Small RNA profiling

Data preparation

- Prepare and check the sequence quality

Basic Analysis

- Trim sequence adapters and low quality sequence reads
- Merge the read and count
- Annotate by mirBase
- Produce Annotated and Un-annotated result

Why we study Small RNA

Micro-RNA Molecules from Your Food May Control Up to 30 Percent of Your Genes

Groundbreaking new research shows that microscopic RNA in the plants you consume enters your body and is actually capable of affecting the expression of up to **30% of your genes!**

Never before could it have been imagined that your "genes" could be so profoundly affected by things you eat.

There is also the field of lectinology, which has opened our eyes to how plants, particularly grains and legumes – have a set of defenses, not unlike invisible thorns," which can cause direct, low-immune mediated harm to a wide range of tissues and organs within your body.

Medical science is beginning to awaken to how profoundly food is intertwined with health and disease, and how nutrients affect genes, and how our genes respond to nutrients. This, in fact, is the field of study known as Nutrigenomics – something, I believe, you will be hearing far more about as the science begins to gain wider appreciation. It is a burgeoning new field, in fact launched soon after the completion of a working draft of the Human Genome project (2003), which failed to provide the long sought after "holy grail" of modern biology.

In a nutshell, the project failed to identify one gene for every one protein in the human body, forcing researchers to look to epigenetic factors -- namely, "factors beyond the control of the gene" – to explain how the body is formed, and how it works. What is the most important factor beyond the control of the gene? Diet.

Eating the Wrong Plants Can Mess With Your DNA Expression

Chances are you've never heard of micro RNA (miRNA) … but that doesn't mean it hasn't already been impacting your health … RNA is one of three major macromolecules, like DNA. Micro RNA are basically small pieces of RNA that interact with your genes, essentially stopping certain genes from being expressed.

MiRNA exists in human body fluid naturally; for instance, researchers have detected high expression levels of immune-related miRNAs in breast milk, particularly during the first 6 months of lactation. It's thought that this genetic material is transferred from mother to baby to help modulate the development of the infant's immune system. Cow's milk also contains miRNA, which is currently being explored as a possible new standard for the quality control of raw milk.

However, micro RNA also exists in *plants*, and for the first time research has shown that eating the wrong plants may transfer this plant miRNA to humans -- with potentially devastating implications.

The study, published in the September 2011 edition of the journal Cell Research, determined that microRNA from cooked plant foods like rice, wheat and potatoes can in fact collect in your blood and tissue, leading to a number of potential health problems.

The study further revealed that microRNA remains completely stable after not only cooking, but through the digestion process as well. Most importantly, the researchers found a significant quantity of microRNA in the human body, concluding that:

" … plant miRNAs are primarily acquired orally, through food intake."

http://articles.mercola.com/sites/articles/archive/2012/02/18/eating-wrong-plants-can-mess-dna-expression.aspx