

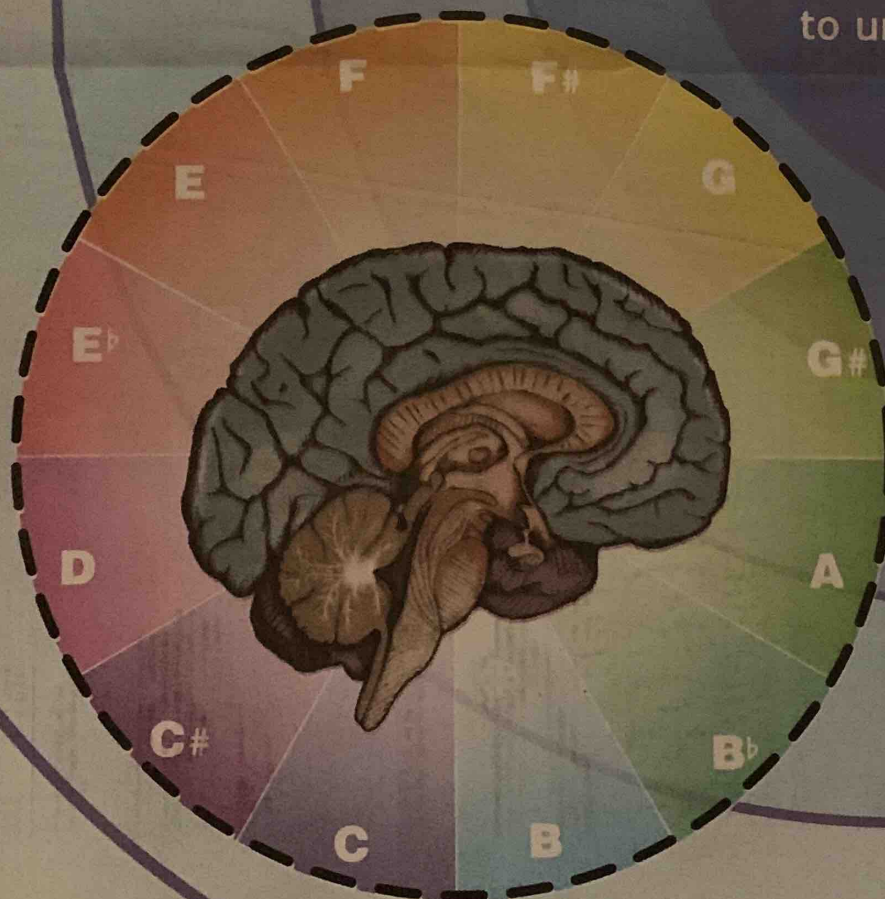


FROM HEAR TO HERE



Researchers try
to unravel the mystery
of perfect pitch

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By Evan Henerson | Staff Writer



"As far as we know, there is no stigma attached to it. It seems to be a neutral ability, which is why it's so easy to study."

Mayim Bialik,
UCLA researcher,
on perfect pitch

Laboratory manager Thuy Vu, left, research associate Maricel Tampilic and graduate student Mayim Bialik work together at UCLA.

Evan Yee/Staff Photographer

Hear that?

Perfect pitch may be the key to unlocking genetic mysteries

AS UNUSUAL ABILITIES go, this one's neither as sweet as a perfectly warbled high C, nor as sour as fingernails on a chalkboard. It's simply a puzzle.

Not a lot of people have it. Not a lot of people necessarily want it. It can be especially annoying to possess if you happen to be particularly musical and you're surrounded by someone with the vocal ability of a water buffalo.

So if perfect pitch — the ability to name any note without any external reference — doesn't necessarily make you a better musician, then what good is having it?

"Fun at parties?" suggests Mayim Bialik, a second-year graduate student in the department of neuroscience at UCLA. "As far as we know, there is no stigma attached to it. It seems to be a neutral ability, which is why it's so easy to study."

Ringling endorsement

Bialik is part of a UCLA research team, led by neuroscience geneticist Dr. Nelson Freimer, trying to crack the genetic code of perfect pitch, or absolute pitch as it's known. Researchers believe that embed-

ded within the mystery of why people can recognize notes is information that could aid the study of other areas. The way we hear and interpret music could hold implications for the study of language and learning, or it may have ramifications in the research of genetically inherited diseases such as bipolar disorder, Tourette's syndrome or schizophrenia.

Those who don't see its scientific possibilities find perfect pitch to be, well, just plain cool.

"People are really intrigued by it," says Dr. Jane Gitschier, professor of medicine whose lab at the University of California at San Francisco is conducting the perfect-pitch study jointly with Freimer's at UCLA. "I gave a talk last year on perfect pitch. There was a 9-foot Steinway all tuned for the occasion. I played four notes, and instantaneously somebody shouted out (the names of) the four notes from the back.

"Everybody started clapping. They found it so unbelievable that anybody could do that."

Precisely why a person can identify those four notes — or the key of a buzzing computer screen, or the toll of a bell — is what the teams at UCLA and

UCSF are trying to determine. Since absolute pitch tends to congregate in families, researchers suspect there is a strong genetic component.

Nature and nurture

Unlike genetically inherited diseases, however, absolute pitch also appears to be something that can be learned if a child is given musical training at an early enough age. Hence Mozart's legendary ability from childhood to hear a composition, then return home and write it down note for note.

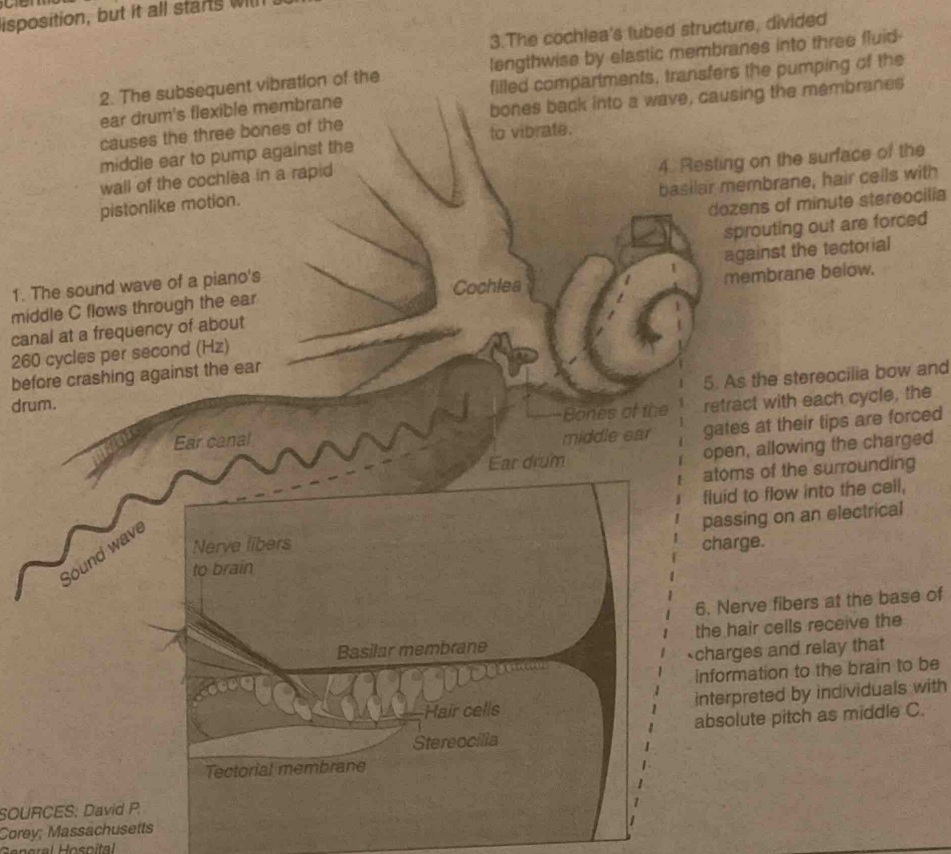
If you possess perfect pitch, say researchers, you invariably know you have it. Far more common is relative pitch — the ability to find a note after hearing another note first.

At least one researcher, psychology professor Diana Deutsch of the University of California at San Diego, believes that absolute pitch is an ability that all babies possess at birth. The majority just never get the training to develop it.

"If we are able to uncover an ability we thought was very rare and confined to specially privileged families and find that it is latent in most people,

HOW THE EAR DETECTS PITCH

Scientists suspect the brain's ability to detect perfectly the pitch of a sound is related to genetic disposition, but it all starts with some amazing equipment responsible for delivering the message.



Dan Delorenzo/Staff Artist

that would be a find," said Deutsch, who has perfect pitch, but who is not associated with the UCLA and UC San Francisco research. "It might be as easy as giving babies color-coded xylophones with letter names on them to let them bang on in a critical time."

Giving their pitch

The UCLA/UCSF study is still largely in the recruitment phase. An audio test taken over a Web site (perfectpitch.ucsf.edu/ppstudy.html) asks people to identify several notes to determine whether they might be candidates for the study.

Gitschier and Freimer are particularly interested in people who seem to have several instances of absolute pitch within their immediate family. Participants are asked about their musical background, including the age when they began musical training and how old they were when they realized they had absolute pitch. A blood sample or cheek swab is taken and sent to a Los Angeles laboratory, where Freimer's team takes over.

Newspaper articles have drawn the curious to the Web site, and Gitschier reports that 74 people who meet the criteria for absolute pitch have joined the study since mid-January. Because one in 2,000 people is estimated to have absolute pitch, researchers concentrated their initial recruitment

efforts within musical environments such as conservatories and music schools.

A community of Ashkenazi Jews has also held interest to researchers since a contained homogeneous population — particularly one with a rich tradition of music — is easily studied. People are more willing to talk about a family history of music, says Bialik, than, say, a disease.

Feeling the music

Coming from disciplines ranging from psychiatry to neurobiology to genetics, the research team doesn't necessarily share a love of music. But Bialik enjoys the prospect of working with musicians as much as figuring out what a musician's DNA will uncover about the way we think and learn.

"I was sort of recreationally interested in special abilities in the brain," says Bialik, 26. "When I learned Dr. Freimer actually studies these special abilities in terms of understanding other, more complex disease traits, I thought that was kind of a phenomenal combination of two interests of mine."

She tracked down Freimer, who was newly transferred from UCSF, before he had unpacked his bags. "I said, 'I'm a musician, and I'm fascinated with special abilities and the brain,'" said Bialik. "He said, 'Well, we have kind of a bigger goal of

understanding complex disease traits.' So everything kind of ended up coming together for a lot of different interesting reasons."

Bialik helped revive the study, which had cooled slightly since former UCSF graduate student Siamak Baharloo left the team. She expects the work with Dr. Freimer and perfect pitch to be ultimately the source of her doctoral dissertation.

And she comes by her interest honestly. Even though she doesn't have perfect pitch, the former actress and star of the NBC series "Blossom" has spent her life surrounded by music. She leads an a cappella group, Shir Bruin, and teaches and arranges music.

"People usually hear me singing at some point in the day," Bialik said. "I was raised with Bob Dylan as my lullabies. I just grew up kind of immersed in music."

Gitschier, who has loved music since childhood, doesn't have perfect pitch either. Even though she knows the annoyances that can accompany the condition, she would love to be able to hear through the ears of her research subjects.

"For a day or two, just to see what it's like," said Gitschier. "I think it would have enhanced my love of music to have perfect pitch."