How Does Reading Genes Improve Crops?

Your team of experts will gather in-depth information on the use of DNA sequencing information from plants to change and improve agricultural crops. The information you gather on this topic will be vital for the group discussion that will take place toward the end of your visit to the Museum, which will focus on:

"How can the knowledge of DNA sequencing be applied in the future?"

Answers to this worksheet can be found in the *How Does Reading Genes Improve Crops?* station.

1. Agricultural crop plants look very different from the original wild plant ancestors of years ago. What techniques have our human ancestors used do to help create these changes?

2. List three differences between the following characteristics of ancient teosinte and modern corn (maize).

   a. Ears:

   b. Kernels:

   c. Number of branches:

3. How is a genetically modified organism (GMO) created?

4. Watch the video and find which continent (besides North America) was most responsible for developing GMOs by 2002.

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Using the interactive maize chromosomes exhibit, your group should complete the following chart by finding 2 genes that control each of the following characteristics of the corn plant:

5. Kernel color:

Chromosome #	Name of gene	What does this gene do to the plant?

6. Leaf texture or color:

Chromosome #	Name of gene	What does this gene do to the plant?

7. Silk/Tassels:

Chromosome #	Name of gene	What does this gene do to the plant?

8. What does the "transgenic" gene on chromosome 7 increase resistance to in *Bt* corn plants?

9. Compare the amount of modern corn produced per acre in 2002 with the amount that would be produced by teosinte if it was used as a crop plant today.

2002 corn: _____ tons per acre

Teosinte: _____ tons per acre

10. If we were still planting teosinte as a food crop, how much more land (in millions of acres) would be needed to get the same yield as modern corn (from 2002)?

Teosinte: _____ million acres

2002: – _____ million acres

= _____ million acres more

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