

- The “Fish Tomato” is another great example:
 - Tomatoes (and other fruits) are important sources of _____ and other nutrients for the heart, liver, and other organs
 - They can't be grown in cold climates – they _____ and die!
 - Fruit is very _____ for people who live in these areas, and they suffer from malnutrition because they can't afford to buy them.
 - A fish called the Winter Flounder can live in freezing temperatures because it has a _____ that prevents ice crystals from forming, preventing _____!
 - The gene for the _____ protein is removed from the fish's DNA.
 - It is inserted into the DNA of the tomato plant.
 - The tomato plant now makes the antifreeze protein - it doesn't _____!
 - People living in places where it gets cold can now grow fruits like tomatoes!



Self Check 1

1. Biotechnology is the use of _____ to form a product or accomplish a task.
2. Three examples of biotechnology include _____, _____, and _____.
3. Genetic engineering involves changing an organism's _____ information to give it new _____.
4. Two examples of genetic engineering are _____ rice and the _____.
5. Would you eat golden rice and/or fish-tomatoes? Why or why not?

How Does It Work?

- Genetic engineering is possible because ALL living things use _____ to make _____ in the same way
 - DNA → RNA → Protein; The _____
- A _____ enzyme is used to remove the gene to be inserted.
 - Restriction enzymes cut DNA at _____ nucleotide sequences
 - When the gene is cut, it has a “_____ end”
- The DNA of the organism that will get the new gene is also cut with the same restriction enzyme.
 - It gets the _____ “sticky ends”
 - The gene's sticky ends _____ to those of the DNA molecule
 - The gene is now inserted!

