Is the risk of cancer higher for firefighters?

Jung A.M., Zhou J., Beitel S.C., Littau S.R., Gulotta J.J., Wallentine D.D., Moore P.K., Burgess J.L., "Longitudinal evaluation of whole blood miRNA expression in firefighters." *Journal of Exposure Science and Epidemiology,* 28 January 2021. Summary by Devin Ritter.

Is the risk of cancer higher for firefighters? People working in this field often are exposed to fires that release toxic byproducts when they burn. Many of these byproducts can cause cancer. Studies show a pattern in which firefighters are more likely to get or pass away from cancer than people with other careers. Some of these higher-risk cancers include melanoma, leukemia, prostate, testes, colon, bladder, rectum, and thyroid.

What is MiRNA and why is it important?

MicroRNA (miRNA) is a single molecule of RNA, which helps code genes and synthesize proteins along with your DNA. MiRNA molecules are very important in cell growth and cell differentiation. Cell differentiation is the process in which the genes in cells change to become a more specific type of cell. Therefore, miRNA is related to the way gene expressions in cells change and develop.

Some types of cancer are related to certain miRNA gene expressions. The purpose of this study was to determine if the toxic byproducts from live fires can change the miRNA of firefighters.

Jefferey Burgess is the associate dean for research and a professor at the University of Arizona. He and other researchers conducted a study to determine how the miRNA of firefighters is affected by their work environment. They believed that there would be noticeable changes in the miRNA based on time spent at a live fire. It was also predicted that structure fires (such as burning buildings) would be more damaging to health than vehicle or other fire types. This damage is caused by higher levels of toxic breathable particles in structure fires.

During testing, researchers recorded the amount of time firefighters spent working at a live fire as well as the type of fire (structure, vehicle, or other). It was discovered that firefighters do have significant changes to their miRNA after working with live fires.

It is important to understand that workplace environments can impact your health, and to realize that people working in careers like firefighting are risking their own health to protect others.

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