Cancer Biology Lectures 2016

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The lectures below were all presented at Emory University by CancerQuest founder/director Dr. Gregg Orloff. The talks are targeted at advanced undergraduate biology students and do asume some previous biology knowledge. The lectures cover the basics of cancer biology and touch on some of the causes of cancer, including viruses. Cancer treatments and drug resistance are covered in the last talk. Each talk is approximately one hour long.

Title: "An Introduction to Cancer and Cancer History"
Date: 01/15/2016
This is the introductory lecture to Cancer Biology (Biology 415) at Emory University. A bit of the history of cancer is covered as well as a general overview of cancer biology and the topics to be covered in the remaining lectures.

Title: "The Cancer Cell"
Date: 01/18/2016
The key features of cancer cells and tumors are covered in this lecture. Special attention is paid to the 'Hallmarks of Cancer' a set of features first outlined by Drs. Weinberg and Hanahan in a 2000 article published in the journal ***Cell***.

Title: "Viruses and Cancer"
Date: 01/22/2016
Viruses are the cause of a significant percentage of human (and animal) cancer cases. The viruses that cause cancer and the ways in which they interfere with normal cell behavior are described. Includes HPV, the virus that

causes cervical cancer and the Epstein-Barr virus, causative agent of Burkitt's lymphoma.

Title: "Good Genes Gone Bad: Oncogenes"
Date: 01/29/2016
Many oncogenes produce products that cause cells to divide or prevent cell death (apoptosis). Others may be involved in metastasis or angiogenesis. The roles of several different oncogenes are discussed in this overview lecture.

Title: "Good Genes Gone Bad: Tumor Suppressors"
Date: 02/05/2016
Tumor suppressors are the 'brakes' of the cell. They normally prevent cell division and are able to cause abnormal cells to commit the cellular version of suicide (apoptosis). The roles of tumor suppressors in normal and cancerous cells are covered.

Title: "Immortality and Death"
2/9/2016
Cancer cells, unlike normal cells do not have a limited lifespan. This lecture describes what allows to continue to divide and then discusses the ways that normal cells die, a process called apoptosis. Apoptosis is triggered by many cancer drugs and is a critical aspect of cancer cell survival and death.

Title: "Cell Death Part 2; The Tumor Microenvironment"
2/16/2016
Cancer cells make up only a small percentage of what is actually inside a tumor. The other cells types include immune cells, blood vessel cells, and fibroblasts. The tumor microenvironment is critical in the development of a tumor and in the spread of cancer cells to distant parts of the body.

Title: "Tumor Microenvironment 2; Angiogenesis"
2/25/2016
Angiogenesis is the development of blood vessels from pre-existing blood vessels. This process is crucial to the growth a tumor, because the blood vessels provide nutrients and oxygen to the cancer cells. Blood and lymphatic vessels also carry cancer cells to other parts of the body, and influence responses to cancer treatments.

Title: "Metastasis"
Date: 03/3/2016
The vast majority (~90%) of cancer deaths are caused by tumors that have spread from their original location. The spread of cancer (metastasis) and the distant growths (metastases) are covered in this lecture. Questions addressed: How does cancer spread? Why do certain cancers tend to spread to specific locations?

Title: "Metastasis 2 and Cancer Treatment 1"
3/22/2016
Cancer is treated in many different ways. The next few lectures outline the main approaches to cancer treatment, their limitations, and new efforts to develop effective cancer treatments. The lectures present an overview of the different drug-based approaches and includes chemotherapy, targeted therapies and angiogenesis inhibitors. Also covered: radiation therapies, and immunotherapies.

Title: "Cancer Treatment 2"

Title: "Cancer Treatment 3"

Title: "Drugs & Drug Resistance"
Date: 04/14/2009
Despite the many treatments for cancer, many cancer patients still die of their disease. The major reason for the deaths associated with cancer is the development of resistance to the treatments. This lecture finishes cancer treatments and addresses drug resistance and, briefly, cancer prevention.

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