

## Speech Final Draft 4:

Biology: A Study of Life

Dear Lowell House,

My name is Josh Wortzel, and it is an honor to speak with you tonight. I am not a theologian or a philosopher. I like to study developmental biology. I spend my time in a lab over in Central Square where I put tiny cells into plastic dishes, feed them sugar, and see what they do. But after four years of doing this, I think I've learned something that may apply to life beyond the microscope as well.

If you are a human, your life began with the fertilization of an egg that contained all of the information that is you. Your eye color, the length of your femur, your predisposition to love Boloco - it was all there - it was in your DNA. And though that one fertilized cell divided and differentiated into many different tissues, each of these cells still contains that same DNA. The difference is that each cell only expresses a part of it. Your DNA is like a book of music, but each cell only sings one part, and consequently each cell seems to sing a different song. If we were to examine an osteon in your bone singing bass and a neuron in your brain singing counter tenor, we would all agree that they appear very different. Moreover, we would agree that any one of these cells alone is not "you." Only when we listen to the entire ensemble of your cells do we hear the entire rhapsody that *is* you.

So a fetus is a developing organism built from a collection of cells singing different parts from the same score. You might imagine that hearing just a few of these parts out of context might sound like cacophony, and in fact I can tell you from my experience that when you zoom into development on the cellular level, it looks like chaos too. I'll give you an example. The germ-line cells that give rise to your gonads, or sex organs, actually are created behind your gut, and over the course of several weeks, these cells need to migrate down to the base of your trunk where they will finally reside. During that migration, thousands of these cells die from lack of nutrients. If these cells had minds to think and fists to wave at the sky, you might hear them shouting, "Why, dear God? What have I done to deserve this? What is the point?" And they would hear no answer.

But as scientists, we can look down at these cells and have the perspective to see that what is really going on is not chaos. The environment behind the gut is perfectly suited for these germ cells to develop, and the migration they undergo primes them to make the gonads. Moreover, we see the irony of these cells as they condemn the sky, because we know that the reason for their predicament is the very DNA inside them. Although the cells themselves do not have a clue as to why things happen in development the way they do, there is something inside all of them that does, and that something, the DNA, is behind the scenes creating a beautiful bouncing baby. If we could just talk to these cells, we would tell them to look inside at their own DNA; we would tell them to then look beyond their cellular walls to see the same DNA in everything around them; and we would tell them – peace – your identity and purpose are something much greater than what you perceive.

Here we leave biological facts and enter metaphysical questions. What if the Big Bang were the fertilization of an egg, and what if that egg is dividing and differentiating into all that is the universe? Maybe if we could look within ourselves and then beyond the walls of our individuality into everything around us, we would see that inside all of us is the very same driving force, a shared spiritual DNA, if you will, from which each of us sings a part. Perhaps the real I is something much larger than me, and it is inextricably bound and connected to you all.

When I look at all of the suffering and chaos in the world, I should not shake my fists; I should not condemn the sky; and when I do, I should not be disappointed when I hear no answer. I should not because I believe that, if there is a God, that God is within us and speaks through us in our decisions and actions. Just as the germ cell's long march through the body creates miraculous possibilities – of gonads and children and grandchildren – you and I have also embarked on bewilderingly miraculous journeys, and we will create new possibilities for this developing universe.