

Developing aptamer probes for detection of acute myelogenous leukemia

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Despite the scientific advances, the majority of patients who suffer from acute myeloid leukemia (AML) still die of their diseases. The monoclonal antibodies available for diagnosing leukemia neither identify the molecular event underlying the neoplastic process nor provide adequate information to the aggressiveness or the prognosis of the disease. As a consequence, the lack of specific antibodies results in many different leukemia cases grouped together under the same name, even though they do not represent the same disease by nature. Moreover, when only a small number of leukemic cells are present, such as post-chemotherapy minimal residual leukemia, it is often difficult, if not impossible, to determine the disease status. Therefore, developing a new strategy to discover biomarkers for acute myeloid leukemias is envisioned to improve treatment of AML patients. The biggest advantage of the aptamer-based technology is the unique cell-based selection process, Cell- SELEX (Systematic Evolution of Ligands by Exponential enrichment), which allow us to select a group of cell-specific aptamers in a relatively short period without even knowing which target molecules are present on the cell surface. Once specific aptamers are selected, not only can the selected aptamers be used as molecular probes for molecular profiling, but they can be used as tools for identifying new biomarkers expressed by tumor cells or other cells in disease status. We began our studies with well-characterized leukemia cell lines to develop the cell-based SELEX methodologies and then used patients' leukemia specimens to select aptamers that recognized patients' leukemia cells.

Biography

Ying Li graduated from the Henan Medical College in China in 1982, finished his Ph.D in 1992 from the University of California, San Diego and completed his postdoctoral studies from the Brigham and Women's Hospital, Harvard Medical School in 1996. He is the director of Hematopathology in the Department of Pathology, University of Florida. He has published more than 25 papers in reputed journals.

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