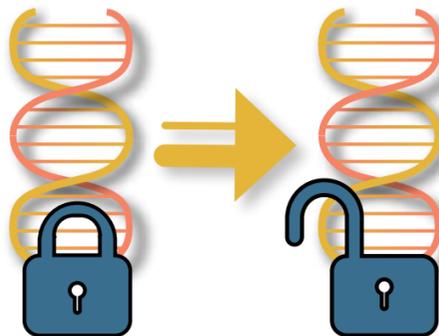


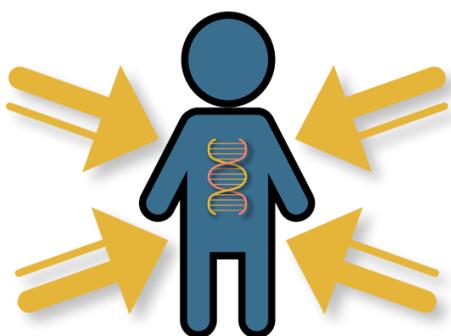
# WHAT IS EPIGENETICS?

## AND HOW DOES IT RELATE TO CHILD DEVELOPMENT?

“Epigenetics” is an emerging area of scientific research that shows how environmental influences—children’s experiences—actually affect the expression of their genes.



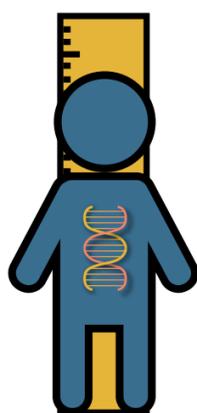
During development, the DNA that makes up our genes accumulates chemical marks that determine how much or little of the genes is expressed. This collection of chemical marks is known as the “epigenome.” The different experiences children have rearrange those chemical marks. This explains why genetically identical twins can exhibit different behaviors, skills, health, and achievement.



This means the old idea that genes are “set in stone” has been disproven. Nature vs. Nurture is no longer a debate. It’s nearly always both!



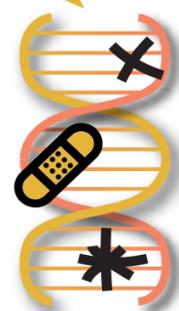
## EPIGENETICS EXPLAINS HOW EARLY EXPERIENCES CAN HAVE LIFELONG IMPACTS.



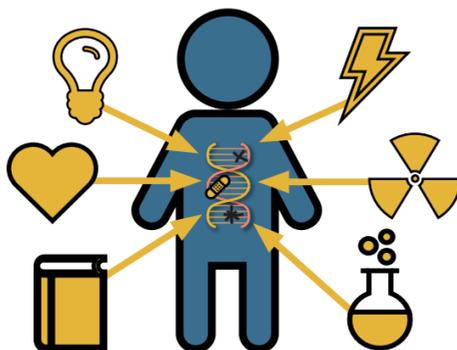
The genes children inherit from their biological parents provide information that guides their development. For example, how tall they could eventually become or the kind of temperament they could have.



When **EXPERIENCES** during development rearrange the epigenetic marks that govern gene expression, they can change whether and how genes release the information they carry.



Thus, the epigenome can be affected by positive experiences, such as supportive relationships and opportunities for learning...

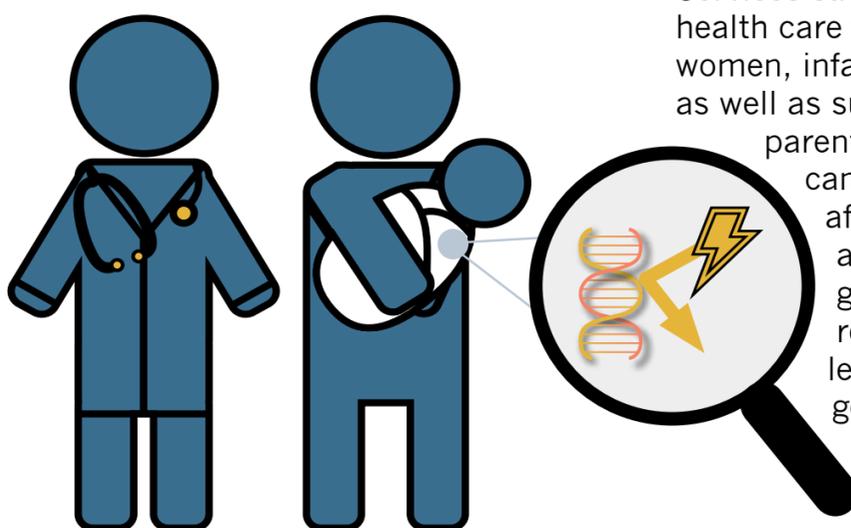


... or negative influences, such as environmental toxins or stressful life circumstances ...

... which leave a unique epigenetic “signature” on the genes. These signatures can be temporary or permanent and both types affect how easily the genes are switched on or off. Recent research demonstrates that there may be ways to reverse certain negative changes and restore healthy functioning. But the very best strategy is to support responsive relationships and reduce stress to build strong brains from the beginning.

## YOUNG BRAINS ARE PARTICULARLY SENSITIVE TO EPIGENETIC CHANGES.

Experiences very early in life, when the brain is developing most rapidly, cause epigenetic adaptations that influence whether, when, and how genes release their instructions for building future capacity for health, skills, and resilience. That’s why it’s crucial to provide supportive and nurturing experiences for young children in the earliest years.



Services such as high-quality health care for all pregnant women, infants, and toddlers, as well as support for new parents and caregivers can—quite literally— affect the chemistry around children’s genes. Supportive relationships and rich learning experiences generate positive epigenetic signatures that *activate* genetic potential.