

PARTNERS

Research Education Program in Cancer Disparities

NCCU

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Research Education Core



NC Central
UNIVERSITY

Discover what's Central to you.



UNC
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PARTNERS Research and Education Program supports the education and training of undergraduate students with two thematic tracks

Basic Cancer Biology

Public Health

NCCU Students

Basic cancer lab research experience and professional development for 2 years

UNC Students

Basic cancer research experience and professional development for one summer

NCCU Students

Public health cancer prevention research and professional development for 2 years

Program Goal

Research Education Program to introduce **undergraduate** students to cancer research in areas relevant to eliminating disparities in cancer screening, diagnosis, and treatment.

Aim 1

- Provide NCCU **undergraduates** with an introduction to basic cancer biology or public health

Aim 2

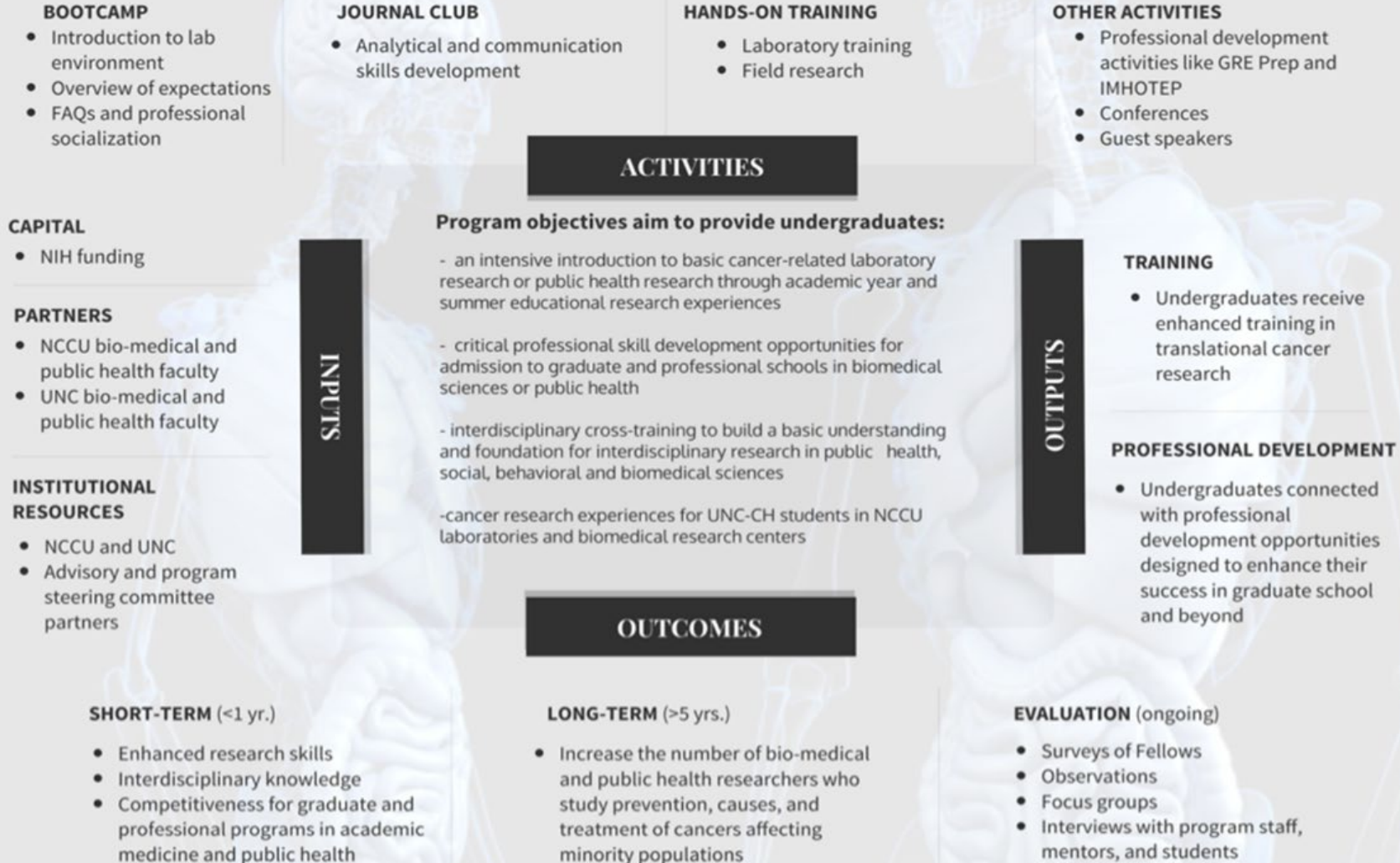
- Facilitate development of professional skills necessary to gain admission to graduate programs
- Provide interdisciplinary education to build basic understanding of research in public health, social, behavioral and biomedical sciences

Aim 3

- Facilitate cancer research experiences and professional development for UNC-CH undergraduates in labs at NCCU

NCCU and UNC's Partners Program

to Train Undergraduates in Research into the Prevention, Causes, and Treatment of Cancers Disproportionately Affecting Minority Populations



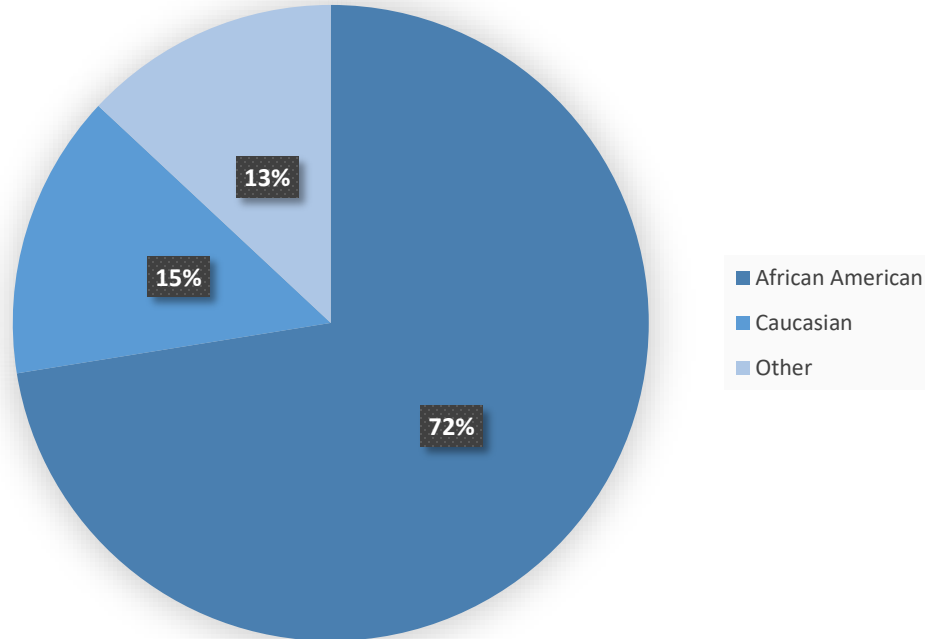
PARTNERS TRAINEES (2011-2021)

- 69 Total Trainees
 - **52 NCCU**
 - 27 Basic Cancer Biology
 - 25 Public Health
 - **17 UNC**

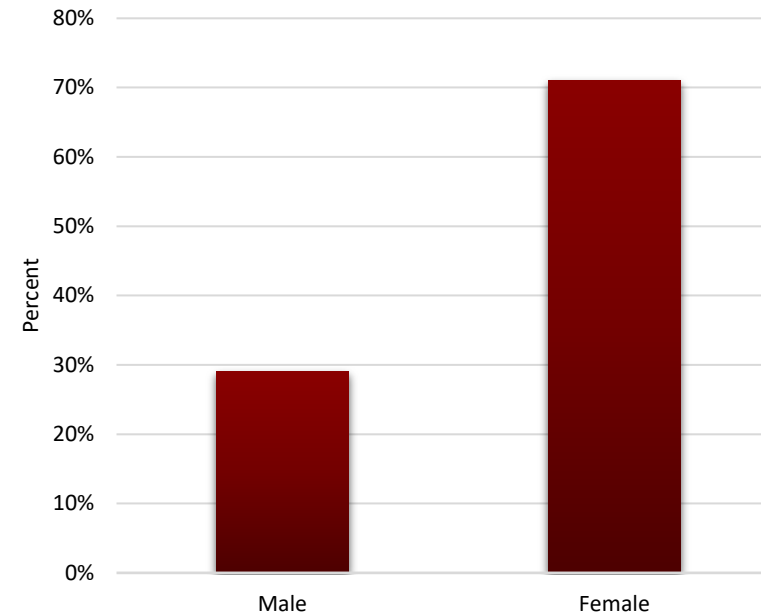


Overall Demographics for All Students in Program History 2011-2021

Race/Ethnicity of All Students



Gender of All Students 2011-2021



Tracking Partners Fellows

We use a variety of methods to track current and former PARTNERS program trainees for 10 years upon program completion.

- Trainees are asked to provide an e-mail address, permanent address, and telephone number through which they can be reached after leaving the program.
- Trainees are now required to create a LinkedIn account while in the Partners Program
- Annual check-in via email requesting updates for contact information and education/career path.
- Additionally, we check social media sites, google, and ask other alumni who may have information on their peers
- Tracking is performed in collaboration with the evaluation team and program staff.

PARTNERS Fellows Abstracts and Presentations (2015-2020)

- Almost all the students (90%) present at ABRCMS.

ABRCMS

- **39 Poster Presentations**
- **2 Oral Presentations**
- **15 Travel Awards**
- **6 Best Poster Awards**

Other Regional and National Conferences

- **14 Poster Presentations**
- **5 Oral Presentations**

PARTNERS Fellows have been co-author on 10 manuscripts

- Bowman BM, Montgomery SA, Schrank TP, Simon JM, Ptacek TS, Tamir TY, Mulvaney KM, **Weir SJ**, Nguyen TT, Murphy RM, Makowski L, Hayes DN, Chen XL, Randell SH, Weissman BE, Major MB. A conditional mouse expressing an activating mutation in NRF2 displays hyperplasia of the upper gastrointestinal tract and decreased white adipose tissue. *J Pathol.* 2020 Oct;252(2):125-137. doi: 10.1002/path.5504. Epub 2020 Aug 29. PMID: 32619021; PMCID: PMC7511428.
- Ellis KR, Black KZ, Baker S, Cothorn C, Davis K, Doost K, Goestch C, Griesemer I, **Guerrab F**, Lightfoot AF, Padilla N, Samuel CA, Schaal JC, Yongue C, Eng E. Racial Differences in the Influence of Health Care System Factors on Informal Support for Cancer Care Among Black and White Breast and Lung Cancer Survivors. *Fam Community Health.* 2020 Jul/Sep;43(3):200-212. doi: 10.1097/FCH.000000000000264. PMID: 32427667; PMCID: PMC7265975.
- Martin ME, Reaves DK, **Jeffcoat B**, Enders JR, Costantini LM, Yeyeodu ST, Botta D, Kavanagh TJ, Fleming JM. Silver nanoparticles alter epithelial basement membrane integrity, cell adhesion molecule expression, and TGF- β 1 secretion. *Nanomedicine.* 2019 Oct;21:102070. doi: 10.1016/j.nano.2019.102070. Epub 2019 Jul 24. PMID: 31351238; PMCID: PMC6814557.
- Ocasio J, Babcock B, Malawsky D, **Weir SJ**, Loo L, Simon JM, Zylka MJ, Hwang D, Dismuke T, Sokolsky M, Rosen EP, Vibhakar R, Zhang J, Saulnier O, Vladiou M, El-Hamamy I, Stein LD, Taylor MD, Smith KS, Northcott PA, Colaneri A, Wilhelmsen K, Gershon TR. scRNA-seq in medulloblastoma shows cellular heterogeneity and lineage expansion support resistance to SHH inhibitor therapy. *Nat Commun.* 2019 Dec 20;10(1):5829. doi: 10.1038/s41467-019-13657-6. PMID: 31863004; PMCID: PMC6925218.
- Oladapo HO, Tarpley M, Sauer SJ, Addo KA, Ingram SM, **Streptay D**, Ehe BK, Chdid L, Trinkler M, Roques JR, Darr DB, Fleming JM, Devi GR, Williams KP. Pharmacological targeting of GLI1 inhibits proliferation, tumor emboli formation and in vivo tumor growth of inflammatory breast cancer cells. *Cancer Lett.* 2017 Dec 28;411:136-149. doi: 10.1016/j.canlet.2017.09.033. Epub 2017 Sep 28. PMID: 28965853; PMCID: PMC5720365.
- Samuel CA, Mbah O, Schaal J, Eng E, Black KZ, Baker S, Ellis KR, **Guerrab F**, Jordan L, Lightfoot AF, Robertson LB, Yongue CM, Cykert S. The role of patient-physician relationship on health-related quality of life and pain in cancer patients. *Support Care Cancer.* 2020 Jun;28(6):2615-2626. doi: 10.1007/s00520-019-05070-y. Epub 2019 Oct 16. PMID: 31620925.
- Samuel CA, Schaal J, Robertson L, Kollie J, Baker S, Black K, Mbah O, Dixon C, Ellis K, Eng E, **Guerrab F**, Jones N, Kotey A, Morse C, Taylor J, Whitt V, Cykert S. Racial differences in symptom management experiences during breast cancer treatment. *Support Care Cancer.* 2018 May;26(5):1425-1435. doi: 10.1007/s00520-017-3965-4. Epub 2017 Nov 18. PMID: 29150730; PMCID: PMC6363352.
- Samuel CA, Lightfoot AF, Schaal J, Yongue C, Black K, Ellis K, Robertson L, Smith B, Jones N, Foley K, Kollie J, Mayhand A, Morse C, **Guerrab F**, Eng E. Establishing New Community-Based Participatory Research Partnerships using the Community-Based Participatory Research Charrette Model: Lessons from the Cancer Health Accountability for Managing Pain and Symptoms Study. *Prog Community Health Partnersh.* 2018;12(1):89-99. doi: 10.1353/cpr.2018.0010. PMID: 29606697; PMCID: PMC6542568.
- Tamir TY, Bowman BM, Agajanian MJ, Goldfarb D, Schrank TP, Stohrer T, Hale AE, Siesser PF, **Weir SJ**, Murphy RM, LaPak KM, Weissman BE, Moorman NJ, Major MB. Gain-of-function genetic screen of the kinome reveals BRSK2 as an inhibitor of the NRF2 transcription factor. *J Cell Sci.* 2020 Jul 15;133(14):jcs241356. doi: 10.1242/jcs.241356. PMID: 32546533; PMCID: PMC7375482.
- Williams, D., Perry, D., Carraway, J., Simpson, S., Uwamariya, P., & Christian, O. E. (2021). Antigonococcal Activity of (+)-Medicarpin. *ACS omega*, 6(23), 15274–15278. <https://doi.org/10.1021/acsomega.1c01590>

Career Trajectory of PARTNERS Fellows in Post Graduate Programs or Employment

Post Graduate Degree Category	NCCU (n)	UNC (n)	Percent (%) n=33
Medical/Health Professional School	13	3	
MD	4	3	43.8
PA	2	0	12.5
DDS	1	0	6.2
PharmD	5	0	31.3
Nursing	1	0	6.2
Graduate School	16	1	
MS	3	0	17.6
MPH	8	0	47.1
PhD	5	1	35.3
Employment Category	NCCU	UNC-CH	Percent n=31
Industry/Research & Clinical Trials	10	4	45.2
Academia/ Program-Project Coordinators	12	2	45.2
Others	2	1	9.6

Steps to Success

Many elements of the program are in place to facilitate a successful and educational experience for PARTNERS Fellows:

- **Professional Development Activities:** Courses in Science and Public Health, Journal Club, professional/graduate school prep
- **Boot-camp:** Discipline-specific workshop to establish the professional and technical skills, along with knowledge of basic culture, required to succeed in research
- **Monthly Meetings:** During the academic year students meet with NCCU directors monthly
- **Near-Peer Mentors:** Graduate students and Post-doctoral fellows who do not work in the Fellows' research groups meet individually with Fellows to help them understand research group culture, expectations, and career paths and provide support in Basic and Public Health journal clubs

Challenges and Recommendations

Evaluation Concern	Corrective Action
Fellow retention and career focus	Rigorous screening protocols; at least three program directors present at interviews; external evaluator on hand to assess process
Need for experienced Fellows to assist new Fellows	April Boot Camp will incorporate assistance from returning Fellows for best practices, lab experiences, and other info
Provide 2 nd year fellows with workshops that build on 1 st year experiences	Expand/diversify professional development offerings to reflect varied research career interests (i.e. conference and poster session participation)

Challenges and Recommendations

Evaluation Concern	Corrective Action
More robust tracking of trainees	We have expanded our tracking from 5 years to 10 years in order to capture trainees completing a graduate or professional degree program; Required LinkedIn accounts
UNC students only participating in summer research	Expanded the program for UNC students to 2 years to mirror that of the NCCU students
Focus limited to only undergraduates. Lost opportunities for PHD or postdocs	We do include PhDs and postdoctoral fellows as bench mentors and near peer mentors; NCCU has multiple M.S. programs composed mostly of minority students, so we will help these students apply PhD program at UNC; we will help LCCC T32 recruit postdocs from NCCU's INBS program

Explore Collaboration with CPACHE and CURE Programs

- Utilize CareerTrac to help us better track trainee details and produce progress reports
- Collaborate with PACHE to provide informational sessions to current and past trainees about additional funding opportunities for graduate and or professional programs or careers.
- To increase the pool of UG, encourage mentors to apply for Diversity supplements (CURE, PACHE etc) for additional UG students
- Opportunities for students to do research at NCI/NIH after graduation