



## **Title: Lung Cancer Risk in Sweden and USA Versus Japan – A Lifestyle Matter?**

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### ***Abstract***

The aim of this study was to develop a physical model for predicting lung cancer rates. Such means may be useful in promoting successful preventive work against lung cancer. In cancer epidemiology statistical models use linear and logistic regression to evaluate relationships between risk factors and cancer incidence. Less frequently used are bio-mathematical models translating a hypothesis about the biological process into mathematical terms.

There are differences between countries worldwide regarding lung cancer even if they have similar smoking habits. This indicates that there are other factors, still not considered or yet identified in epidemiological studies of lung cancer. The model developed for this study was based on a similar model, successfully used for estimating melanoma rates over time, where a reduced repair efficiency of sun-induced skin damages was taken into consideration [1]. In the current study, the model developed for lung cancer had to account for varying smoking prevalence over age and calendar years.

The main finding from this study is that the model with the parameters used was capable of predicting age-specific incidence for both men and women in Sweden and for men in the USA and Japan. The model study indicates that the projected lung cancer risk after one year of smoking is larger in Sweden and USA as compared to Japan. This conclusion was strengthened by the fact that western countries in general have twice the lung cancer rate as non-western countries at similar smoking intensities. A study of associations between lung cancer rates and life-style factors other than smoking is strongly recommended.

### **References**

1. Hallberg Ö. A reduced repair efficiency can explain increasing melanoma rates. *European Journal of Cancer Prevention*. 2008;17:147-152.

### ***Biography***

Örjan Hallberg, born 1942, received a Master of Science degree in Electrical Engineering from the Technical University of Chalmers in 1966. After heading a component engineering group within the Swedish Administration of Telecommunication he worked from 1971 to 1981 as manager of the component reliability unit within ELLEMTEL Development AB. In 1981 he was appointed quality manager within an Ericsson company. From 1987 to 2003 Hallberg worked within Ericsson as Qualification and Vendor Assessment Manager, Product Improvement Manager and finally since 1998 as Environmental Manager for two business areas within Ericsson. From 2003 onwards Hallberg has been managing his own research company, Hallberg Independent Research.

Hallberg has co-authored one book about long term reliability of technical systems, authored 17 publications in reliability journals and conferences and, so far, authored 35 publications in medical journals and conferences. In 1996 Hallberg was appointed Expert Reliability Engineering within the Ericsson Corporation.