THE STANDARD

Inheritance of Desired Traits

Gather and synthesize information about technologies that have changed the way humans influence the inheritance of desired traits in organisms.

ANCHORING PHENOMENON

From Wolf to Chihuahua

A photo lineup: a gray wolf, a Great Dane, a Chihuahua, a Border Collie, a Pug. All the same species. All descended from a common wolf ancestor. The differences in size, shape, coat, and behavior came from thousands of generations of humans choosing which dogs reproduced. Students keep coming back to this all week, because every other technology in the standard is a faster version of what produced these dogs.

> DRIVING QUESTION
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> *"How did people turn one wolf species into hundreds of dog breeds, and what tools do we have to do that kind of work faster today?"*

INVESTIGATIVE 1

Teosinte and Modern Corn

A photo of teosinte, the wild grass that corn came from, next to a modern corn cob. Teosinte has a few hard kernels in a thin spike. Modern corn has hundreds of soft kernels on a thick cob. Same plant lineage, 10,000 years apart, shaped almost entirely by farmers saving seeds from the biggest cobs each season. Use this one to sharpen the lens the anchor is pushing on: cause (human choice) and effect (trait change over generations) in a plant instead of an animal.

> DRIVING QUESTION
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> *"What did farmers actually do, year after year, that turned a skinny grass into modern corn?"*

INVESTIGATIVE 2

Golden Rice

Standard white rice next to golden rice. They look almost identical except for color. Golden rice was engineered to produce beta-carotene, which the human body converts to vitamin A. It was developed to address vitamin A deficiency in regions where rice is a staple food. Same plant species, a targeted genetic change involving two added genes, a trait that doesn't exist in standard rice. Use this one to show what genetic engineering can do that selective breeding alone couldn't, and to give students a real case study with documented trade-offs they can research.

> DRIVING QUESTION
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> *"What can a gene editing or genetic engineering approach do that selective breeding can't, and what trade-offs come with each path?"*