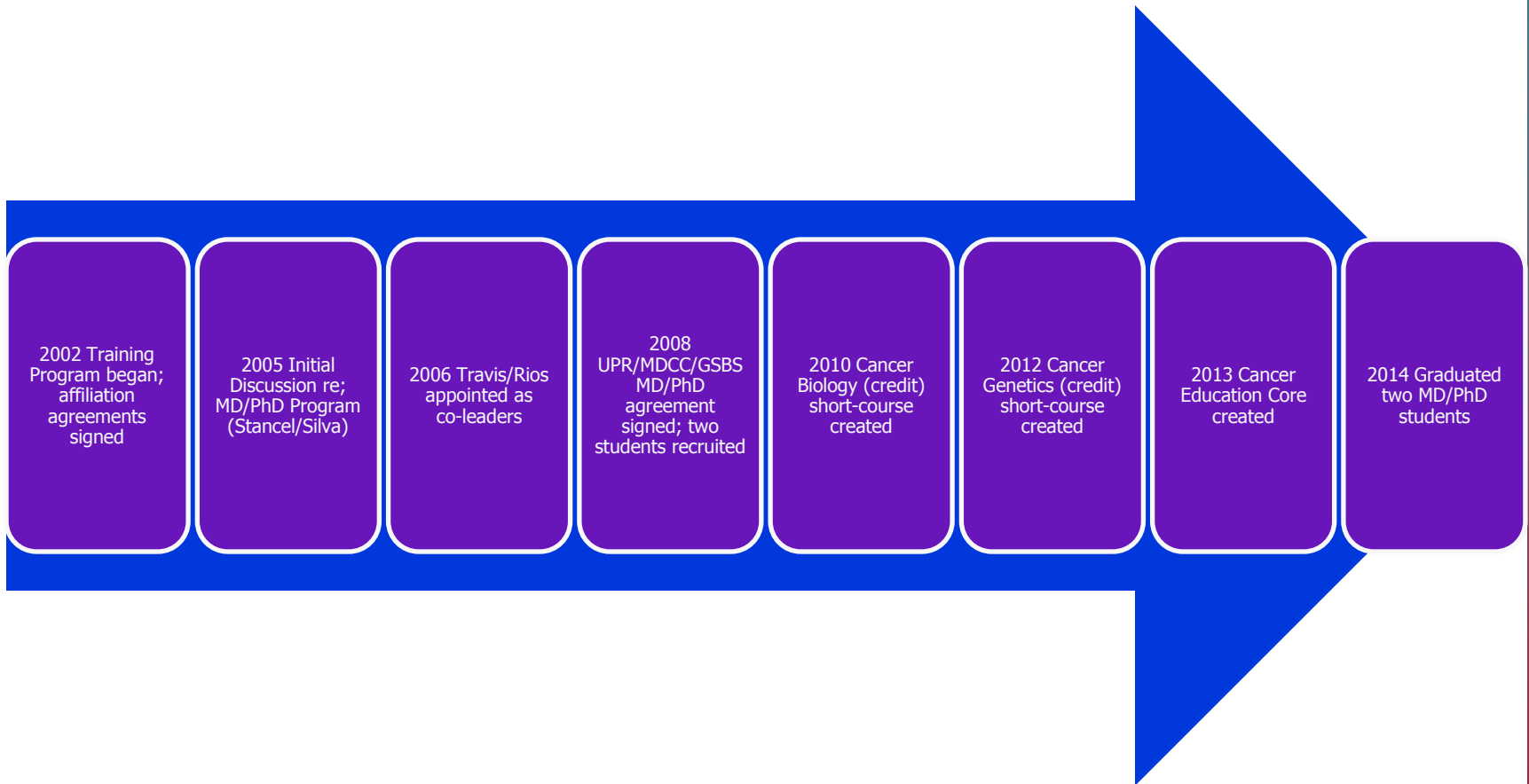


# From Trainee to Leader in Cancer Medicine and Science: Building and Sustaining the Pipeline

## U54 Partnership for Excellence in Cancer Research

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# Timeline



# Training and Career Development Core Specific Aims

Aims 1-2: Increase # of trainees and junior faculty pursuing careers in cancer medicine, cancer research, and population sciences

Aim 3: Strengthen the faculty development program, targeted to maximize each individual's advancement potential, in order to engage and retain:

- Junior faculty
- Senior faculty transitioning their focus to cancer

# Significance

- Addresses the need for under-represented Hispanic physicians, scientists, and physician-scientists
- Targets junior and senior undergraduates, graduate students, postdoctoral students, and junior faculty

# Major Programs

- Summer Research Program (MDACC)
- Semester Research Program (UPR)
- MD/PhD Program (both)
- Faculty Development Program (both)

# CANCER TRAINING PIPELINE

## Undergraduate Phase

### Junior Year

#### Research Experience

One (1) semester at UPR Mentor for 10 hours each week



#### Concurrent Cancer Education Curriculum at UPR\*

Fundamental Skills for Cancer Research courses  
(2 semester courses each year)

Short Intensive Courses in Cancer Topics  
(offered first week in January  
e.g. Cancer Biology, Cancer Genetics, Cancer  
Prevention)

### Summer Research Program at MDACC

### Senior Year

Cancer Research Experience at UPR  
with assigned mentor  
at least 1 semester 10 hours each week



Continuation of Skills for Cancer Research courses  
(2 semester courses each year)

### Summer Research Program at MDACC or UPR

## Graduate Phase

After completing the Bachelor degree the main two (2) paths to be followed are either, MD, MD/PhD or PhD.

## Graduate Phase

After completing the Bachelor degree the main paths are MD, MD/PhD combined Program or PhD.

**UPR School of Medicine/  
UT GSBS MD/PhD  
Combined Degrees Program**

**Year 1 MD at UPR  
Summer Research MDACC**

**Year 2 MD at UPR  
Clinical Oncology Rotation UPR  
USMLE Part 1**

**Year 3 MD at UPR  
Clinical Oncology Rotation UPR  
USMLE Part 2**

**Years 4 to 8 (Approx. 4 yrs)  
PhD studies at UT GSBS - MDACC**

**Year 9 - Year 4 of MD Studies at  
UPR and completion of thesis  
dissertation**

**Internship/ Residency**

**Oncology Fellowship**

**Cancer  
Education  
Curriculum \***

Enhancing verbal and analytic  
reading and writing skills

Responsible conduct of research  
Research methodology and design

Introduction to biostatistics and  
bioinformatics

**Graduate School  
PhD  
UPR or UT GSBS**

Approximate time  
to complete PhD Requirements  
5 years

**Post-Doctoral Studies  
in  
Cancer Research**

# MD/PhD Track

2008: 3-way Partnership agreement  
MD Anderson, UPR and GSBS



- Annual recruitment visit to UPR campuses.
- Students must be at least in junior year to apply for Summer Research Program, indicate interest in MD/PhD. SRP rotations designed to meet GSBS tutorial requirement.
- Selected students interviewed by Drs. Rios, Barton, Travis and MDACC co-directors of UT MD/PhD program
- Students must be accepted to medical school before applying to GSBS
- Apply to GSBS 2<sup>nd</sup> year of medical school
- MCAT scores in lieu of GRE exam
- Both degrees granted in same year, MD from UPR, PhD from GSBS and MDACC. Students walk in both commencement ceremonies.



# U54 MD/PhD students fully integrated into UT Medical School MD/PhD program functions

- Topics in Molecular Medicine
- Interview day, recruitment functions
- Serve as student representatives
- Summer retreat, meet and greets, etc
- Advised by MD/PhD program directors, meet annually

“Goal is to ensure that these students feel at home here and are treated exactly as every other student in the program”

# MD/PhD Track – Fall 2014

Year Starting PhD at UT GSBS (12 accepted)

2008	Nahir Cortes Sergei Guma	– Graduated – Graduated
2011	Ramon Flores	– Year 4 PhD
2012	Alejandro Villar Paloma Monroig Rocio Rivera	– Year 3 PhD
2013	Sahily Reyes Arianexys Aquino	– Year 2 PhD
2014	Vincent Bernard Marimar de la Cruz	– Year 1 PhD
2015	Rosa Santacana* Viviana Vidal Anaya*	– Year 3 MD



Partnership Recruitment Tour (10/1-3/2013) - 188 students attended from the UPR campuses of Bayamon (39), Medical Sciences (35), Rio Piedras (31), Humacao (26) and Mayagüez (57).

# Cancer Education Core

Goal Enhance training and sustain and retain trainees in pipeline by:

- Implementing new courses, formalize/modify existing courses for the cancer curriculum.
- Adding one new short course topic every other year to include topics in Cancer Research, Population Sciences and on emerging technologies.
- \_Coordinating/collaborating with Ponce SOM U54

# Short Course in Cancer Biology (2)

## Cancer Biology

- DNA Repair, Chromatin Structure, Genomic instability – Jessica Tyler, PhD, Professor, Biochemistry and Molecular Biology, MDACC
- TCGA: The Cancer Genomic Atlas - David McConkey, PhD, Professor, Urology-Research, MDACC

## Cancer Development and Tumor Immunology

- The mouse as a model for studying the p53 tumor suppressor pathway – Guillermina Lozano, PhD, Professor and Chair, Genetics, MDACC

## Angiogenesis and Animal Models

- Bench to Bedside – Faye Johnson, MD, PhD, Associate Professor, Thoracic/Head & Neck Medical Oncology, MDACC

## Clinical/Translational Correlations

- Epidemiology of Cancer in Puerto Rico - Erick Suarez, PhD, Professor, Biostatistics and Epidemiology, UPR-School of Public Health

# Short Course in Cancer Genetics (2)

## Topics and Faculty

Genetic Model Systems to Study Tumor Suppressor Pathways – M. Galko  
Creating Genetically-Modified Mouse Models – R. Behringer

DNA Damage and Repair Pathways – R. Wood  
p53 – G. Lozano and L. Strong

Genomics or Genetics of Human Cancer – A. Futreal  
BRAF – L. Chin

Introduction to Cancer Susceptibility Syndromes – K. Lu  
BRCA – K. Lu and UPR Breast Surgeon  
Hereditary Gastrointestinal Cancer syndromes – M Cruz-Correa  
Pathology and Genetics of Lynch syndrome – R. Broaddus

Genetic Risk Assessment & Testing – A. Brandt, MDACC Genetic Counselor  
Genetics in Cancer Prevention – M. Cruz-Correa and other UPR faculty

# Career Development

- Heart of Leadership
  - Leaders only
- Mentorship: The Mentor-Mentee Continuum
  - Faculty and Students
- MDACC Faculty and Academic Development
- 1- 2 day programs, didactics coupled with workshop, individual and small group learning