Disease pathways: A key to new drug discovery [1]

From Our Labs [2]

As recently as a decade ago, many scientists and physicians were unaware of the connections between seemingly disparate diseases. Osteoporosis and cancer, for example, were considered completely unrelated. But it turns out they sometimes share similarities at a molecular level.
Using new technologies, researchers have developed a deeper understanding of how cells function, changing conceptions of biological processes. Disrupted pathways lead to disease. Scientists once thought all diseases were unique. New research shows that some diseases, such as cancer, psoriasis, and arthritis, for example, actually share molecular pathways and can be treated similarly. This breakthrough has already produced treatments that are more effective and discovered more quickly than any before.

The latest maps of molecular interactions reveal connections between diseases that seem very different. A molecule linked to one disease might also be involved in another. Scientists have discovered that a relatively small number of core pathways play a fundamental role in development — and in disease. Researchers at the Novartis Institutes for BioMedical Research (NIBR) focus on these key pathways, searching for ways to maintain or restore their function to treat a variety of conditions.

Identifying the location of the pathway disruption is a first step toward developing new medicines. Then scientists need to develop drugs that can interfere with these pathways. There are opportunities in areas such as multiple sclerosis and chronic myelogenous leukemia, but there are still many more opportunities to explore.

NIBR researchers continue to work to unravel how complex pathways are structured in order to find ways to intervene in these processes. Their work could result in important therapies for some of the world’s most deadly and difficult-to-treat diseases.

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