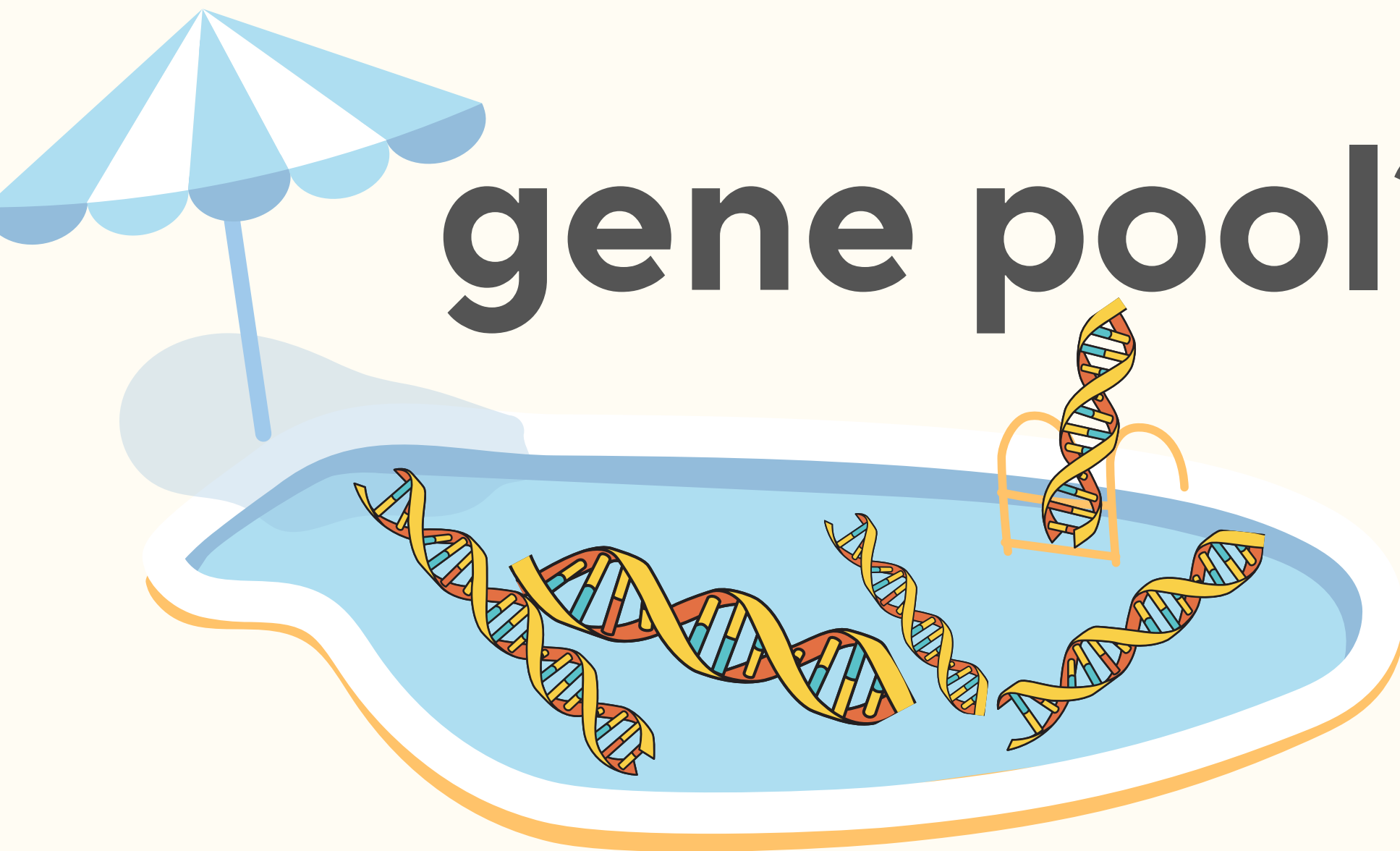
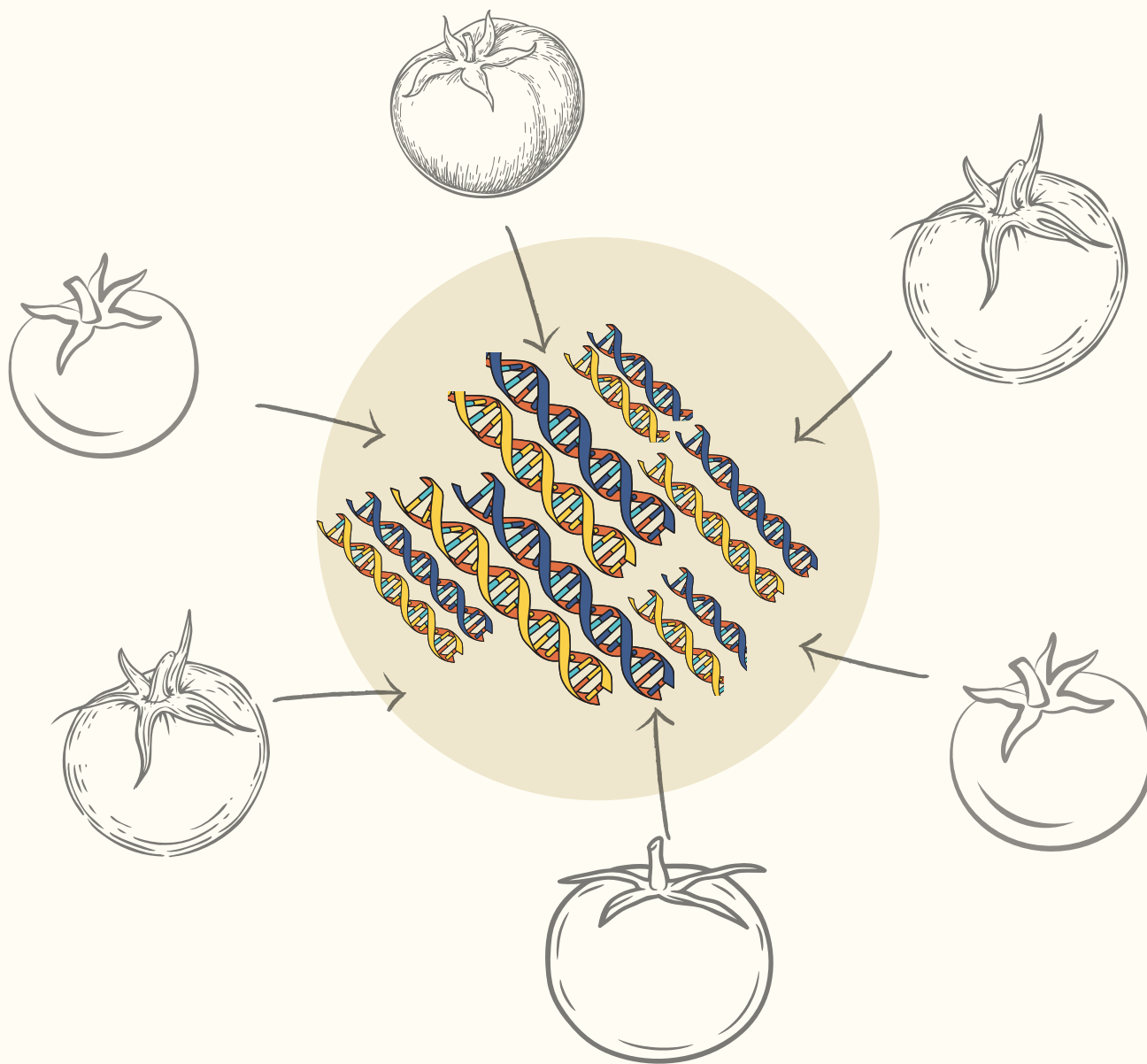


What is a

gene pool?



A gene pool refers to the **entirety of genetic information in the breeding population** of a particular species.



That includes **all the genes and alternative forms of those genes**, called alleles. It represents the genetic diversity within a population.



What role does a gene pool play in plant breeding?

Plant breeding uses the **resources from gene pools to improve various traits.**

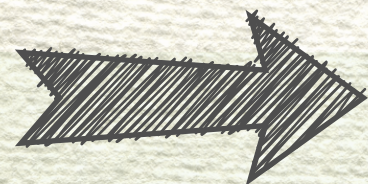
Wild relatives of cultivated crops often offer a rich diversity of genes that can be valuable for breeding.

One concrete example of using wild relatives to breed a variety is wheat!



Wheat yield is threatened by stem rust, caused by the fungus *Puccinia graminis*. It can reduce wheat yield by a staggering 90%!

How did the researchers use the wild relatives' gene pool to breed rust-resistant wheat?



1 In the mid-20th century, scientists found a **rust-resistance gene in the wild wheat relative**, a grass called *Aegilops tauschii*.



2 The breeding program then bred the grass and wheat through processes called **hybridization and backcrossing**. This resulted in the development of wheat varieties carrying the gene for stem rust resistance.

3 These resistant wheat varieties help **protect crops from stem rust**, contributing to increased global wheat production and food security.



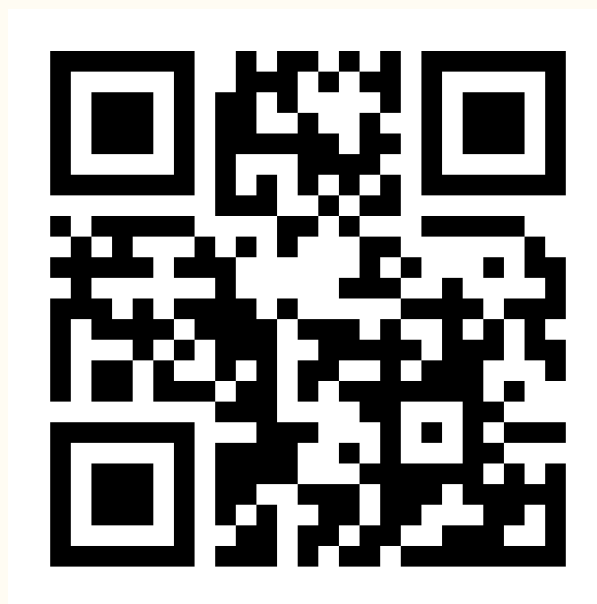
The success of this approach shows how the genetic pool diversity present in wild relatives can be harnessed to improve the resilience and productivity of cultivated crops.

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