

Urine Sediment Guide



All images from the SediVue Dx® Urine Sediment Analyzer

Reference bar = 20 microns

Blood cells

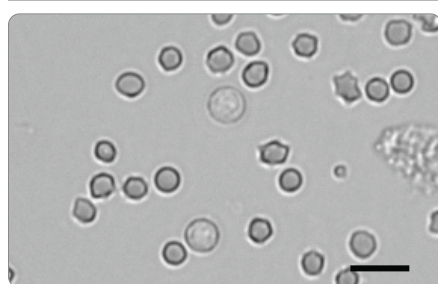


Figure 1. Red blood cells

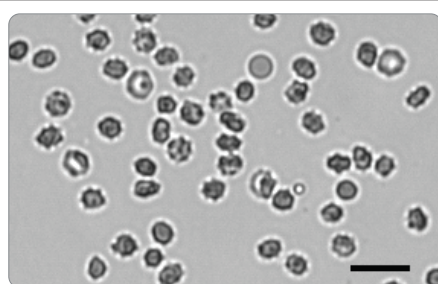


Figure 2. Crenated red blood cells



Figure 3. White blood cells

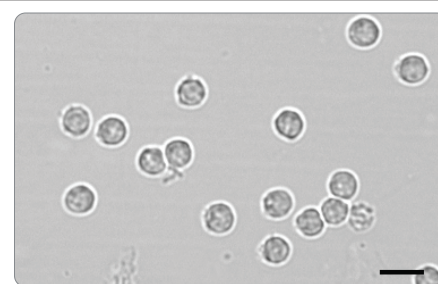


Figure 4. White blood cells

Epithelial cells

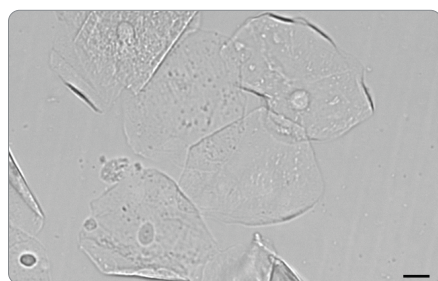


Figure 5. Squamous epithelial cells



Figure 6. Squamous epithelial cells

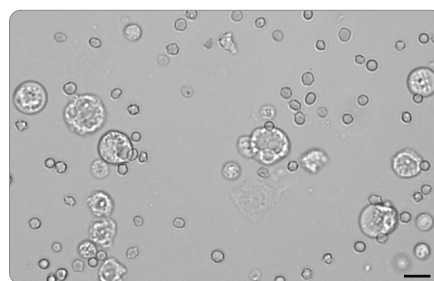


Figure 7. Numerous transitional (nonsquamous) epithelial cells with RBCs and WBCs

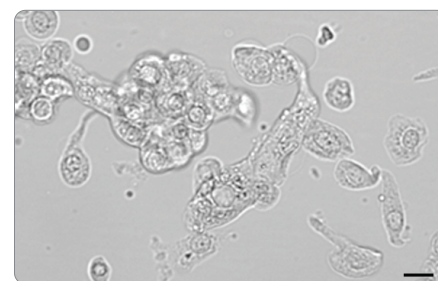


Figure 8. Numerous transitional (nonsquamous) epithelial cells (Possible transitional cell carcinoma. Confirm with dry-slide cytology.)

Bacteria



Figure 9. Rods with white blood cells



Figure 10. Rods with white and red blood cells

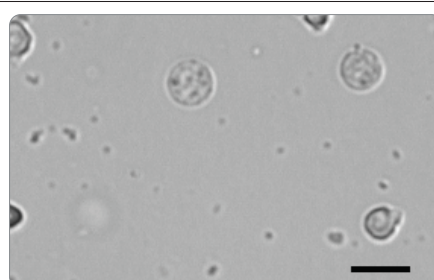


Figure 11. Cocci with white blood cells



Figure 12. Cocci in chains

Casts

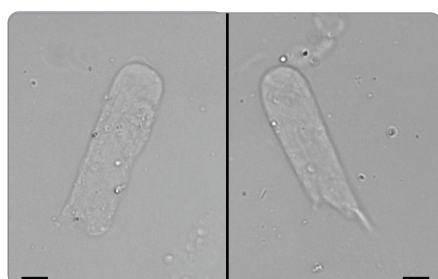


Figure 13. Left and right, hyaline cast



Figure 14. Cellular (nonhyaline) cast

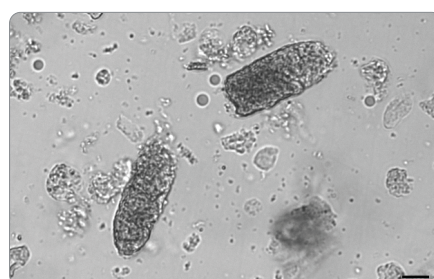


Figure 15. Numerous granular (nonhyaline) casts



Figure 16. Waxy (nonhyaline) cast

Crystals

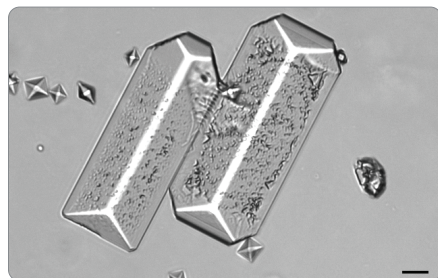


Figure 17. Large struvite crystals

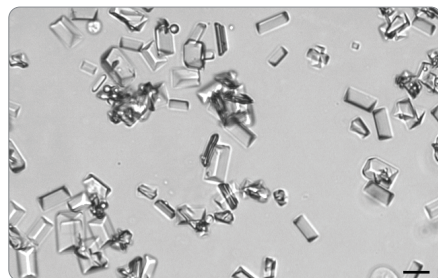


Figure 18. Numerous small struvite crystals

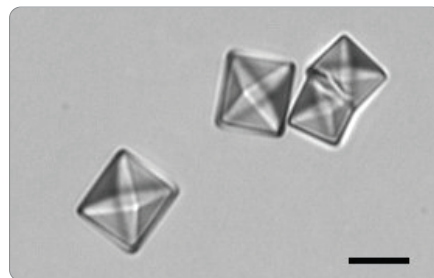


Figure 19. Large calcium oxalate dihydrate crystals

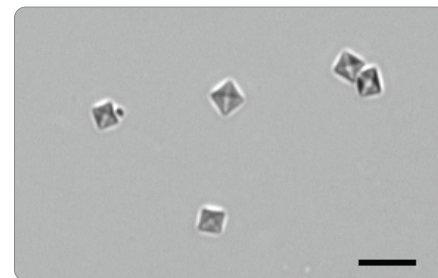


Figure 20. Numerous calcium oxalate dihydrate crystals

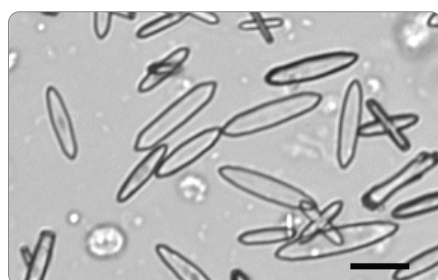


Figure 21. Calcium oxalate monohydrate (picket fence) crystals

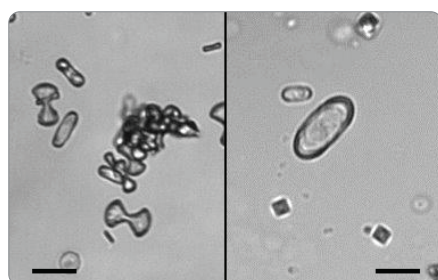


Figure 22. Calcium oxalate monohydrate crystals; left, dumbbells; right, hemp seed

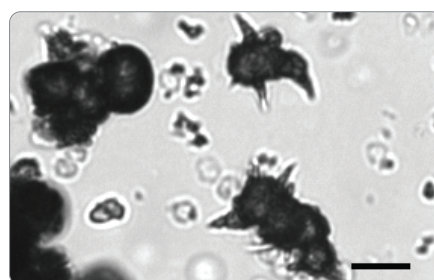


Figure 23. Ammonium biurate (thorn apple) crystals



Figure 24. Bilirubin crystal with WBCs

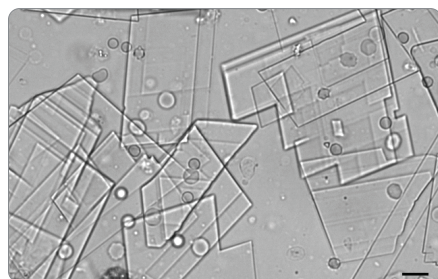


Figure 25. Cholesterol crystals



Figure 26. Cystine crystals with red blood cells

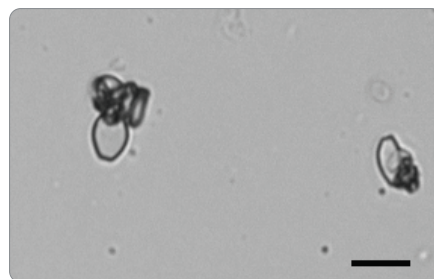


Figure 27. Uric acid crystals

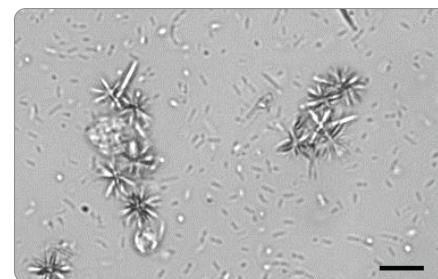


Figure 28. Likely drug-related crystals

Miscellaneous

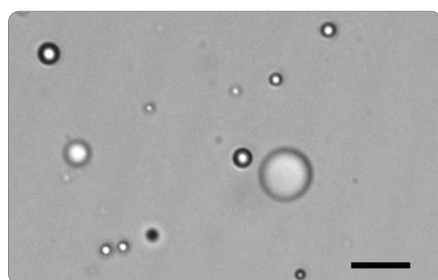


Figure 29. Lipids

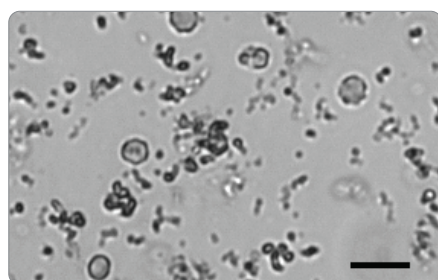


Figure 30. Amorphous crystalline debris



Figure 31. Hyphae



Figure 32. Sperm with white blood cells



Figure 33. Left, *Pearsonema* spp. (*Capillaria* spp.) ova; right, macrocanidia

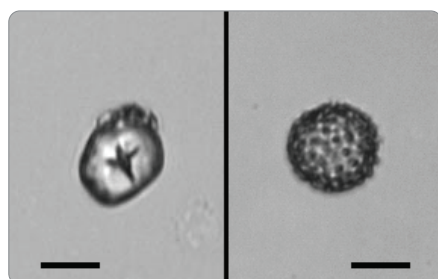


Figure 34. Left, glove powder; right, pollen



Figure 35. Fiber

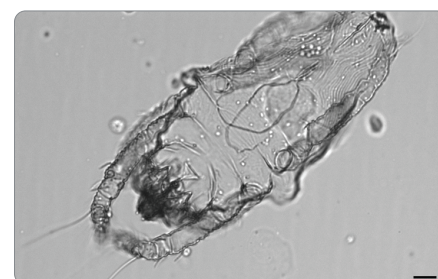


Figure 36. Dust mite

Conventional microscopy

All images, unless otherwise indicated, are representative of a high power (40x objective) field of view.

Blood cells

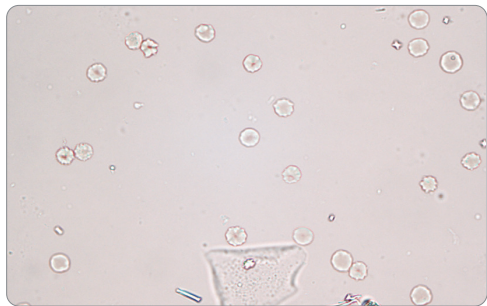


Figure 1. Erythrocytes and one squamous epithelial cell

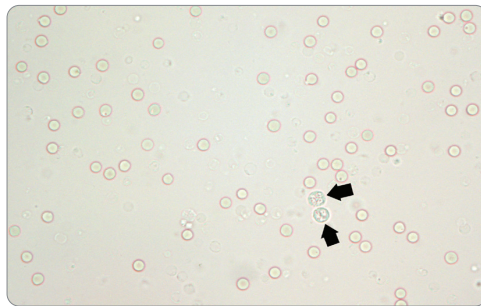


Figure 2. Erythrocytes and two leukocytes (black arrows)

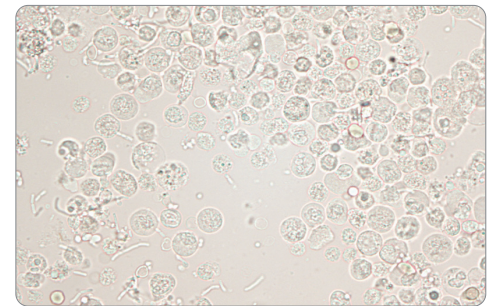


Figure 3. Numerous leukocytes and few rod-shaped bacteria

Epithelial cells



Figure 4. Squamous epithelial cells

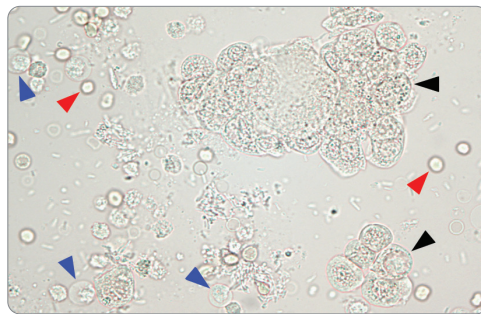


Figure 5. Epithelial cells (black arrows), RBC (red arrows) and WBC (blue arrows)

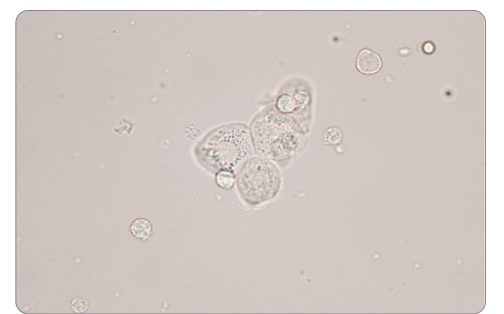


Figure 6. Transitional epithelial cells

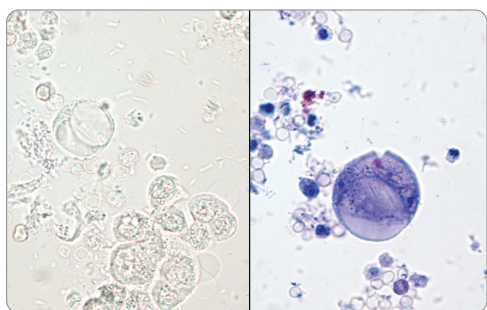


Figure 7. *Left*, Transitional cell carcinoma; *right*, NMB wet prep

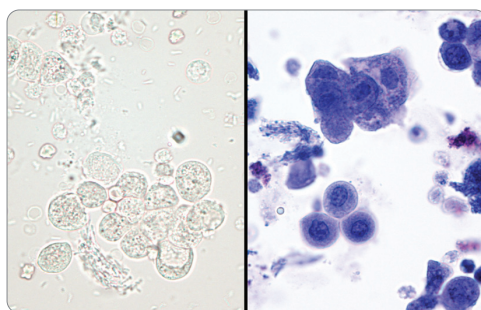


Figure 8. Transitional cell carcinoma (NMB wet prep on right)

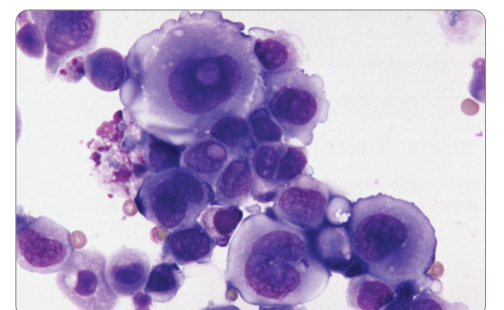


Figure 9. Transitional cell carcinoma, air-dried and Diff-Quik* stained

Bacteria

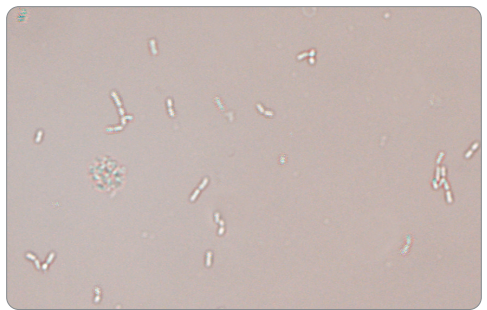


Figure 10. Many rod-shaped bacteria, 100x objective field of view

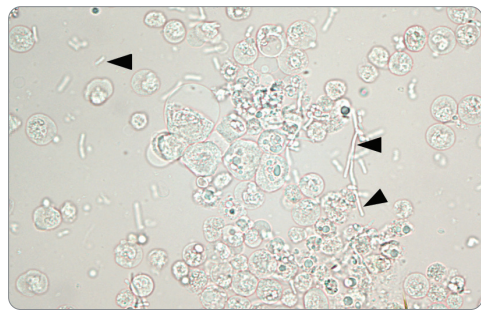


Figure 11. Many leukocytes and large rod-shaped bacteria (black arrows)

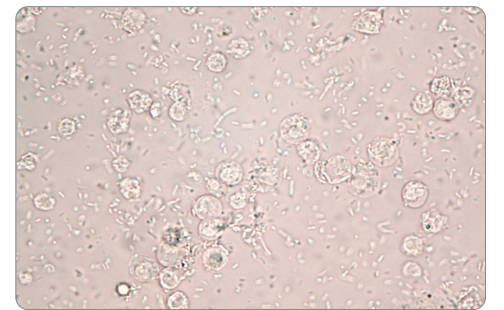


Figure 12. Numerous bacteria and leukocytes

Casts

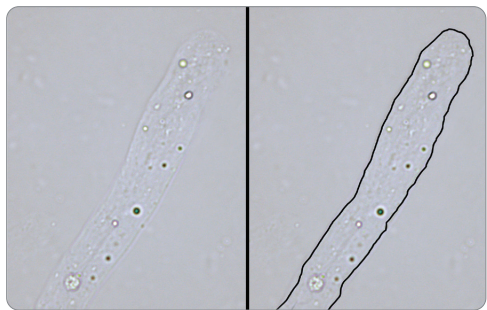


Figure 13. Hyaline cast (borders outlined)

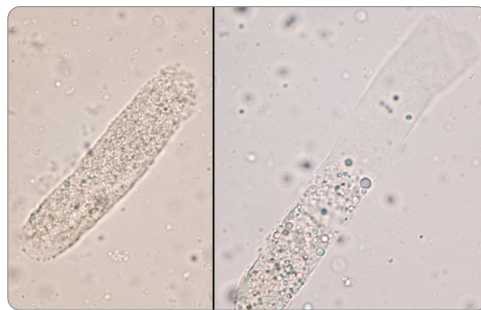


Figure 14 *Left*, granular cast; *right*, mixed waxy and granular cast



Figure 15. Waxy cast

Crystals

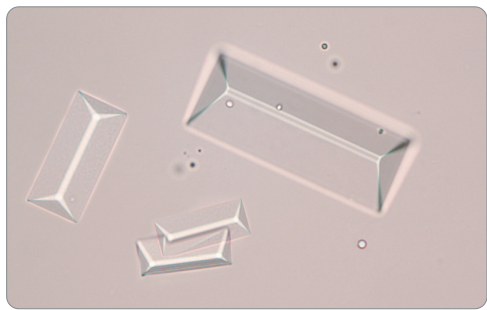


Figure 16. Struvite

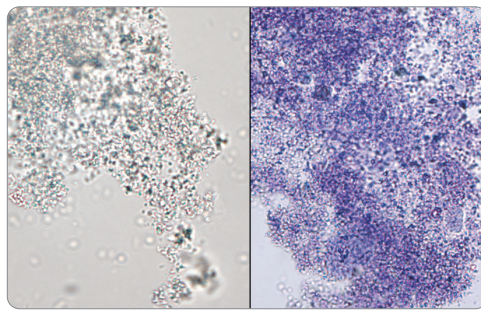


Figure 17. Amorphous (NMB wet prep on right)

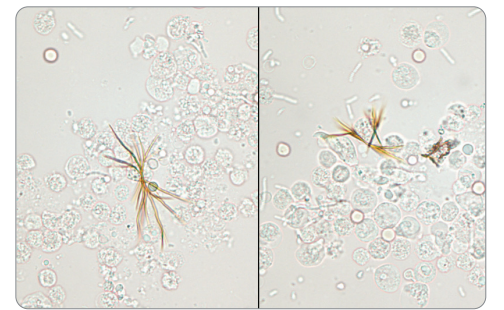


Figure 18. Bilirubin

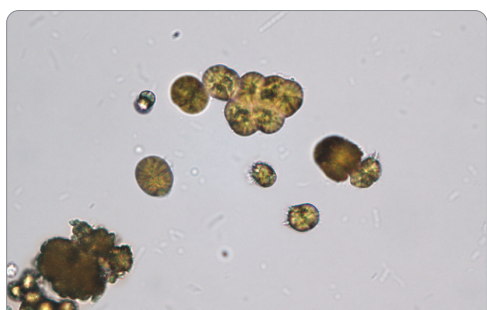


Figure 19. Ammonium biurate

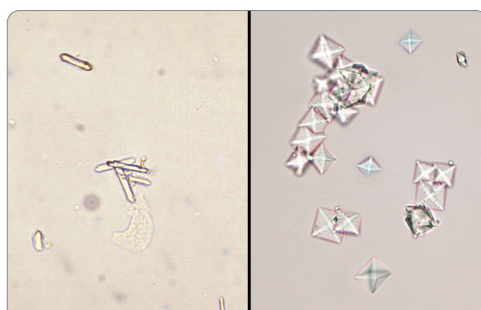


Figure 20. *Left*, calcium oxalate monohydrate; *right*, calcium oxalate dihydrate

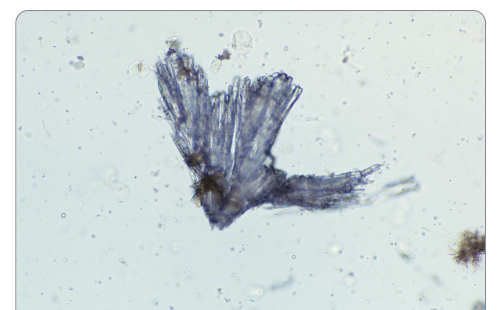


Figure 21. Drug (Tribrissen*) crystals, 10x objective field of view

Miscellaneous

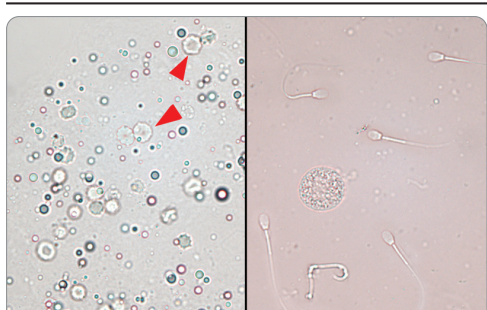


Figure 22. *Left*, fat droplets (red arrows), RBC; *right*, sperm

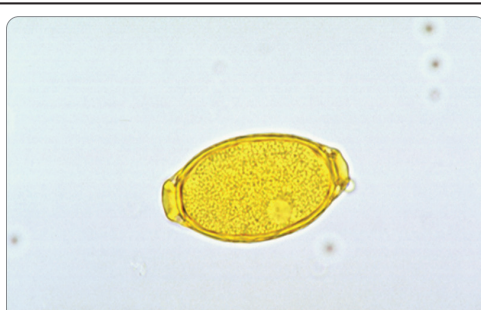


Figure 23. Pearsonema plica



Figure 24. Contaminant fragmented fiber

How to perform a dry prep/line smear

Performing a dry prep or line smear is an extremely cost-effective means of confirming the presence or absence of bacteria, of differentiating between cocci and short rods, and for characterizing various cellular elements in the urine sample.

1. Label your slides appropriately.
2. Fill a centrifuge tube with well-mixed, fresh urine taken from the bottom of the sample tube.
3. Centrifuge the sample (and a balance tube) on the **Urine** setting (or 400 g).
Note: If your centrifuge does not have a Urine setting, refer to its operator's manual for centrifugation settings and times.
4. After centrifugation, a concentrated pellet of formed elements should be visible at the bottom of the tube.
Gently aspirate the supernatant down to the pellet, leaving an extremely small amount of urine to resuspend the pellet.
Note: If the sample is extremely hypocellular, it may be very difficult to see the pellet.
5. Lightly flick the bottom of the tube multiple times with your finger to gently resuspend the formed elements.
6. Using a new pipette, dispense a drop of sample on a glass slide, similar to preparing a blood film.
7. Place a clean glass spreader slide on your labeled slide, at approximately 30°–40°, in front of the drop of urine.
8. Back the spreader slide into the drop allowing the material to spread along the edge of the spreader slide.
9. Move the spreader slide toward the end of the specimen slide, keeping the two in contact with each other.
10. In the middle of the slide, abruptly stop spreading the urine sample and lift the spreader slide straight up to form a line of material.
11. Air dry thoroughly and then stain the slide using your routine hematology/cytology stain (e.g., Diff-Quik*).
12. Review microscopically.

