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BIOLOGICAL INDIVIDUALITY (GENETIC VARIABILITY)

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Common sense tells us people are all different. We can see that by looking around. But for the past 150 years or so, medicine has assumed that people are interchangeable. We have based most of our clinical studies on the "controlled trial" in which two groups of people, usually matched for age, sex, race and other factors, are compared: one group gets the test drug, the other a placebo (inactive pill). The controlled trial has given us most medical progress, but it has its limits. It is estimated that perhaps 40% of the population do not respond to prescription drugs the way they are "supposed to."

The reason for that is **biological individuality**.

In the past decade or so, as we have begun serious study of the **human genome**, it has been discovered that there are upwards of 50,000 clinically important genetic variations. These are called SNPs (Solitary Nucleotide Polymorphisms). Some key enzyme, for example, might have an average activity of, say, 25. But there are people with an activity of 1, or 0, and others with an activity of 250. And if that enzyme is important, it may have a big impact on health, positive or negative.

For example, there is an enzyme called PON1. People with low PON1 activity get sick when exposed to certain pesticides. But people with high PON1 activity can seemingly breathe or drink the same pesticide all day without getting sick. That is why controlled trials which don't take relevant genetic factors into account can sometimes be misleading.

There is another key enzyme called MTHFR. People with low activity have a lot of problems with fatigue, heart disease, and with excretion of toxins. People with high activity generally don't. Sometimes people with low activity recover normal function, just by being given high doses of B vitamins, carnitine and CoQ10. Sometimes they don't, if their disease has been active too long.

There are thousands of human genes, many of which have changes like those involving PON1 and MTHFR. This variation in genetic heritage may determine why one person can smoke 70 years without getting cancer, while another gets cancer after only 20 or 30 years. Or why one person can drink alcohol without trouble, while another becomes alcoholic. Why one person can work in a perfume factory without trouble, while another gets faint whenever he or she gets a whiff of scent.

Fortunately, the physiology of many of these variations is known, and can be treated. If you inherited disease-prone genes, it's not a curse; it's just a starting point. The expression of your genes can often be greatly improved with simple biochemical measures. In our clinic, we never

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say “one size fits all.” People are all different, and require the individualized treatment that is right for them. It takes a fair amount of detective work on our part, and lab studies to figure out what will work, but most people can be helped. There is hope for most chronic illness.

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