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UMass Center for Clinical and Translational  
Science Seminar Series

2012 UMCCTS Seminar Series

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Jan 12th, 12:00 PM

## Education and Career Development

Anthony Carruthers

*University of Massachusetts Medical School*

*Et al.*

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# UMass Center for Clinical & Translational Science Seminar Series *Education and Career Development*

**Anthony Carruthers, PhD** Dean, Graduate School of Biomedical Sciences

**Katherine Luzuriaga, MD** Chief, Division of Pediatric Immunology & Infectious Diseases; Associate Provost for Global Health

**Gyongyi Szabo, MD, PhD** Associate Dean for Clinical & Translational Sciences; Director, MD/PhD Program; Vice Chair for Research

# ***Educational opportunities in the Center for Clinical & Translational Sciences***

*The goals of the educational arm of the CCTS are to:*

- Increase the number of practicing clinical researchers*
- Promote research training that translates basic discovery into medical practice*
- Enhance the training and credentialing of clinical and translational sciences research staff*
- Increase the pipeline of trainees considering a career in the clinical sciences*

# ***Educational programs supported by the Center for Clinical & Translational Sciences***

- *Millennium PhD program*
- *K12 program*
- *MD/PhD program*
- *Clinical & Translation Research Pathway*
- *UMMS Clinical Scholars program*
- *Masters in Clinical Investigation and Certificate programs*
- *GSBS Clinical & Population Health Research program*
- *GSBS Translational Science program*

# Clinical Research Scholars (K12) Program

**GOAL:** To support a period of mentored training that allows young investigators to transition from training to a fully independent career.

## **CANDIDATES:**

- Research or health professional doctoral degree (MD, DO, PhD, ScD, DVM, PharmD).
- Commitment to a career as an independent investigator in patient-oriented research.
- Talent and aptitude for scholarship and critical thinking; prior productive research experience highly desirable.
- Candidates may not enter the program any earlier than their second year of post-doctoral fellowship or any later than three years following the completion of their post-doctoral or fellowship training.
- Personal commitment to and departmental support of a minimum of 75% protected time (50% for surgical specialties) for a minimum of 3 years and maximum of 5 years.
- Cannot have previously been the principal investigator on an R01, R21, or Program Project grant, or a Co-PI on a program project grant.
- US citizens, non-citizen nationals, or permanent residents.
- UMCCTS member

**MENTORS MUST BE UMMS GSBS FACULTY AND CCTS MEMBERS**

# Current Clinical Research Scholars

<b>Name:</b>	<b>Department:</b>	<b>Project:</b>	<b>Research Mentor:</b>
<b>Olga Hardy, MD</b>	Pediatrics	Inflammatory markers of insulin resistance	Czech / Lee
<b>Wendy Marsh, MD</b>	Psychiatry	Impact of peri-menopause on bi-polar disorder	Rothschild / Nicholson
<b>Jeff Bailey, MD, PhD</b>	Medicine / BIB	Human gene copy number and malaria susceptibility	Weng / Finberg
<b>Heena Santry, MD, MS</b>	Surgery / QHS	Acute care surgery practice patterns	Kiefe / Litwin
<b>Sarah Cutrona, MD, MPH</b>	Medicine	Electronic methods to improve cancer screening	Gurwitz / Mazor

	<b>K12 Program</b>	<b>Dept./Program Sponsor</b>
Salary support (trainee)	Up to 5 yrs (50-75%)	Up to 5 yrs (25-50%)
Course tuition (MSCI)	Provided	
Research supplies	\$25,000	Minimum \$25,000
Travel funds	\$1500	
Tenure track appt		At program completion

# **2012 Clinical Research Scholar (K12) Award RFA**

<b>LOI's Due:</b>	<b>January 26, 2012</b>
<b>Full Proposals Due:</b>	<b>March 16, 2012</b>
<b>Funding Start Date:</b>	<b>April 1, 2012</b>



# ***The Millennium PhD Program***

**Program Director: Dr. Hardy Kornfeld**

- The MPP grants PhD degrees to MDs.
- A small number of didactic courses are required before the student can take a qualifying exam.
- The stipend is at the appropriate PGY level and is contributed by: the clinical department, the Graduate School and the Thesis Advisor.
- The MPP is open to:
  - UMMS physicians with an MD or equivalent
  - UMMS graduate and undergraduate medical students enrolled in UMMS clinical clerkship, residency and/or fellowship programs, or who have completed such clinical training.
- Medical students applying to the MPP must receive their MD before starting MPP training.
- Typical MPP candidates are physicians in subspecialty fellowship programs undertaking research and contemplating KO8 applications. Other typical candidates are medical residents enrolled in the research track.

# *The Millennium PhD Program*

**Program Director: Dr. Hardy Kornfeld**

## Requirements for MPP

The student is required to devote at least 80% time to graduate studies and research. Up to 20% can be spent in other activities such as clinical rotations.

The student and mentor create a Research Advisory Committee from GSBS faculty to periodically review and the student's progress.

To obtain a PhD degree from MPP, a candidate will:

- hold an MD or its equivalent degree
- be in the process of completing, or has already completed, clinical residency and/or fellowship training
- pass required course work
- pass the qualifying exam
- write a PhD dissertation on candidate's original research
- pass the final PhD exam.

The PhD Degree issued will be in Biomedical Sciences.



# Education Programs

MS 4 years	Clinical/Translational Research Pathway	Certificate
GSBS 2 years	Masters in Clinical Investigation	MS
MS and GSBS Average 8.3 years	MD/PhD Program	MD and PhD
GSBS 3-4 years	Clinical Population Health Research	PhD
GSBS 4+ years	Millennium PhD Program	PhD
Residents, fellows 2 years	Clinical Scholars Program	No degree
Residents, fellows 1 week	Introduction to CTS	No degree

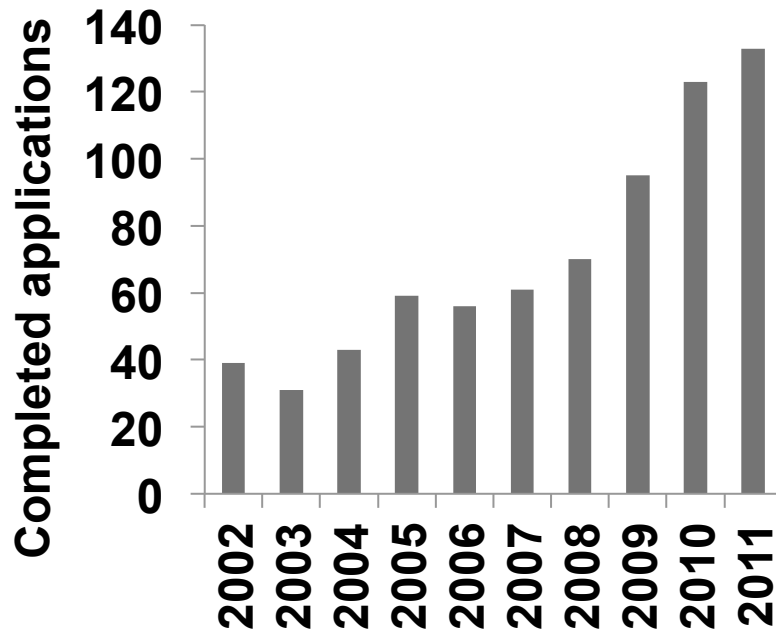


# MD/PhD Program

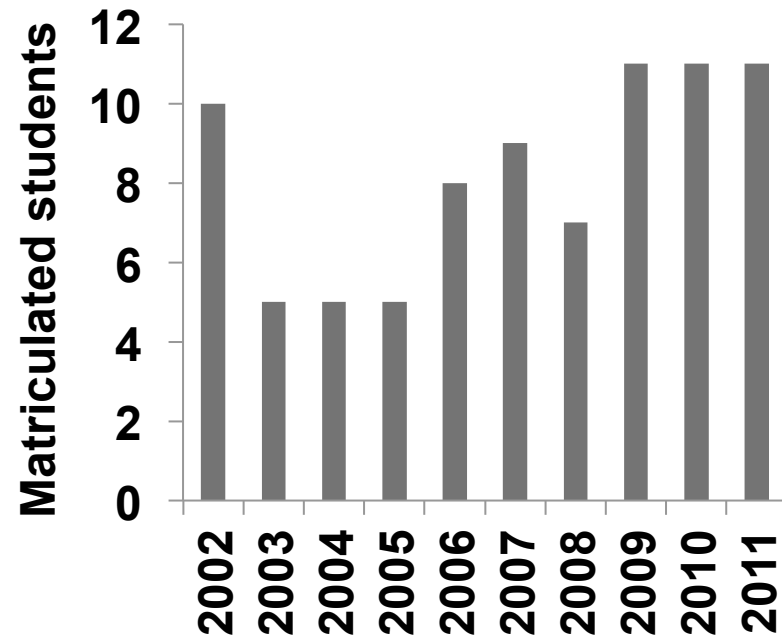
Director: Gyongyi Szabo  
Associate Directors: William Schwartz and Silvia Corvera  
Program Coordinator: Anne Michelson

**MD/PhD Program – currently 63 students**

**Number of applications**



**Number of matriculated students**





# MD/PhD Program Highlights

- **Matriculated 11 MD/PhD students (5 OOS and 6 MA residents) in 2011**
- **Evaluation and recommendations by an External Advisory Committee**
- **New format of the MD/PhD Seminars**
- **Programmatic changes under implementation:**
  - **Re-design of the MDP740 course to enhance fundamentals of basic science education in MS1-MS2**
  - **Introduction of a new clinical refresher course before return to MS**
  - **Adjustments in the MS and GSBS courses and timing to optimize/maximize the MD/PhD training experience**



## MD/PhD Student Achievements

- MD/PhD student Joanna Chaurette received the Community Engagement Award from the Worcester Consortium of Colleges Leah Dickstein Leadership Medical Student Award from the Association of Women Psychiatrists
- MD/PhD student Jennifer MacDonald received the Visions Community Award, Worcester Telegram and Gazette
- MD/PhD students Christopher MacKay was the co-recipient, Student Award for Outstanding Mentoring in Professional Development, UMMS/GSBS



# UMMS Clinical Scholars Program

## **Goals:**

- To provide intense research training opportunities for residents/fellows and enable them for a future independent physician-scientists career

## **Training:**

- Two-year experience on a selected research project with a mentor. Progress overseen by a Research Advisory Committee.

## **Recipients:**

- 2010: Elizaveta Ragulin-Coyne, M - Surgery
- 2011: Michal Ganz, MD – Medicine
- 2012: Samuel Joffe, MD, MS - Medicine

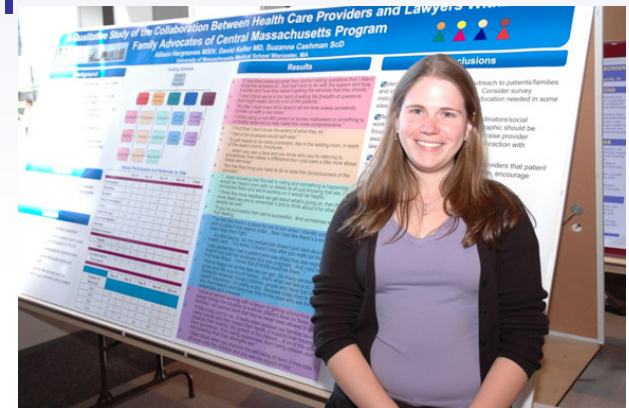


# Clinical and Translational Research Pathway Program (CTRP) January 12, 2012



# Talented MD Student Researchers

- **CTR Pathway Graduates:** 6 (AY 2011)
- **Current Enrollment:** 51 (across 4 years)
- **Applicants:** 25-29 for 12 positions (20% of incoming class)
- **Competitive Application Process:**
  - Prior Bench or Clinical Research Experience and/or
  - Intent to pursue research as part of clinical practice
  - Complete a CTRP application (personal essay, CV, references)



# CTRP: Longitudinal Curriculum

**CTR Pathway Goal:** Introduce methods and concepts in clinical/translational research to medical students and provide a training platform in the basics of CTR through a longitudinal, structured program throughout the four years of the medical school curriculum.

<b>MS1:</b>	<b>Seminar Series; 8 sessions Ethical conduct of research, IRB, introduction to clinical translational research.</b>
<b>Summer:</b>	<b>8 week research placement</b>
<b>MS2:</b>	<b>Epi/Clerkship tailored to survey research</b>
<b>MS3:</b>	<b>Journal Club; tailored to student research work and preparation for Senior Scholars projects</b>
<b>MS4:</b>	<b>Senior Scholars research (8–12 weeks)</b>

# CTR Pathway: Selected Outcomes

## *Within UMMS*

- Summer Research Projects (MS2): 43
- Senior Scholars Projects (MS4): 6

## *National*

- Journal Articles Published: 8
- Textbook Chapters: 1
- Posters at Regional/National Meetings: 14
- Presentations at Regional/National Meetings: 1
- \*Awards/Scholarships: 7

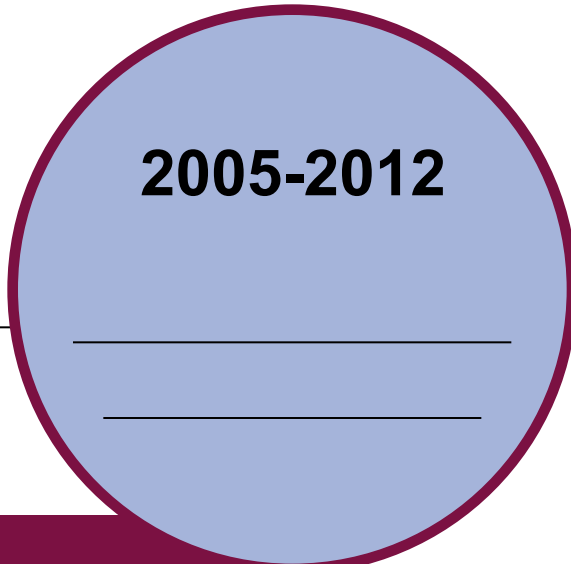
### **\* Includes three 'year out ' fellowship awards:**

- 1) Doris Duke at Johns Hopkins Scholars Program
- 2) HHMI- NIH Research Scholars Program (Harvard)
- 3) HHMI- NIH Research Cloisters Program



**UMMS-GSBS**

**Clinical & Population  
Health Research PhD Program  
Track**



**2005-2012**

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# What is clinical and population health research?

- Patient –oriented research. Research conducted with human subjects (or identified human tissues, specimens) for which the investigator directly interacts with human subjects investigating:
  - Mechanisms of human disease
  - Therapeutic interventions
  - Clinical trials or
  - Development of new technologies
- Epidemiologic and behavioral studies
- Outcomes research
- Health services research
- Community-based health research
- Dissemination research



# Curriculum and Research Preparation

## First Year

- Biostatistics-full year
- Epidemiology-full year
- Determinants of Health-full year
- Required Comprehensive Project (early summer)
- One elective (Summer); Three research rotations (Fall, Spring, Summer)
- On going participation in CPHR seminar and tea talks

## Second Year

- Research Ethics
- Scientific Writing-qualifying paper development
- Proposal Development-thesis proposal writing
- Fall qualifying paper =focus of research rotation
- Spring thesis proposal =focus of research rotation
- Years 3-4 Completing Thesis Research



# Outcomes as of Fall 2011

- 42 total matriculated: 29 full time PhDs, 7 MD/PhDs, 6 part time
- 15 graduates (average time to graduation <4 years)
  - Post docs at Harvard, Yale, UMMS (6)
  - Faculty positions (instructor/Assistant Professor) UMMS, Yale, U. Tennessee (4)
  - Industry positions: Biogen, Wellpoint (2)
  - State public health analysts (1)
  - MS4 (1)
- 39 publications based on student research, 26 first authored
- Over 100 total published papers as co-authors
- 50% required qualifying papers have been published
- 4 NIH/CDC/AHRQ dissertation grants



# MSCI Program

Emphasizes the development of strong clinical investigation skills based on a solid foundation in study design, conduct of observational studies and randomized trials, clinical epidemiology, and biostatistics.

Students will also acquire excellent writing and oral presentation skills through formal classroom work.



# MSCI Program

In the second academic year, students take elective courses and complete independent research and a thesis project with a faculty mentor and advisor.

Students also attend a bi-weekly journal club to augment their study design and analytical skills.

# MSCI Program

Trainees completing the program will acquire skills to successfully:

- Design, conduct, and analyze the results of clinical investigations at the individual and population level.
- Design and analyze the results of studies that provide insights into the molecular pathophysiology of disease.

# MSCI Program

Two concentration tracks are offered:

- Population based clinical research
- Bench-to-bedside translational research

# MSCI Program

Students must satisfactorily complete a minimum of 44 credits to obtain the Master's Degree.

This includes 27 credits in the core curriculum, 6 credits in elective courses, and 11 credits for the completion of their thesis.

Students complete the majority of their course work during their first academic year.

Fall I	Spring I
Core Curriculum	Core Curriculum
Introduction to Clinical Biostatistics	Intermediate Clinical Biostatistics
Introduction to Clinical Epidemiology	Design of Observational Studies & Clinical Trials
Scientific Writing and Oral Presentation	Topics in Molecular Medicine
Biomedical Informatics	Concepts in Team Science
Ethical Aspects of Biomedical Research	Grant Writing

# ***GSBS Translational Science Program***

## **Program Faculty**

57 in total from 15 different UMMS departments and programs

<http://www.umassmed.edu/bbs/about/faculty/tsp.aspx>

## **Program Goals**

Biomedical research strives to solve problems in medicine through the development and application of new tools and approaches. The program in Translational Science addresses this goal by training graduate students to develop and apply leading-edge biological tools to clinical problems.

**The program provides training at the basic and clinical sciences interface by:**

- Requiring that students are co-mentored by basic and clinical scientists.
- Mandating regular trainee meetings with both mentors to ensure that the student gains a broad understanding of basic biological and clinical problems
- Introducing courses that provide students with an understanding of the principles of translational science and the tools used in translational research.
- Providing program-specific activities that include yearly retreats, a seminar program and opportunities to interact directly with clinicians.

# ***GSBS Translational Science Program***

## **Advanced Topics in Translational Science**

### **Molecular Basis of Disease**

*Catalog number: BBS786*

This course introduces students to the molecular understanding of disease. The course consists of five-week blocks investigating neurodegenerative disease, cardiovascular disease and diabetes. Students finish the course by developing a written research proposal on an important unanswered question.

### **Quantitative Informatics in Biology & Medicine**

*Catalog number: BBS785*

This course introduces students to informatics approaches spanning bioinformatics to Medical informatics and epidemiology. The course comprises three blocks:

- *fundamental tools of bioinformatics*
- *application of bioinformatics and genomics*
- *clinical research informatics.*

The course consists of didactic lectures, student classroom presentations, problem sets and an individual research proposal.