ACS FELLOW NAME, DEGREE (working toward or received):
Emily Roundtree, Bachelor of Arts in Biology with a Chemistry minor, Case Western Reserve University

Certificate in Cancer Studies, Case Western Reserve University, expected May 2026

NAME OF SPONSORING INSTITUTION: Case Western Reserve University

FELLOWS MENTOR(S):
Ruth Keri, PhD: Professor, Department of Molecular Medicine, Pharmacology, Genetics and Genome Sciences, and General Medical Sciences—Oncology, Case Western Reserve University
Associate Director for Basic Research, Case Comprehensive Cancer Center
Member, Molecular Oncology Program, Case Comprehensive Cancer Center

DESCRIPTION OF THE FELLOWS' RESEARCH PROJECT AND PROGRESS:
As a post-bacc scholar at the Case CCC, I have worked in the Keri Lab at the Cleveland Clinic. From November 2024 to October 2025, I worked on a project titled "CDK10 is a driver of breast cancer disparities." This project focused on discovering the role of Cyclin-dependent kinase 10 (CDK10) and its downstream effectors, to determine if CDK10 could be an important therapeutic target that may overcome racial disparities in breast cancer outcomes. Black women have a disproportionately higher mortality from breast cancer compared to white women despite having lower incidence, and CDK10 is overexpressed in triple negative breast cancer (TNBC) tumors from black women, making it a potential target to lessen this disparity. I completed several cell line studies demonstrating that the loss of CDK10 activity inhibited growth of TNBC cell lines. The student leading this project graduated early during my tenure in the lab, thus I shifted projects while another student is completing this project as part of her doctoral thesis.

From June 2025 onward, I have also worked on a second project titled "Leveraging Focal Adhesion Dependencies in CDH1-deficient Lobular Breast Cancers." This project investigates how the loss of e-cadherin (CDH1) in invasive lobular breast cancer creates therapeutic vulnerabilities/reliance on focal adhesion proteins (such as FAK and NEK2), that could be leveraged for treating this disease. Invasive lobular carcinoma (ILC) is currently treated the same as invasive ductal carcinoma (IDC), despite having worse response to therapy and significantly different morphology. Because of this, there is an important need for new therapies that could successfully target ILC cells in patients. For this project I have assessed the role of FAK using siRNA-mediated silencing in regulating responsiveness to paclitaxel and its ability to control centrosome protein expression and function.

I expect to be a co-author on papers developed from both of these projects.

CAREER DEVELOPMENT ACTIVITIES (E.G., INDIVIDUALIZED COURSEWORK OR WORKSHOPS ATTENDED): My IDP is helping me develop a well-rounded application for MD-PhD programs. By frequently reviewing my goals with my mentor, I am making sure that I am building my research and pre-clinical skills. I have requested and have had the opportunity to implement new assays in my project, worked on experimental design, and data interpretation. I have also practiced presenting scientific journal articles. Here, I have discussed strengths and limitations of the work and proposed alternative approaches and interpretations on a monthly basis. While many of my IDP goals are lab-based, such as presenting work at poster competitions or running a successful lab-meeting, I have also consistently made space for medicine-based activities, such as shadowing physicians and participating in clinical volunteering.

This program has given me the opportunity to develop my research career and bolster my MTSP applications through the following:

Courses:
IBMS 453 (Cell Biology I): 3 Credits, Grade A, Points 12.000,
IBMS 455 (Molecular Biology I): 3 Credits, Grade A, Points 12.000,
IBMS 500 (Being a Professional Scientist): 1 Credit, Grade P, Points 0.000,

PHRM 520 (Hallmarks of Cancer): 3 Credits, Grade A, Points 12.000,
PHRM 525 (Topics in Cell & Mol Phrm): 1 Credit, Grade A, Points 4.000,
PHRM 526 (Grant Writing Tutorial): 2 Credits, Grade A, Points 8.000,
BIOC 445 (Metabolic Dysregulation): 3 Credits, Grade A, Points 12.000,
BIOC 415 (Biological Membranes/Proteins), 3 Credits, (in progress),
Current/Overall GPA: 4.000.

I enrolled in a Kaplan MCAT preparation course from November 2024-May 2025, which included 15 hours of MCAT studying per week plus a virtual-synchronous lecture each Sunday during that period. This class increased my score by 17 points over my baseline on practice exams.

I have taken a short course to improve my technical research skills. This includes the 34th Annual Jackson Laboratory Annual Short Course on Experimental Models of Human Cancer where I attended seminars and conducted hands-on workshops focused on cancer research and experimental modeling. Topics included cancer cellular and molecular biology, PDX tumor models, systems and computational genetics, the tumor microenvironment and tumor progression, inflammation and immunotherapy, and health disparities.

I have had the opportunity to shadow physicians, such as Dr. Megan Kruse at CCF Taussig Cancer Center during two of her in-clinic days. We began each shadowing day by discussing patient history, prognosis, and individual therapeutic plans. After this, I observed each patient appointment with Dr. Kruse. We debriefed each case after all appointments concluded. I had the opportunity to speak with Dr. Kruse, other breast oncologists, and pharmacologists about why certain therapies are standard of care and how to navigate treatment decisions.

During my free time, I volunteer at Cleveland Clinic Taussig Cancer Center and MedWish International, where I provide patients and their loved ones with baked goods, tea, coffee, and flowers between chemotherapy and appointments at Taussig Cancer Center, and recovering, sorting, repurposing, and redistributing unused and discarded medical supplies to areas in need, respectively.

I have been able to be a near-peer mentor to ACS CanSUR summer students, where I attended weekly meetings and helped plan their final summer project. I also serve as a mentor to various undergraduates in the Keri Lab, teaching them about commonly performed assays and helping them troubleshoot experimental setbacks.

PUBS/MANUSCRIPTS CO-AUTHORED: (See instructions for more information):

I will be a co-author on two manuscripts that are in preparation. One is focused of FAK and paclitaxel response in lobular breast cancer and the other describes the role of CDK10 in regulating TNBC cell growth.

CONFERENCE PRESENTATIONS: (See instructions for more information):

Great Lakes Breast Cancer Research Symposium 2025, August 24th-26th 2025: I submitted an abstract and had my poster titled “CDK10 is a driver of breast cancer disparities” displayed during each session. (Not in attendance due to illness.)

2025 ACS Annual Meeting, September 24th-25th, 2025, Atlanta, GA: I presented a poster titled "CDK10 as a driver of breast cancer disparities" and **won first place in my section**.

Case Comprehensive Cancer Center Annual Retreat, October 28th-29th 2025, Cleveland, OH: **I was awarded first place for my poster presentation** titled "CDK10 is a driver of breast cancer disparities."

ABRCMS 2025, November 19th-22nd, 2025, San Antonio, TX: I presented a poster titled "CDK10 as a driver of breast cancer disparities"

HONORS, AWARDS, FELLOWSHIPS, AND ANY OTHER SUPPORT RECEIVED DURING THE PERIOD OF TRAINING:

Travel funding for attendance at the 34th Annual Jackson Laboratory Annual Short Course on Experimental Models of Human Cancer.

American Cancer Society Annual Conference 1st Place Poster Award, Fall 2025: awarded for poster presentation titled "CDK10 is a driver of breast cancer disparities."

Case Comprehensive Cancer Center Annual Retreat 1st Place Poster Award, Fall 2025: awarded for poster presentation titled "CDK10 is a driver of breast cancer disparities."