

Cancer Research Training and Education Coordination

Edmund C. Lattime, PhD
Sunita Chaudhary, PhD

April 26, 2023



RUTGERS
Cancer Institute
of New Jersey
RUTGERS HEALTH



CRTEC Leadership



Edmund C. Lattime, PhD

Associate Director, Education and Training
Professor, Rutgers University

- Overall responsibility for education and training
- Active contributor to medical and graduate education >25 years
- Established researcher in tumor immunology >100 publications



Sunita Chaudhary, PhD

Director, Research Education
Associate Professor, Rutgers University

- PI NCI funded RUYES and OPTIM programs
- Over 25 years experience mentoring, teaching, developing curricula
- Established researcher in diversity focused program evaluation

Mission

Develop and maintain a comprehensive program of education and career enhancement to train the next generation of researchers and health care professionals with special emphasis on trainees from under-represented groups to serve catchment area needs, to support Comprehensive Center status

CRTEC Specific Aims

AIM
1

Training Programs. Leverage the strengths of the Consortium with Princeton to secure training grants to develop the next generation of basic, clinical, and population researchers.

AIM
3

Career Enhancement and Mentorship. Provide mentorship and a comprehensive set of University-wide resources to trainees and junior faculty to support continued professional development.

AIM
2

Educational Initiatives. Organize Consortium-wide educational initiatives that integrate with Research Programs to contribute to training across the Consortium and the community.

AIM
4

Enhance Diversity. Integrate diversity, equity, and inclusion throughout all education and training initiatives.

CRTEC Advisory Committee

Research Program Liaisons



Haejin In
AD, DEI, CPC



Daniel Herranz
CP



Peter Cole
CIPT



Subho De
GICG



Jian Cao
CMI



Anita Kinney
AD, Pop Sci and
Community Outreach



David August
Surgical Oncology



Maria Gomez
T32 Trainee



Kathleen Scotto
Dean, TL1 Director



Yibin Kang
AD, Consortium



Renata Pasqualini
Chief, Cancer Biology, NJMS

Response to Prior Critique

Scored **Very Good to Good**

Strengths

- Highly successful in engaging trainees
- Strong emphasis on exposing students to concepts and techniques in cancer research
- Effective outreach to minority student populations

Not clear how the cancer center training and seminar activities differ from overall university activities of Rutgers and Princeton

- Number of CRTEC-developed and -implemented educational seminars, courses, research retreats, symposia

Number of peer-reviewed training grants is low, and the quality of career development appears to be modest to date

- **Ten** NIH institutional training grants (3 from NCI)
- **17 NIH** individual training awards (**5 F, 7 K, 5 R00**)
- NCI-funded training grants increased from **zero to three**

Relatively little description of CINJ educational or mentoring activities at Princeton University

- Multiple programs for training and mentoring at PU
- NCI funded T32 and Joint summer internships with PU
- Annual Research Symposium, seminars, lectures, and chalk talks at PU

Training Next Generation of Researchers

4 New NCI Funded Programs (3 New Grants)

4 post-docs/year

T32 Post-doctoral Training Program in Cancer Metabolism and Tumor-host Interactions, 2021-2026, PIs Zong and Kang (CMI), mentors from across consortium

3 trainees/year

NCI R25 Rutgers Youth Enjoy Science – Oncology Physician Training Initiative to Maximize Diversity (OPTIM) Supplement, 2020-2022, PI Chaudhary (CIPT)

28 trainees/year

NCI R25 Rutgers Youth Enjoy Science, 2020-2025, PI Chaudhary (CIPT)

204 students

NCI R25 Building a Statistics Education Program for Preclinical Cancer Researchers, 2019-2022, PI Satagopan (CPC)

Impact

- Increased Institutional PR Training Opportunities
- 3 new NCI Training Grants since 2018



Maria Gomez, PhD
T32 Post-doctoral fellow
Mentor: Dr. Eileen White
Understanding the mechanisms governing cancer metabolism and cancer-induced cachexia



RUYES Trainees 2022

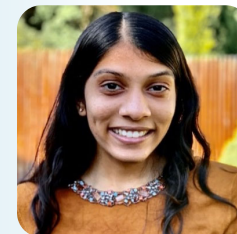
Training the Next Generation of Researchers

National Institutes of Health

- T32 Initiative for Maximizing Student Development (IMSD), PI Runnels (CMI)
- T32 Biotechnology, PI Yarmush (CP)
- T32 Environmental Toxicology, PI Aleksunes (CIPT)
- TL1 New Jersey Alliance for Clinical Translational Science: NRSA Training PI Scotto (CP)
- R25 Multidisciplinary Opportunities in Research Education for Students in Health Professions, PI Rameshwar (CP)
- R25 Summer Research Experience Programs, PI Aleksunes (CIPT)
- R25 Summer Undergraduate Research Program (SURP) in Molecular and Developmental Neurobiology PI Rasin (GICG)



Gregory Marshall
Graduate Student, T32 IMSD
NJCCR Fellowship
Mentor: Jian Cao, PhD
A novel oncogene
in hepatocellular carcinoma



Chadni Patel
Graduate Student, T32
Biotechnology
Mentor: Peter Cole, MD
Genetic susceptibility for
chemotherapy-induced cognitive
impairment

Impact

- Increased Institutional Peer-Reviewed Training Grants
- 7 new/renewed NIH training grants since 2018

Training the Next Generation of Researchers

Increased Pathway to Independence Awards from 0 to 7

Seven

Pathway to Independence Awards: 4 NCI, 3 NIH (K99/R00)

Five

F Awards: 2 NCI, 3 NIH (F30, F31, F32)

Six

Career Development Awards: all NCI (K01, K07, K22)

Five

American Cancer Society Research Scholar Awards

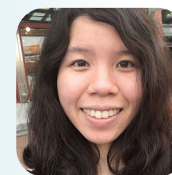
102

Cancer Center trainees

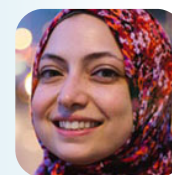
received New Jersey Commission on Cancer Research (NJCCR) independent peer-reviewed Pre-doc/Post-doc Awards



Bo Qin, PhD
NIH K99/R00 Pathway to Independence Award
Cancer health disparities



Mai-Uyen Nguyen
NIH/NCI F31 Fellow
Mentor: Michael Verzi, PhD
Role of epigenetics in colon cancer in novel mouse models



Nur Zeinomar, PhD
NCI K22
Assistant Professor
Epidemiology of breast cancer

Impact

Increased individual training awards since 2018

Training the Next Generation of Clinicians

Clinical Fellowships and Residency Programs

CINJ (Directed and Funded)

Breast Surgery Fellowship
(SSO Approved)

5 trainees

since 2018

Hematology/Oncology Fellowship
(ACGME Accredited)

19 trainees

since 2018

Complex General Surg Oncology
Fellowship (ACGME Accredited)

5 trainees

since 2018

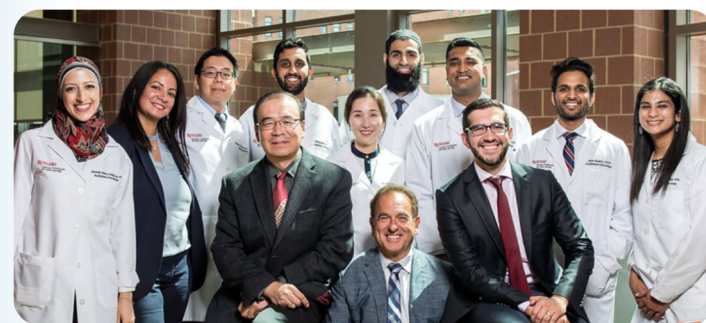
Radiation Oncology
Residency Program

11 trainees

since 2018

Pediatric Hematology Oncology
(ACGME accredited 2022)

Rutgers CINJ Faculty Mentors



Clinical Trial Design Course

- Therapeutic and non-therapeutic trials
- Fellows and junior faculty
- Overview, basics of clinical trial design, statistics, and ethics

Impact

Training the next generation of clinical researchers

Consortium-wide Education and Mentoring

AIM
2



LUDWIG
CANCER
RESEARCH

Princeton

PROGRAM SCHEDULE CANCER RESEARCH SYMPOSIUM JANUARY 11, 2022

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Welcome and Opening Remarks

9:00 A.M.

Eileen White, PhD

Associate Director, Basic Research, Chief Scientific Officer, Deputy Director and Member, Cancer Metabolism and Growth Program, Rutgers Cancer Institute of New Jersey, Professor, Molecular Biology and Biochemistry, Rutgers, The State University of New Jersey

Joint training grants, seminars, symposia, and other activities with Princeton (new since 2018)

- Joint T32 Training Grant in Cancer Metabolism
- Annual Cancer Research Symposium in Princeton
 - Over 200 participants and presentations from both Universities
- Summer Research Internships
 - 6 Princeton undergrads (4 funded by CINJ, 2 by PU)
 - Research in Cancer Center laboratories
- Princeton undergraduates attend weekly Molecular Tumor Boards
- Cancer Center members from Rutgers lecture at Princeton courses, provide research training, pre-med advising

Utilizing Technology: How Web-based Intervention Influences Health



Quinn Rademaker, 2022, Chemistry
Rutgers Cancer Institute of New Jersey
Funded by CHW under the Global Health Program

Introduction

• Rutgers CINJ works to find ways to improve the health of cancer patients and survivors.

• Drs. Heckman and Devine focus their efforts on the use of Short Message Services and other digital methods to improve patient quality of life.

Objective of Internship

I wanted to increase my experience in the field of academia and research in order to make a more educated decision for my career path, as well as learn the different stages of academic writing.

Work profile

- Assisted data analysis and coding of several free-response surveys
- Transcribed audio files of feedback interviews from participants
- Organized and coded patient health information from ARIA
- Assisted in a literature review for an upcoming paper

Reflection

- By providing a fresh set of eyes, I was able to look over surveys and feedback interviews as though I were a participant, allowing for greater understanding between participants and researchers, and allowing for smoother discussion overall.



Drs. Carolyn Heckman and Katie Devine, photos provided by Rutgers University

- Data collection on patients with iron deficiency anemia was performed with ARIA
- Sorting and formatting survey responses and questions was performed on Excel
- Most research on papers was performed on PubMed, while formatting was performed on EndNote



My workspace for the summer, photo taken by Matthew Rademaker

- With the prevalence of mobile phones and internet access, the research I assisted with attempted to utilize these tools in creative ways to teach patients ways to improve their health, as well as encourage the patients to seek further education from other sources by connecting them to survivors with similar conditions and doctors whose expertise lay in the area of their treatment.

Looking ahead

• This opportunity has provided me with different possible routes to take if I should pursue academia with an emphasis in medicine.

Questions

• While patients are willing to use these educational websites and sources when provided monetary incentive, is there any way to convince them to use these tools without those incentives?

Conclusion

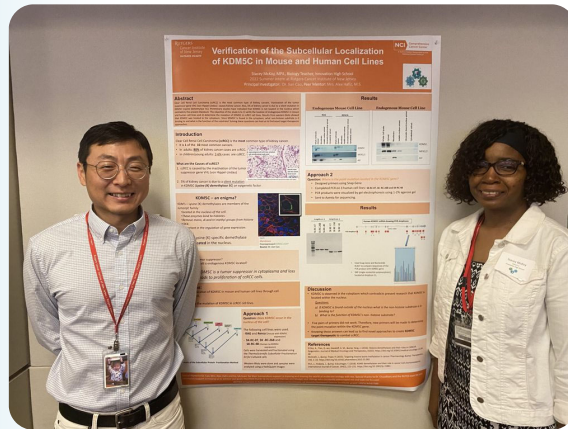
• Not a day goes by in which I do not learn a new skill, statistic, or fact from these wonderful researchers, all in order to improve world health.

Acknowledgements

I would like to acknowledge Drs. Carolyn Heckman and Katie Devine for offering this opportunity, as well as Drs. Trishnee Bhurosy and Zhaomeng Niu for supervising me throughout my time with them. I also acknowledge the Center for Health and Wellbeing and the Global Health Program for their support in these difficult times.

Consortium-wide Centers and Institutes

Consortium-wide cancer-focused centers and institutes provide unique opportunities (new since 2018)



Cancer Immunology and Metabolism Center of Excellence

- Joint seminars, symposia, chalk talks, journal club to bring together Consortium trainees

LUDWIG CANCER RESEARCH

Princeton

Ludwig Institute for Cancer Research-Princeton Branch (CINJ Partnership)

- Funding for proposals
- Launching summer undergraduate internship program (2023)
- Launching Fellows program
- Fall Research Retreat

Mentoring Committee

- Selected for research and career path
- Require at least two meetings per year
- Supports grant/publication review and submission

Annual Review by AD, Basic Research or Clinical Chief

- Reviews of all aspects of performance
- Used on as added basis for identifying mentoring success/needs

Impact 18 Junior faculty mentored through promotion and awarding of tenure since 2018



Jessie (Yanxiang) Guo
Postdoctoral Fellow
Mentor: Dr. Eileen White

The NCI Transition Career Development Award (K22)

2008

Assistant Professor of Medicine, RWJMS – ACS, GO2, OASIS

2015

Associate Professor of Medicine (Tenured) – R01, ACS, R21, LCRF

2021



Wenwei Hu
Postdoctoral Fellow
Mentor: Dr. Arnold Levine

Post-doctoral fellow
Mentor: Dr. Arnold Levine

2003

Assistant Professor
DoD, ACS

2009

Associate Professor (with Tenure)

2017

Professor (R01)

2021

CRTEC Across the Academic Continuum

Trained and Mentored > 4,080

Middle/High School	Undergraduate	Graduate	Post-Graduate	Junior Faculty
<p>>1400</p> <ul style="list-style-type: none"> NCI R25 RUYES Blanquita B. Valenti School BOLD Decoding Cancer CINJ Tours 	<p>>1500</p> <ul style="list-style-type: none"> NCI R25 RUYES Joint Princeton Summer Internship Joint Middlesex College Internship Joint Ludwig Princeton Internship DIMACS/NSF 	<p>>550</p> <p>Medical Students</p> <ul style="list-style-type: none"> NCI R25S OPTIM ASCO Internship <p>PhD Students</p> <ul style="list-style-type: none"> Cancer Biology Track MD/PhD Program Rutgers iJOBS (BEST) 	<p>>580</p> <ul style="list-style-type: none"> NCI T32 Rutgers iJOBS (BEST) Clinical Fellowships <ul style="list-style-type: none"> Hem/Onc Breast Surgery Rad Onc General Surg Onc 	<p>>50</p> <ul style="list-style-type: none"> NIH REACH Formal Mentoring Programs - NJ ACTS Mentoring Teams OASIS Pilot Funding Targeted conferences
<p>10 Training Grants (3 NCI, 7 NIH)</p>				
<p>Grand Rounds DLS Annual Retreat Research Symposia Tumor Boards Research Program Retreats</p>				

Summer Internship in Clinical Oncology Research (OHRS)

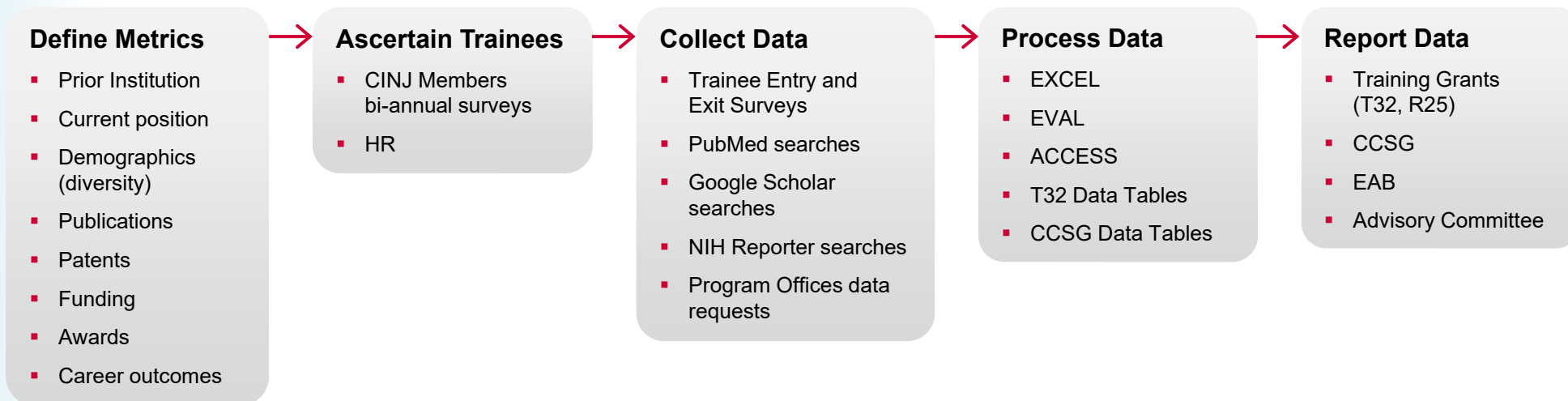
*Red text indicates New Programs since 2018

*Bold text indicates programs that exist because of CINJ

Tracking Metrics of Success

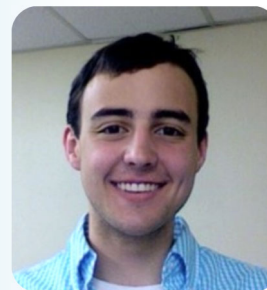
Dedicated CRTEC Staff Member to Oversee Data Collection and Reporting

Julie Ann Glaz-Bopp
Grants Coordinator



Tracking Metrics of Success

Graduate Students	297 Started Training	260 Completed Training
	13.1% URG	51.9% Female/ Non-binary
Postdoctoral Trainees	292 Started Training	282 Completed Training
	7.5% URG	40.4% Female



Alex Bott, Graduate Student
Mentor: Dr. Wei-Xing Zong (CMI)

- 7 Publications (Molecular Cell, Cell Metabolism)
- F31 F99/K00
- Post doc, Univ. of Utah



Kristen D. Krause, Graduate Student
Mentor: Dr. Perry Halkitis (CPC)

- 27 Publications (Journal of Healthcare for Poor and Underserved, LGBT Health)
- Stuart D. Cook Excellence in Research Award
- Deputy Director, Center for Health, Identity, Behavior and Prevention Studies



Gregory Ducker, PhD, Post-doc
Mentor: Dr. Joshua Rabinowitz (CMI)

- 7 Publications during training (Nature, PNAS)
- NCI R00
- Assistant Professor, Univ. of Utah

≡ Trainee Mentoring and Career Enhancement



Graduate Students

- Mentoring committee
- Required Individual Development Plan (IDP)
- Required annual seminar



Postdoctoral Fellows

- IDP encouraged
- Required annual seminar



Career Development for Pre- and Post-doctoral Trainees

- Grants Office/Workshops
- External Funding Incentive
- Travel Awards to present at regional/national meetings



Adrienne Viola, MD, PhD

Mentor: Dr. Katie Devine (CPC)

- 10 publications
- NCI F30 Award
- Pediatric Resident, Boston Children's Hospital

Presentations at Annual Retreat and Annual Symposium with Princeton

Grant Writing Support



CINJ Grants Office

- Budget preparation, review/edit documents, institutional signatures

Grant-writing courses by NJ CTS Award

- Graduate students and early-stage postdocs
- Grant application components peer and grant coach reviewed
- NIH review groups, response to peer review critiques, submission of the final grant application

Other Initiatives

- Assist senior postdoctoral trainees and faculty (early and mid-career) applying for K and R grants
- Once monthly mock study section to review specific aims pages, prepare proposals for K and R grants

Impact Successfully used for individual and institutional education and training grant submissions since 2018

Robust Pipeline Programs Prioritizing Diversity



Rutgers Youth Enjoy Science Program (RUYES)

NCI R25CA247785, PI Chaudhary,
Awarded 2020

- Builds on NCI-funded CURE Program



100% of high school students in college

90% of undergraduate students pursued graduate degrees

28 trainees engaged in hands-on cancer research, community outreach and professional development

Impact

- 4 high school students in prestigious universities
- Teachers created cancer focused curriculum
 - Reached >500 high school students
 - Disseminated to other teachers
- Lung and skin cancer prevention community outreach to **415 students** (4 middle schools)



Jada, HS
Mentor: Mitrofanova (GICG)
Freshman at Case Western



Caitlyn, HS
Mentor: Steinberg (CPC)
Freshman at Johns Hopkins



Pranavi, HS
Mentor: Hu (GICG)
Accepted in UPENN



Richard, HS
Mentor: Heckman (CPC)
Accepted in Yale

Robust Pipeline Programs Prioritizing Diversity

Oncology Physician Training Initiative to Maximize Diversity (OPTIM)

3R25CA247785-02S1 (NCI R25 Supplement, PI Chaudhary)

Co-Program Directors: Chaudhary and In

- First year Medical Students from URGs
- Clinical and research exposure in oncology
- Role models and mentors to RUYES trainees



Victoria Ayoola

First Year Medical Student,
RWJMS

Mentor: Sarah Weiss (CIPT)



David Agyapong

First Year Medical Student,
RWJMS

Mentor: Eileen White (CMI)



Nour Abdel-Azim

First Year Medical Student,
NJMS

Mentor: Bahar Dasgeb (CIPT)

Training in the Community and Catchment Area



Blanquita B. Valenti Community School

NEW New Brunswick Community School: underserved community; 95% Hispanic; 98% economically disadvantaged

- Funded through the Jack and Sheryl Morris Cancer Center capital gift
- Additional support from Middlesex County

Pipeline access to students at early academic level

- STEM projects, etc.
- Align with RUYES funded cancer focused interactive activities

Joint Internship Program with Middlesex College

Supported by \$25 M investment from Middlesex County

- Clinical trial management internship
CINJ Office of Human Research Services
- Clinical Research Internship in nursing



CRTEC, COE, PED Collaborative Initiatives

PED

• DEI Advisory Committee •
Community media and arts project •
Eliminating Racism Strategic Plan
RWJBH • DEI • COE and Clinical
Trials Staff • IDEA grant, Social
Advocacy Program

Community input on
Strategic Plan Components •
CCAB Interactions • Internal
Catchment Area Advisory
Committee • Bidirectional
Dialogue with Community

Science Communication and Community
Engagement • Community Based
Participatory Research Training • Training in
Community Engagement, Outreach and
Disparities Research • Informing CINJ
members of CA burden and community
needs • RUYES R25 • CRTEC Internal
Advisory Committee • Community Scientist
Training; Pillars of Success • Outreach to
Elementary and High Schools • NIH
Biospecimen Infrastructure Grant Proposal

COE

CRTEC

Future Plans

1 Develop additional joint consortium R25 and T32 training grants

- Resubmit (September 2023) NCI T32 in Cancer Genomics and Systems Biology
- Genomics and Large Data Sets
- Cancer Prevention and Control

2 Develop additional consortium-wide initiatives (training, seminars, symposia)

- Cancer metabolism Ludwig retreat in fall 2023
- Tristate Cancer Metabolism meeting in summer 2023
- Ludwig-Princeton Branch retreat in fall 2023

3 Develop additional collaborative initiatives with COE and PED

- Science communication workshops for faculty
- Diversity training workshops for trainees
- Outreach activities to K-12 students across New Jersey

4 Enhance junior faculty career development

- Reorganize faculty mentoring program
- Develop / enhance grant-related training and mentorship
- Increase number of individual Career Development Awards

Thank You

Q&A Segment



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