

# Do Birds Hold the Clue to How We Learn Languages?

By Alison at Accredited Language

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Recent research has revealed that bird brains can teach us a surprising amount about human brains, specifically when it comes to how humans learn languages and even how the human language evolved.

In 2010, a team of scientists led by the Washington University School of Medicine in St. Louis [decoded the first songbird genome in history](#), that of the Australian zebra finch, revealing surprising information regarding the relationship between the bird's genes and how it learns to sing.

Even more interesting is a new discovery made regarding the chestnut-crowned babbler bird, which along with information learned from the zebra finch, can potentially teach us just as much about how humans learn languages as it does about how birds learn to communicate.

## What Birds Reveal About Language Learning

So what makes the zebra finch genome mapping so special? The zebra finch is only the second bird to have its genome decoded, after the chicken. What scientists found so surprising when mapping the zebra finch genome was the huge influence that the bird's DNA was seen to have on the bird's "vocal learning" — the process of learning its language of song.

Previous research on zebra finches and song acquisition has shown that when the bird sings or hears a song, a complex network of hundreds of genes lights up in the brain of the bird.

After mapping out the entire genome, however, scientists were able to identify an even greater number of genes — approximately 800 in total — activated by singing or hearing song.

This shows scientists that the process of song acquisition in zebra finches is far more complex and deep-rooted in the birds' DNA than previously realized. The tiniest melody lasting only a few seconds might sound simple, but it's actually rooted in an amazingly intricate genetic network that underlies the process of [learning new languages](#).

## Birds & Babies: How We Learn Language

These findings regarding the zebra finch and the role DNA plays in vocal learning have surprising implications for humans as well. Human babies and baby zebra finches learn their respective languages essentially the same way — by listening to their parents.

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While babies learn from hearing their parents talk, zebra finches learn from hearing their parents sing. Both the baby humans and birds start off by trying to mimic the speech or song they hear, first babbling nonsense sounds and later mastering the proper sounds of the language, be it words or song.

This process of learning to communicate, known as vocal learning, is evident in other animals as well, including whales, elephants, bats and parrots (whose genome scientists are planning to map next).

Thanks to the predictable manner in which zebra finches learn and the fact that many of their genes are found in humans, they can serve as a valuable model for learning more about vocal learning in humans and deepening our understanding of how people learn languages.

## **Possible Medical Benefits of the Zebra Finch Genome**

By discovering the genetic roots contributing to vocal learning, not only will scientists be able to better understand how we learn languages, they may also be able to find the origins of certain speech disorders.

Using the zebra finch genome as a basis, scientists can conduct studies to identify which — if any — genes related to vocal learning in zebra finch brains are disrupted in people with speech disorders.

With the possibility of better understanding the potential genetic reasons for such conditions, scientists — with the help of zebra finches — may come closer to finding cures.

## **New Discoveries in Early-Language Evolution**

In more recent months research on the chestnut-crowned babbler has revealed even more connections between human speech and that of birds.

Unlike the zebra finch, the babbler is not a song bird but uses a series of at first seemingly meaningless sounds to communicate. What researchers have found, however, is that what the babbler is really do is rearranging these sounds to form actual, meaningful messages.

This is the first time that scientists have actual evidence of other animals performing this feat previously thought only capable by humans. Not only does this prove that other animals can take meaningless sounds and arrange them to communicate ideas the same as mankind, it may also hold the key to uncovering the origins and evolutions of human language itself.