The Effect of Heat Shock Proteins on Drosophila With Malignant Tumors

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Upon experiencing a stress induced injury, organisms like humans and drosophila produce heat shock proteins, which protect cells from injury. When heat shock proteins are detected in tumors, a noticeable increase in tumor size occurs. Through crossing of lines aiming to create directed drosophila fat body tumors, heat shocking a portion of the crossed flies to prompt expression of heat shock proteins, and using imaging software to measure the sizes of the fat bodies of the lines, the effect of heat shock proteins can be directly observed. Through these procedures, a noticeable difference in the average of abdominal sizes between heat shocked flies and non heat shocked flies was discovered. Based on these results, it can be concluded that HSP has an important impact on tumor growth, and flies who have been heat shocked display larger tumors than flies maintained in normal temperatures. Based on these results, regulation of heat shock proteins could be a method of cancer treatment and reduction, as tumors that have been heat shocked may also be more resistant to chemotherapy. Through further research regarding which specific types of heat shock proteins contribute to cancer growth the most and ways to specifically target and reduce heat shock protein expression, treatment for malignant tumors could be revolutionized.

Awards Won:
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