# AI and viral oncology: Global trends and scientific landscape through a bibliometric lens

**Chye Phing Teh[1], Tiong Yew Tang[2], Jack Bee Chook[1]**

[1]Department of Biomedical Sciences, Faculty of Medical and Life Sciences, Sir Jeffrey Cheah Sunway Medical School (SJCMED), Sunway University, 47500, Bandar Sunway, Selangor, Malaysia, [2]Department of Smart Computing and Cyber Resilience, Research Centre for Human-Machine Collaboration (HUMAC), Sunway University, Faculty of Engineering and Technology, 47500, Bandar Sunway, Selangor, Malaysia

**Track: Research**
**Theme: Screening and Diagnosis**

## ABSTRACT

**Introduction:** Approximately 13-20% of all cancers are attributable to carcinogenic infections. Seven of the eleven infectious agents classified as Group 1 human carcinogens by the International Agency for Research on Cancer (IARC) are viruses. The integration of artificial intelligence (AI) into biomedical research in recent years has opened new avenues for a deeper understanding of virus-induced cancers. **Aims:** This study aimed to map global research trends and the scientific landscape at the intersection of AI and viral oncology, focusing specifically on the seven IARC Group 1 oncogenic viruses: HPV, HBV, HCV, EBV, HTLV-1, KSHV, and HIV. **Materials and Methods:** A systematic search was conducted in the Scopus database to compile peer-reviewed publications in the interdisciplinary field of AI and viral oncology. We analyzed publication and citation metrics, research trends, keyword co-occurrence, and co-citation networks using Biblioshiny and VOSviewer. **Results:** The analysis comprises 522 articles published in 310 journals spanning from 1990 to 2025. Research applying AI in viral oncology was minimal until 2018 but has surged sharply thereafter, peaking at over 100 publications in 2024. Scientific Reports (24 articles), Cancers (13), and Frontiers in Immunology (11) were the leading journals in terms of publication frequency. The most productive institutions in the field were Fudan University (67 articles), Sun Yat-Sen University (65), and the US National Cancer Institute (64). Machine learning (including deep learning), hepatocellular carcinoma, HPV, and cervical cancer together accounted for 45% of all keyword occurrences, making them the most prominent research themes. Other emerging trend topics include biomarker, predictive modeling, and XGBoost. **Conclusion:** Our bibliometric study highlights an evolution toward AI applications in viral oncology research. While current efforts focus largely on disease prediction and diagnosis, these advancements lay the groundwork for future integration of AI into precision oncology for virus-associated malignancies.

Keywords: Artificial intelligence, viral oncology, oncovirus, cancer, bibliometric analysis