MSIseq: Software for Assessing Microsatellite Instability from Catalogs of Somatic Mutations

### Microsatellite instability diagnostics**[**[**edit**](https://en.wikipedia.org/w/index.php?title=Microsatellite_instability&action=edit&section=4)**]**

MSI is a good marker for determining Lynch syndrome and determining a prognosis for cancer treatments. The NCI has agreed on five microsatellite markers necessary to determine MSI presence: two mononucelotides, BAT25 and BAT26, and three dinucelotide repeats, D2S123, D5S346, and D17S250. MSI-H tumors result from MSI of greater than 30% of unstable MSI biomarkers. MSI-L tumors result from less than 30% of unstable MSI biomarkers. MSI-L tumors are classified as tumors of alternative etiologies. Several studies demonstrate that MSI-H patients respond best to surgery alone, rather than chemotherapy and surgery, thus preventing patients from needlessly experiencing chemotherapy.[[3]](https://en.wikipedia.org/wiki/Microsatellite_instability#cite_note-Role_of_microsatellite_instability_in_the_management_of_colorectal_cancers.-3)

Direct and indirect mechanisms contribute to chemotherapy resistance. Direct mechanisms include pathways that metabolize the drug, while indirect mechanisms include pathways that respond to the chemotherapy treatment. The NER DNA repair pathway plays a substantial role in reversing cell damage caused by chemotherapeutic agents such as 5-FU.[[13]](https://en.wikipedia.org/wiki/Microsatellite_instability#cite_note-13)

froom https://en.wikipedia.org/wiki/Microsatellite\_instability