

## Most Cancers are Caused by Bad Luck; how we May Scientifically Explain This?

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### 1. Short Communications

There is no dearth of robust data correlating 'Environmental & Life style Factors' with various types of cancers. However there are still a large number of cancers which arise out of blue with no known risk factors [1]. These include some of the most lethal cancers like 'Brain gliomas', 'Pancreatic cancer', 'Ovarian cancers' and so many others. Question is then asked particularly by the patient; 'why am I suffering from this cancer in spite of healthy habits and no obvious risk factors?' To explain this we need to go back to basics i.e., DNA. DNA is a fragile molecule that is continually under assault not only from agents in the environment & our diet but even from normal processes that takes place within the cell [2,3]. It is therefore critically important that damage to our genetic material is recognized and efficiently removed. It has been calculated that in a single day, DNA in one cell suffers about 20,000 single strand breaks and 10-20 double strand breaks. Single strand breaks are easy to repair as complimentary sequences are present, however double-strand breaks are difficult to repair as unlike both strands of the double-helix are affected, such that there is no immediately available template in the form of an intact complementary strand to use for correcting the lesion. It also involves the risk of losing a whole part of chromosome and potentially hundreds & thousands of genes [2-4]. Most errors happen at the time of cell replication. Keeping in mind trillions of cells in human body, the propensity of DNA damage and DNA repair genes like BRCA1 & BRCA2 [4,5] which also are prone to develop mutations, one actually ponders instead that 'Why cancer is so uncommon?'

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