# Is cancer brought on by genes, environment or simply bad luck?

The chances are that, if you follow news articles about cancer, you'll have come across headlines like "Most Cancers Caused By Bad Luck" (The Daily Beast) or "Two-thirds of cancers are due to "bad luck," study finds" (CBS News). The story – based on research out of Johns Hopkins University – has grabbed widespread media attention. But it's also raised the ire of science communicators who think that the headlines and stories are, in the words of a couple of writers, "just bollocks".

With all the coverage of the paper, and the subsequent coverage of the coverage, I was interested in just how off-base the news articles were, and to what extent this was down to lazy reporting.

The paper in question is "Variation in cancer risk among tissues can be explained by the number of stem cell divisions" by Cristian Tomasetti and Bert Vogelstein, published this month in the journal Science. At the heart of the paper the authors look at how stem cell divisions in different tissues correlate with lifetime risk of developing cancer in those tissues. The study shows a clear correlation with the cancer types considered – the faster the stem cells divide in a particular tissue, the greater the chance of developing cancer in that tissue.

The two researchers then tease out the degree that they think random genetic mutations, as opposed to environmental and lifestyle factors, influence cancer risk. They conclude that, out of 31 cancer types considered, 22 were primarily associated with random genetic mutations (they called these "R-tumors" – the R standing for "random"), and nine were associated with environmental factors on top of these random mutations (deterministic tumors, or "D-tumors").

**Read full, original article:** Bad luck and cancer – did the media get it wrong?