# Detection and preference of mice for smells of cancerous congeners.

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**Résumé**

In many animal species, chemical communication plays a major role in individuals' interactions. As established for a large number of pathologies, cancer has been shown to induce changes in body odors. In the framework of research that aimed at finding none invasive methods to detect early stages of cancer development, the present study asks whether untrained mice could detect the presence of cancer in odor sources of ill congeners, as they already do for some parasites. If yes, are they able to detect cancer at an early developmental stage? Which odorant molecules may be involved in this discriminatio ? Does it influence female sexual preference? Wild derived mice were involved in habituation/generalization and two-ways preference tests, during which they were presented to odor stimuli of healthy *versus* cancerous mice (pulmonary adenocarcinoma). The stimuli were obtained from transgenic mice carrying different alleles of the EGFR mutation, for which cancer has been induced/or not following antibiotic inoculation. Our results indicate that mice can discriminate ill congeners at an early stage of cancer development. We also found quantitative differences suggesting that pheromones such as brevicomine and thiazoline were less present in ill versus healthy mice. Finally, health status of males did not seem to influence female attraction to their smells, unlike studies involving smells of mice inoculated with intestinal parasites which were avoided by females. It would therefore seem that changes in body odor linked to cancer could be detectable by a mouse nose at an early stage of development, however these changes did not seem to influence female choice. If occurrence of cancer among mice in natural conditions mostly concerns old non-reproductive animals, our results suggest that selection did not favor evolution of discrimination against males carrying cancer.

**Mots-Clés:** Body odors, Volatile Organic compounds, Cancer, Mus musculus domesticus, EGFR mice

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