

Box 1.1 *continued*

Thanks to preserved tissue samples that were kept in a hospital where she had undergone surgery, her DNA could be typed. The results were negative; Empress Alexandra and Prince Philip were not related to her. Why Anna Anderson claimed to be Anastasia is unclear. She maintained till her death that she was a Romanov. However, she never benefited, monetarily or otherwise, from her lies. We know now that she was simply an impostor.

Summary

We have learned in this chapter about the chemical composition of DNA, its double-helical structure, and its role as genetic blueprint. We also can see from its double-helical structure, based on complementary base pairing, how DNA can be copied. This understanding of DNA replication has led to the discovery of a technique, PCR, that allows the production of substantial amounts of DNA from very small amounts. PCR is now used on a routine basis in laboratories doing basic research and in forensic laboratories.

Try This at Home: Extract DNA from Vegetables in Your Kitchen

Have you wondered what DNA looks like? It is fairly easy to extract DNA using common equipment and materials found in your kitchen. The following is one recipe for isolating DNA. The recipe mentions onion but you can use other vegetables, such as lettuce or celery.

Ingredients

1 small onion
meat tenderizer
dishwashing detergent
cheesecloth
denatured alcohol (can be purchased at a pharmacy)

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Try This at Home *continued*

Directions

Peel and chop up 1 onion and place in blender.

Add twice the amount of water and blend until fine.

Add 1–2 tablespoons dishwashing detergent. This is to emulsify the membranes around cells that are made of lipids.

Add 1 tablespoon meat tenderizer. Meat tenderizer is typically made from papaya or other fruits that contain protease, an enzyme that breaks down proteins. This helps to release the DNA from proteins.

Gently (so that the mixture does not become foamy) mix in the detergent and meat tenderizer.

Filter through cheesecloth to get rid of plant debris.

Gently layer cold denatured alcohol on top of the clear filtered juice.

The white material at the interface is DNA!

If you want to collect the DNA, try spooling it up with a chopstick.