

PublisherInfo		
PublisherName	:	BioMed Central
PublisherLocation	:	London
PublisherImprintName	:	BioMed Central

## Smoking selects mutants

ArticleInfo		
ArticleID	:	3809
ArticleDOI	:	10.1186/gb-spotlight-20001025-01
ArticleCitationID	:	spotlight-20001025-01
ArticleSequenceNumber	:	246
ArticleCategory	:	Research news
ArticleFirstPage	:	1
ArticleLastPage	:	2
ArticleHistory	:	RegistrationDate : 2000-10-25 OnlineDate : 2000-10-25
ArticleCopyright	:	BioMed Central Ltd2000
ArticleGrants	:	
ArticleContext	:	130591111

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In the October 24 [Proceedings of the National Academy of Sciences](#) Rodin and Rodin propose that smoking leads to increased lung cancer not by causing more mutations, but by selecting for those mutations that do arise (*Proc Natl Acad Sci USA* 2000, **97**:12244-12249). They take advantage of an increase in [p53 mutational data](#) in nonsmokers and find, for example, that the frequency of silent mutations in p53 is identical between smokers and non-smokers. In contrast, twice as many lung cancers from smokers have a defective p53 as compared to lung cancers from non-smokers. Rodin and Rodin suggest that the more often that smoking-related stresses such as hypoxia induce p53-related [cell cycle arrest](#) or apoptosis, the higher the probability that a p53 mutant cell will be selected. If true, this would mean that eliminating specific carcinogens from cigarettes would have little effect on the occurrence of lung cancer.

## References

1. *Proceedings of the National Academy of Sciences*, [<http://www.pnas.org/>]
2. IARC TP53 mutation database , [<http://www.iarc.fr/p53/>]
3. Strand asymmetry of CpG transitions as indicator of G1 phase-dependent origin of multiple tumorigenic p53 mutations in stem cells.