



## Tumor-agnostic Therapy: Shifting the Lens from the Tumor Type to its Molecular Identity

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Science and medicine have witnessed a major shift throughout the years and oncology is no stranger to these changes. The diagnosis of a disease and more specifically of a tumor has evolved from the basic histopathological staining and morphological analysis to a more precise identification of receptors and antibodies implicated in the tumor multiplication and more recently to a more peculiar analysis of genomics and molecular markers.

With every diagnosis a genomic profiling is disclosed that defines the tumor cells from a different, complex perspective. It discloses a number of mutations, implicated in the cell signaling processes and tumor growth. Targeting those mutations is the pillar of precision medicine. Tumors are no longer seen through their histological profile but rather through their molecular profiles. This perception allowed physicians and scientists to understand the difference of behavior and response to treatment between tumors of an apparently identical histology [1].

Precision and targeted medicine, with tumor-agnostic treatment, was only allowed by an extensive profiling and molecular analyses offered to clinicians such as next generation sequencing (NGS), tumor molecular profiling among others that ensued the well known “cancer genome atlas” (TCGA) the molecular reference of more than 33 types of cancers [2]. Pembrolizumab was the first approved tumor-agnostic treatment for tumors deficient in mismatch repair or with high microsatellite instability, regardless of the tumor origin [3], and it is only the first of a very long and extending list of agnostic drugs.

Moreover, basket trials and umbrella trials have allowed for the study and identification of these agnostic agents. For instance,

the MEDIOLA trial, is a basket trial that concluded that the combination of Olaparib and Durvalumab was superior to Olaparib and Durvalumab monotherapy, in BRCA-mutated, metastatic breast cancer; metastatic ovarian cancer; metastatic gastric cancer; and relapsed small-cell lung cancer [4].

To conclude, with the progress and evolution of oncologic diagnoses, the genomic and molecular profiles have gained a crucial role in identifying and treating different tumors and malignancies. The tumor-agnostic treatment has opened new doors to novel treatment strategies targeting the genes, their mutations, and their signaling pathways regardless of the tumor origin and histology. This has marked a true milestone in the development of targeted and precision medicine, a forever evolving concept in Medical Oncology.

### Bibliography

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