

Genetics: Understanding DNA and How It Works

This course is intended for anyone interested in learning about basic concepts in genetics with an emphasis on understanding what DNA is and how it works. We will start by discussing the genetic code concealed in our DNA. We will gradually build to an understanding of its more complex features of control relating to its three-dimensional arrangement in the cell and the movement of genes from one chromosome to another. Factors such as aging, environmental changes, stress and nutrients all can impact how the information in your DNA is expressed. We will learn how these factors can physically change your DNA and the mechanisms that allow these changes to be passed on to your offspring (epigenetics).

The links between DNA alteration and cancer will be discussed along with how our cells protect against these changes in their DNA code to prevent malignant transformation. Alterations in the code or in the expression of its information, as it relates to a number of other diseases, will also be discussed in the context of how the expression of information stored in DNA is controlled. The use of DNA in forensics and anthropology will be discussed. We will consider how DNA testing companies such as “23 and me” provide information about your origins as well as your risk for certain diseases from a small sample of your DNA. Progress in gene therapy and the use of CRISPR (a technique used to insert genes in DNA) will be examined along with ethical issues that relate to its use. During our final session, we will debate the pros and cons of genetic testing, gene doping, gene therapy and optimization of an individual’s genetic make-up.

The course material will be derived from a number of different texts and scientific publications. Questions and discussion will be encouraged.

Leader: Kurt Steiner holds a PhD in biochemistry, has taught at Vanderbilt University Medical School, and for 23 years was a Director of Drug Discovery research for Wyeth Pharmaceuticals.

Thursdays: 10:00 a.m. to 12:00 noon, 8 weeks: September 28 through November 16.

Location: Presbyterian Church of Lawrenceville