The Potential Role of Epigenetics in “The Fussy Infant”
Sample Scenario

1. Case

Physical Examination and ROS:
A mother and her 2-month-old female infant present for well child care. The baby’s physical examination is normal as is her development. After a thorough review of systems, it is apparent that the baby is doing well otherwise. She is gaining weight, and voiding and stooling well.

Family and Social History:
Mom is struggling with postpartum depression. She reports that she lost her job shortly after learning she was pregnant, and shortly thereafter she was evicted from her apartment. Although the father of the infant is not involved, mom has been staying with her aunt, who has been very supportive and ensured that mom received sufficient prenatal care.

When asked about her possible depression, mom reports that she is “crying a lot” and has been “worried all the time” since she lost her job and apartment. Although she denies suicidal ideation, she reports that she is not sleeping well, in part because “my baby hates me – she just cries all the time.”

Mom reports that, while there are times when her baby is calm and smiling, “once she gets started, she won’t stop!” Mom reports that she is able to console her infant with singing and rocking, but it “seems like that is all I do.”

2. What Role Does Epigenetics Play in this Case?

Antepartum maternal stress is known to increase the methylation of the infant glucocorticoid receptor gene. Methylation is known to decrease the expression of genes and animal models have confirmed that the methylation of the glucocorticoid receptor is associated with lower levels of glucocorticoid receptor protein in the hypothalamus. This receptor plays a critical role in the negative feedback loop that turns off the physiologic stress response. As a consequence, infants born to mothers with significant levels of antepartum stress or postpartum depression have higher salivary cortisol levels, a more “reactive” hypothalamic-pituitary-adrenal axis, and are generally more irritable and harder to console.

3. Epigenetic and Prevention Messages

Pregnancy and the first few months of life are often stressful times. But significant maternal stress can result in an infant that is somewhat harder to console. Scientists believe that maternal stress can change the way the baby’s genes are turned on and the way the baby’s brain is wired. These changes could help the infant to survive in a difficult world – ensuring that the infant is “on-guard” for threats and “very vocal” about getting the care that she needs.
While these behaviors definitely make parenting more difficult, they do not indicate that mom is doing a poor job. The infant’s fussiness is simply reflecting the infant’s stress, not her “dislike” for mom.

**Messages for Mother:**

Teach mom that the baby’s behavior is her way to “prepare” for a stressful world.

Help the mother understand to not take the baby’s behavior personally.

Help mom enjoy the baby when she is calm, encouraging a healthy secure attachment. Tell mom to “Enjoy and talk to your baby when she is calm and this will help her know you are protecting her.”

Address mom’s depression, because her attentive, responsive, and calm care will allow the infant to “learn,” over time, that her mother is keeping her safe and will respond to her needs.

Tell the Mom that “Your caring and calm response to the baby will allow her to learn that you love her, and will protect and help her.”

Tell mom that the baby’s crying will get better as she learns that her smiling, cooing, and talking always get the mom’s attention and that interaction is the way she can get her needs met.