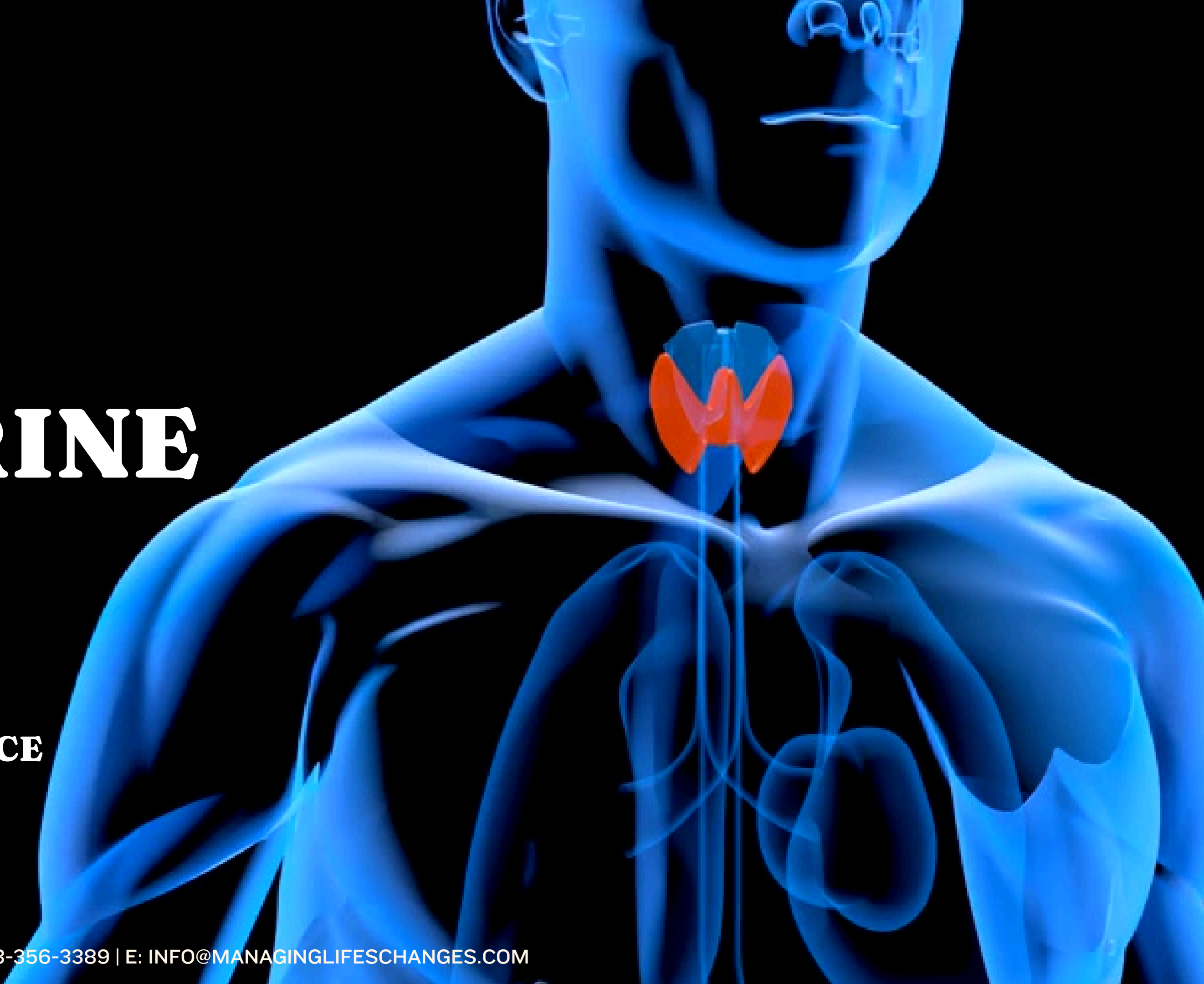


THE ENDOCRINE SYSTEM

MIDDLE SCHOOL SCIENCE



LEARNING OBJECTIVES

- Students will identify the major glands of the endocrine system and describe their locations and functions.
- Students will explain the role of hormones as chemical messengers and how they affect processes like growth, metabolism, stress response, and reproduction.
- Students will describe how the endocrine system helps maintain homeostasis by regulating internal body conditions.



WHAT IS THE ENDOCRINE SYSTEM?

The endocrine system is a network of glands that produce and release hormones, which are chemical messengers that travel through your blood. These hormones control many important body functions, like growth, mood, energy levels, metabolism, and development. Unlike the nervous system, which uses electrical signals for quick responses, the endocrine system works more slowly but its effects last longer. It's one of the main systems your body uses to keep everything balanced.



WHAT ARE HORMONES?

The Body's Chemical Messengers

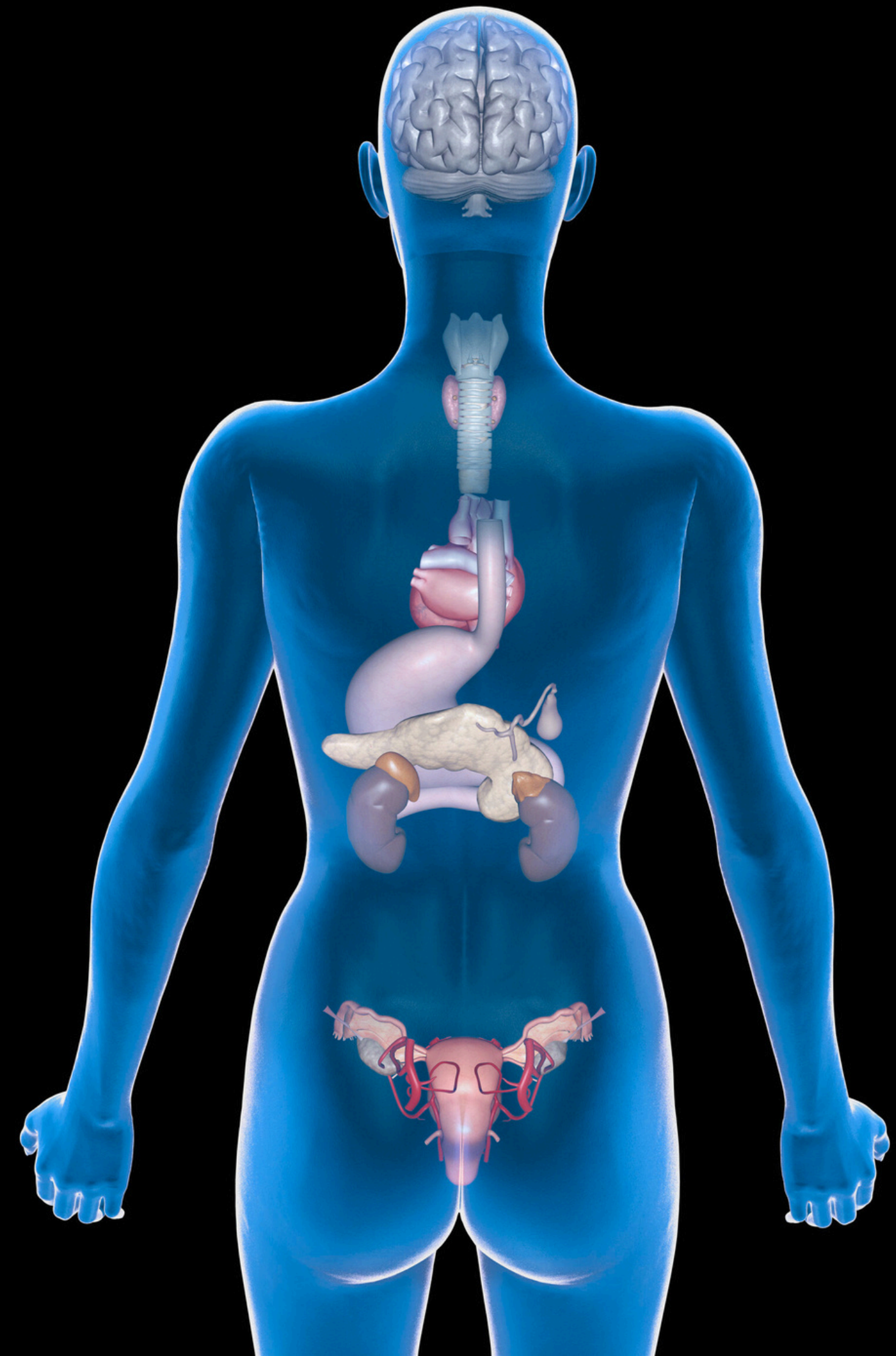
Hormones are special chemicals that help control and coordinate body activities. They are made in glands and travel through the bloodstream to target organs or tissues. Each hormone has a specific job for example, some help with growth, while others control sugar levels or emotions. Think of hormones like text messages sent from one part of the body to another, telling it what to do.



GLANDS OF THE ENDOCRINE SYSTEM

Where Hormones Come From

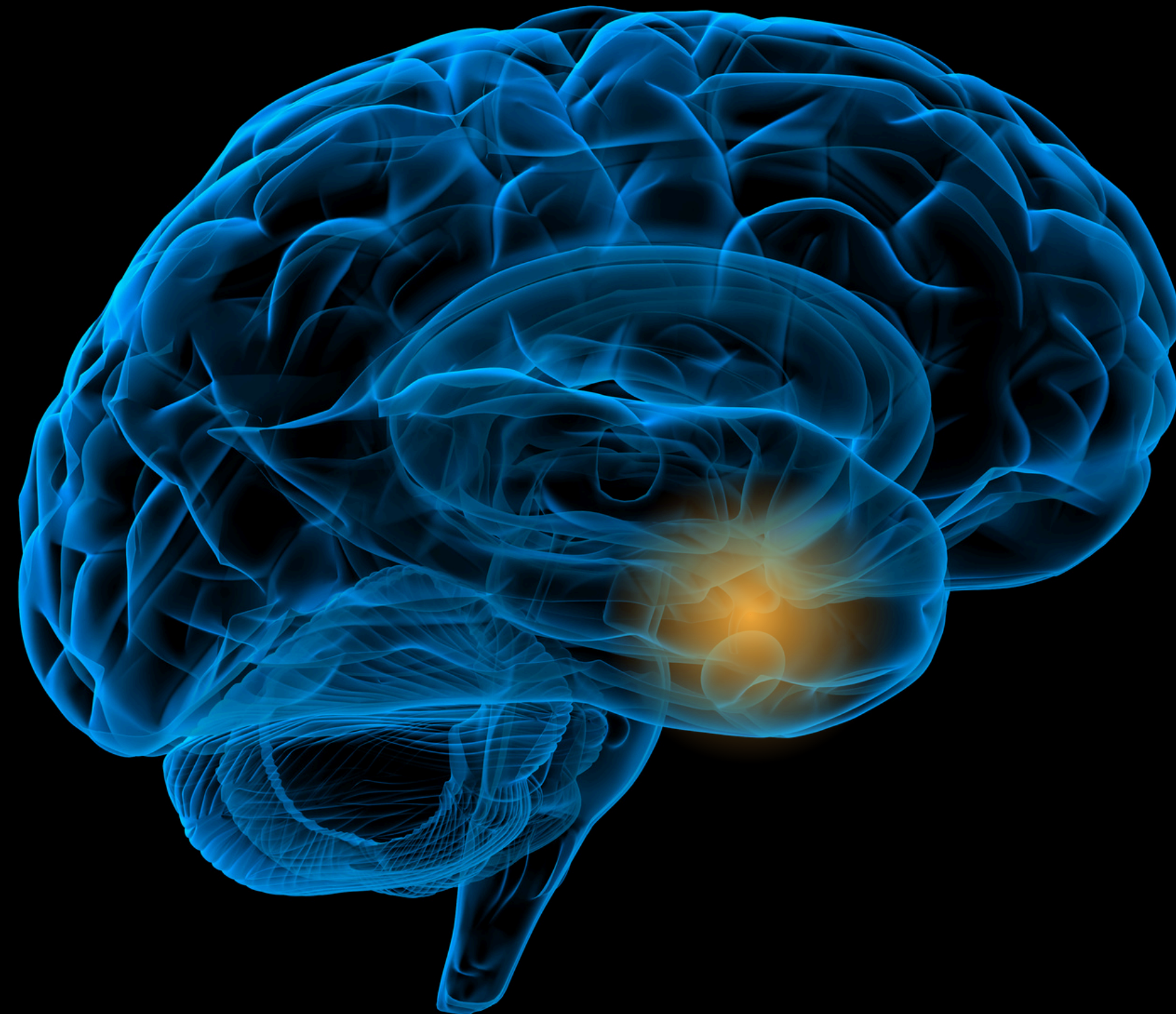
The endocrine system is made up of several glands located throughout the body. These include the pituitary gland, thyroid gland, adrenal glands, pancreas, ovaries (in females), and testes (in males). Each gland makes different hormones for different jobs. Even though the glands are small, they have powerful effects on how your body works and feels.



THE PITUITARY GLAND

The Boss of the Endocrine System

The pituitary gland is often called the master gland because it controls the activity of many other endocrine glands. It is located at the base of the brain and is about the size of a pea. The pituitary releases hormones that affect growth, blood pressure, and reproduction. It also tells other glands when to start or stop making hormones.



THE THYROID GLAND

Regulating Metabolism

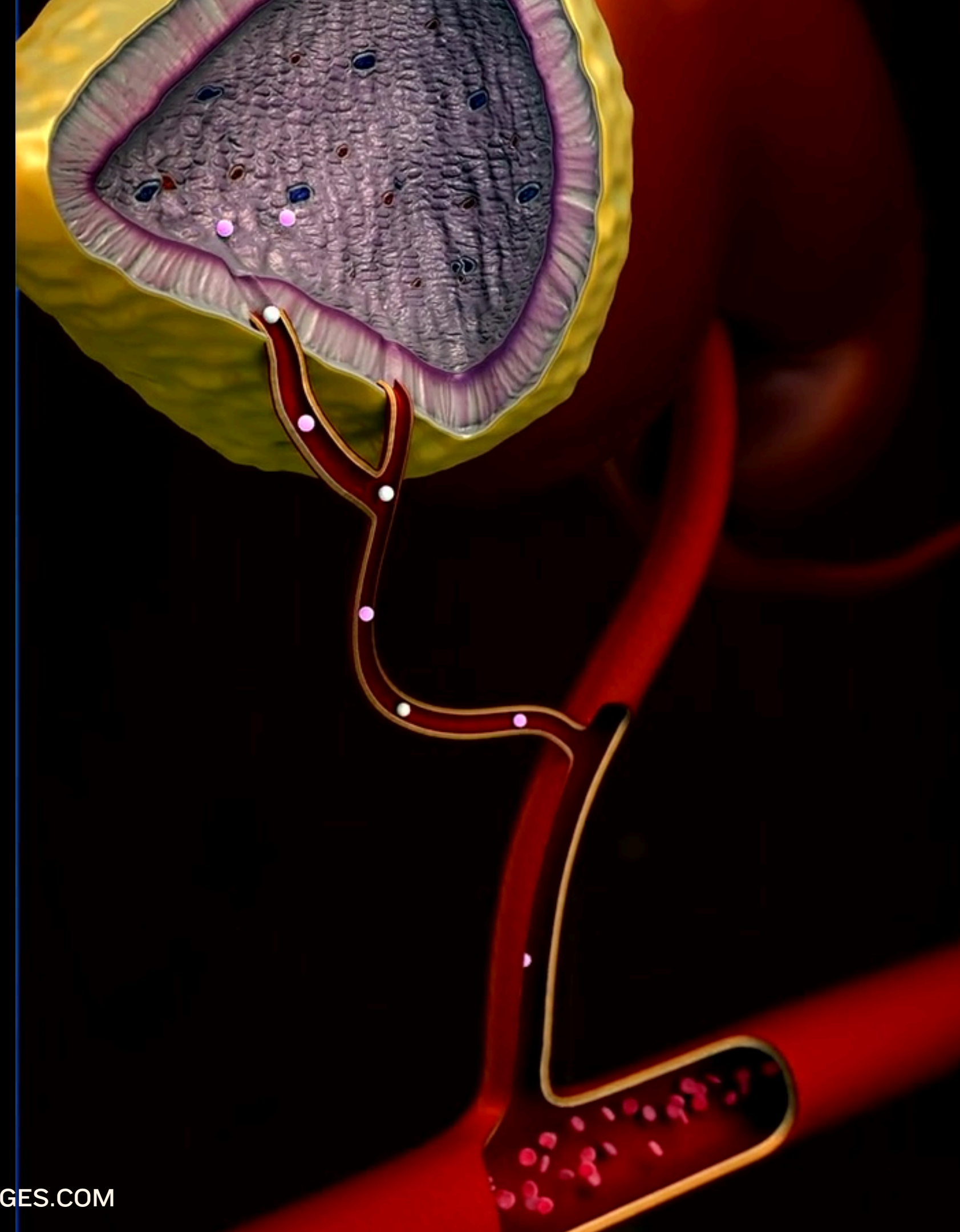
The thyroid gland is found in the neck and makes a hormone called thyroxine that controls how quickly your body uses energy this is called your metabolism. If your thyroid makes too much hormone, your body works too fast; too little, and it works too slowly. This gland helps you stay energetic, grow properly, and stay warm.



THE ADRENAL GLANDS

Responding to Stress

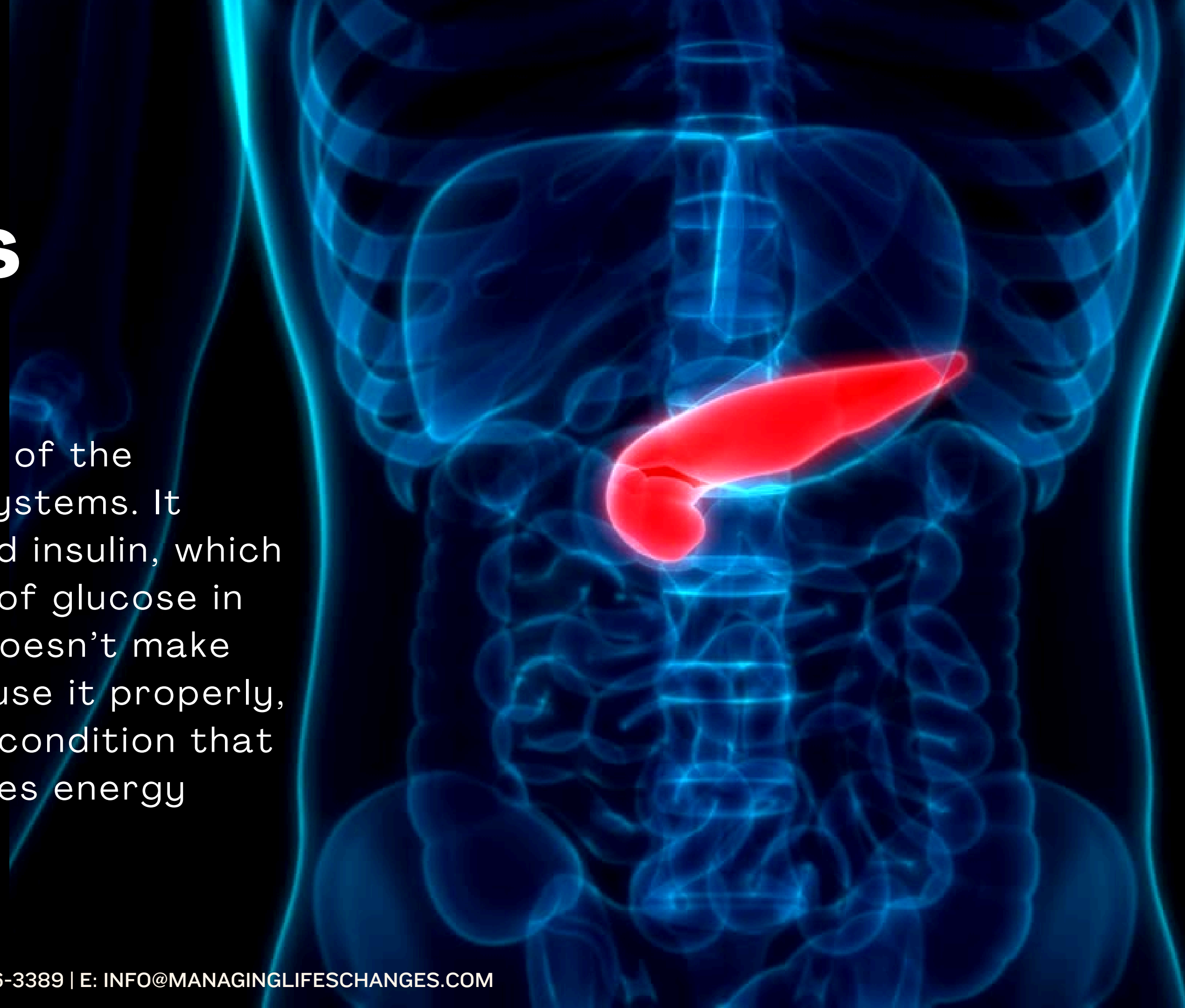
The adrenal glands sit on top of your kidneys and produce hormones like adrenaline and cortisol. These hormones help your body respond to stress or danger by increasing your heart rate, breathing, and alertness this is known as the “fight or flight” response. Adrenal glands also help control salt levels and blood pressure.



THE PANCREAS

Blood Sugar Balance

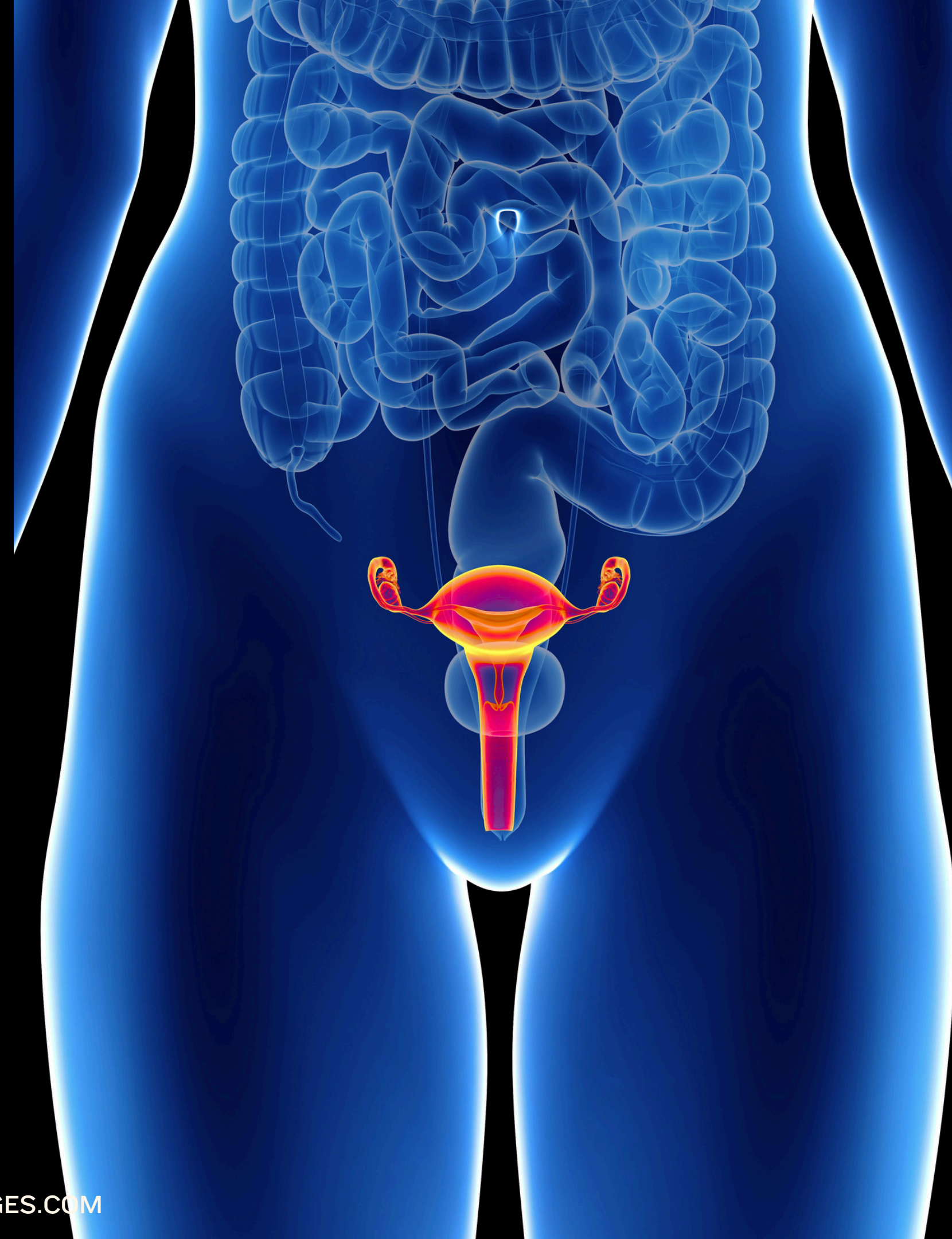
The pancreas is both part of the digestive and endocrine systems. It produces a hormone called insulin, which helps control the amount of glucose in your blood. If your body doesn't make enough insulin or doesn't use it properly, it can lead to diabetes, a condition that affects how your body uses energy from food.



OVARIES AND TESTES

Hormones for Growth and Reproduction

In females, the ovaries produce hormones like estrogen and progesterone, which help control the menstrual cycle and support pregnancy. In males, the testes produce testosterone, which is important for muscle growth, deepening of the voice, and sperm production. These hormones also help the body go through puberty, a time when many physical changes happen.



HOMEOSTASIS

Hormones Keep You in Balance

The endocrine system plays a major role in homeostasis, which means keeping the body's internal environment stable. Hormones help regulate things like body temperature, water balance, growth, and mood. If hormone levels become too high or too low, it can lead to health problems. That's why the endocrine system works with other body systems to stay balanced and healthy.



Thank You

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