

Rats to the Rescue



How do you turn a rat into a life-saving hero? You start with its natural superpower—an amazing sense of smell.

Rats have twice as many scent receptors in their noses as people have. That helps these animals recognize millions of smells. An organization called APOPO has found a way to harness that super odor detection in two life-saving projects.

First, APOPO trained rats to sniff out buried bombs left behind after wars. These bombs could explode if a human stepped on them. But rats are so light they don't set the bombs off. They can run up and down a field, sniffing. If the rats smell a bomb, human experts can safely remove it.

APOPO has also trained rats to sniff for signs of a serious infectious disease called **tuberculosis** (TB). Usually, if a patient is suspected of having the disease, doctors run lab tests to identify it. A doctor takes a sample of mucus from the patient's lungs. Then lab workers examine the sample to find evidence of the disease.

But in some countries, medical workers and labs are scarce. As a result, it can take a long time to diagnose the disease. In the meantime, more people can get sick as the disease spreads. APOPO found that rats' super smelling abilities can detect TB in a patient's mucus—and the rats can check mucus samples with superior speed!

How a Rat Uses Its Nose

What's the secret to a rat's super sense of smell? Here's how it works:

- 1** The air a rat sniffs contains **odor molecules**, or tiny particles that carry scents.
- 2** The air passes over a **scent area** covered with **scent receptors**. The odor molecules hit the receptors.
- 3** The **scent receptors** send messages to the part of the brain that recognizes different smells.

