

TABLE 1. Species identification*

Stage	<i>P. vivax</i>	<i>P. ovale</i>	<i>P. malariae</i>	<i>P. falciparum</i>
Infected red cell	Enlarged (usually); Schüffner's dots (visible) (usually)	Enlarged (usually), may be oval or oval with fimbriae; Schüffner's dots present	Size normal (or may be smaller than normal)	Size normal, frequent microspherocytes and echinocytes, occasional infected red cells show distortion (crenation) or change in colour; Maurer's clefts may be seen with longer duration** (ddx: Schüffner's dots)
Early trophozoite (ring stage)	Usually quite large (but young rings are small like <i>P. falciparum</i>); one or two chromatin dots; usually one ring per rbc (may be two or three rings per rbc)	Compact (no irregularities); may be thick; two rings per rbc rare	Compact (no irregularities); two rings per rbc rare	Small and delicate (often smaller than <i>P. vivax</i>); often two chromatin dots; often two or more rings per rbc; accolé forms common
Late trophozoite (mature)	Large; amoeboid; pigment seen as fine rods or dots inside the parasite; rarely, band-shaped trophozoites may be seen (they have irregular outline unlike the band-shaped <i>P. malariae</i> trophozoites which are regular/smooth in outline) (Schüffner's dots in erythrocytes are prominent in this stage)	Small; not amoeboid; pigment coarse granules	Small; compact (no irregularities); often band-shaped; (a characteristic feature of the parasite is the tendency to spread across the cell to form a band-like structure); contains coarse pigment granules	Moderate size; thickened cytoplasm (ddx: <i>P. vivax</i>); usually compact; pigment granular (fine granules); usually in small number (Maurer's dots in erythrocytes seen in this stage ddx: <i>P. vivax</i>)
Schizont (mature)	Large; contains many large merozoites (12-24 in number); coalescent pigment	Smaller than <i>P. vivax</i> ; contains 6-12 merozoites; pigment darker than in <i>P. vivax</i>	Small but merozoites (6-12) large and prominent; 'daisy head' appearance characteristic (the 8-10 merozoites of the mature schizont tend to form a rosette); pigment coarse	Rare in peripheral blood; merozoites (8-26) small; contains a single mass of pigment
Gametocyte (mature) (male microgametocyte, female macrogametocyte)	Spherical; compact with no irregularities (unlike trophozoite); single nucleus well defined (especially in the female macrogametocyte); pigment: diffuse and coarse granules (Immature gametocytes may be difficult to distinguish from some mature trophozoites)	Spherical; similar to, but smaller than, <i>P. vivax</i> (Immature forms may be difficult to distinguish from some mature trophozoites)	Spherical; resemble <i>P. vivax</i> but smaller, less numerous and Schüffner's dots absent (Immature forms may be difficult to distinguish from some mature trophozoites)	Crescent-shaped or 'banana-shaped' (male microgametocyte is more rounded); single nucleus (less distinct in male microgametocyte); pigment scattered, coarse, rice-grain like (Seen in patients who have fever for more than 7 to 10 days)

*A newly emergent *Plasmodium* species, ***P. knowlesi***, has been found to cause severe human malaria in South-East Asia. *P. knowlesi* resembles *P. malariae* (including band-shaped trophozoites and daisy-head schizonts) and may be misdiagnosed by microscopy as *P. malariae*. Important differences include a greater level of parasitaemia, often rings with two chromatin dots, often two or more rings per erythrocyte, and schizonts with 16 merozoites (usually 8-10 in *P. malariae*). *P. knowlesi* schizonts are often present in blood films (unlike *P. falciparum*). Occasionally, erythrocytes may contain fine red dots called Sinton-Mulligan dots. The natural hosts of *P. knowlesi* are macaques: long-tailed macaques, pig-tailed macaques, and rhesus monkeys. Therefore, *P. knowlesi* malaria is essentially a zoonosis.

**Cells containing late stage trophozoites of *P. falciparum* often include irregular red-mauve dots. These are Maurer's dots or clefts. Maurer's dots consist of denatured microtubules and *P. falciparum* proteins PfHRP-2, PfEMP-1. ddx denotes differential diagnosis, rbc red blood cell.