

## DNA Sexing

DNA sexing has quickly risen to become the method of choice for determining the sex of avian monomorphic species. With accuracy rates greater than 99.9 %, it is no surprise that this method of sexing has become number one with bird owners and aviculturalists worldwide. Over the years, HealthGene Laboratory has conducted literally thousands of DNA sexing tests for an array of clients, ranging from individual bird owners and breeders to entire zoo populations.

You may be wondering what makes DNA sexing so accurate. The answer to this question can be found in the technology underlying this approach. Advances in molecular diagnostics have brought a technique known as PCR to the forefront of DNA diagnostics. Using PCR, differences in the DNA of male and female birds can be amplified and detected in the laboratory. Here's how it works. DNA sexing utilizes the fact that male and female birds have different genes or chromosomes, much like mammals. The only difference is that the female bird (carrying a ZW chromosome pair) determines the sex of the offspring, since the male (carrying a ZZ chromosome pair) can only contribute a 'Z' chromosome (this is just the opposite of what occurs in humans). Using PCR in the laboratory, a region of DNA that differs in size between the Z and W chromosomes is amplified. Thus, this method yields one PCR product for males and two PCR products for females, making visual detection in the laboratory easy.

HealthGene laboratory offers bird owners two options with regards to submitting samples for sexing. These options include feather sexing or blood sexing. It is a common misconception that blood samples are more accurate than feather samples for determining sex. In reality, blood sexing and feather sexing are 100% identical with regards to accuracy. Since both procedures ultimately result in isolating and analyzing DNA, the source of the DNA (whether it's from blood or feather cells) has no impact on the final results of this test. Instructions for submitting either blood or feather samples are included on the last page of this newsletter. Also, HealthGene provides free sample collection kits, complete with instructions, for those interested in submitting blood samples. Although HealthGene accepts feather and blood samples, blood samples are preferred since they ensure a result. Again, there is no difference in the accuracy of the final result; however, feather samples may have to be resubmitted if not enough cells are present for analysis. Alternatively, eggshells may be used to determine sex if the inner membrane is still present and intact. Turnaround times for this particular test range from 1-2 business days.

## **Blood Collection Instructions:**

1. Write the Bird's ID and your name on the card provided. Since the toenail is the easiest location to collect blood, wipe the bird's nail with an alcohol swab and let dry (5 - 10 seconds).
2. Clip the nail short enough to allow bleeding (avoid clipping too high since this may be uncomfortable for the bird). If blood is not present, gently squeeze the toe until blood appears. Ensure that the toenail clipper is thoroughly cleaned with alcohol between birds.
3. Allow a small amount of blood to bead up and carefully touch the corner of the card to the blood bead (only one or two drops is required). Sample only one bird per card.
4. Leave the card to dry for approximately 20 minutes at room temperature. Once the card is dry, place it into the small envelope provided (only 1 card per envelope).
5. Once the samples have dried and the cards have been placed in their individual envelopes and sealed, the envelopes may be collected and placed into a mailing envelope. Ensure ID information is on the cards and the submission form provided. If you are not submitting the sample(s) immediately, store the cards at room temperature in a dark dry location. Cards can be stored in this fashion for several weeks.

## **Feather Collection Instructions:**

1. Select only medium sized mature feathers for plucking. The feathers must be physically plucked (molted feathers cannot be used for this test). Very small feathers located under the wing are not recommended.
2. Pluck 4-6 medium sized feathers from the chest area of the bird and place them in a zip-lock bag. The quantity of feathers plucked is not as important as the quality. Ensure that the feather tip, which is attached to the skin, is present (white colouration). Large feathers may contain some blood which should be left on the feather.
3. Sample only 1 bird's feathers per zip-lock bag. Mark the bird's identification number or name directly on the bag with magic marker (alternatively, place a piece of paper with the birds name and species in the bag). Ensure that the submission form is properly filled out including your name, address (and other contact information), as well as the bird's name and species.

**Price:      \$22.00 CDN + 6% GST**  
**\$19.00 US**