

# Pathology and Molecular Diagnosis

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## Contemporary genomic studies in hematologic pathology: Utility of next generation sequencing in clinical evaluation of myeloid and lymphoid malignancies

Next generation sequencing (NGS) has revolutionized the clinical evaluation of myeloid and lymphoid malignancies. The ability to identify clonal mutations at the single nucleotide level has provided insights into disease pathogenesis and has led to the development of novel targeted therapies. In this review, we discuss the utility of NGS in the clinical evaluation of myeloid and lymphoid malignancies, with a focus on the identification of clonal mutations and the use of NGS in the diagnosis and prognosis of these diseases.

Myeloid malignancies, including acute myeloid leukemia (AML) and myelodysplastic syndromes (MDS), are characterized by the presence of clonal mutations in a variety of genes, including FLT3, NPM1, DNMT3A, and TET2. The identification of these mutations by NGS has improved the diagnosis and prognosis of these diseases and has led to the development of novel targeted therapies. For example, the identification of FLT3 mutations has led to the development of FLT3 inhibitors, and the identification of DNMT3A mutations has led to the development of DNMT3A inhibitors.

Lymphoid malignancies, including chronic lymphocytic leukemia (CLL) and multiple myeloma (MM), are also characterized by the presence of clonal mutations in a variety of genes, including BCL2, TP53, and MYD88. The identification of these mutations by NGS has improved the diagnosis and prognosis of these diseases and has led to the development of novel targeted therapies. For example, the identification of BCL2 mutations has led to the development of BCL2 inhibitors, and the identification of MYD88 mutations has led to the development of MYD88 inhibitors.

In conclusion, NGS has revolutionized the clinical evaluation of myeloid and lymphoid malignancies. The ability to identify clonal mutations at the single nucleotide level has provided insights into disease pathogenesis and has led to the development of novel targeted therapies. NGS is now an essential tool in the diagnosis and prognosis of these diseases.

### Biography

Bevan Tandon, MD is board certified by the American Board of Pathology in both Hematologic Pathology and Molecular Genetic Pathology. His Hematopathology training was completed at the University of Pittsburgh under the guidance of WHO lead Author, Steven Swerdlow. His Molecular Pathology training at Washington University in St. Louis was focused on next generation sequencing for clinical testing in Oncology. He has multiple publications in the peer reviewed literature including the International Journal of Laboratory Hematology and Modern Pathology. He currently serves as the Director of Clinical Molecular Diagnostics at Mo-

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