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16/01/2015 - IARC dismiss cancer and bad luck theory

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The [World Health Organisation's](#) International Agency for Research on Cancer ([IARC](#)) have [come forward in anger](#) against the paper "Variation in cancer risk among tissues can be explained by the number of stem cell divisions" released last month in the Journal 'Science', unscientifically stating that the majority of cancer is due to "bad luck".

The [published research](#) claimed that environmental factors and genetic predispositions explain about one-third of cancers and that two thirds of cancers are due to "bad luck" caused by random mutations arising during DNA replication and the more replications that occur in tissue the higher the chance of developing cancer there. It is disappointing that peer-review by a historically good journal (Science) allowed this statement in the paper's Abstract; however the journal has been defending this in subsequent editorials. The publication by 'Science' resulted in the story being run non-critically as a major item even on the BBC News.




The paper does some work to investigate the sort of variance that can be expected in mutations in different parts of the body. It found that some tissue types give rise to more cancer that correlates with the higher number of divisions in the self-renewing cells in that tissue. However, it does nothing at all to exclude the impact that environmental and lifestyle factors may have in increasing the risk of developing cancer. We recommend reading the three critical responses ([IARC](#), [Guardian](#) and [CRUK](#)) linked below.

It is well known that many stimuli (such as ionising radiation) can both increase the number of mutations during DNA replication, increase the chance of random mutations occurring, and directly damage DNA forcing cellular processes to take place that can also lead to further mutations (failures to correctly repair damaged genetic material). It is fairly basic maths that the more opportunities there are for random mutations to take place, the more unstable cancerous mutations are likely to happen - i.e. even though random variance and "bad luck" is a given, the more times that "die" is rolled, the more chance there is for cancer to form.

Links

- » [Original paper abstract](#) in Science Magazine
- » [Introduction](#) to the IARC press release
- » [IARC press release](#) in full
- » An excellent [critique in the Guardian](#) "Bad luck, bad journalism and cancer rates"
- » [Cancer Research UK](#) - an excellent commentary on this study
- » [BBC](#) poor, non-critical coverage
- » [Dail Mail](#) coverage
- » [Forbes Online](#) coverage
- » [Telegraph](#) coverage

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