

## Insights on Virtual Programming - Mekinda et al. Supplementary Material. Trainee Activity Packet.



### FACULTY JOURNAL CLUB

**+1 point each; Must complete at least one journal club for activity credit**

Journal club builds capacity for comprehension and critique of scientific literature, expertise in cancer-related content, and connections with potential role models and mentors. Each week, we will read a scientific study or review article assigned by our faculty host, then participate in a virtual group discussion about the piece's merits, limitations and implications. Faculty will also reflect on their paths into cancer research and medicine.

Our first four faculty hosts represent the four scientific programs supported by the UCCCC: Molecular Mechanisms of Cancer, Cancer Prevention and Control, Clinical and Experimental Therapeutics, and Immunology and Cancer. Use these opportunities to consider how the nature of the research described appeals to your own talents and scientific thinking. Join us on July 29 to consider how collaboration among investigators builds strong connections across these areas. Our final host focuses on cancer health disparities, expanding on themes introduced throughout the series.

Papers will be posted at least one week in advance.

**\*\*First-year trainees are strongly encouraged to complete the "Reading a Scientific Paper" and "Cancer 101" activities before participating in journal club (see below).\*\***

#### **Molecular Mechanisms of Cancer | July 1, 12-1:30PM**

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The Molecular Mechanisms of Cancer program targets the basic cell signaling and gene expression mechanisms that underlie malignancy.

#### **Cancer Prevention and Control | July 8, 12-1:30PM**

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The Cancer Prevention and Control program targets the environmental, genetic, psychological, biobehavioral, and economic factors underlying the etiology, risk, prevention, diagnosis, prognosis, and survivorship of cancer.

#### **Clinical and Experimental Cancer Therapeutics | July 15, 10-11:30AM**

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The Clinical and Experimental Therapeutics program maintains a long-standing focus on drug development at all phases of clinical testing. It also maintains a strong pharmacogenomics component.

#### **Immunology and Cancer | July 22, 12-1:30PM**

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The Immunology and Cancer program explores the interaction between the host immune system and malignant tumors, and how that interaction can be manipulated to promote immune-mediated tumor destruction in patients with cancer.

#### **Cancer Research as Team Science | July 29, 12-1:30PM**

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Cancer research is a multi-faceted, multi-disciplinary field fueled by collaboration among individuals with diverse expertise and perspectives. Learn how team science really works from real-life collaborators.

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**Underrepresentation of Minorities in Cancer Genetic Studies | August 6, 2-3:30PM**

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Genomic studies are critical for understanding how genetic variations among individuals – or groups of individuals – correspond to differences in cancer susceptibility and responsiveness to treatment. These findings are the foundation of precision medicine, personalized care that gives patients the greatest chance of surviving and thriving after their cancer diagnosis. What happens when certain groups are left out? Is precision medicine widening the cancer disparity gap? This week, we discuss the consequences of underrepresentation in genomic studies, specifically with regard to African American communities.

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**Virtual Research Symposium | August 13, 9AM-12:30PM**

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Support your peers! While you're at it, learn about some really cool cancer research. Attend our first-ever virtual research symposium, where trainees engaged in full-time remote research experiences this summer deliver ten-minute presentations of their work and address your comments and questions. Great practice for them, great examples for you! Stay for the keynote address by Dr. David Ansell, Senior Vice President for Community Health Equity and Associate Provost for Community Affairs, Rush University Medical Center. Dr. Ansell is also author of *The Death Gap: How Inequality Kills*, one of the selections in our book club series.

**BOOK CLUB**

+2 points each; **Must complete at least one book club for activity credit**

Our book club series encourages you to think critically about broad issues in research and medicine through careful consideration of a particular case. Books will be provided by the EYES program.

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***The Immortal Life of Henrietta Lacks* by Rebecca Skloot | July 2, 1:30-3PM**

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HeLa cells have been among the most valuable tools in modern medicine, facilitating historic scientific breakthroughs and saving countless lives. This week we discuss the cells' troubling origins, and what they teach us about racism, classism and sexism in medicine, bioethics, and tensions between scientific progress and individual rights. Join us again on July 14, 11-12:30PM, for a discussion with a scientific advisor for the recent [film adaptation of the book](#).

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***Bad Blood: Secrets and Lies in a Silicon Valley Startup* by John Carreyrou | July 16, 1:30-3PM**

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*Bad Blood* tells the story of Elizabeth Holmes, who built a multi-billion dollar health technology corporation on the false promise of a device to revolutionize personalized medicine. Join us to discuss the science behind Holmes's device, science entrepreneurship, and most importantly, ethical dilemmas raised by Holmes's actions.

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***The Death Gap: How Inequality Kills* by David Ansell, MD | July 30, 1:30-3PM**

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There is a *thirty-five year difference* in life expectancy between those in America's poorest and wealthiest neighborhoods. Join us to critique the social and cultural arguments often made to excuse this gap, identify the structural factors actually to blame, and consider promising solutions. Join us again on August 13, 11AM-12PM, for a talk with author Dr. David Ansell.

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***When Breath Becomes Air* by Paul Kalanithi | August 10, 1:30-3PM**

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At the age of thirty-six, near the end of his training as a neurosurgeon, Paul Kalanithi was diagnosed with terminal lung cancer. His memoir captures his insights and reflections as he transitions from physician to patient. Bring tissues.

## RESEARCH AND PROFESSIONAL SKILLS

### Reading a Scientific Paper (+1/2 point) | June 24, 12-1:00PM

Reading a scientific paper requires skills and strategies different from those applied to most other forms of literature. Join us for pro tips on how to tackle – and make sense of – scientific literature. This workshop will focus on the paper to be reviewed during journal club on July 1.

### Science Communication (+2 points) | July 9 & 23, 1:30-3PM

Clear, precise communication is an invaluable skill in most career fields, and especially in science. In this workshop, you will practice communicating complex scientific concepts to the general public. Drawing from one of our journal club papers, you will develop both a written summary and graphical abstract for a lay audience. Final pieces will be presented during a virtual showcase for your peers and members of the EYES leadership team. They may also be incorporated into science outreach materials for our schools and communities.

### Learn a Lab Technique (+1 point per technique)

Throughout your training and career you'll encounter a diverse array of laboratory techniques. Some of these will facilitate your own research projects. Others you'll come across in a published study, scientific talk or news media. In any case, understanding what various techniques are designed to do, their strengths and limitations will help you become a savvy practitioner and consumer of scientific research.

Review the list of scientific techniques below and select one with which you are unfamiliar:

- CRISPR Gene Editing
- FACS Analysis
- Cell cytotoxicity
- Apoptosis
- Forward Genetic Screen
- Reverse Genetic Screen
- Quantitative Real Time PCR
- IHC
- RNA In Situ Hybridization
- RNA Micro Array
- Mouse Tail Vein Injections
- Ultrasound Imaging

Research your technique, and provide the following to be included in an EYES manual for future students and teachers:

- Description of how the technique works and why it is used
- PowerPoint figure depicting the technique and how it works ([biorender.com](https://biorender.com) is a useful resource, and free for educational purposes)
- Citation for at least one research paper that uses the technique
- Links to any supplemental materials you found useful, such as a YouTube video or online tutorial

\*\*See activity guide for more information.

### Diversity and Inclusion in Biomedicine (+1/2 point) | June 30, 12-1:00PM

The field of biomedicine is greatly enriched by diverse teams of scientists and clinicians. In fact, representation across cultures, communities and lived experiences is absolutely vital to facilitate quality care and healthy outcomes for all. Yet, the field lacks diversity in many respects, and it does not always feel inclusive to those working hard to be a part of it. Join us to discuss diversity and inclusion within biomedicine and consider strategies to contribute effectively your own unique talents, skills and perspectives.

**\*\*This workshop is strongly recommended for all trainees.\*\***

## CAREERS IN BIOMEDICINE

**Must complete at least one for activity credit**

A main objective of the EYES program is to familiarize you with a broad range of cancer-related careers and help you assess the best fit for your unique talents and interests. Select from the activities below to explore different specializations, connect with potential role models and mentors, and gain insights on how to navigate pathways toward these exciting opportunities.

### **Navigating Career Pathways (+1/2 point) | June 23, 12-1PM**

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What's the difference between an MD, PhD and MD/PhD? What kind of work – in the lab, clinic or elsewhere – do people with these degrees ultimately do? How many years of training do they require? How much does that training cost? Is one of these a good option for you? Join us for an overview of these career pathways in biomedicine.

**\*\*This workshop is strongly recommended for first-year trainees.\*\***

### **Networking for Career Exploration (+1/2 point) | June 25, 12-1PM**

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Particularly during these early stages of your education and training, professional networking is an invaluable tool to discover career options and connect with new mentors and role models. Join us for a crash course on networking specifically for the purpose of career exploration, with an emphasis on informational interviews.

**\*\*This workshop is recommended for all trainees in preparation for the informational interviews incorporated in the activities below.\*\***

### **Women in Biomedicine (+1/2 point) | July 23, 6-8:30PM**

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Women often face unique challenges throughout their training and careers in biomedicine. This is particularly true for women who identify as racial and ethnic minorities, living with a disability, and/or economically disadvantaged. As a result, they remain underrepresented in senior faculty and other leadership positions in many scientific disciplines, to the detriment of those fields.

Join our panelists for a candid discussion about their experiences as women in science and strategies they have developed to manage the challenges they face. Both women and their allies are encouraged to attend!

### **Anatomy of a Comprehensive Cancer Center (+1 point)**

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What is a comprehensive cancer center? What do the structure and operations of such an organization teach us about how research happens? Importantly, what can they teach *you* about diverse and exciting career opportunities in the field?

Take our virtual tour of the University of Chicago Medicine Comprehensive Cancer Center. Identify one role (other than faculty researcher) in which you are interested. Conduct an informational interview with someone in that role. Report back: Who did you interview and what type of work do they do? What are your top three takeaways from the conversation? For example, did your interviewee offer a particularly salient piece of advice? Did the conversation impact your career perceptions or future plans?

### Research in Oncology (+1 point)

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Careers in oncology-related research combine scientific inquiry and patient care – ideal for those of you interested in both science and medicine. Through the SOAR (Scholars in Oncology-Associated Research) program, which provides cancer research training to Pritzker medical students, you have an opportunity to explore areas of oncology-related research led by University of Chicago faculty. Access the SOAR 2020 seminar series via YouTube ([https://www.youtube.com/playlist?list=PLC6LwUPuoq0jFFAhvIXzB42G\\_o7RnOHDt](https://www.youtube.com/playlist?list=PLC6LwUPuoq0jFFAhvIXzB42G_o7RnOHDt)) and view a lecture that aligns with your own interests. Submit answers to the questions provided.

### Research Safety and Oversight (+1 point)

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It is tempting to take for granted the integrity of scientific research conducted at prestigious institutions like the University of Chicago – or to assume that researchers adhere to the highest standards for safety and ethics. In fact, researchers are subject to multiple systems of oversight designed to ensure safe, ethical and scientifically valid practices, from the design of study protocols to publication of results.

This activity introduces three systems of oversight in biomedical research to both enhance your understanding of the research process and orient you to research-related careers beyond the laboratory. Complete the brief tutorial for each:

**Office of Research Safety:** The ORS partners with researchers across campus to ensure that laboratory research is conducted safely and according to federal and institutional guidelines. Staff provide training, guidance and oversight to minimize risks to both laboratory personnel and the surrounding environment. Browse the ORS website for more information on resources and services the office provides: <https://researchsafety.uchicago.edu>. Visit the team page to explore different roles, responsibilities and expertise among the ORS staff: <https://researchsafety.uchicago.edu/about/our-team/>.

**Institutional Review Board:** The IRB reviews, approves and monitors research involving human subjects. It is responsible for protecting the rights and welfare of all research participants, including volunteers and patients, as well as ensuring compliance with federal and institutional regulations. Watch this short tutorial on the types of individuals who serve on the IRB and the roles they play: <https://www.youtube.com/watch?v=sk5CXXLafQQ>.

**Peer Review Processes:** Whether you're applying for grants to fund your research or submitting to conferences and journals to share your findings, you will be subject to peer review. Peer review is the process through which colleagues with recognized expertise in your field evaluate the merits and shortcomings of your work. Their feedback determines which projects receive support and recognition. Watch this short tutorial for information on the roles and responsibilities of those involved in processes of peer review: <https://www.youtube.com/watch?v=rOCQZ7QnoN0>.

Select one of these systems in which you'd like to conduct an informational interview. Report back: Who did you interview and what type of work do they do? What are your top three takeaways from the conversation? For example, did your interviewee offer a particularly salient piece of advice? Did the conversation impact your career perceptions or future plans?

### Faculty Career Talk Series (+1/2 point each) | Fridays, July 10 – August 14, 12-1PM

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The career talk series is an opportunity for you to interact with potential mentors and role models in a relatively informal setting. Faculty guests have been chosen to represent the five institutions of researchHStart, EYES's sister program: UChicago, Northwestern, the University of Illinois at Urbana-Champaign, the University of

Illinois at Chicago, and Rush University. We will be joined by members of the 2020 researchHStart cohort. Conversations will focus on faculty's personal experiences and advice for aspiring scientists and physicians. There is no preparation required, although you are strongly encouraged to ask questions during the meeting.

## SCIENCE OUTREACH AND COMMUNITY ENGAGEMENT

### **American Cancer Society Cancer Action Network Day of Action (+1 point) | August 3, 10AM-1PM**

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Are you interested in public policy? Do you want to represent your community on important cancer issues? Then this is the activity for you! Join us for a Day of Action. With guidance from the American Cancer Society Cancer Action Network (ACS CAN), the nonprofit, nonpartisan advocacy affiliate of the American Cancer Society, you will spend the day learning about policy and advocacy. There will be an educational session in the morning followed by calls to your legislators and lots of social media blasts.

### **Educating Chicagoland about Cancer (+1 point) | June 30, July 14, July 28, & August 11, 10-10:30AM**

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Cancer research centers have an academic and ethical mandate to include the communities they serve through outreach and engagement. These efforts foster understanding of cancer research and involve community members in the research process. Breaking down complex science into more digestible concepts through the use of easily-accessible modes of communication is an essential part of community outreach and engagement. In this activity, you will create a one-minute TikTok video to convey information related to one of the UCCCC's cancer research programs. Videos will be disseminated to local communities.

### **Peer Mentor South Side Youth (+1 point) | July 31 & August 7, 1-1:30PM**

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The mission of the Office of Community Engagement and Cancer Health Equity is to serve as a bridge between the University of Chicago Medicine Comprehensive Cancer Center, academics and the community. For young people in our community, this bridge can lead to exciting education and career opportunities. Connect with local middle and high school students about your shared interests in science and careers in biomedicine. Answer questions about your experiences and share your advice to others interested in following in your footsteps.

## CANCER CONCEPTS

### **Cancer 101 (+1 point per module)**

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Understanding the biological basis for cancer, and some of the basics of cancer diagnosis and treatment, is essential when starting a cancer research project. This activity will help you learn some of these basics and practice biological reasoning and analysis.

Choose from one of two modules (or complete both for double credit): Molecular Biology of Cancer and Cancer Diagnosis and Treatment. Each module contains resources on the topic and an assignment to check your understanding of the content. It might be helpful to look over the questions before starting the readings, so you can keep the questions in mind as you read.

We strongly encourage you to collaborate with your peers when completing the questions. Discussing ideas and possible answers will help you check your understanding of the materials and strengthen your biological reasoning. Each person should record who they collaborated with but submit their own assignment separately for credit, even if many of your answers are similar to your peers'.

### **AACR Virtual Meeting: COVID-19 and Cancer (+2 points) | July 17, 20-23**

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COVID-19 has disrupted our approaches to caring for patients with cancer, and the negative impacts on patient outcomes and psychosocial disorders have been both immediate and disproportionate across communities. On the bright side, efforts to combat the virus are enhanced by the contributions of cancer investigators, who have applied their expertise in ingenious ways. Examples include the development of diagnostic assays adapted from cancer studies, virus-targeted drugs modeled from targeted cancer therapies, testing of next-generation vaccines with similar principles as cancer vaccines, and the repurposing of oncology drugs to treat COVID-19 patients. Furthermore, the pandemic has hastened innovations in cancer care that are transforming access to treatments and clinical trials: the implementation of telehealth, remote consenting for clinical trials, and access to home infusions.

Join some of the world's leading cancer researchers for updates on these developments and more at the American Association for Cancer Research's virtual meeting on COVID-19 and cancer (<https://www.aacr.org/meeting/aacr-virtual-meeting-covid-19-and-cancer/>). This activity has three components:

- 1) A pre-conference meeting to review the schedule and discuss best practices for making the most of conference proceedings – **Friday, July 17, 11AM-12PM**
- 2) Attendance at your selected conference sessions – **July 20-22, all day**
- 3) A post-conference meeting to share new insights and reflections – **Thursday, July 23, 10-11AM**

**\*\*This workshop is especially recommended for second-year students.\*\***