

## 2<sup>ND</sup> INTERNATIONAL CONFERENCE ON CELL SCIENCE AND REGENERATIVE MEDICINE



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### Minimal Requirements for Cancer Initiation: A Comparative Consideration of Three Prototypes of Human Leukemia

**Abstract:** Even if its completed form is complex, cancer originates from one or two events that happened to a single cell. A simplified model can play a role in understanding how cancer initiates at the beginning. The pathophysiology of leukemia has been studied in the most detailed manner among all human cancers. In this review, based on milestone papers and the latest research developments in hematology, acute promyelocytic leukemia (APL), chronic myeloid leukemia (CML), and acute myeloid leukemia (AML) with RUNX1-RUNX1T1 are selected to consider minimal requirements for cancer initiation. A one-hit model can be applied to the initiation of APL and CML whereas a two-hit model is more suitable to the initiation of AML with RUNX1-RUNX1T1 and other AMLs. Even in cancer cells with multiple genetic abnormalities, there must be a few mutant genes critical for the mutant clone to survive and proliferate. Such genes should be identified and characterized in each case in order to develop individualized target therapy.

**Keywords:** cancer initiation, two-hit model, AML, APL, CML

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