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### A Nose for Bacteria

By [Diana Novak](#) | Published May 25, 2011

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Ken Suslick (photo courtesy University of Illinois)

On *Chicago Tonight* at 7:00 pm, the Scientific Chicago segment discusses a number of advancements in science and technology, including a chemical “nose” that can smell and diagnose bacterial infections. We caught up with Ken Suslick, the scientist who developed the “nose.” Suslick is the Marvin T. Schmidt professor of chemistry at the University of Illinois at Champaign-Urbana. He says the nose has endless capabilities:

#### **Where did the idea for the nose come from? What led up to its development?**

“We first started on this project 12 years ago. A prospective grad student, Neal Rakow, asked me, “If I come to Illinois to do my Ph.D. in your group, what will I actually work on?” That’s the question that faculty most dread because we actually never know!

At any rate, what spilled out of my mouth was pretty much the next dozen years worth of work. The bacterial detection is only the latest application. We’ve been using the technology for all kinds of things — detecting toxic gases in the workplace, and quality control of beverages. We can tell 10 different commercial Columbian coffee brands apart from one another, we can tell one beer from another, we can even tell diet Coke from diet Pepsi. Just a few months ago we demonstrated that we could detect TATP, the shoe bomber explosive, at part per billion levels. So maybe we won’t have to take our shoes off at the airport.”

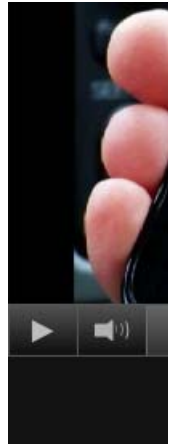
#### **Will your findings improve the accuracy and speed of bacterial infection diagnoses?**

“Yes. The nicest aspect of this technology is that it is cheap and easily used, even in third world clinics. We also hope to see the technology included in current automated (and very expensive) large scale culturing systems used in major hospitals.

The technology is now being commercialized by iSense, a start-up in Palo Alto. They’ve taken their array performance another big leap forward.”

#### **What are your hopes for the nose’s future use?**

“Imagine the technologies we would have developed if we had evolved from intelligent canines instead of smart apes. Humans are visual creatures, which is unusual among mammals. Most animals live and die by their sense of smell, not their vision. There is a world of both medical and industrial applications, and even everyday life uses. Imagine diagnosing diseases by breath analysis in the doctor’s office: our arrays have been used successfully at the Cleveland Clinic for lung cancer diagnosis. Imagine monitoring food production industrially by smell. Imagine not burning popcorn in your microwave. Imagine teenyboppers testing their breath with their cell phone cameras.”



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To read more about the nose and its developer, [click here](#).

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