Environmental Effects on Mitosis

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Cancer cells are formed when mitosis, the asexual reproduction of cells, becomes uncontrollable and cells can no longer send or receive signals concerning their own growth. The purpose of this project was to test which of four substances affected mitosis the most. My hypothesis was that if green onions were germinated in a rooting hormone, these cells would have a greater increase in mitosis, and hyaluronic acid would affect mitosis the least. In this experiment, I used Carnoy's plant fixative, Neutrogena™ Hydro Boost (hyaluronic acid), Garden Safe™ Rooting Hormone, and a control to germinate green onions in four different solutions. I then observed the cells of the onion roots under a microscope and counted the number of cells in mitosis from each trial. My results showed that the order of cells in mitosis from greatest to least was the control, hyaluronic acid, rooting hormone, and finally, with the least amount of cells in mitosis, the Carnoy's plant fixative. The hypothesis was not confirmed, as neither the germination with the highest or lowest increase of mitosis were correctly predicted. From this I am able to conclude that the substances added to the solutions controlled mitosis rather than increased them. Yet because the hyaluronic acid had the highest percentage after the control, its dangers concerning the growth of cancer cells is still evident. In the future, I would use other substances in the testing of mitosis, such as gases commonly found in air pollution.

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