**Attachment 2-16; Answer key to questions in Act 2: Content Wrap-Up/Explanation**

1. **Why is DNA of beta-casein used?**

Beta-casein is a milk protein. These animals are all mammals. Therefore all of these animals would have a beta-casein gene. The fewer the differences in the DNA sequence between the animals indicates a closer evolutionary relationship..

1. **What is the overall conclusion about the relationships of these animals using this DNA data?**

There are fewer differences between the whale and the porpoise showing a close evolutionary relationship. The next most closely related animals appear to be the whale and the hippo.

1. **Does this seem logical? Explain.**

They seem to be very different. However, they both are mammals and the hippo does spend a lot of time in the water. It can hold its breath for 5 min or more.

1. **Was anything surprising about the results of this evidence?**

Answers will vary

1. **Using all the evidence in this activity, how is the whale related to other animals? Which animal is most closely related to the whale? Explain by summarizing the evidence.**

It appears that the whale is more closely related to the hippos. The fossil evidence does show that the ancestors of whales were land dwellers. The DNA evidence shows that the hippo and whale are more closely related due to the few differences in the DNA sequence of beta-casein. Finally the ankle bone data indicates that the whale is most closely related to artiodactyls like pigs and hippos.

1. **As a scientist do you think this is enough evidence to positively make the claim of evolutionary relationships between the animals? If so, why and if not why?**

Answers will vary