

***Randy Wayne PhD (on right) ~ BioG 1110 Professor***



***Who I am is, in part, what I think*** ~ Much biological knowledge has been discovered in the past 2500 years that has helped us to “know ourselves”, our world and our place in the universe. This knowledge has also helped us lead healthy and meaningful lives. I have always loved this aspect of biology. In the twenty first century, biology with its need to be relevant in another way, has partnered with business to create biotechnology. I teach biology in this context.

The invention of the steam engine ignited the industrial revolution that transformed the world. Craftspeople and farmers became factory workers and those factories produced products that in part enhanced our lives and in part gave us new things about which to worry. One generation lamented the invention of the automobile, because families no longer stayed at home together on Sunday while the next generation thrived on taking Sunday drives together. Something is always lost and something else is always gained. It is our job to think critically about the pluses and minuses (the thesis and the antithesis) of each new technology so that we create a world that furthers the things about being human that we value.

Biotechnology will have equally profound influences on our life. Genetically modified food can feed a starving world but it also can cause potential health risks to those who eat it as a result of the widespread introduction of the antibiotic-resistance genes that are used to make genetically-modified foods. Gene therapy can cure diseases like severe combined immunodeficiency disease that, if left untreated, will imprison children to live in a bubble, but the same technology can be used to genetically dope athletes to give them more muscle mass, a different proportion of fast twitch or slow twitch muscles or more oxygen carrying red blood cells. *In vitro* fertilization and the creation of artificial wombs can help an infertile couple have a genetically related baby, but the same “newgenic” technology can be used to create designer babies where parents get to choose the genetic characteristics of their offspring, perhaps shifting the emphasis of parenting from unconditional love to product development.

My aim as a teacher is to teach the fundamental aspects of human biology through stories about how the discoveries were made and how we know what we know. That is, I teach students how to get answers through questioning, doubting and being skeptical. I then challenge the students to think critically about how biotechnological developments will change our world and encourage them to act as individuals and as professionals to create a world that furthers the things about being human that they value.