The unique genomic predictive markers for Taiwan head and neck cancers

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Abstract. Compared with Western countries, the incidence rate is rather higher in Taiwan, an island with a very high genetic conservation. Thus, the genetic studies for Taiwanese are very useful, especially for nasopharyngeal cancer susceptibility evaluation. In addition to Epstein-Barr virus (EBV) infection, certain dietary factors and genetic differences such as single nucleotide polymorphisms (SNPs) which may all contribute to nasopharyngeal cancer carcinogenesis, environmental factors such as smoking, may also play a role in the etiology of nasopharyngeal cancer. The highlight cancer of this report is oral cancer, which is a commonly diagnosed cancer all over the world. With continuously increasing incidence and mortality for the past two decades, oral cancer has become the fourth most common cause of male cancer death in Taiwan. The genomic etiology of oral cancer is of great interest but largely unknown. In 2011, ten hallmarks of cancer were summarized in the journal of Cell. Among the hallmarks, this study aim at four important parts, the cell cycle regulation, the DNA repair system for genome integrity, the DNA metabolic and stability, and immune escape. The highlights of the study is the collection of several novel markers among cell cycle regulation (CCND1), DNA repair (XRCC4, XRCC5, XRCC6, EXO1, ATM, hOGG1), (XRCC3), DNA metabolic (MTHFR) and immune (IL-10) systems, with the susceptibility to oral cancer and nasopharyngeal cancer, and their possible role in carcinogenesis and personalized pharmacogenomics.