Application Note

ZEISS Primo Star iLED

Selected Fluorescence Applications in Laboratories and Education

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Author: Hung Pham
Carl Zeiss Microscopy GmbH, Germany

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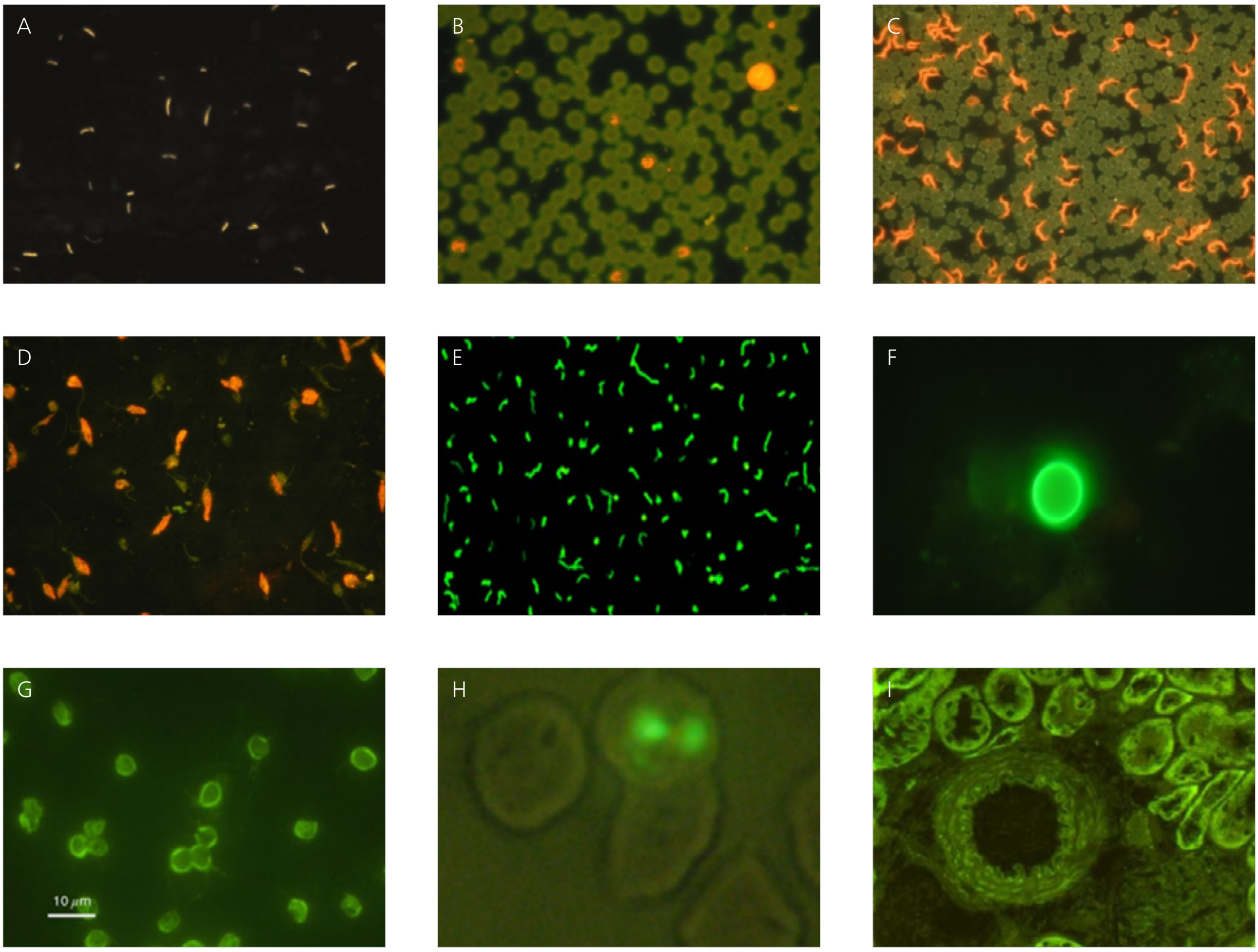
Primo Star iLED is your flexible solution with LED fluorescence excitation and transmitted light brightfield illumination. Analyze tuberculosis with Ziehl-Neelsen staining in brightfield or use fluorescence excitation with Auramine O dye. In combination with new iLED fluorescence attachments: even greater versatility can now be achieved with Primo Star iLED for many fluorescent labels. Primo Star iLED allows you to switch easily between the two modes.

Applications**	Brightfield (BF) ***	LED fluorescence (FL)		Examples [detection of]
		Dye	Filter set (FS) & LED	
Tuberculosis diagnosis	Ziehl-Neelsen stain	Auramine O*	FS 67, LED 455 nm	Mycobacteria (BF, FL[1-10])
Malaria diagnosis	Giemsa's stain	Acridine orange*	FS 67, LED 455 nm	Protozoa (BF, FL[11-13])
Sleeping Sickness diagnosis	Giemsa's stain	Acridine orange	FS 67, LED 455 nm	*Trypanosoma brucei* (BF, FL[13-15])
Leishmaniasis diagnosis	Leishman's or Giemsa's stain	Acridine orange	FS 67, LED 455 nm	Leishmania parasites (BF, FL[13])
With optional accessories (Filter sets & LEDs):				
Gastritis diagnosis	H & E stain	FITC	FS 09, LED 470 nm	Tissue morphology (BF), *Helicobacter pylori* (FL)
Giardiasis diagnosis		FITC or SYBR-Green / SYBR-Gold	FS 09, LED 470 nm	*Giardia lamblia* (FL[16])
Cryptosporidiosis diagnosis	H & E stain	FITC or SYBR-Green / SYBR-Gold	FS 09, LED 470 nm	Tissue morphology (BF), Cryptosporidia (FL)[17]
Malaria diagnosis	Giemsa's stain	SYBR-Green	FS 09, LED 470 nm	Protozoa (BF, FL)
Histology / Immunohistology	H & E stain	FITC	FS 09, LED 470 nm	Tissue morphology (BF, FL)

* *No coverslip needed, observed at 400 X magnification.*
** *For the best use of Primo Star iLED that comes with FS 67 and LED 455: equipped with a 40x objective D=0 and a 100x objective D=0.17.*
*** *Please take note that the references are for fluorescence application only (iLED part).*

Application examples:



Short notes:

A. Tubercle bacilli
B. Plasmodium knowlesi
C. Trypanosomes
D. Leishmania donovani promastigotes
E. Helicobacter pylori
F. Giardia
G. Cryptosporidia
H. Plasmodium falciparum
I. Mouse capillary

Legend:

(A) *Tubercle bacilli* stained with auramine O (courtesy of CDC). (B) Malaria parasites (small orange structures) inside red blood cells (green) of a baboon experimentally infected with *Plasmodium knowlesi* and stained with acridine orange.
White blood cells also stain orange (blood smear courtesy of Dr. Maina Ngotho, Institute of Primate Research, Nairobi).
(C) A thin blood smear stained with acridine orange showing trypanosomes (orange) alongside red blood cells (green).
(D) Cultured *Leishmania donovani* promastigotes (orange with flagella) stained with acridine orange (slide courtesy of Dr. Maina Ngotho).[13] (E) *Helicobacter pylori* immuno-labeled with FITC. (F) Giardia from contaminated water immuno-labeled with FITC (courtesy of Dr. H.P. Fuechslin, Bachema AG). (G) Cryptosporidia from contaminated drinking water immuno-labeled with FITC (courtesy of Mr. Brian Oram, Wilkes University).[17] (H) *Plasmodium falciparum* stained with SYBR Green I (courtesy of Dr. West Suhanic[11]). (I) Mouse capillary immuno-labeled with FITC.

Highlights

Use ZEISS Primo Star in combination with iLED fluorescence attachments for many fluorescent labels and profit from.

- fast and efficient testing
- reflected-light fluorescence (FL) together with transmitted-light brightfield (BF)
- easy switching between FL excitation and BF illumination
- economical LED concept: long-lasting, retrofittable with any Primo Star
- versatility with options for fluorescence attachments
- battery pack for operation without a main power supply
- special eyecups eliminate the need for a dark room during a test for tuberculosis, malaria, sleeping sickness, or leishmaniasis
- easy to operate
- durable and robust
- tried-and-tested ZEISS optics made from high-quality glass
- high-quality materials
- worldwide support from ZEISS

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Carl Zeiss Microscopy GmbH
07745 Jena, Germany
microscopy@zeiss.com
www.zeiss.com/microscopy

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