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BIOL 294

10/1/25

Writing Assignment 4

The news article that I have found in order to present a summary of genetics related news would be from a newspaper titled The Harvard Gazette. The article that I found was titled "New blood test detects HPV-associated head and neck cancer 10 years early". This article discusses the method of genetic detection that uses AI technology to accurately detect the possibility of HPV-related head and neck cancers. The article states that the methods of detection will identify the possibility of cancer in people who present asymptomatic for different head and neck cancers associated with HPV. The article firstly breaks down the anatomical implications of head and neck cancer, discussing how they can impact specific structures such as the oral cavity, larynx, salivary glands, and pharynx. The article then explains how the AI technology called HPV-Deepseek, a cancer screening blood test, will detect cancerous DNA proliferation in the head and neck up to 10 years before the cancer expresses itself. The test does this by screening for and detecting DNA that has broken off of tumors in associated fragments found in the bloodstream. In the associated data of this DNA blood testing mechanism, the researchers found that out of 28 blood samples, all cancerous, the AI technology identified 27 of them as having contained HPV-cancerous DNA. All 28 of the blood samples' would go on to develop cancer in their donors, meaning that the HPV-Deepseek software was able to correctly identify approx. 96% of cases in which the donor would go on to develop HPV related head and neck cancers. This article demonstrates how DNA reading technology has advanced with the use of AI to genetically predict the phenotypic expression of individuals in the future pertaining to their development of HPV-associated cancers.

I believe that the article I have chosen contains accurate information regarding the usage of AI recognition to detect cancers preliminary and I trust that AI has the capability to detect cancers based on supporting evidence that I have found in the review article titled "Early detection of esophageal cancer: Evaluating AI algorithms with multi-institutional narrowband and white-light imaging data." This article discusses the evolution of AI in healthcare to overview a parent topic surrounding esophageal cancer, and it discusses these AI algorithms as using a software known as deep learning (DL) in order to detect lesions early in development to treat cancer at very early stages with genetic DNA analysis of blood. This article provides supporting evidence from a related study of cancer to show how AI has the capability to detect cancers in their development by using simple but scaled pattern recognition the same as the HPV-Deepseek software does. The article references a specific case as to which AI deep learning technique was able to detect superficial squamous cell carcinoma with an achieved sensitivity of 90%, which presents the prevalence as to which AI developed softwares can detect cancer

development in DNA assessment similarly to the DNA assessment of HPV-Deepseek, which is why I chose this article to be a supporting article to the popular article that I have summarized.

**References:**

Mass General Birmingham Communications (September 10, 2025) “New blood test detects HPV-associated head and neck cancer 10 years early.” *The Harvard Gazette*

Balik, Y. et al. Early Detection of esophageal cancer: Evaluating AI algorithms with multi-institutional narrowband and white-light imaging data. PubMed; https://pmc.ncbi.nlm.nih.gov/articles/PMC11970661/ (2025)