Mapping the Human ‘Diseasome’

Researchers created a map linking different diseases and disorders, represented by circles, to the genes they have in common.

For example, PTCH2 is a gene linked to two different types of cancer (blue circles). Tight groupings hint at similar genetic origins for some diseases, like this disease cluster that includes a number of inherited eye disorders.

Some genes risk seemingly unrelated diseases. The ACE gene (center right) is associated with both diabetes and Alzheimer’s.

The research is already starting to change medicine, as the field of disease classification is known. Seemingly distinct diseases are being lumped together. What were thought to be single diseases are being split into separate ailments. Just as they once mapped the human genome, scientists are trying to map the “diseasome,” the collection of all diseases and the genes associated with them.

“We are now in a unique position to be able to explain disease precisely, uniquely and unequivocally,” said scientists of the new approach. Last year in the journal Molecular Systems Biology, such research aims to do more than just satisfy the basic intellectual urge to organize and categorize. It also promises to improve treatments and public health.”

Redefining Disease, Genes and All

By ANDREW POLLACK

Duchenne muscular dystrophy may not seem to have much in common with heart attacks. One is a rare inherited disease that primarily strikes boys. The other is a common cause of death in both men and women. To Atul J. Butte, they are surprisingly similar.

Butte, a professor of medicine at Stanford, is among a growing band of researchers trying to redefine how diseases are classified — by looking not at their symptoms or physiological measurements, but at their genetic underpinnings. It turns out that a similar set of genes is active in both with Duchenne and adult who have heart attacks.

NO MORE INSULIN

Ryan Collins, 5, of Albie, Va., was given a diagnosis of Type 1 diabetes shortly after birth.

Doctors now know he has a rare form of diabetes that can be treated with pills instead of insulin. Page 4.
Looking at Genes, Scientists Are Redefining Disease

By the New York Times

In a preliminary study, scientists found that the genetic basis for many diseases is more complex than previously thought. This new understanding is leading to a reevaluation of how diseases are classified and treated.

For the first time, scientists are recognizing that many diseases are not caused by a single gene or genetic mutation, but rather by a combination of genetic and environmental factors. This has led to the development of new diagnostic tests and treatment options.

This new approach to disease classification is being called "multifactorial disease." It refers to diseases that are influenced by both genetic and environmental factors, such as diet, lifestyle, and exposure to environmental toxins.

Many common diseases, such as diabetes, asthma, and cancer, are now being classified as multifactorial diseases. This has led to a shift in the way these diseases are treated, with a greater focus on lifestyle modifications and personalized medicine.

New ways to classify diseases and their underpinnings.

The idea that disease is caused by a single gene or genetic mutation is now being replaced by a more complex understanding of how genetic and environmental factors interact to cause disease.

New diagnostic tests are being developed that take into account the genetic and environmental factors that contribute to disease. This has led to a new approach to personalized medicine, where treatments are tailored to an individual's genetic and environmental profile.

Some diseases that were once thought to be caused by a single genetic mutation are now being recognized as multifactorial diseases. This has led to a shift in the way these diseases are treated, with a greater focus on lifestyle modifications and personalized medicine.

In conclusion, the new understanding of disease classification is leading to a reevaluation of how diseases are treated. This new approach is leading to new diagnostic tests and treatment options, and a greater focus on personalized medicine.