

## The Fecal Gram Stain

**Jonathan Mehlorose, BS**  
**Heidi Hoefler, DVM, ABVP**

West Hills Animal Hospital  
Huntington, New York

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The fecal gram stain is a convenient and inexpensive diagnostic tool used to quickly determine the microscopic flora of a fresh stool sample. The stain selectively colors, or dyes, microorganisms like bacteria, fungi and some protozoa. Gram stains divide bacteria into two broad groups called gram positive and gram negative. Structural differences in the cell walls determines which dye they will more readily absorb and retain. Gram positive bacteria stain purple while gram negative bacteria stain pink. Yeast will also stain purple and protozoa vary in stain uptake.

A normal gram stain for the average psittacine (hookbill) should be dominated by gram positive bacteria with the occasional gram negative. Birds of prey (meat eaters) tend to show an opposite trend with gram negative bacteria being most prevalent. An abnormal gram stain for a psittacine is one that contains, abundant gram negative bacteria, an overgrowth of yeast and/or protozoa.

The effectiveness of a fecal gram stain as a diagnostic tool is only as strong as the interpretation. Therefore, an experienced avian veterinarian or laboratory technician is recommended for this task. An avian veterinarian will be able to judge if there are too many gram negative bacteria or if the yeast present are indeed pathogens (disease producers) and not just a part of the bird's morning breakfast (leavened bread products will impart yeast to the stool that is usually harmless). A keen eye will also be able to distinguish protozoa, megabacteria and other pathogens from the numerous particles of fecal debris.

If a gram stain is significantly abnormal a second test called a culture and sensitivity may be recommended. Culture and sensitivity tests are usually sent to a laboratory. Microbiologist at the lab will grow bacterial colonies on a nutrient media and identify the organism(s) to see if they are known pathogens. If pathogens are identified, sensitivity trials will determine what drug the organism is most susceptible to.

A fecal gram stain should be considered every time a bird is undergoing its yearly examination. Birds are a prey species and tend to hide illness well. This noninvasive test is one way to access the health of the gastrointestinal tract. It is best to identify any gastrointestinal problems before a bird shows clinical signs of illness. Early detection leads to quicker and more effective treatment protocols.

Gram stains are a wonderful tool that avian veterinarians routinely perform. Though the fecal gram stain is the most common gram staining event during an exam, the gram stain is not limited to fecal matter. Samples that can be gram stained can come from various sites including the crop, choana, skin and ears. The next time you visit your veterinarian feel free to inquire about the benefits of having a fecal gram stain performed.