Laboratory diagnosis of babesiosis

**Babesia species**

**Basic guidelines**
A. Capillary blood should be obtained by fingerstick, or venous blood should be obtained by venipuncture.
B. Blood smears, at least two thick and two thin, should be prepared as soon as possible after collection. *Delay in preparation of the smears can result in changes in parasite morphology and staining characteristics.*

In *Babesia* infections, infected red blood cells (rbcs) are normal in size. Typically rings are seen, and they may be vacuolated, pleomorphic or pyriform. Extracellular or tetrad-forms may also be present. Unlike *Plasmodium* spp., *Babesia* organisms lack pigment.

**Rings**
Rings of *Babesia* spp. have delicate cytoplasm and are often pleomorphic. Infected rbcs are not enlarged; multiple infection of rbcs can be common. Rings are usually vacuolated and do not produce pigment. Occasional classic tetrad-forms (Maltese Cross) or extracellular rings can be present.
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*Babesia microti* in thin blood smear. Note the classic “Maltese Cross” tetrad-form in the infected rbc in the lower part of the image.

*Babesia microti* in thin blood smears. Notice the vacuolated and pleomorphic rings and multiply-infected rbcs. Notice also there is no pigment present in any of the parasites.

*Babesia* sp. in a thin blood smear stained with Giemsa, showing pleomorphic rings and tetrad forms.

*Babesia* sp. in a thin blood smear. Notice the pyriform rings.

*Babesia* sp. in a thin blood smear. Notice two extracellular forms.

*Babesia* sp. in a thin blood smear, showing pleomorphic and pyriform rings and multiply-infected rbcs.

*Babesia duncani* (formerly WA1) in a thin blood smear. Notice the tetrad-form.