FOXP2

Continued from page 11

animals have it. Mice have it, as do rats. So do our nearest genetic relatives, the chimpanzees. And not just mammals. Songbirds such as the zebra finch have a fully expressed *FOXP2* in their brains and use it in their vocalizations.

Why then, is there such a human-specific function associated with *FOXP2*? The real answer is that nobody knows. Even a complete description of all the genes *FOXP2* is responsible for regulating in the human brain will not fully address this important question.

The situation is hardly hopeless, of course. Comparisons of the nucleotide sequences within the genes of a variety of species have shed some important light. For example, the human and mouse lineages started diverging around 70 million years ago, with changes in gene structure and expression resulting in very different creatures. Such changes are not noticed if you look at the sequences of human and mice *FOXP2*. Only three amino acids have changed in that 70 million year history between us and mice, which means there is a certain amount of stability and a whole lot fewer variables to examine.

Chimpanzees, orangutans and gorillas are more related to us, of course, diverging from the eventual *Homo sapien* line about 6 million years ago. Yet, two of the three differences seen in mice are preserved as differences when one compares sequences between us and our nearest primate cousins. Believe it or not, this rate of amino acid change, which is not so startling between humans and mice, is very significant between chimps and humans, much greater than that which you would calculate by chance.

In other words, human *FOXP2* retains two very different amino acid alterations that no other animal on the planet has. These two amino acids (one at position 303, the other at position 325) have made all the difference in the world. Whatever other molecular moieties are involved, it is one crucial reason why we alone retain the power of speech. Very little research in the many efforts to explore the distance between a gene and a behavior is more exciting than this!

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RESIDENT'S COLUMN

by Jeffrey Junig, M.D., Ph.D.

Patient Progress—A Cause for (My) Happiness?

"Miss Rose" had been coming to the walk-in clinic for eight months. She was in her mid-40s, but appeared much older. Coming to monthly appointments was a challenge for her; she was unemployed and had difficulty scraping up money for bus fare—although she managed to find the resources to keep drinking. She used a cane to support her weight and usually limped behind me at a distance of five feet or so, a distance that remained constant no matter how slowly I walked. She had a malignantly pessimistic attitude, and over time I had become somewhat frustrated by her refusal to seek sobriety despite my attempts to "plant a seed." Through her distorted "chicken and the egg" logic, she drank because of her depression, which kept her homebound, friendless and apathetic. When she remarked one day that she might go into treatment, I provided information and the referral as I had done on several earlier visits, without believing that anything would come of it.

She missed her next appointment, but rescheduled for the following month. I scanned the waiting room at her scheduled time and was not surprised to find it empty save for a unrecognizable woman in the corner, who smiled and walked to me without the aid of a cane. To my surprise, I then recognized Miss Rose, as she beamed with the pride of a student with a straight-A report card. "I did it," she said. "I feel great!"

And I beamed back—reflecting happiness that sprung up in me from nowhere—and everywhere. I remembered an old joyful feeling from my days as an anesthesiologist—a feeling of unchecked happiness and satisfaction that would follow a job well done. Punctuated by the cry of a baby after an emergency C-section, or by a glimpse of the pile of empty transfusion bags after the save of a patient with a ruptured aortic aneurysm. I briefly felt unequivocally happy for Miss Rose, but then was aware of reservations that had become familiar since beginning my psychiatry training. While I wanted to congratulate Miss Rose and show my happiness for her, I was aware of the fact that her sobriety was early and precarious, and I realized that too much excitement in her success would reduce the chance of her return should she relapse. Congratulations were in order, but required awareness. And as my unchecked happiness changed to careful happiness, I thought of the angst that fueled much of my writing. And I wondered, would I ever be able to experience unqualified happiness in the care of my patients? Will I find joy in psychiatry?

I saw Miss Rose in our medication clinic, where a proactive and supportive stance was perhaps sometimes productive and allowable, given the short appointments and reduced role of transference. The concerns over my happiness for a patient were more acute, however, in our psychodynamic therapy clinic, where I learned the hard way that taking sides on an issue often resulted in a string of reactions that blocked a patient's trust and honesty, resulting in transference reactions—reactions that were likely predictable to an experienced therapist.

"Angie" was a bookish, thin woman in her early twenties, and came for therapy at the recommendation of a friend at college. She was clearly quite bright, and planned to go to graduate school in science, as both of her parents had done. She looked almost too happy to be seeking therapy, but described her internal state as depressed and nervous despite her construction of a perfect resume. She found herself missing more and more classes. "It makes no sense," she said. "Everyone tells me how lucky I am, to be able to go anywhere. But when I think of grad school, I almost panic … my mom tells me that I have a duty to apply myself more, but when she talks to me like that, I can't do anything!"

In all honesty, I was impressed by Angie's accomplishments and intelligence. As I recognized the "parental pride" that I felt toward her, I reactively tried to empathize with her resentments. Soon I was attempting to clarify her anger toward her mother, and she began to miss appointments. "I keep forgetting …" she said. Later, during my attempt at interpreting her absences, she became angry: "There is nothing behind it. I just have too much to do … I feel like I always have to be here, and I'm sick of it! All we do is blame everything on my mother!"

Later, I felt unspoken and what I thought was innocent happiness for her, as she resumed her studies. But in the glow of my pride for her progress toward graduate school, I found it difficult to consider whether she really wanted to become a scientist at all. As I tempered my personal investment, I came to see that her happy exterior was a defense against other thoughts, for example her aggression toward demanding parents and her fear of disappointing them. And I wondered, is it ever safe to "root" for our patients, or will that attitude only strengthen the defenses that block insight? There was a very fine line between empathizing with a patient's pride, and giving the conscious or unconscious impression that such achievement was necessary, or even desirable.

While the practice of anesthesia had its own concerns, the occasions for pleasant—and horrible—feelings were much less ambivalent. Extubation by the end of the day in the surgicenter was good, ventilators were bad. Nausea was bad. Waking up without pain was good. Low partial pressure of oxygen (pO_2) was bad. And the occasional "save" was a cause for unbridled pride.

In psychiatry, even the happy expectation of a patient's visit raises concerns of hidden countertransference reactions. My desire for pleasant interaction may interfere with my willingness to approach painful material, or the patient may unconsciously feel the need to please me. In psychodynamic work, my happiness not only comes second; it often has no place at all.

On a good day, I attempt to place the day's work in the context of the complexity of human existence, and the ambiguities and varied perceptions and opinions that make life interesting. While this type of happiness sometimes requires time alone in a quiet room, I will appreciate a deep satisfaction from being a part of such an intellectual endeavor. I admit that I miss the unqualified satisfaction after a long surgical case, the lack of concern over too much enjoyment of pre-op conversation, and the simplicity of always being on the same side as the patient, fighting a common and universal enemy. I regret that there are few, if any occasions for high-fives in psychiatry.

On other days, perhaps because of my own insecurities, or perhaps because of the fatigue of a long call night, I have the need to find a bit more potent source of joy in my work. On those days I claim inexperience, and decide that just for a moment, I will sit back and think of my patients, smile, and secretly, without reservation, wish them well.

Dr. Junig has returned to residency to study psychiatry after working 10 years as an anesthesiologist and pain physician. He is currently a resident in the department of psychiatry and behavioral medicine at the Medical College of Wisconsin. ❐

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