

## 《科学家发现蚂蚁能嗅出癌症 比狗更胜一筹》

都说狗鼻子灵，但是科学家近日发现，蚂蚁的鼻子比狗还灵。只需短时间的训练，蚂蚁就能迅速识别出人体的癌细胞，甚至还能区分不同癌细胞，未来或可大量应用于临床诊断。



[Photo/Pexels]

Ants have the ability to sniff out cancerous cells in humans, a new study has discovered, suggesting they could be used for cancer diagnosis in future.

一项新研究发现，蚂蚁能嗅出人体内的癌细胞，这表明蚂蚁可用于未来对癌症的诊断。

Researchers from the French National Centre for Scientific Research (CNRS) discovered that ant species *Formica fusca* has a well developed sense of smell.

法国国家科学研究中心的研究人员发现，丝光褐林蚁的嗅觉非常发达。

It was able to differentiate cancerous cells from healthy cells in humans, thanks to their

sense of smell, limited trials revealed. But more clinical tests must be carried out before they could be used in clinical settings like hospitals, the team said.

有限的试验显示，这种蚂蚁的嗅觉超强，能够将人体的癌细胞同健康细胞区分开来。但是该研究团队表示，还需要进行更多临床测试才能将丝光褐林蚁用于医院等临床环境中。

They suggest that in future, ants could turn out to be better at dogs when it comes to locating cancerous cells in humans.

研究人员指出，未来在识别人体癌细胞方面，蚂蚁可能会比狗做得更出色。

To conduct their research, the scientists performed tests with 36 ants, smelling cells under a laboratory setting.

为了开展这一研究，科学家用36只蚂蚁进行了测试，让它们在实验室环境中闻细胞的气味。

First, the specialists exposed the ants to the smell of a sample of cancerous human cells. This odor was then associated with a reward of sugar solution.

首先，科学家让蚂蚁闻一份人体癌细胞的样本，每当蚂蚁闻癌细胞，就会给它们糖液奖励。

In a second step, the researchers exposed the ants to two different odors. One was a new smell and the second was the smell of the cancerous cells.

接下来，研究人员让蚂蚁闻两种不同的气味。一种是新气味，另一种是癌细胞的气味。

once this test was successful, the researchers exposed the ants to different cancerous cells.

这一测试获得成功后，研究人员又让蚂蚁闻两种不同的癌细胞。

As such, the scientists found that 'ants discriminate between cancerous and healthy cells and between two cancerous lines.'

于是，科学家发现“蚂蚁能将癌细胞和健康细胞区分开来，也能分辨不同的癌细胞”。

After training, *Formica fusca* ants are able to detect volatile organic compounds emitted by cancerous cells.

经过训练，丝光褐林蚁能够识别出癌细胞散发出的挥发性有机化合物。

'This first study shows that ants have high potential, are capable of learning very quickly, at lower cost, and are efficient,' points out CNRS in a news release.

法国国家科学研究中心在一份新闻稿中指出：“这项初步研究表明，蚂蚁拥有巨大的潜力和快速的学习能力，不仅成本低还高效。”

This isn't the first time that scientists have used the animal sense of smell to locate cancerous cells.

这不是科学家第一次利用动物嗅觉来识别癌细胞。

'Dogs' noses are well suited for medical diagnosis and used for the detection of cancer-specific [volatile organic compounds],' the researchers explained.

研究人员解释道：“狗鼻子很适合用于医疗诊断以及识别癌细胞（的挥发性有机化合物）。”

However, training them to do so requires several months to a year.

但是，让狗学会识别癌细胞需要长达几个月至一年的训练。

On the other hand, 'insects can be easily reared in controlled conditions, they are inexpensive, they have a very well-developed olfactory system and hundreds of individuals can be conditioned with very few trials,' the researchers point out.

研究人员指出，与此同时，“在受控条件下养殖昆虫很容易，成本低廉，而且昆虫嗅觉发达，只需几次测试就能训练出数百只昆虫。”

'Ants therefore represent a fast, efficient, inexpensive, and highly discriminant detection tool for detection of cancer cell volatiles,' the team explained.

该团队解释说：“因此蚂蚁作为识别癌细胞挥发物的工具，既快速、高效、廉价，辨别力又强。”

'Our approach could potentially be adapted to a range of other complex odor detection tasks including the detection of narcotics, explosives, spoiled food, or other diseases, including malaria, infections, and diabetes.'

“我们的方法未来也可用于其他一系列复杂的气味识别任务，包括识别毒品、爆炸物、过期食品或疟疾、传染病、糖尿病等疾病。”

The findings have been published in the journal iScience.

这一研究结果被发表在《交叉科学》期刊上。

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