Asthma and Personalized Medicine

Why do some people with asthma respond differently to the same medications?
The answer may lie in our genes.

- Asthma is a complex disease. We don’t know for certain what causes asthma but studies have shown that both genetics and the environment can affect your risk of getting asthma. Scientists are developing ways to customize medical treatments based on our genetic makeup. This is called ‘personalized medicine’ or pharmacogenomics.

Pharmacogenomics may someday help doctors to better:
- Understand your risk of getting asthma;
- Diagnose the type of asthma you have; and
- Prescribe the most effective medications based on your unique genetic makeup. This may help reduce harmful side effects and avoid the trial-and-error method of figuring out which medications help control your asthma the best.

Is pharmacogenomics being used today?
- Yes, but only in a few cases. For example, the drug Purinethol is a chemotherapy drug that can affect children with leukemia differently. Most people do not suffer any severe side effects from the drug, but a small percentage of children are unable to metabolize the drug and may even die from taking it. Based on a child’s genetic makeup, doctors are able to tell, if he or she will suffer severe side effects from the drug. If this is the case, they can prescribe a lower dosage or even another medication.
- Currently there are no drugs ‘tailor-made’ for people with asthma based on their genetic makeup. However, pharmacogenomics is the area that will most likely change the way asthma is treated and even prevented in the future.

Where can I find more information?
- Genetic Science Learning Center http://learn.genetics.utah.edu
- Utah Chronic Disease Genomics Program www.health.utah.gov/genomics
- Human Genome Project www.genomics.energy.gov
- National Human Genome Research Institute www.genome.gov

Sources
Utah Department of Health Chronic Disease Genomics Program