th Floor Mellon Institute

4:00 PM CMU Admissions.....Joseph Robertson

4:30 PM Closing Keynote Evolution: You are What you Eat.....Ann Gibbons, Porter Hall 125 C



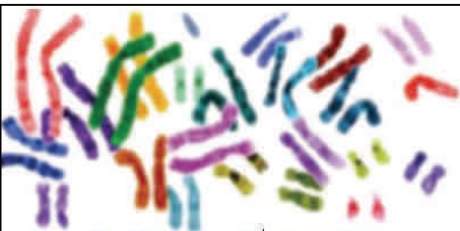
"The [UPCI Academy] is more than an opportunity to conduct scientific research. It is a way for you to empower yourself, meet new people, and learn the applicability and excitement of a scientific query."

- Ashwin Reddy

UPCI Academy Scholar 2015

Appendix D

Weekend Activities



WELCOME

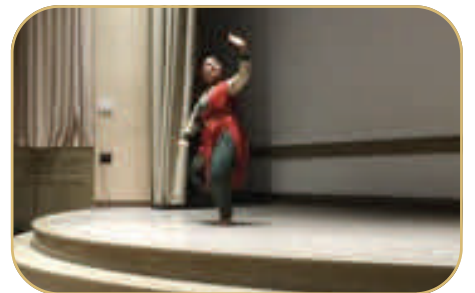
The University of Pittsburgh Cancer Institute (UPCI) Academy provides rising high school seniors with eight weeks of research-focused didactic and experiential learning at seven locations. Scholars will work on their own research project in a dedicated research mentor's laboratory. At the end of the program, scholars will be asked to present their projects as an oral presentation and in a poster session. Participating scholars will also learn important skills to help prepare them for success in college and in their future careers in science and medicine.

Enjoy the talent presented by these remarkable individuals!

Event Schedule

Name	ACT
Anika Roy	Indian Dance
Kevelis Matthews-Alvarado	<i>Cuz he's Black</i> by Javon Johnson
Go CEBIG or Go Home	<i>Thrift Shop</i>
Nico Amich, Mush Anisha, Adam Barsouk, Elizabeth Hung, Isabella Kopits, Nikita Maheshwari, Donovan Moore, Ashwin Reddy, Fateemah Saleem	High School UPCI Musical
Jahnik Kurukulasuriya	Magic Trick
Sreeroopa Som	<i>First Movement of Beethoven's Sonata Pathetique: Grave</i>
Isabella Kopits	<i>Out of my Dreams</i>

Talent Show



The University of Pittsburgh Cancer Institute

UPCI Academy

upci.upmc.edu/UPCIAcademy

