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Epigenetics: The next frontier for health and healing?

Recently, one of our members brought to my attention a book about epigenetics and the ability for our bodies to heal themselves. I had never heard of epigenetics and felt intrigued, so I decided to research this growing field of science.

Epigenetics is a very complex topic, and is new to me, so this article serves as a brief introduction to this fascinating topic, and not a comprehensive guide.

What is epigenetics?

Finding a simple definition of epigenetics was challenging. According to the US Center for Disease Control and Prevention, epigenetics is "the study of how your behaviors and environment can cause changes that affect the way your genes work." These changes are believed to be reversible, and do not change the DNA sequence a person had at birth. *The critical difference is in how the body **reads** the DNA sequence.*

[This simple graphic](#) and the videos below help bring some clarity:

- [**Epigenetics** – 3-minute introductory video:](#)
(US Centers for Disease Control and Prevention (CDC))
- [**What is epigenetics**](#) – 5-minute video that explains how epigenetics relates to health.
(TED-Ed.com)

Epigenetics and health

Epigenetics is an emerging science with much to explore. What researchers seem to agree upon is that the switches that turn on and off in our genetic code can have a direct impact on our health, either positive or negative.

We can inherit conditions, or a high risk of a condition, due to mutations in our genetic code that are passed on to us from our parents. Research into epigenetics looks at how the events in someone's lifetime can change the way their DNA is expressed, and even the possibility that this change can be passed to the next generation. Research is examining how trauma impacts our epigenetics and whether this impact is passed down between generations. Research is also diving deeper into understanding epigenetics, and how this science may lead to new advances in how to heal ourselves and/or target new treatments.

For now, what can we as individuals do to support healthy epigenetics?

As is often the case with the health conditions we discuss in ReFresh, exercise is touted as being very important, including strength training (weightlifting), and high-intensity interval training (HIIT) which improves cellular metabolism. Even thirty minutes of moderate exercise of any form will be beneficial as this can elicit epigenetic change that increases the number of cancer-fighting immune cells in the body.

Diet can also support genetic change: this includes the consumption of minerals including folate, Vitamin B-12, iron, zinc, magnesium, manganese, calcium, selenium, chromium, and copper, along with foods that are supportive of epigenetic changes such as garlic, broccoli, caffeic acid, citrus fruits, apples, soybeans, tea, grapes, tomatoes, turmeric, cinnamon, and cashew nuts.

What does the future hold?

It is interesting to consider how this science may evolve. Imagine the possible benefits of being able to match up specific nutrients for persons at risk for specific illnesses, which could lead to a whole new field of 'precision nutrition' with a personalised nutrition plan! There could be an impact through medications that send specific messages to our genes to turn on the switches needed to help heal ourselves, such as releasing serotonin and dopamine to relieve depression.

The body is an amazing machine with a high degree of complexity and interconnections, and epigenetics is one new frontier awaiting the work of researchers.

Sources

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A handwritten signature in black ink, appearing to read 'R. Morandini', with a stylized flourish at the end.

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If you would like to contribute or have ideas about what you would like to see in the ReFresh series, we would love to hear from you: contact rochelle@bcpvpa.bc.ca.