

Topics	Notes, Diagrams, Drawings
<b>Early ideas about heredity</b>	<ul style="list-style-type: none"><li>• A long time ago, people believed that traits were passed down with organisms resembling both parents: blending inheritance</li><li>• <b>Heredity:</b> passing of traits from parents to offspring</li><li>• <b>Genetics:</b> study of how traits are passed from parents to offspring</li><li>• Heredity is complex</li></ul>
<b>Mendel's experimental methods</b>	<ul style="list-style-type: none"><li>• Mendel studied genetics by doing controlled breeding experiments (around 29,000) with pea plants</li><li>• Peas plants were idea for genetics because:<ul style="list-style-type: none"><li>• They reproduce quickly</li><li>• They have easily observed traits</li><li>• Mendel could control which pairs of plants he reproduced</li></ul></li></ul>
<b>Pollination in pea plants</b>	<ul style="list-style-type: none"><li>• Mendel controlled which pea plants pollinated other plants<ul style="list-style-type: none"><li>• Pollination occurs when pollen lands on the pistil of a flower. Sperm cells from the pollen then can fertilize egg cells in the pistil</li><li>• <b>Self-pollination:</b> pollen from one plant lands on the pistil of a flower on the same plant</li><li>• <b>Cross-pollination:</b> pollen from one plant reaches the pistil of a flower on a different plant</li></ul></li></ul>
<b>True-breeding plants</b>	<ul style="list-style-type: none"><li>• Self-pollinate and produce offspring with traits that match the parent</li></ul>

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<b>Mendel's cross pollination</b>	<ul style="list-style-type: none"> <li>Mendel was able select which plants pollinated other plants</li> <li>He did this for hundreds of plants for each set of traits and recorded the traits that appeared in the offspring</li> </ul>
<b>Mendel's results</b>	<ul style="list-style-type: none"> <li>First generation crosses: Why did all the offspring have purple flowers when purple and white flowers were bred?</li> <li><b>Hybrid:</b> offspring of two animals or plants with different forms of the same trait</li> </ul>
<b>Mendel's results</b>	<ul style="list-style-type: none"> <li>Second generation crosses: Mendel cross pollinated two purple hybrid plants <b>Trait that disappeared in first generation reappeared</b></li> </ul>
<b>More hybrid crosses</b>	<ul style="list-style-type: none"> <li>Mendel analyzed the data from countless experiments and noticed a pattern: <ul style="list-style-type: none"> <li>Data between hybrid crosses produced a 3:1 ratio of one trait to another</li> <li>3 purple flowers: 1 white flower</li> <li>3 yellow seeds: 1 white seed</li> <li>3 round seeds: 1 wrinkled seed</li> </ul> </li> </ul>
<b>Mendel's conclusion</b>	<p>Dominant and recessive traits: two genetic factors control each inherited trait</p> <ul style="list-style-type: none"> <li><b>Dominant trait:</b> genetic factor that blocks another genetic factor</li> <li><b>Observed when offspring have either one of the two dominant factors</b> <ul style="list-style-type: none"> <li>Example: purple flower color</li> </ul> </li> <li><b>Recessive trait:</b> genetic factor that is blocked by the presence of another dominant factor</li> <li><b>Observed when two recessive genetic factors are present in the offspring</b> <ul style="list-style-type: none"> <li>Example: white flower color</li> </ul> </li> </ul>