THE STANDARD

Environmental & Genetic Factors in Growth

Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

DCI — DISCIPLINARY CORE IDEA

LS1.B · Growth and Development of Organisms

> *Genetic factors as well as local conditions affect the growth of the adult plant.*

Every organism starts with a genetic blueprint inherited from its parents. That blueprint sets the range of what's possible. But where the organism actually lands inside that range comes down to environment: food, water, light, space, temperature. A Great Dane puppy will never grow Chihuahua-sized, but a malnourished Great Dane won't hit its breed potential either. Genes set the ceiling. **Environment decides how close you get to it.**

SEP — SCIENCE & ENGINEERING PRACTICE

Constructing Explanations and Designing Solutions

> *Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.*

Students aren't memorizing that "genes and environment both matter." They're building an explanation supported by evidence. They look at data, identify patterns, and write a claim with reasoning. The explanation is the deliverable. If it cites evidence and connects cause to effect, it counts as science. **If it's a guess with no data behind it, it doesn't.**

CCC — CROSSCUTTING CONCEPT

Cause and Effect

> *Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability.*

This whole standard is a cause-and-effect detective story with two suspects. Why is this plant taller than that one? Could be genes. Could be sunlight. Could be both. **Students learn that one effect (growth) can have multiple causes acting at the same time, and untangling them takes careful comparison.**