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## Genetic Dysregulation in Recurrent Respiratory Papillomatosis

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Revirent Respiratory Papillomatosis (RRP) is a devastating disease, caused by infection of the upper aerodigestive tract with human papillomavirus (HPV) types 6 and 11. There is no cure for RRP and surgical removal is the mainstay of treatment. The purpose of our study was to compare genes of cell cycle, apoptosis, and inflammatory cytokines in laryngeal papilloma versus normal tissue for a better understanding of the molecular mechanisms of the disease in order to discover novel therapies. Methods: Papilloma tissue was obtained from patients requiring surgical debridement. For comparison, normal mucosa was obtained from the excised uvula of patients undergoing uvulopalatopharyngoplasty. Total RNA was extracted from both groups and then probed using customized reverse transcriptase real time PCR gene arrays. Results: The custom arrays examine expression of 84 separate genes within the cell cycle, apoptosis, and inflammatory cytokine pathways. Our findings based on 11 papilloma samples run in comparison to normal mucosa shows that the MCL-1 gene of the apoptosis pathway is significantly down regulated. Cytokine genes IL1-A, IL-8, IL-18, and IL-31 are also significantly dysregulated. Conclusion: Genes of cell cycle and apoptosis are generally up regulated and down regulated, respectively, as expected in papilloma tissue, with MCL-1 achieving significance when compared to normal tissue. The finding of particular interest is that inflammatory cytokine genes were significantly down regulated in papilloma tissue, including IL1-A, IL-18, and IL-31. This finding may explain why patients infected with the virus are unable to mediate a T-cell immune clearance of their disease.

## **Biography**

Michael Underbrink is an assistant professor and surgeon-scientist at UTMB, currently supported by an NIH-K08 mentored clinician-scientist award. He completed his doctorate degree at UT-Health Science Center-Houston, Texas (1999) followed by residency training in Otolaryngology at UTMB-Galveston (2004). Subsequently, Dr. Underbrink trained in Seattle, Washington from 2004 to 2007 where he completed a clinical laryngeal fellowship followed by a two-year postdoctoral research fellowship studying molecular mechanisms of HPV infection under the mentorship of Dr. Denise Galloway. His current research interests include studying HPV infections of the head and neck, including RRP-related low-risk HPVs and high-risk HPV-related oropharyngeal cancer.

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