

## Public Education and Information

In Oregon, individuals learn about genetics and genetic technological advances from a number of sources, including:

### The Media

Many participants voiced that much of their current knowledge about genetic advances came from various forms of media (TV, newspaper, magazines) and they acknowledged the importance of multi-media in educating the public, especially in capturing a wider, younger audience. The media often focuses on 'hot items' such as stem cell research, cloning, and genetically modified food, and rarely focuses on the genetic component of more common conditions. In addition, the media often promulgates misinformation.

### The Internet

Many national educational materials are available on the web. Among the most useful are information by the Human Genome Project ([www.ornl.gov/TechResources/Human\\_Genome/](http://www.ornl.gov/TechResources/Human_Genome/)), the Centers for Disease Control, Office of Genetics and Disease Prevention ([www.cdc.gov/genomics/update/current.htm](http://www.cdc.gov/genomics/update/current.htm)), the National Newborn Screening and Genetics Resource Center ([genes-r-us.uthscsa.edu/](http://genes-r-us.uthscsa.edu/)), Genetests.org ([www.genetests.org/](http://www.genetests.org/)), Genetics Education Center ([www.kumc.edu/gec/](http://www.kumc.edu/gec/)), GEMdatabase.org ([www.GEMdatabase.org](http://www.GEMdatabase.org)), HuGEM II Project ([gucdc.georgetown.edu/hugem/](http://gucdc.georgetown.edu/hugem/)), and Genetic Alliance ([geneticalliance.org/](http://geneticalliance.org/)).

### Health Providers and Health Centers

Health care providers are often the first point of contact for individuals and families seeking information about a genetic health condition. Genetic service centers as well as primary and specialty health providers provide brochures, information packets, and other educational materials.

### Educational Institutions

The K-12 science curriculum in Oregon designates three broad-based science categories (physical science, life science, earth and space science), common curriculum goals (describes the course of study used in all Oregon school districts), content standards (defines what students are expected to know and be able to do), and benchmarks (assessments during grades 3, 5, 8, and 10). Genetics fits most directly under life science, and students are charged with "understanding the transmission of traits in living things." The state standards influence what teachers present in the classroom, but the curriculum is also influenced by district regulations, the expectations of students, parents, and universities, and what the teacher feels is important. Many faculty and

administration are unaware of existing guidelines, frameworks, and resources for integrating genetics into the public school curriculum.

### K-12 Education: Oregon Content Science Standards for Heredity

| Common Curriculum Goals                                | Content Standards                                      | Benchmark 1 Grade 3                                                  | Benchmark 2 Grade 5                                                                                                                                                                                                            | Benchmark 3 Grade 8                                                                                                                                                                                                                                                                                                                                   | Certificate of Initial Mastery Grade 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Understand the transmission of traits in living things | Understand the transmission of traits in living things | Describe how related plants and animals have similar characteristics | Describe the life cycle of an organism                                                                                                                                                                                         | Describe how the traits of an organism are passed from generation to generation                                                                                                                                                                                                                                                                       | Explain laws of heredity and their relationship to the structure and function of DNA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                        |                                                        |                                                                      | <p><i>Eligible Content:</i></p> <p>Describe the life cycle of common organisms.</p> <p>Recognize that organisms are produced by living organisms of similar kind and do not appear spontaneously from inanimate materials.</p> | <p>Distinguish between asexual and sexual reproduction.</p> <p>Identify traits inherited through genes and those resulting from interactions with the environment.</p> <p>Use simple laws of probability to predict patterns of heredity with the use of Punnett squares.</p> <p>Explain how our understanding of heredity has changed over time.</p> | <p>Describe the structure of DNA and the way that DNA functions to control protein synthesis.</p> <p>Recognize and understand the differences between meiosis and mitosis in cellular reproduction.</p> <p>Recognize that changes in DNA (mutations) and anomalies in chromosomes create changes in organisms.</p> <p>Apply concepts of inheritance of traits to determine the characteristics of offspring including Mendel's laws, Punnett squares, and pedigrees.</p> <p>Recognize the existence of technology that can alter and/or determine inherited traits</p> |

Genetics is also finding its way into the health curriculum. For example, a common curriculum goal in health is to understand controllable health risks; an instructor may use breast cancer to exhibit a point, by discussing family history and the increased need for early mammograms.

### Consumer Information and Educational Resources

A number of state, regional, and national resources are available for consumers, including individuals and families impacted by inherited conditions. These

resources include hard-copy brochures and online information. ([See Genetic Services Summary for listings.](#))