

## TERMS TO KNOW

### CANCER

Cancer is the collective name for a group of diseases caused by unchecked cell growth, which interferes with the body's normal, healthy function. Cancers can differ greatly depending on their location, their cause and how they spread. There are more than 100 different types of cancer.

**Immunotherapy:** Any treatment that harnesses the body's natural defenses (the immune system) to combat disease.

**Metastasis:** The spread of cancer cells from one area of the body to another.

**Tumor:** An abnormal mass of tissue. Tumors can be benign, meaning they are non-cancerous, or malignant, meaning they are cancerous.

### PARKINSON'S DISEASE

A progressive, neurological disease that leads to the loss of voluntary movement as well as stiffness, rigidity, tremor and difficulty walking. Once thought to only affect movement, scientists now know that Parkinson's impacts many of the body's systems and can cause cognitive problems, constipation, loss of sense of smell and other non-motor symptoms, many of which appear years before diagnosis. Current treatments can help manage symptoms but do not slow or stop the disease. Between seven to 10 million people globally have Parkinson's, making it the second most common neurodegenerative disease after Alzheimer's.

**Alpha-synuclein:** Alpha-synuclein is a protein whose normal job in cells is unknown. In Parkinson's, abnormal alpha-synuclein is thought to spread from cell to cell in the brain, and contribute to damage and cell death.

**Dopamine:** Dopamine is a neurotransmitter that plays an important role in voluntary movement and reward responses. In Parkinson's disease, the cells that produce dopamine are damaged or killed, which leads to the disease's symptoms.

**Lewy bodies:** Abnormal clumps mostly made up of alpha-synuclein found in the brains of people with Parkinson's disease.

**Neurodegenerative disease:** A blanket term for conditions that cause a progressive loss of function in the nervous system. Alzheimer's disease is the most common neurodegenerative disease followed by Parkinson's disease.

**Neurotransmitter:** Chemicals that relay messages between nerve cells (neurons) and also help nerve cells communicate with other types of cells.

**Substantia nigra:** Literally meaning "the black substance," this area of the brain is home to the dopamine-producing cells damaged in Parkinson's disease.

## GENERAL BIOLOGY

**Cryo-electron microscopy (cryo-EM):** A revolutionary technique that allows scientists to see important biological molecules that are smaller than 1/10,000th the width of a human hair (atomic resolution), such as the structure of proteins involved in Parkinson's or DNA replicating in a cancer cell.

**Epigenetics:** Refers to the packaging and marking of DNA, which guides whether genes are on or off and to what extent. Epigenetic errors can lead to diseases such as cancer.

**Epigenome:** The total set of epigenetic marks in an organism.

**Gene:** The smallest unit of heredity, genes are sequences of DNA that hold instructions for specific functions. Genes can be thought of as recipes for life, determining everything from eye color to disease risk.

**Genome:** The total set of genetic information in an organism. If genes are recipes, then the genome is the cookbook.

**Protein:** As the workhorses of biology, proteins are involved in virtually every process in the body, from copying the genetic code to digestion.

## RESEARCH TERMS

**Basic research:** Scientific studies that examine fundamental processes. Examples include investigating how DNA replicates and uncovering the structure of a protein.

**Clinical trials:** Rigorously designed studies that examine new treatments to improve people's health. Clinical trials are essential in translating a lab discovery into an approved, usable therapy. Trials have several stages designed to ensure the therapy being tested is safe and effective.

**Repurposing:** Using a drug that was developed or approved to treat one disease as a treatment for another. An example is using a drug originally developed to treat diabetes to treat Parkinson's disease. Also called drug repositioning.

**Translational research:** Harnessing basic research findings to develop new treatments and other patient care strategies to improve outcomes. Also referred to as bench to bedside.