

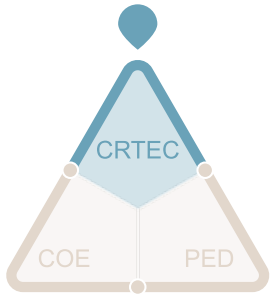
Cancer Research Training & Education Coordination (CRTEC)

EDWARD NELSON, MD
CLAUDIA BENAVENTE, PHD

EAB 2025
MARCH 14, 2025



Objective & Specific Aims



OBJECTIVE

Ensure CFCCC and UCI (i) provide rigorous training and conduct of cancer research, (ii) provide career enhancement activities that prepare trainees as biomedical cancer researchers/healthcare professionals, and (iii) support community cancer care professionals in providing quality care as partners in alleviating the burden of cancer in our Catchment Area

AIMS

1

Education & Career Pathways

To coordinate and foster cancer education and cancer research career development across the entire career spectrum, from high school students to established professionals, and throughout UCI

2

Career Development Support

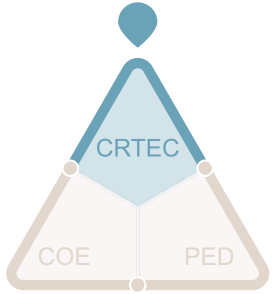
To advance the development of early stage and mid-career CFCCC members through targeted pilot grants and specific mentorship programs

3

Infrastructure & URM Focus

To develop and enhance the infrastructure to support existing programs, apply best practices, and foster innovative approaches with a special emphasis on supporting the cancer research career development of minoritized populations

Objective & Specific Aims (Proposed for Renewal 2026)



OBJECTIVE

Cultivate a diverse and skilled cancer research and healthcare workforce by providing rigorous training, career development, and mentorship. Through strategic education initiatives and community partnerships, we aim to advance cancer research, improve patient care, and reduce the burden of cancer in our Catchment Area

AIMS

- 1 Tracking Activities & Outcomes**
 Measure and enhance career development activities on the pathway for future cancer researchers.
- 2 Pathway Programs**
 Strengthen the portfolio of high school, undergraduate, and post-baccalaureate programs to bridge pathway gaps, including underrepresented populations
- 3 Mentorship & Career Development**
 Expand mentorship and career development programs to support graduate students, postdoctoral scholars, fellows, and faculty

Leadership



Edward Nelson, MD
Associate Director, CRTEC

EXPERTISE

- Professor, Division of Hematology/Oncology, Medicine
- Professor, Molecular Biology and Biochemistry
- Research interests: tumor immunology, cancer stem cell biology, psychoneuroimmune axis, immunomodulation & immunotherapeutics, dendritic cell biology

ROLES

- Leads cancer research and clinical oncology training
- Chair, CRTEC Steering Committee
- Member, EDI Steering Committee
- Member, EDI Climate & Culture Working Group
- PI, American Cancer Society Institutional Research Grant (ACS-IRG)
- PI, American Cancer Society Diversity in Cancer Research (ACS-DICR) Internship Program



Claudia Benavente, PhD
Deputy Associate Director

EXPERTISE

- Associate Professor, Department of Pharmaceutical Sciences
- Research interests: genetics, epigenetics, cancer, pediatric cancer, retinoblastoma, osteosarcoma, Rb

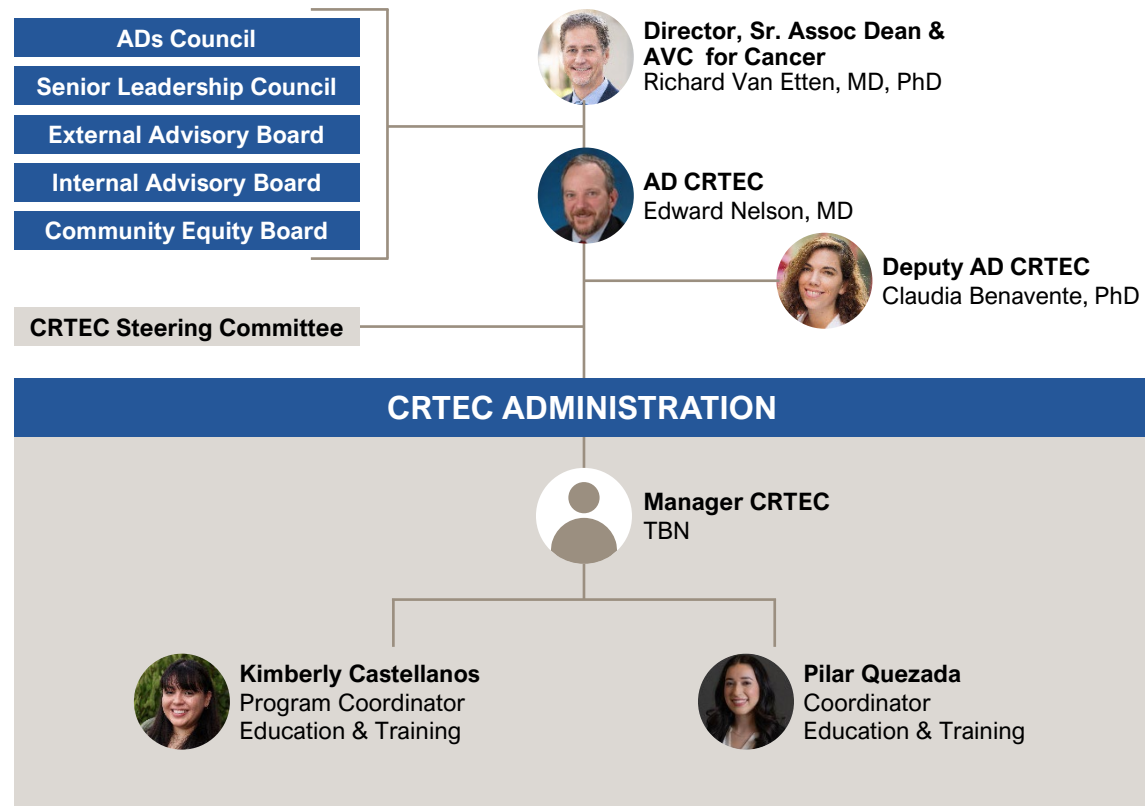
ROLES

- Expands the cancer research training programmatic portfolio and equity-driven initiatives
- Co-Chair, CRTEC Steering Committee
- Member, EDI Steering Committee
- Member, EDI Professional Development & Education Working Group
- Member, ACS-IRG Steering Committee
- Member, ACS-DICR Steering Committee

SHARED RESPONSIBILITY

- Champion cancer education and career development across all career stages
- Bolster CRTEC efforts through collaboration and institutional engagement
- Secure institutional support and extramural funding for CRTEC programs
- Drive equitable opportunities for underserved individuals in cancer training and education
- Strengthen infrastructure to support innovative programs and trainee outcome tracking

Team & Infrastructure



\$625k Annual Investment

Budgeted

FREQUENCY

Monthly

FUNCTION

Facilitates coordination, reviews program progress, addresses operational challenges, and aligns initiatives with strategic goals

AUTHORITY

Oversees program operations, implements decisions, ensures compliance, streamlines execution of education and training initiatives

Steering Committee



Edward Nelson, MD
Chair, Associate Director
CRTEC, CFCCC



Claudia Benavente, PhD
Deputy Associate Director
CRTEC, CFCCC



Devon Lawson, PhD
Associate Professor
Physiology & Biophysics



Alexandre Chan, PharmD, MPH
Professor
Pharmaceutical Sciences



Daniel Chow, MD, MBA
Associate Professor
Neuroradiology



Peter Donovan, PhD
Professor
Developmental & Cell Biology



Charles Limoli, PhD
Professor
Radiation Oncology



Wendy Cozen, DO, MPH
Interim Associate Director
Pop Sci & Cancer Control, CFCCC



Michelle Digman, PhD
Manager
LFD, CFCCC



Robert Edwards, MD, PhD
Director
ETR, CFCCC



Susan O'Brien, MD
Professor
Hematology/Oncology



Michelle A. Fortier, PhD
Assistant Director
BBSR, CFCCC



Anand Ganesan, MD, PhD
Program Co-Leader
BIDD, CFCCC



Angela Fleischman, MD, PhD
Program Co-Leader
SPT, CFCCC



Nicholas Pannunzio, PhD
Associate Professor
Hematology/Oncology



Joel Milam, PhD
Program Co-Leader
Cancer Control, CFCCC



Jason Samarasena, MD
Associate Professor
Gastroenterology



David Fruman, PhD
Associate Director
Basic Science, CFCCC



Susanne Phillips, DNP
ARPN, FNP-BC, FAANP
Clinical Professor, Nursing



Sora Tanjasiri, DrPH, MPH
Associate Director
CE & Cancer Health Equity, CFCCC

FREQUENCY

Bi-annually

FUNCTION

Provides strategic oversight, guidance, and support for cancer research education and training initiatives

AUTHORITY

Advises program direction, ensures accountability and evaluates cancer research education and training initiatives

Response to EAB Review



STRENGTHS (2021 NIH Summary Statement)

“ This is an outstanding CRTEC that brings tremendous value to training, education, and mentoring activities at CFCCC

CRITIQUE

Tracking and Analytics: development of CRTEC analytics lags peers and is a high priority. Develop robust analytics and central database

Governance: define CRTEC’s role in governance and emphasize CFCCC member contributions to graduate programs and admissions committees

Integration: highlight how CRTEC interfaces with Research Programs, Shared Resources, COE and PED, particularly in addressing catchment area burdens and disparities

Programs and Activities: expand partnerships with minority-serving institutions and local community colleges to enhance diversity in programs; emphasize role in educating on catchment area needs and disparities; clarify CRTEC’s role in activities. Clearly define lanes/scope for each CRTEC/PED/COE.

Grant Opportunities:

RESPONSE

- Established Trainee Associate Membership
- Implementation of Advarra’s EVAL to track 805 Trainee Associate Members

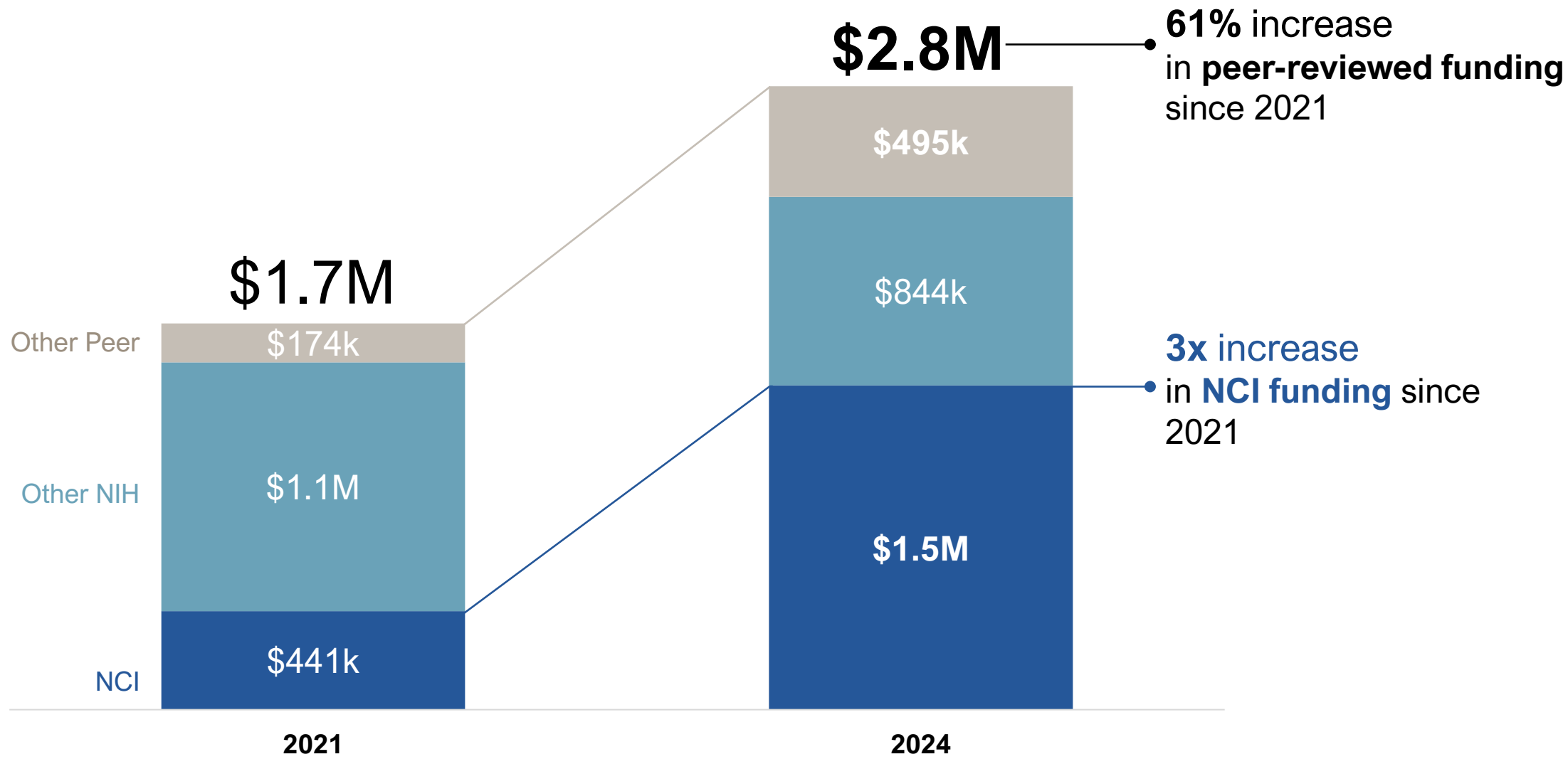
- Involved in Medical Scientist Training Program (MSTP) 2025-26 admissions committee
- CRTEC leadership Vice Chair for Academic Affairs, Department of Medicine
- CRTEC steering committee members in leadership of T32s and umbrella graduate program

- Launched COE-CRTEC-PED Integration Committee to streamline operations
- Integrated COE and PED components of the Cancer Clinical Trial Bootcamp
- Developing “Maximizing Insights with the Catchment Area Dashboard” video resources in collaboration with COE, PED, and Research Programs

- Strengthened partnerships with Cal State Universities (CSUs) and community colleges to recruit trainees from underrepresented and underserved backgrounds
- Revamp UCI-HBCU summer program with oncology focus for undergraduates interested in medicine
- Promote and educate CFCCC members on the Office of COE Catchment Area Dashboard

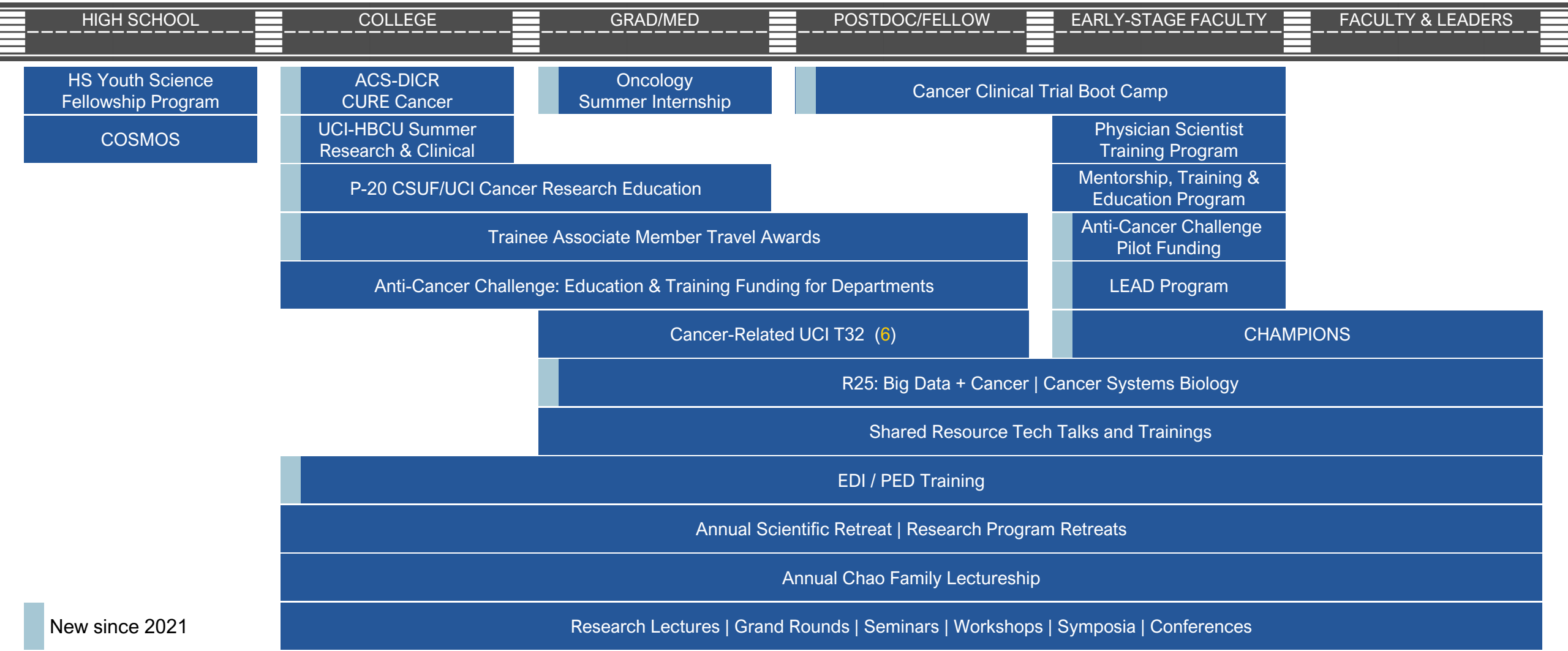
- R25 Youth Enjoy Science (YES) scored. Plan for resubmission May 2025
- American Cancer Society (ACS) Diversity in Cancer Research (DICR) Internship Program funded

Strong Training Grant Portfolio of Peer-Reviewed Funding



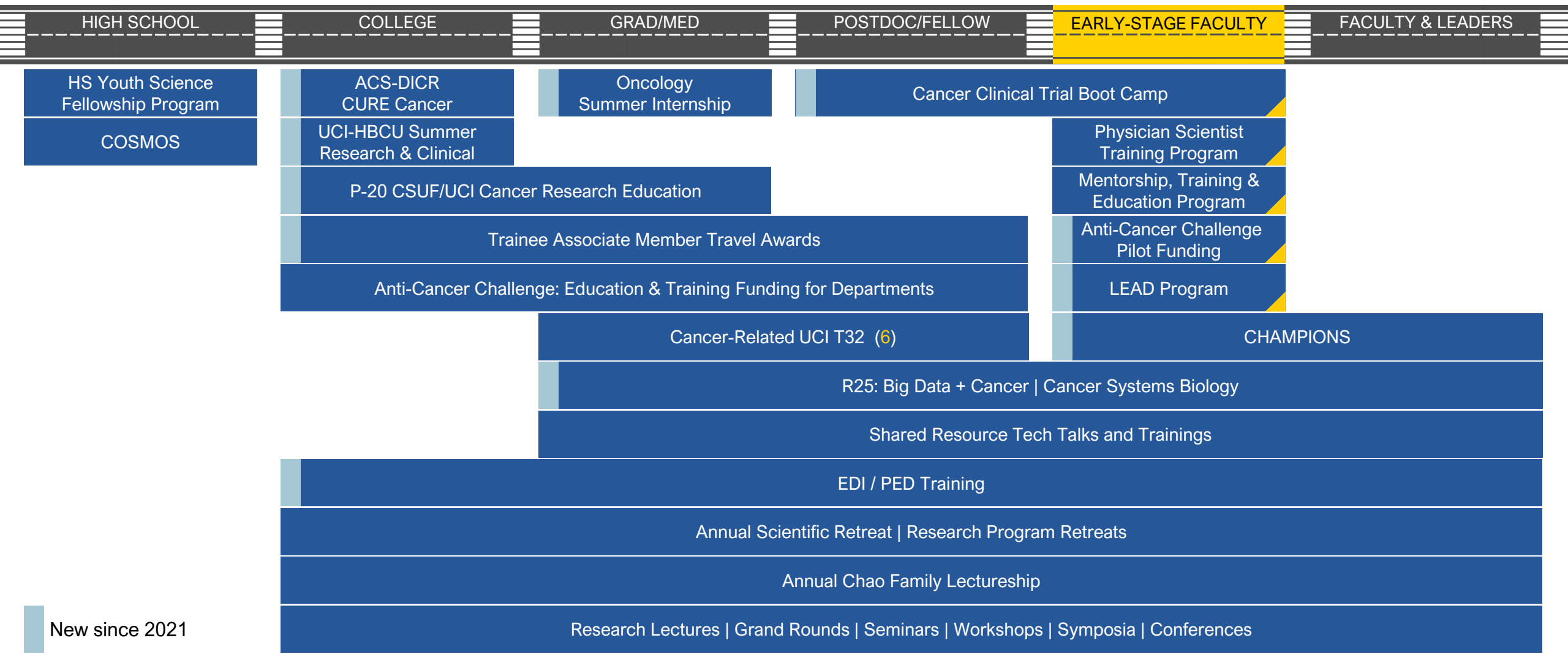
Strong Support Portfolio

Aim 1: CFCCC Led Programs and Activities Across the Career Spectrum



Strong Support Portfolio

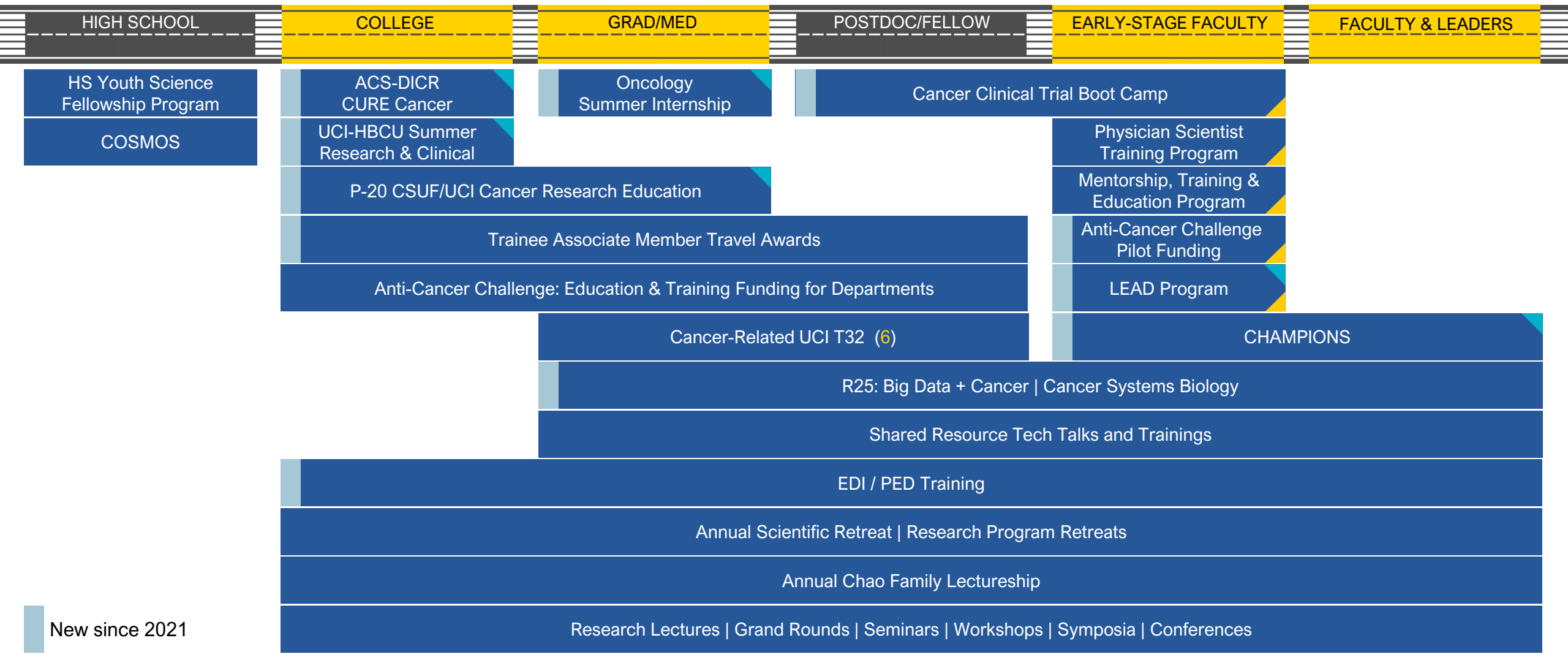
Aim 2: CFCCC Led Mentorship and Funding Support for Early- and Mid-Career Faculty



New since 2021

Strong Support Portfolio

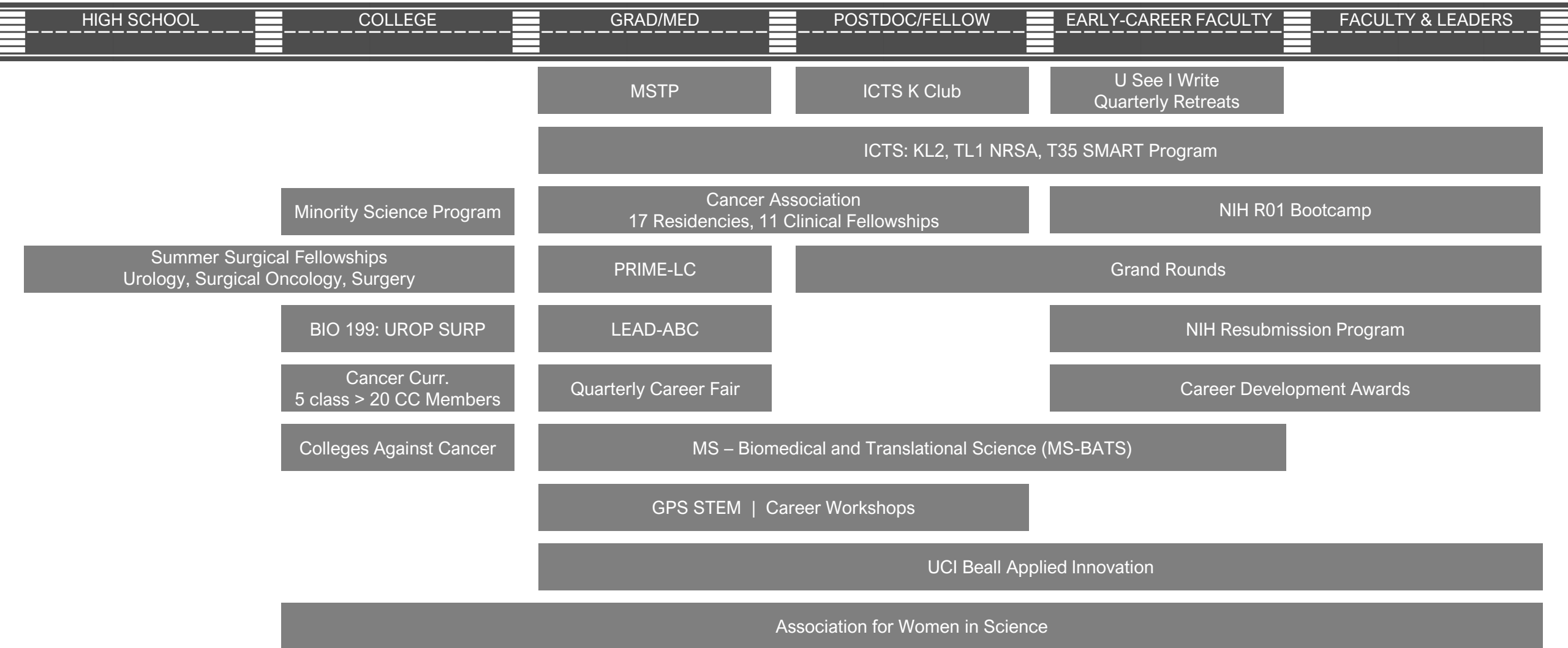
Aim 3: Infrastructure & CFCCC Led Programs and Activities for Minoritized Populations (URM)



New since 2021

Strong Support Portfolio

Leveraging 20+ Partner and UCI Programs and Activities



Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum

HIGH SCHOOL

COLLEGE

GRAD/MED

POSTDOC/FELLOW

EARLY-CAREER FACULTY

FACULTY & LEADERS

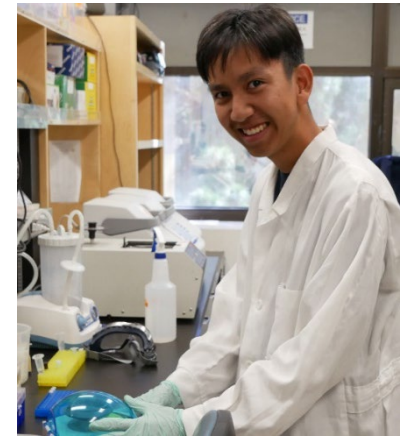
Youth Science Fellowship Program (YSFP)

- Free summer program offering hands-on cancer research experience to high school students across Orange County
- Students supported (2021-2024): 92**
 67% Female
 25% URM
 86% HS graduates pursuing college degrees
 82% Cancer-related majors

California State Summer School for Mathematics and Science (COSMOS)

Cancer Center Visit

- Engaging lectures from CFCCC leadership and an immersive Cancer Center tour
- Students supported (2023-2024): 47**
 60% Female

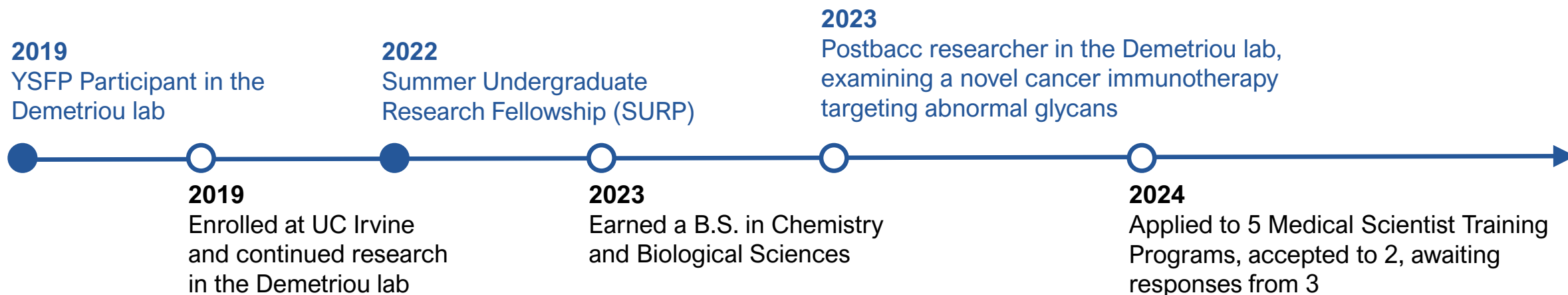


Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum



Andres Cordon



"To this day, I recommend YSFP to parents, current high school students, and anyone looking to get involved in medicine or have no exposure to research. Research turned out to be my dream career, and without the exposure given to me by the program, I would not have been where I am today"



Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum



Annual Scientific Retreat Poster Awards Competition

- A record-breaking **68** undergraduate, graduate students, and postdoctoral scholars from **32** labs showcased their cancer research
- Senior CFCCC leadership and community reviewers judged the posters for research impact, innovation, presentation quality, and community relevance. Top-scoring posters received awards and recognition for excellence:



Casey Hudson PhD Student Stem cell-derived extracellular vesicles ameliorate breast cancer chemobrain



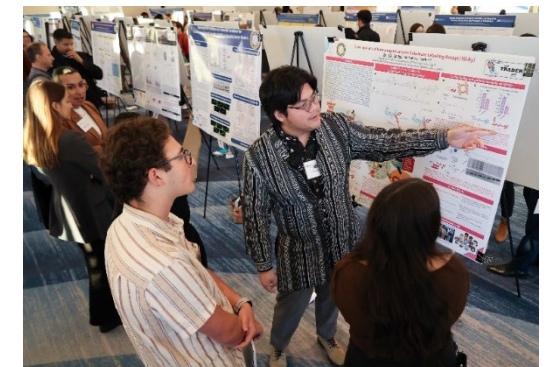
Rima Singh PhD Student Targeting the epithelial-stromal cell crosstalk in metastatic pancreatic cancer



Shreya Madan PhD Student Targeting C5aR1 Signaling to Mitigate Chemotherapy-Induced Cognitive Impairments (CRCI) and Neuroinflammation



Axs Avenido Undergraduate Patient-reported Barriers and Preferred Interventions to Improve Lung Cancer Screening Uptake



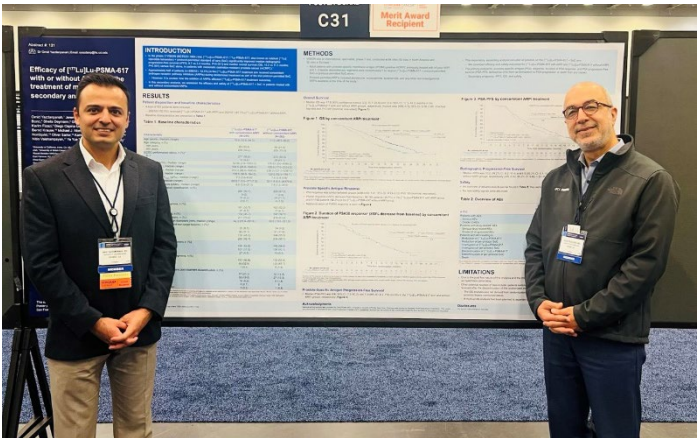
Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum



Trainee Associate Member Travel Awards – NEW!

- Travel and conference funding to Trainee Associate Members
- Quarterly application deadlines
- 6 awards issued to date



Issued Awards to Date: \$10.5K	Title	Conference
Omid Yazdanpanah, MD	Medical Fellow	ASCO Genitourinary Cancers Symposium
Jacqueline Chow	Medical Student	Society of Behavioral Medicine
Ding Quan Ng	Graduate	9th International Cognition and Cancer Task Force Conference
Esther Lam	Graduate	AACR Annual Meeting 2025
Yijun Gu	Graduate	AACR Annual Meeting 2025
Vanessa Pham	Undergraduate	Society for Biopsychosocial Science and Medicine 82nd Annual Scientific Meeting

Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum



Cancer Clinical Trial Bootcamp

- **2023:** Launched the 16-week training for clinical faculty & fellows on investigator-initiated cancer trial protocols
- **Format:** Combines didactics with hands-on mentorship
- **2024:** Mandatory for first-year Heme/Onc Fellows
- **2025:** Integrated insights from Jason Zell, DO (CC) R50 Research Specialist Award “Advancing novel cancer preventative and therapeutic strategies across the modern NCI clinical trial networks”
- **Participants (2023-2024): 29**
52% Female
9 IITs impacted



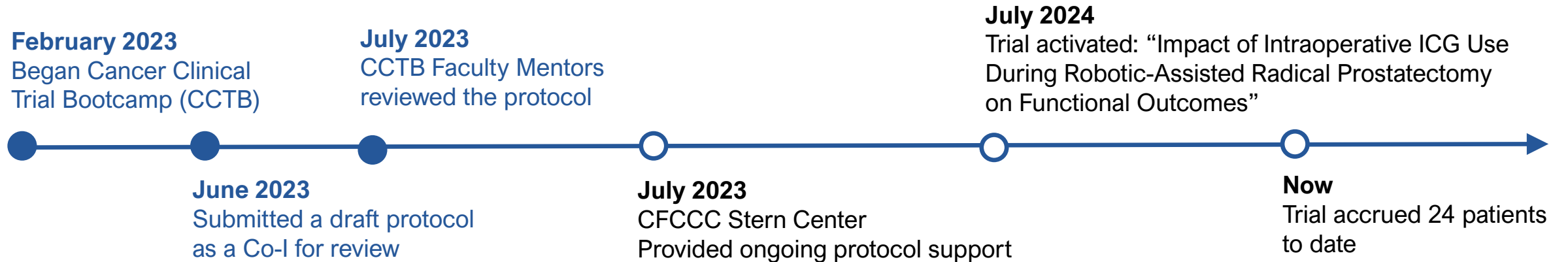
Aim 1: Education & Career Pathway Highlights

Coordinate and foster cancer education and career development across the entire career spectrum



Sohrab Naushad Ali, MD, MSc

Assistant Professor, Urology



"I hope this course expands to many participants as I think this is very helpful and a resource available to the physicians at UCI"



Aim 2: Career Development Highlights

Advance career development of CFCCC members through pilot grants and mentorship programs



Mentorship, Education & Training (MET) Program

- Year-long mentorship program for early-stage and mid-career faculty to overcome career and scientific challenges
- **Participants (2021-2024): 8**
 - 63% Female
 - 24 Publications
 - 4 Grants funded
 - 4 Grants pending review

NIH Bootcamp

- A multi-tiered mentorship program that equips mentees with the tools and knowledge to craft successful NIH research grant applications
- **Participants (2021-2024): 25**
 - 55% Female
 - 16% URM
 - 17 NIH R01, NIH, or R01-equivalent grants funded



Jacqueline Kim, PhD, MS
Assistant Professor in Residence
School of Medicine



Jeremy Harris, MD
Assistant Professor
School of Medicine



Education & Training Pathway Support

Support from idea generation to funded projects and beyond



Xiaoyu Shi, PhD (BIDD)

Assistant Professor
Developmental & Cell Biology

- **2021**
NIH Bootcamp Participant
- **2022**
MET Advisory Panel
- **2022**
NIH Director's New Innovator Award (DP2)
- **2023**
Dissemination of chemical-based
super-resolution microscopy
- MET presentation at annual Scientific Retreat
- Appointed Assistant Program Leader
- **2024**
NSF CAREER Award



MAY 2, 2024

Congratulations to Dr. Xiaoyu Shi for receiving the prestigious National Science Foundation's CAREER Award.

Congratulations to the Dr. Xiaoyu Shi for receiving the National Science Foundation's CAREER Award offered by the NSF, highlighting her exceptional capabilities and the groundbreaking research being conducted.



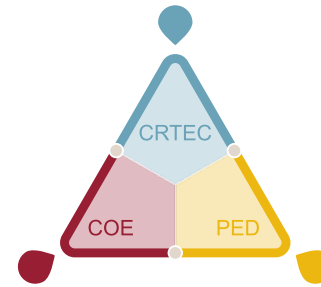
Aim 3: Support of URM Population Highlights

Special emphasis on the career development of minoritized populations



CSUF/UCI-CFCCC Cancer Health Equity Research Partnership (CHERP) Cancer Research Education Program (CREP) at UCI

- Year-long program that equips undergraduates across Orange County with critical research skills and professional development to succeed in cancer research careers
- Students supported (2023-2024): 19**
 - 79% Female
 - 53% URM
 - 53% Intend to enroll in a STEM postbaccalaureate



American Cancer Society (ACS) Diversity in Cancer Research Cultivating Undergraduate Research Excellence in Cancer (CURE-Cancer)

- Year-long program that equips undergraduates across Orange County with critical research skills and professional development to succeed in cancer research careers
- Recruiting from **3** Minority Serving Institutions, **4** Hispanic Serving institutions, and **9** community colleges for June 2025 launch

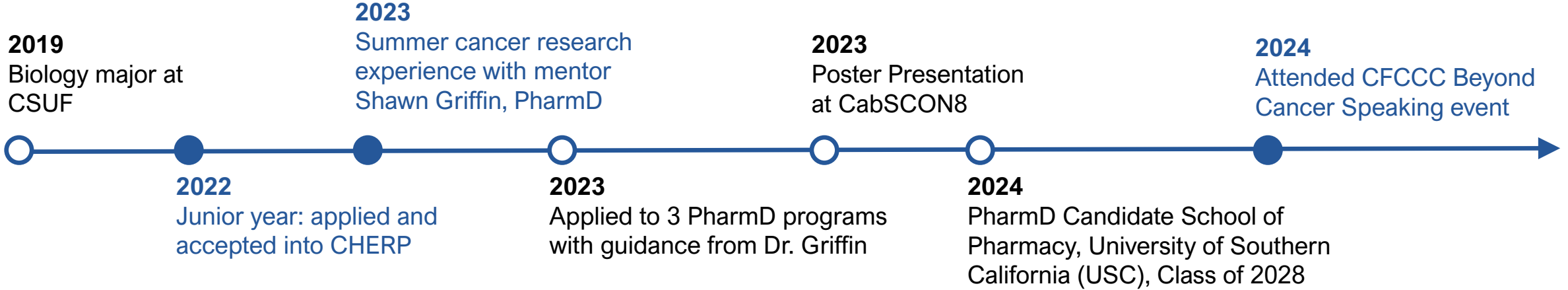


Education & Training Pathway Support

Support from idea generation to funded projects and beyond



Gloria Castañón



"I truly had an amazing experience with my research topic and fantastic mentor, Dr. Griffin...I never thought in a million years I would be here today attending pharmacy school at USC with an interest in cancer research"



Aim 3: Support of URM Population Highlights

Special emphasis on the career development of minoritized populations

HIGH SCHOOL

COLLEGE

GRAD/MED

POSTDOC/FELLOW

EARLY-CAREER FACULTY

FACULTY & LEADERS

Oncology Summer Internship (OSI)

- 4-week immersive program for rising second-year students from minoritized populations in medicine to explore careers in oncology related specialties
- Students supported (2022-2024): 25**
67% Female
41% URM



Cohort Highlights

2024

- 138%** increase in participation from last year
- Each participant completed **80+** hours of clinical shadowing and **20+** hours of specialized lectures
- 100%** of participants reported an increased interest in oncology

2022

- 100%** see cancer care playing a role in their careers after they graduate
- 2** participants co-authored “Novel combination approaches to locoregional and systemic therapy in the management of primary and metastatic liver tumors” featured in *Clinical Advances in Hematology & Oncology*

Aim 3: Infrastructure Highlights

Develop and enhance infrastructure (tracking and metrics)

Implemented Advarra's EVAL Software

- Monitors the progress and achievements of trainees, including their publications, grants, and CRTEC program participation



Total: 805*	Count
Undergraduate	246
Masters	11
Graduate	404
Postdoctoral Scholar	104
Medical Student	26
Medical Fellow	13
Medical Resident	1

*225 trainees participated in a CRTEC program
717 work in a CFCCC member's lab and receive CFCCC support

Developed Trainee Associate Membership

- Systematic process for becoming a Trainee Associate Member, ensuring continuous tracking of new trainees
- Formalizes benefits to Trainee Associate Members



Collaborative Activities: Shared Resources

Annual Scientific Retreat: Shared Resource Showcase

- Featured 8 Shared Resources
- 5-minute technical presentations
- Posters outlining support services

Biostatistics Shared Resource

Leadership

Min Zhang, MD, PhD²
Wen-pin Chen, MS
Faculty Advisor

Mission

The BSR provides a centralized resource of biostatistical expertise for the experimental design and analysis of basic, translational, clinical and population-based cancer research. To fulfill this mission, BSR:

- facilitates active participation during grant preparation in the areas of cancer etiology, prevention, detection, and prevention
- participates in research design, optimization and quantitative protocol features
- implements existing and develops new statistical methods
- provides guidance on sample size requirements

Services

Basic Statistical Analysis

- Statistical analysis for manuscript/grant preparation
- Survival data analysis
- Genomics data analysis, including RNA-seq, ChIP-seq, Hi-C, etc.
- Regression analysis
- Bayesian analysis
- Machine learning
- Single-cell analysis
- Functional analysis (pathway, etc.)
- Microbiome
- Radiomics and radiogenomics

Advanced Statistical Analysis

- Project-oriented special study design and data analysis
- Research consulting
- Project planning with FDA-compliant computational methods and their application in clinical computing technologies
- Statistical design, analysis and interpretation (e.g., using R and SAS data for R/R/R)
- Programming assistance
- Setting up and running pipelines (e.g., cloud)
- Training and education
- Annual BSR "Big Data Training for Cancer Research"
- Other regular need-based workshops

Consulting

- Biostatistics | Biostatistics | Statistics | Machine Learning | Research consulting | Statistical/computational genetics and genomics

Research Highlights

1 | Hereditary Cancer Clinics Improve Adherence to NCCN Germline Testing Guidelines for Pancreatic Cancer

Background: Pancreatic cancer is a leading cause of cancer death. Germline testing can identify hereditary cancer risk and guide clinical management. However, adherence to NCCN guidelines for germline testing remains low. We evaluated adherence to NCCN guidelines for germline testing in pancreatic cancer patients at two academic medical centers.

Methods: We conducted a retrospective analysis of pancreatic cancer patients who underwent germline testing between January 2015 and December 2017. We compared adherence to NCCN guidelines for germline testing between two academic medical centers.

Results: We identified 100 pancreatic cancer patients who underwent germline testing. Of these, 60% (60/100) adhered to NCCN guidelines for germline testing. The most common reason for non-adherence was lack of insurance coverage (30%).

Conclusion: Our study shows that adherence to NCCN guidelines for germline testing is improving at academic medical centers. However, more work is needed to ensure that all patients have access to germline testing.

2 | Interventions to mitigate cancer-related medical financial hardship: A systematic review and meta-analysis

Background: Cancer-related medical financial hardship is a significant barrier to cancer care. We conducted a systematic review and meta-analysis to evaluate the effectiveness of interventions to mitigate cancer-related medical financial hardship.

Methods: We searched PubMed, Embase, and Cochrane for studies published between January 2010 and December 2017. We included studies that evaluated the effectiveness of interventions to mitigate cancer-related medical financial hardship.

Results: We identified 10 studies that evaluated the effectiveness of interventions to mitigate cancer-related medical financial hardship. The most common intervention was financial counseling (5/10). The most effective intervention was financial counseling (OR 1.5, 95% CI 1.2-1.8).

Conclusion: Our study shows that financial counseling is an effective intervention to mitigate cancer-related medical financial hardship. Other interventions, such as financial counseling, may also be effective.



Cancer Clinical Trial Bootcamp

- Biostatistics presentation and mentorship with Min Zhang, MD, PhD² and Wen-pin Chen, MS
- Biobehavioral research presentation with Michael Hoyt, PhD



Collaborative Activities: Research Programs

CRTEC + Cancer Control (CC)

- Visiting Lecturer (Nguyen, MD) in collaboration with CC Program Leaders
- Milam & Ritt-Olson presented at OSI
- Cozen presented CC focused lecture at COSMOS
- CC leadership identified MET candidates
- Annual Scientific Retreat: “Using Implementation Science to Accelerate Impact: Insights from Digital Health”

CRTEC + Biotechnology, Imaging & Drug Development (BIDD)

- Annual Scientific Retreat: “The Future Scope of AI and Machine Learning in the CFCCC” with BIDD
- YSFP: **46** students mentored by BIDD 2021-2024

CRTEC + Systems, Pathways & Targets (SPT)

- Annual Scientific Retreat: “Tumor Immunology & Novel Therapeutic Approaches” with SPT
- YSFP: **69** students mentored by SPT 2021-2024

UCI Chao Family Comprehensive Cancer Center

**BEYOND CANCER
SPEAKER SERIES**

Community-Engaged and Patient Centered Cancer Control Research in Asian American Communities

Wednesday, May 22, 12:00-1:00 PM via Zoom

Tung Nguyen, MD

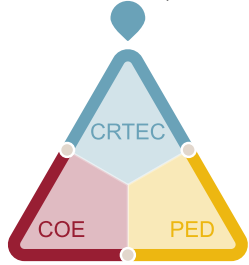
Lecture in honor of Asian American, Native Hawaiian, and Pacific Islander (AANHPI) Heritage Month





Intersection between COE, CRTEC & PED

Collective Mission, Communication & Activities



COE-CRTEC-PED Integration Committee

Training

- Youth Science Fellowship Program
- COSMOS Cancer Center Visit
- ACS-DICR Cultivating Undergraduate Research Excellence in Cancer (CURE-Cancer)
- Oncology Summer Internship
- Cancer Clinical Trial Bootcamp

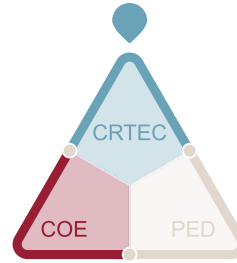
Annual Scientific Retreat

- Poster Awards Competition

External Funding

- ACS-DICR Internships Funded
- R25 YES Submission

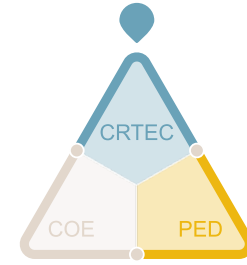
Joint participation in steering committees



Annual Scientific Retreat

- “Collaborating with COE”
- “Connecting Community Partners and Cancer Researchers”

Conquering Cancer Series



Training

- CHAMPIONS program (*upcoming*)
- LEAD program (*upcoming*)
- CRI Fellows Program
- NIH Diversity Focused Funding Webinar

Trainee Tracking & Support

- Trainee Associate Membership (TAM)
- TAM Travel Awards

Future Plans

AIMS

1

Education & Career Pathways

- **Expand research opportunities** for high school students through external funding initiatives
- **Apply for the ACS-DICR Postbaccalaureate Fellowship** to bridge gaps in training and education pathways
- **Strengthen educational collaborations** with pre-health pathways and health sciences departments

2

Career Development Support

- **With PED – Broaden mentorship programs** to connect diverse early- and mid-career investigators with senior CFCCC leaders
- **With COE – Create a platform** for CFCCC members to present their research to peers and the community, fostering bi-directional communication and promoting community-centric research

3

Infrastructure & URM

- **Launch the CHAMPIONS program** to equip faculty with skills for effective, culturally responsive mentoring that benefits both mentors and trainees
- **With PED – Implement the LEAD program curriculum** to prepare emerging CFCCC leaders with the skills needed to lead successful comprehensive cancer centers
- **With PED – Enhance initiatives** that foster inclusivity and a sense of belonging among members, trainees, and staff

Questions?
