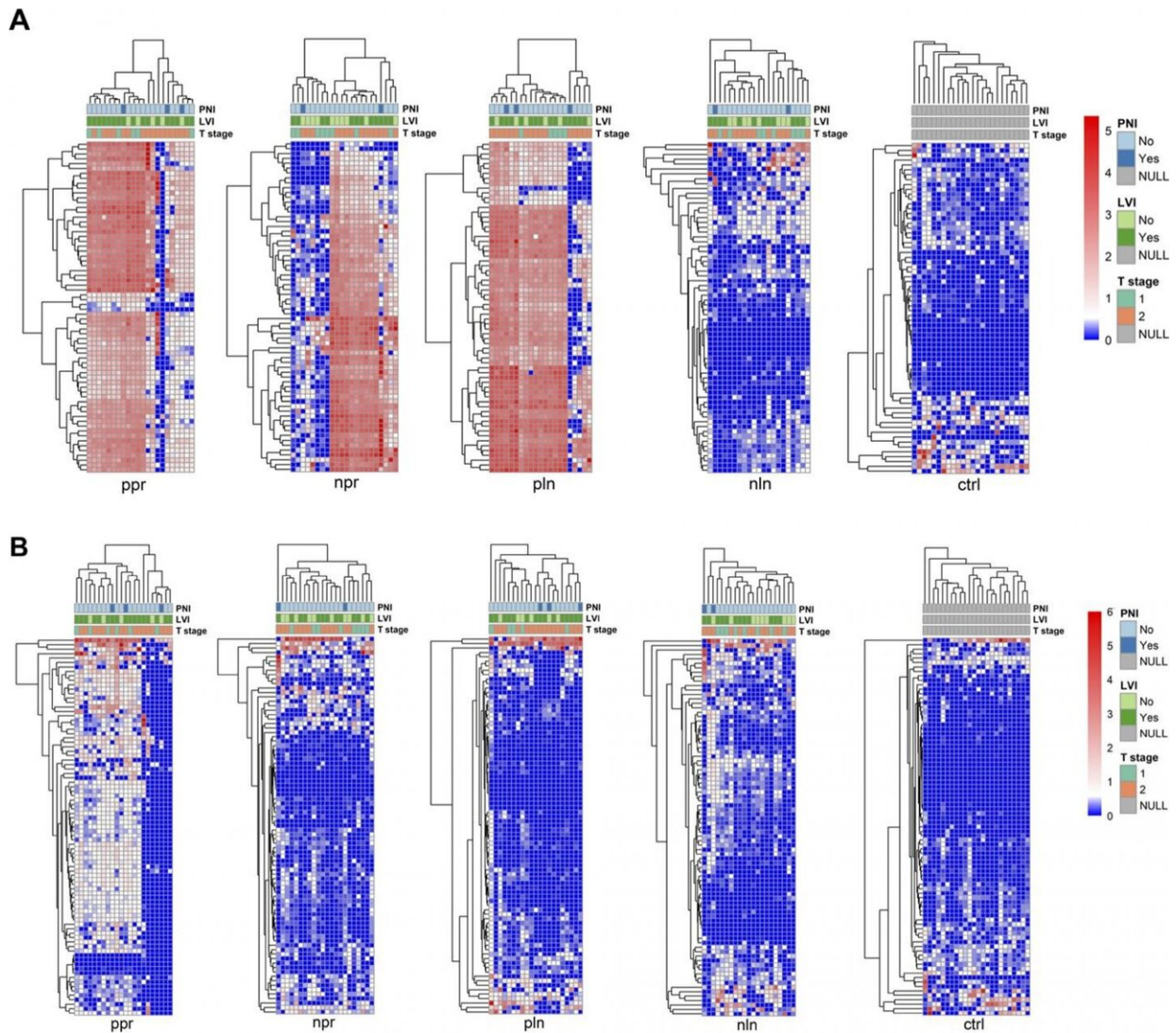


The virome of HPV-positive tonsil squamous cell carcinoma and neck metastasis

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Hierarchical clustering of tonsil squamous cell carcinoma cohorts based on viral signature detection pattern with associated pathological features (perineural

invasion (PNI), lymphovascular invasion (LVI), and tumor stage (T stage)). Hierarchical clustering for HPV16 (A) and HPV18 (B) viral probes are represented as heat maps for each cohort. Clustering was performed by R program using Euclidean distance, complete linkage and non-adjusted values. Clustering of the samples using NBClust software [Calinski and Harabasz index, Euclidean distance, complete linkage]. Chi-square test was applied and showed no significant differences of proportions of tumor stage (T1 versus T2), PNI, and LVI in different hierarchical clusters of cancer samples. NPR ("negative-node primary"), PPR ("positive-node primary"), NLN ("negative lymph node"), PLN ("positive lymph node"), CTRL ("control"), HPV (human papilloma virus), PNI (perineural invasion), LVI (lymphovascular invasion), T stage (tumor stage). Credit: Erle S. Robertson - erle@pennmedicine.upenn.edu

The cover for issue 3 of *Oncotarget* features Figure 3, "Hierarchical clustering of tonsil squamous cell carcinoma cohorts based on viral signature detection pattern with associated pathological features (perineural invasion (PNI), lymphovascular invasion (LVI), and tumor stage (T stage))," by Carey, et al.

In this prospective study, a pan-pathogen microarray was used to determine the virome of early stage, p16-positive OPSCC and [neck](#) metastasis treated with transoral robotic surgery and neck dissection.

The virome findings of primary tumors and neck lymph nodes were correlated with [clinical data](#) to determine if specific organisms were associated with clinical outcomes.

This will serve as a foundation for future research investigating the role of the virome in OPSCC.

Dr. Erle S. Robertson Department of Otorhinolaryngology-Head and Neck Surgery, University of Pennsylvania, Perelman School of

Medicine, Philadelphia, PA, USA said, "Head and neck [squamous cell carcinomas](#) (HNSCCs), including oropharyngeal squamous cell carcinoma (OPSCC), are classically associated with risk factors such as tobacco and alcohol use."

Head and neck squamous cell carcinomas, including oropharyngeal squamous cell carcinoma, are classically associated with risk factors such as tobacco and alcohol use.

HPV-positive OPSCCs have a [higher incidence](#) amongst younger patients with higher performance status, lower tobacco consumption, and higher socioeconomic status.

Compared to HPV-negative OPSCCs, HPV-positive OPSCCs have an improved overall survival and disease-free survival, which is at least partially related to the increased sensitivity to chemotherapy and radiation therapy.

The survival advantage of HPV-positivity persists even after adjusting for confounders, suggesting a difference in the [tumor](#) biology between HPV-positive and -negative OPSCCs.

The Robertson Research Team concluded, "*In summary, specific viruses, including HPV16, are known to impact the tumor biology and clinical behavior of OPSCCs. The virome of HPV-positive OPSCC primary tumors and neck lymph nodes include the virus families Papillomaviridae, Herpesviridae, Baculoviridae, Reoviridae, Siphoviridae, Myoviridae, and Polydnviridae. Additional studies are necessary to determine if the identified viral signatures correlate with tumor behavior.*"

More information: Ryan M. Carey et al, The virome of HPV-positive tonsil squamous cell carcinoma and neck metastasis, *Oncotarget* (2020). [DOI: 10.18632/oncotarget.27436](https://doi.org/10.18632/oncotarget.27436)

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