

J. Craig Venter, Ph.D.  
Lecture Summary

Dr. Venter plans a lively discussion in which he takes his audience through a brief history of the young but burgeoning field of genomics. He highlights the events leading up to the historic sequencing of the human genome and some of the interesting and surprising findings from this work. For example, he will outline the fewer than expected number of human genes and the implications for future understanding of human biology, the incredible similarities between humans and other species at the genetic level, and the evolutionary lessons that will be gleaned from having the human and multiple other genomes available.

Given that Dr. Venter's organizations are covering a wide spectrum of issues in genomics he will highlight some of these projects including the exciting work that is being undertaken at the Institute for Biological Energy Alternatives (IBEA). IBEA's mission is to explore and potentially develop biological solutions toward production of cleaner energy or dealing with carbon sequestration. Specifically, he and his team are applying the same techniques used to sequence the human genome (whole-genome shotgun sequencing, a technique he pioneered for rapid genome sequencing) of environments and are currently embarked on the Sorcerer II Expedition, which is an 18 month circumnavigation of the globe in which Dr. Venter and his team sample ocean water and when near land, soil samples in an effort to survey and sequence all the unseen organisms found in those environments. Scientists at IBEA are also working toward the creation of a synthetic chromosome which the team hopes will eventually lead to the creation of a synthetic organism that could be tailored to eliminate pollution in the environment or perhaps efficiently produce cleaner fuels such as hydrogen.

Dr. Venter concludes with an overview of the way he envisions everyone benefiting from the genomics revolution—genomic-based medicine. He will discuss current collaborations underway with his organization along with major US academic medical centers in which scientists and physicians are trying to integrate genomic data into the clinical setting. Dr. Venter is passionate about the advances that genomics will bring to everyday life and inspires his listeners with his views on how genomics will empower

everyone to take a more active role in their health. He details a world in the not too distant future where parents of newborns will leave the hospital with their baby's genetic code on a CD-ROM and how this will enable them to directly impact the health outcomes of their child.