

June 15, 2011

The war on cancer: where we are in the battle and why we haven't won

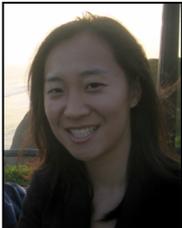
Introduction:

This year marks the fortieth anniversary of the United States' declaration of war on cancer, and yet more than half a million people continue to die from cancer each year, accounting for 23% of all deaths in this country. For many, this lack of progress made on cancer may be mystifying. Given the large amount of funding and the severity of the disease, why haven't we made more progress? This lecture will answer this question by addressing the challenges in cancer research, as well as some of the progress that has been made in the past few years, with an emphasis on targeted therapies.

Speakers:



Adrianna San Roman is a 2nd year student in the Biological and Biomedical Sciences program. Her research focuses on understanding how the gastrointestinal tract develops and is maintained throughout adult life, to inform our knowledge of cancer development in this organ system. Adrianna was raised on Long Island and did her undergraduate studies at Williams College. In her free time, Adrianna enjoys cooking, playing tennis and traveling.



Leah Liu is a 2nd year student in the Biological and Biomedical Sciences PhD program. She studies liver development and liver diseases using zebrafish as a model system. Leah grew up in Pennsylvania and graduated from Penn State University. When she's not in lab, Leah enjoys watching college football, running along the Charles River, and eating frozen yogurt.



Clare Malone is a 2nd year student in the Biomedical and Biological Sciences PhD program. In lab, Clare works on identifying combination therapies for lung cancer and a hereditary cancer predisposition syndrome called Neurofibromatosis Type 1. Clare grew up in a suburb of Chicago and graduated from Williams College. In her spare time, Clare enjoys art museums, Chicago White Sox baseball, and shopping.

Thank you for joining our spring lecture series! We hope to see you in the fall!

<http://sitn.hms.harvard.edu>

Glossary:

Cancer Cells- cells in a body that have abnormal cell growth and abnormal migration throughout the body

Tumor- a tumor is an abnormally growing mass of cells. Tumors can be cancerous (malignant) or noncancerous (benign)

Metastasis- the property of cancer that involves cells spreading from one organ to another

DNA (deoxyribonucleic acid) - a molecule located within the nucleus of a cell that stores genetic information and codes instructions for how to build proteins

Gene- a segment of DNA that has all of the information to make one protein

Protein- a molecule, encoded by the DNA, that is the molecular machinery for almost all of the cell's functions and carries out a particular function within a cell

Mutation- a change in the DNA code that can be inherited, caused by external insults, such as UV light, or smoking, or spontaneously accumulated due to errors in DNA replication

Oncogene- a gene that has the potential to cause cancer and encodes a protein (oncogenic protein) that is often found to be overactive in cancer cells

Tumor Suppressor- a gene that usually protects a cell from cancer and encodes a protein (tumor suppressor protein) that is often inactive or missing in cancer cells

Cell Signaling Pathway- the relay of a signal from outside of a cell through several protein machines to achieve a final functional result (example: cell growth and division through the Ras pathway including proteins such as Ras, Braf, and Mek)

Therapeutic Window- a range of medicine dosage that is both safe and effective

Chemotherapy- medicines that kill cells that divide rapidly, which is a general feature of cancer cells

Radiation Therapy- therapy using radiation that can be targeted to a specific body part to cause DNA damage and kill cancer cells, which are very bad at repairing DNA

Targeted Therapies- medicines that interfere with specific mutated proteins necessary for tumor survival

Driver Mutation- a mutation that plays a causal role in cancer

Passenger Mutation- a mutation that does not play a causal role in cancer but may be found in cancer cells

Resistance- a property of cancer cells which allows them to survive even though a therapy has been administered

For more information:

- Understanding Science: <http://undsci.berkeley.edu/>
- National Cancer Institute: <http://www.cancer.gov/>