



## **Parent Background on Epigenetics**

Let's Get Healthy! in partnership with Oregon Health and Science University is working to bring the latest health related research to Oregon schools. As part of this effort, a new module was developed for the Let's Get Healthy! fair to educate students, parents and teachers about a new area of science called epigenetics. Epigenetics studies the environment's influence on how DNA is expressed.

### **What your child will be doing**

To learn about this, your child will attend a health fair where one station will teach through an interactive game about the basics of epigenetics. Later, in the classroom the teacher may use some lessons OHSU offers to teach more aspects and more detail about the subject. We hope this increases student awareness of epigenetics and understanding of how choices made now and throughout life can impact their own health and that of their future children and grandchildren.

### **Why is it important**

DNA is made up of genes that are the codes for proteins. Genes can be turned "on" or "off", a process called gene regulation. Gene regulation is required for normal development throughout our lives. Genes that are expressed instruct cells what to become, how our organs form, how we remember material for a math test, how our bodies respond to disease and infection, and much, much more. Epigenetics is the study of how environmental factors impact gene regulation which controls gene expression. Gene regulation influences our health throughout our lifespan and new research is suggesting that epigenetic changes may extend across multiple generations to affect the health of our children, grandchildren, and possibly even great-grandchildren. Epigenetic changes are reversible, so our life choices may reverse or mitigate the effects of early epigenetic marks and prevent them from being transmitted to further generations. This is like playing a card game. Even if you are dealt a bad hand it is possible to play it well. It is also possible to mess up a good hand with the wrong life choices. This is an important concept for adolescents because it suggests that we aren't just a product of our genes, but our environment and the choices that we make, too. We need to "nurture our nature".

### **How is a person impacted by epigenetics**

Epigenetics affects our bodies throughout our lives because gene expression occurs every day throughout our lifespan. The epigenetic effects on our health depend on when (in our development) and where (in our bodies) our genes are turned "on" and "off". We have learned from historical famines and population-wide studies that long-term health effects

