**Movie S1. From the single trophozoite to the paired pyriform.** Time-lapse video microscopy of a single trophozoite that develops into a paired-pyriform stage. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm. https://figshare.com/s/8ba6afd9e161899d682c

**Movie S2. The double trophozoite stage development.** Time-lapse video microscopy of a paired-pyriform that develops into a double trophozoite stage. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S3. The double paired-pyriform stage development.** Time-lapse video microscopy shows double trophozoites that develop into double paired-pyriforms. The video shows the non-simultaneous multiplication of both trophozoites. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on the green fluorescence channel together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S4. Cellular multiplication by binary fission.** Time-lapse video microscopy shows a detailed process of multiplication of a trophozoite within a parasitized RBC. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S5.** **The tetrad stage development.** Time-lapse video microscopy showsa paired-pyriform that develops into a tetrad. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S6. From the paired-pyriform to the double paired-pyriform stage.** Time-lapse video microscopy showsa paired-pyriform that develops into a tetrad and ultimately into a double paired-pyriform stage. Frames are captured every 5 min and the time-lapsed between each frame is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S7. From the tetrad to the double paired-pyriforms** Time-lapse video microscopy ofa tetrad that develops into a double paired-pyriforms. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S8. From the paired-pyriform to the quadruple trophozoite stage.** Time-lapse video microscopy shows double paired-pyriforms that ultimately separate into four identical sister cells that start to develop into trophozoites. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S9. The double paired-pyriforms stage separate to form single pear-shaped cells.** Time-lapse video microscopy shows two paired-pyriforms within an RBC. While one paired-pyriform remains in a stationary phase, the other one separates into two pear-shaped sister cells. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S10. The development process of the multiparasite stage.** Time-lapse video microscopy shows the continuity of the process that takes places in video 9. Video 10 shows an RBC infected with a paired-pyriform and two trophozoites. Both trophozoites multiply by binary fission, involving budding, yielding a multiparasite stage that ultimately exits the host cell. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S11. The development process of the multiparasite stage.** Time-lapse video microscopy shows a polyparasitized RBC. Some of the parasites inside the host cell multiply by binary fission, involving budding, provoking a polyparasitism phenomenon within the RBC. The multiparasite stage ultimately exits the host cell. Frames are captured every 5 min and the time is indicated in hours and minutes. The video is showed on two individual channels together with the merged images. The scale bars is 5 µm.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S12.** Schematic movie showing a trophozoite that develops into a paired-pyriform.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S13.** Schematic movie showing a paired-pyriform that develops into a tetrad.

https://figshare.com/s/8ba6afd9e161899d682c

**Movie S14.** Schematic movie showing the multiparasite stage development.

https://figshare.com/s/8ba6afd9e161899d682c