

## Budgerigar Fledging Disease (*polyomavirus*)

For as long as I can remember, budgie breeders have been dealing with a condition commonly referred to as French Molt. The condition is easily recognized during the breeding season when the young chicks, about to leave the nest, lose feathers. The severity varies from just a tail feather, or tail and wing flights to, in some severe cases, the loss of all the feathers, leaving only the down.

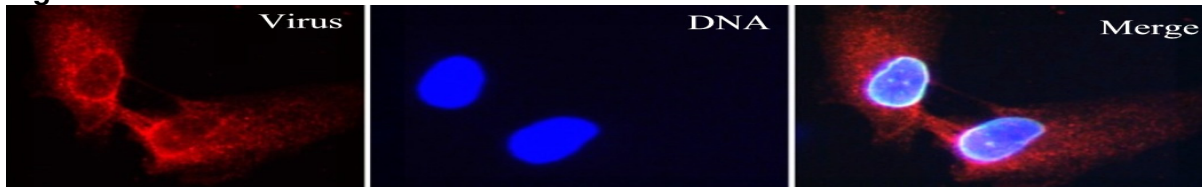
Just about everything has been suspected as the cause of this condition. There was even an article that stated that moths were the cause. And the cures were more bizarre. Everything from black tar oil to dusting with harsh chemicals was recommended. Each was purported to be the cure.

When we started our research, little was known. I would like to tell you that I single handedly solved the issue. However, that is far from the truth. It took many scientists in several countries to advance the knowledge to its current state.

So let me start at the beginning. Several years ago researchers finally discovered the cause of the condition as the avian polyomavirus. German scientists Lehn and Müller isolated the actual virus now named Budgerigar Fledgling Disease (BFD). The breeders of the world in their infant knowledge discounted the discovery. Some time after this discovery is when I got involved. I started corresponding with two universities conducting research on caged birds. I actually found a group testing budgies. Unfortunately, they were American type parakeets in the study; so some extrapolation was needed as the two subspecies are not exactly the same.

So, unequivocal proof was needed to substantiate the cause. The actual process of a virus attack was captured on film. Note in Figure 1, Slide 1, this is an actual polyomavirus in a free state. In Figure 1, Slide 2, DNA as part of a budgie feather cell can be seen. In Figure 1, Slide 3, the merge of the virus through the feather cell wall and the modification of the DNA can be observed. At this point the cell is infected, which signals the onset of the active viral disease.

**Figure 1**



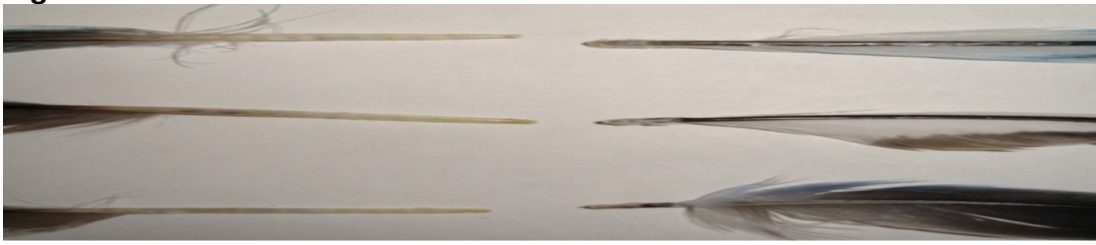
The body starts to react to the intrusion and the war is on. White blood cells start to attack the virus in an attempt to kill the non-normal cells. At some point the white blood cells win and antibodies (Figure 2) to the virus are generated. These antibodies prevent any further infraction to the virus in the subject budgie. In very severe cases, the white cells lose and the budgie dies.

**Figure 2**



The polyomavirus is attracted to hot spots on budgies. These hot spots are enriched with blood and nutrients. They are the major growth areas. In a young budgie there are no hotter spots than the growth area of the large quill feathers. The long tail feather quills are the hottest spot on a young budgie. As the attack begins, the virus inflames the quill causing swelling. While the body fights off the virus attack, the swelling cuts off the blood supply to the growing feather. In many cases, the feather shaft actually ruptures and the remaining blood starts to dry. The swelling in the feather follicle reshapes the quill to a shorter blunt end. Figure 3 depicts a good feather on the left and a damaged feather on the right. Only budgie chicks experience this type of response to the BFD virus. The exposure period appears to be between eight and thirty days. An adult may contract the virus, but there appears to be no resulting damage to the adult. However the adult does generate antibodies to the virus.

**Figure 3**



Over the past two years, the German labs have discovered additional strains of the BFD virus. These strains are significantly different from the initial BFD and are labeled as BFD1, BFD2, etc. BFD1 is specifically associated with budgies, just like BFD. However BFD1 is a more severe strain, causing death in many cases. This strain of the virus also mutates very easily. Each budgie community can develop a slightly different strain of the virus. This accounts for the new bird virus outbreak we hear so much about. An aviary can develop its own strain of BFD. This strain may be slightly different from any other strain in any other aviary. Consequently, this aviary has a set of antibodies specifically targeted to this strain. In this aviary there exists a perfect balance between the antibodies and the BFD virus. As long as this balance exists there will be no BFD outbreak in the aviary. During the breeding season the chicks will be free from BFD.

Change occurs when a new budgie is introduced into the aviary. At that time a new strain is also introduced and the infection/antibody process is reenacted again. The results are a new set of antibodies and a status quo. As long as there are no chicks involved, the new outbreak has little effect. However, if there are chicks between eight and thirty days old, then they will likely be affected. The severity depends on the chick's health and the age at which the virus is contracted. The earlier the virus attack, the more feather damage that occurs.

Using all of this information, I set up a test case. Based on the testing of budgies and the design of my aviary, I summarized that it took forty days for a new strain to matriculate through my flock and infect all the individuals. This process resulted in a specific antibody set in my aviary. If I did not acquire any new budgies, then I should be able to breed BFD free.

I have been testing for five years now. The first two years were BFD free. The third year, toward the end of the breeding season, I brought in a new outcross. I just had to have this bird. The result was about twenty cases of BFD. The fourth and current year, I am again BFD free.

So what does this tell us? BFD is an infant disease. BFD can be managed. Management for me means not introducing any new budgies while I'm breeding. If I follow this rule I can breed BFD free. Different aviaries will have different stabilization periods. But if we want to breed BFD free we can.