

Lets say your friend has a dog she wants to breed. This dog “hates” men with hats. It also cowers and sometimes snaps at people it doesn’t know. You know for a fact that the parents of this dog (both owned by your friend’s parents) had the same temperament but you don’t know about all of the dog’s brothers and sisters. Should the owner take this dog out of the gene pool? Does it have genes that make it aggressive?

Even before genome mapping, scientists have been uncovering genes that cause diseases. Furthermore, with recent advances we can even disrupt specific genes in mice so that we can then study these “knockout” mice to look at the effects of the disrupted gene. In this manner, scientists have found many genes that dramatically affect behavior (as well as health). These include genes that affect aggression, that alter maternal care, that inhibit seizures, that affect spatial learning (Nelson 1998, 1997)

All of this new information has raised some controversy and many question from the public. For instance, if we find genes that affect aggression, are criminals with these genes accountable for their actions or will they be able to use the “gene defense?”

For animal owners, if we know which animals have a specific gene that affects a specific behavioral trait, can we selectively breed against that trait so that trait goes away but other traits are not affected?

With the advent of cloning, can we make a clone of our best friend Fifi so that we will have the same dog over and over? To take it one step further, can we make multiple clones of our favorite Fifi and give them to our friends and relatives so that everyone can enjoy the same Fifi we do?

To a geneticist or an ethologist, the answers are clear. But to the public who learns their science through the media, the answers may be surprising. To answer these questions we first have to realize two interesting facts:

- 1) That genes do not control behavior
- 2) We don’t even have genes for behavior.

I’m sure this sounds contradictory right now, but by the end of this lecture all will be clear. In this lecture,

- I first overview genes and inheritance
- Then I go over case studies that illustrate how genes influence behavior but do not control behavior and how it's development rather than nature vs. nurture that's important.