A New Unit on Cancer Inequities

What We Don’t Know CAN Hurt Us:

Amy Lindahl, Multnomah ESD, Portland, OR
Renée Agatsuma, Evergreen High School, Seattle, WA
Hanako Osuga, Fred Hutchinson Cancer Research Center, Seattle, WA
SEP is a partnership between teachers, scientists, and staff aimed at co-developing resources to support science teaching & learning.
Race, Racism, and Genetic Unit

DNA Exoneration
- Mass incarceration
- Presumption of guilt

COVID-19
- Health inequities/bioethics
- History of racist/unethical research with humans
- Lower participation in trials

Elephant Ivory Cache
- Impacts of colonialism on conservation & poaching

Cancer & Immunology
- Health inequities/bioethics
- History of racist/unethical research with humans
- Lower participation in registry/trial
About the Unit

- Designed by Biology educators and the SEP curriculum team
- For HS/Higher Ed Biology courses, in conjunction with mitosis + cancer units
- Students:
  - Explore health inequities in cancer rates, detection, and treatment
  - Develop plans to reduce cancer inequities in their community
About the workshop

- Overview of entire unit
- Experience parts of Lesson 1 (Activity 1.2) and Lesson 2 (Activity 2)
- Overview of Unit
## Unit Overview

**Part 1: What structural changes are needed to end cancer inequities**

<table>
<thead>
<tr>
<th>1. Is Cancer an Equity Issue?</th>
<th>Investigation of cancer risks, to what degree these risks are preventable, and what demographic comparisons reveal about cancer screenings, diagnosis, and treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Cancer Case Studies</td>
<td>Uses case studies to help students imagine how the inequities shown in cancer data impact individuals, families, and communities</td>
</tr>
<tr>
<td>3. The Social Determinants of Health</td>
<td>This public health framework helps students think about the structural factors that lead to cancer inequities</td>
</tr>
<tr>
<td>4. Identity, Intersectionality, and Cancer</td>
<td>A jigsaw and seminar allow students to dive deep into data on how aspects of identity connect with cancer risk, health care experiences, treatment, and more</td>
</tr>
</tbody>
</table>
### Unit Overview

**Part 2: How can we end cancer inequities in our community?**

<table>
<thead>
<tr>
<th>5. Cancer Inequities in Our Community</th>
<th>Students use databases to discover correlations between cancer outcomes and local factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Local Health Activism</td>
<td>Local health activists provide ideas for student cancer equity actions</td>
</tr>
<tr>
<td>7. Develop Cancer Equity Actions</td>
<td>Students, working in teams, will design an action to reduce cancer inequities in their community</td>
</tr>
<tr>
<td>8. Equity Action Share-Out and Reflection</td>
<td>Teams will share out their cancer equity actions and reflect on needed local and national structural reforms</td>
</tr>
</tbody>
</table>
Lesson 1.12: Is Cancer an Equity Issue?

Looking at Data

**Race/Ethnicity**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percent screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH-White</td>
<td>71.0%</td>
</tr>
<tr>
<td>NH-Black</td>
<td>70.0%</td>
</tr>
<tr>
<td>NH-Other/Multiracial</td>
<td>65.1%</td>
</tr>
<tr>
<td>NH-Asian/Pacific Islander</td>
<td>64.8%</td>
</tr>
<tr>
<td>NH-AI/AN</td>
<td>62.1%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>56.1%</td>
</tr>
</tbody>
</table>

**Education**

<table>
<thead>
<tr>
<th>Education</th>
<th>Percent screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>College graduate</td>
<td>75.6%</td>
</tr>
<tr>
<td>Some college/technical school</td>
<td>71.4%</td>
</tr>
<tr>
<td>High school graduate/GED</td>
<td>65.7%</td>
</tr>
<tr>
<td>Less than high school graduate</td>
<td>53.0%</td>
</tr>
</tbody>
</table>

**Annual household income ($)**

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Percent screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥75,000</td>
<td>76.1%</td>
</tr>
<tr>
<td>50,000–74,999</td>
<td>72.6%</td>
</tr>
<tr>
<td>35,000–49,999</td>
<td>67.5%</td>
</tr>
<tr>
<td>15,000–34,999</td>
<td>62.2%</td>
</tr>
<tr>
<td>&lt;15,000</td>
<td>58.0%</td>
</tr>
</tbody>
</table>

**Health insurance status**

<table>
<thead>
<tr>
<th>Status</th>
<th>Percent screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insured</td>
<td>71.2%</td>
</tr>
<tr>
<td>Uninsured</td>
<td>40.1%</td>
</tr>
</tbody>
</table>
Lesson 1.2: Is Cancer an Equity Issue?

Talk with a Seat Partner

● **What do you notice** as you look through the graphs?
● **What questions** do you have?
● **Are colorectal cancer screening rates impacted by discrimination and unfair systems?** Explain.
● **Why are these graphs important?**

Image from: https://clipartstation.com/think-pair-share-clipart-2/
Activity 2: Cancer Case Studies

Directions

- **Read** the norms out-loud
- **Read** your case study out-loud
- **Rate** each factor in the spider diagram
- If information is missing, skip that factor
How to rate factors

Spider Graph Key:

• **Points on the green (smallest) ring:** Factor has little to no impact in this case study

• **Points on the yellow (middle sized) ring:** Factor has a likely/moderate impact in this case study

• **Points on the red (largest) ring:** Factor has a significant and clear impact in this case study
Norms

- Balance talking time
- Directly quote the case study
- Make connections to things you’ve already learned/experienced
- Work together to reach conclusions
- Ask questions that help your group analyze the case study

Are there any other norms your group would like to use?
Want to review other case studies?

Go To:
https://tinyurl.com/CancerCaseStudy

Or the QR code below....
## Unit Overview

### Part 1: What structural changes are needed to end cancer inequities

<table>
<thead>
<tr>
<th>1. Is Cancer an Equity Issue?</th>
<th>Investigation of cancer risks, to what degree these risks are preventable, and what demographic comparisons reveal about cancer screenings, diagnosis, and treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Cancer Case Studies</td>
<td>Uses case studies to help students imagine how the inequities shown in cancer data impact individuals, families, and communities</td>
</tr>
<tr>
<td>3. The Social Determinants of Health</td>
<td>This public health framework helps students think about the structural factors that lead to cancer inequities</td>
</tr>
<tr>
<td>4. Identity, Intersectionality, and Cancer</td>
<td>A jigsaw and seminar allow students to dive deep into data on how aspects of identity connect with cancer risk, health care experiences, treatment, and more</td>
</tr>
</tbody>
</table>
## Unit Overview

### Part 2: How can we end cancer inequities in our community?

<table>
<thead>
<tr>
<th>5. Cancer Inequities in Our Community</th>
<th>Students use databases to discover correlations between cancer outcomes and local factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Local Health Activism</td>
<td>Local health activists provide ideas for student cancer equity actions</td>
</tr>
<tr>
<td>7. Develop Cancer Equity Actions</td>
<td>Students, working in teams, will design an action to reduce cancer inequities in their community</td>
</tr>
<tr>
<td>8. Equity Action Share-Out and Reflection</td>
<td>Teams will share out their cancer equity actions and reflect on needed local and national structural reforms</td>
</tr>
</tbody>
</table>
Reflect in your handout...

- Do you notice any patterns across case studies?
- What do you want to learn more about?
- What actions should we take to reduce cancer inequities?
Reflect with others...

Do you feel like you could use these lessons in your context?

How are they a springboard for other projects and learning?

What further questions do you have?
Contact Us!
Hanako Osuga: hosuga@fredhutch.org
Twitter: @HanakoOsuga

Follow us!
Twitter/Instagram: @SciEdHutch
Facebook: @SEPHutch

Join our mailing list or ask a question:
SEP Curriculum:
https://www.fredhutch.org/sep

This slide deck:
Other SEP Sessions at NSTA Portland

- **Using DNA Technology to Exonerate the Innocent**
  - Friday 12:30 - 1:30 PM C-123

- **Teaching About the Intersections of Biology, Race, and Racism: Strategies and Resources**
  - Friday 3:30 - 4:30 PM D137/138
Other SEP Sessions at NSTA Portland

- Beyond Mitosis: Utilizing Cancer Case Studies to Explore Cell Growth and Health Inequities
  Friday 3:30 PM - 4:30 PM D133/134

- Immunotherapy Storyline: How One’s Own Body Can Be Used to Fight Cancer
  Saturday 12:30 PM - 01:30 PM D136
1. NSTA is committed to providing a safe and healthy environment for its attendees. In doing so, it is imperative that everyone attending a session complete the session evaluation for the session. This process allows NSTA to identify and track those in a particular space, should we need to contact you.

2. By completing the session evaluations, attendees also create a transcript, which tracks their professional development hours as well as provides feedback to the presenters.

3. **To evaluate a session online, registrants must be logged in at [www.nsta.org](http://www.nsta.org) with their registration credentials and then click here.**

4. **An attendee can retrieve their transcript by:**
   - Clicking here. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.
THANK YOU