Laboratory diagnosis of malaria

**Plasmodium ovale**

### 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.*

C. Schüffner’s dots can be demonstrated in Giemsa stain, which is preferred to Wright or Wright-Giemsa stains.

**In** *P. ovale* infections, red blood cells (rbcs) can be normal or slightly enlarged (up to 1 1/4×) in size, may be round to oval, and are sometimes fimbriated. Under optimal conditions, Schüffner’s dots may be seen in Giemsa stained slides.

1. **Rings**

   *P. ovale* rings have sturdy cytoplasm and large chromatin dots.

   ![Ring in a thick blood smear.](image1)
   ![Rings in fimbriated rbcs in thin blood smears.](image2)
   ![Rings in thin blood smears. Note the multiply-infected rbcs.](image3)
   ![Rings in a thin blood smear.](image4)
2. Trophozoites

*P. ovale* trophozoites have sturdy cytoplasm, large chromatin dots, and can be compact to slightly irregular.

- Trophozoite in a thick blood smear.
- Compact trophozoites in fimbriated rbcs in thin blood smears. Schüffner's dots are also visible.
- Ring forms and developing trophozoites in thin blood smears.
- Compact trophozoite in a fimbriated rbc in a thin blood smear. Schüffner's dots are also visible.
- Compact trophozoites showing Schüffner’s dots. The image on the left also shows prominent fimbriation.
- Ring forms, developing and compact trophozoites in a thin blood smear.
3. Gametocytes

*P. ovale* gametocytes are round to oval and may almost fill the red blood cells. Pigment is brown and more coarse in comparison to *P. vivax*.
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4. **Schizonts**

*P. ovale* schizonts have 6 to 14 merozoites with large nuclei, clustered around a mass of dark-brown pigment.

- Schizonts in thick blood smears.
- Schizont in a thin blood smear.
- Schizonts in thin blood smears. Note the infected rbcs are oval.
- Schizont in a thin blood smear with a developing trophozoite.