# Thyroid Carcinoma and the Role of Genetic Changes

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## Introduction

We focus on genetic and epigenetic factors, characteristics of cancer stemness and tumor microenvironments in our discussion of recent findings regarding the heterogeneity of thyroid cancer and the crucial mechanisms that contribute to the heterogeneity. We also talk about how new discoveries in tumor biology can make it easier to create new targeting therapies for thyroid cancer and how intratumor heterogeneity might be important for understanding therapeutic resistance. The most prevalent malignant thyroid neoplasm is papillary thyroid carcinoma, which is typically identified by its papillary appearance [1,2].

### Description

The pathologist may find some histological variants challenging and others are of clinical significance due to their prognostic implications or associated clinical conditions. A papillary carcinoma with characteristics of more than one variant is not uncommon. Occult thyroid carcinoma" was defined by Moosa and Mazzaferri in 1997 as "impalpable thyroid carcinoma that is generally smaller than 1.0 cm." Stedman's Medical Dictionary (2006) uses a more precise definition of size, defining "occult papillary carcinoma of the thyroid" as "microcarcinoma of the thyroid" or "microscopic papillary carcinoma of the thyroid" that is typically well encapsulated and less than 5 mm in diameter. Papillary thyroid microcarcinoma (PTMC) is defined as "papillary carcinoma measuring 1.0 cm or less in maximal diameter while other clinico-pathological features. During swallowing, the mass moved up and down and its surface was smooth. She denied experiencing neck pain while eating, had no fever and had not had any neck surgery, tuberculosis, or cancer in her past. The thyroid gland had normal, uniform echogenicity, an intact capsule and no abnormal neck lymph nodes, according to ultrasonography. Between the hyoid bone and the thyroid gland, a mass with low echogenicity that was spherical, well-defined and 1.1-0.6 cm in size was found. The entire mass was found and removed. A histological examination revealed that the tumor cells invaded the fibrous stroma by forming papillary and glandular.

Microcarcinomas, which are frequently found in the elderly and are often almost unnoticeable, to rare cases of anaplastic thyroid carcinomas and primary squamous cell carcinoma of the thyroid, both of which have unfavorable outcomes. Genetic causes of some types of thyroid carcinoma are most well-known. 25 percent of medullary thyroid carcinomas (MTCs) are caused by multiple endocrine neoplasia type 2 A and B. Understanding the genetic changes that cause cancer has greatly improved the survival rates of MEN-2 patients. Through family screening, a genotype-phenotype association that indicates distinct outcomes with particular mutations has led

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to individualized treatment plans that frequently include preventative surgery.

At the same time, the term "variant," which refers to a change in the nucleotide sequence, is frequently used in genetics. For thyroid tumors, the term "variant" is increasingly being used in place of "mutation." To avoid confusion with genetic variants and to standardize terminology across all volumes of the WHO classification's fifth edition, the new classification uses the term "subtype" rather than "variant." As a result, "histologic subtype" ought to take the place of "histologic variant." Additionally, considering the clinical applications of circRNAs, additional research ought to focus more on determining the associations between circRNA diagnostic and prognostic value and clinical drug resistance. PTC-related circRNAs are only rarely examined in this field, which is notable. Demonstrates that cell autophagy is influenced by circEIF6's association with chemo-resistance (cisplatin-resistance). More importantly, circRNAs can be secreted into blood, saliva and even exosomes, which play important roles in the tumor microenvironment. This suggests that the level of circRNAs in body fluids and FNAB samples could help with clinical management. Some examples of these circRNAs include circ\_0006156, circ\_MAN1A2 and circ\_RASSF2 [3-5].

#### Conclusion

Oncocytic cell has taken the place of "Hürthle cell" in the new WHO classification. Oncocytic adenoma and oncocytic carcinoma (OCA) are now used to refer to Hürthle cell adenoma and Hürthle cell carcinoma, respectively

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### **Conflict of Interest**

There are no conflicts of interest by author.

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