LIFESTYLE
Study hunts for clues to perfect pitch
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Almost from the time he could walk, concert pianist Roy Bogas felt the pull of music -- and an uncanny facility for recognizing, and eventually naming, notes.

Bogas, who performs for the San Francisco Ballet and other orchestras, can instantly tell whether a given tone is an A or a D or a G or any interval between.

Known as "perfect" or "absolute" pitch, it's a rare ability in adults, even among professional musicians, who typically have what's known as "relative pitch," or the ability to tell what a note is only when given a starting note as a reference.

Now, Bogas and other walking tuning forks are the focus of intense scientific interest as researchers hunt for the roots of this remarkable skill.

A team led by geneticists Jane Gitschier at the University of California San Francisco and Nelson Freimer at the University of California Los Angeles has begun a study to find the gene or genes that may contribute to absolute pitch abilities.

The team is hoping to recruit large numbers of people for its study and has just developed an online test for absolute pitch that prospective subjects can take. (It is available on the Web at www.perfectpitch.ucsf.edu.)

Researchers are particularly anxious to find examples of absolute pitch clustered in families.

"What we are asking is whether or not this ability has a genetic aspect to it, and if it does, can we figure out what that gene is," Gitschier said.

Based on the evidence so far, most scientists believe that genes do play at least a subtle role, perhaps by keeping a developmental "window" open wider and longer during early childhood, when note- naming ability generally takes shape.

"We have interviewed and tested lots of people for this trait and found there is a familial aspect," Gitschier said. "There is also an environmental aspect -- if you don't have early musical training, you're probably not going to develop absolute pitch."

The goal of the current study is to clarify how genetic predisposition might dovetail with life experience to produce what Bogas calls "a higher degree of sound memory" than most people can even fathom.

One study of people with absolute pitch found 43 percent of siblings also had the ability to instantly name notes. In a separate study, investigators found the trait in only 3 percent of those whose music studies began before age 6.

Some skeptics

Still, some experts argue the quest for an absolute pitch gene is akin to searching for a gene for speaking French; it doesn't exist.

"I'm open-minded, but skeptical," said **Daniel Levitin**, a cognitive neuroscientist at McGill University in Montreal who has been researching issues of sound perception in the brain. "I really don't understand what they think those genes might be coding for."

Speaking French also runs in families, he noted, but clearly the reason for that has little to do with any special genetic factors. Some people may be born predisposed for language or music skills. But, Levitin said, the genetic differences

are likely to be extraordinarily subtle and difficult to isolate.

Nor is it clear why humanity needed to develop such a heightened sensitivity to pitch. There could not have been much survival advantage, Levitin said, for any of our prehistoric ancestors born with some innate ability to distinguish, say, an F and an A.

Despite these arguments, genes do play some role.

One particularly remarkable clue comes from studies of people with a genetic condition known as Williams syndrome. The condition is marked by profound impairments -- the inability to tie one's shoes, for example, or perform elementary arithmetic -- but often comes with a notable talent for music.

A recent study by Howard Lenhoff, an emeritus professor of microbiology at the University of California Irvine who began studying brain science after his daughter was diagnosed with Williams syndrome, found evidence that absolute pitch may be much more prevalent among those with the condition than it is in the general population.

His daughter is one example. Lenhoff said she also has the ability to sing in foreign languages with a seemingly perfect accent and has an uncanny ability to remember tunes and lyrics.

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