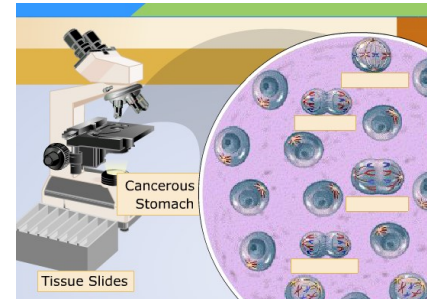


## Using the mitotic index as a prognostic tool in cancer therapy.

### Key Terms

Mitotic index	The ratio of the number of cells in mitosis to the total number of cells.
Prognostic tool	A method of predicting the future growth of cancer cells. (e.g. mitotic index)



### To do:

1. Navigate to [The virtual lab: The Cell Cycle and Cancer](#)
2. Read Purpose, objectives and procedure in the “Question” column on the left side.
3. Click on the TV in the centre of the image, watch the video if you need reminding of the details of the chromosome movements in the different stages of mitosis.
4. Click the microscope – and make a brief note of the appearance of each stage of mitosis in the table below.

#### The stages of mitosis.

Interphase	Prophase	Metaphase	Anaphase	Telophase

5. Start the lab simulation to examine the different stages of mitosis. Drag and drop the labels into place in the spaces in the circle of cells. Then check your answers. Count the cells and record the total number of cells and the number of cells undergoing a phase of mitosis in the table below.
6. Six types of tissue are available for examination. Click the tissue slides box and choose a cell type. Label each stage of the cell cycle, and then check your answers by clicking “check”. Record the number of cells in each stage of the cell cycle in the Data Table.
7. Examine both normal and cancerous tissue for each tissue type.



Tissue Type	Number of cells in Interphase	Number of cells in any phase of mitosis	Mitotic index = # of cells in mitosis / total # of cells	% mitotic index
Normal Lung Tissue				
Cancerous Lung Tissue				
Normal Stomach Tissue				
Cancerous Stomach Tissue				
Normal Ovarian Tissue				
Cancerous Ovarian Tissue				

Note: You can collect repeats of each tissue type by clicking “reset”.

### Analysis of data

Calculate the mitotic index. Using a calculator, sum up the total number of cells you counted by adding the number of mitotic cells and cells in interphase together.

Divide the number of mitotic cells by the total number of cells you counted to calculate the mitotic index of your tissue sample.

Multiply this number by 100 to get the percentage of cells undergoing mitosis in your sample.

### Questions

1. What does your data show about the rate of cell division in cancerous tissue compared to the rate of cell division in normal tissue? What data supports your answer to this question?

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2. Which type of cancer is the fastest growing? Explain your answer, using relevant data to support your claim.

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