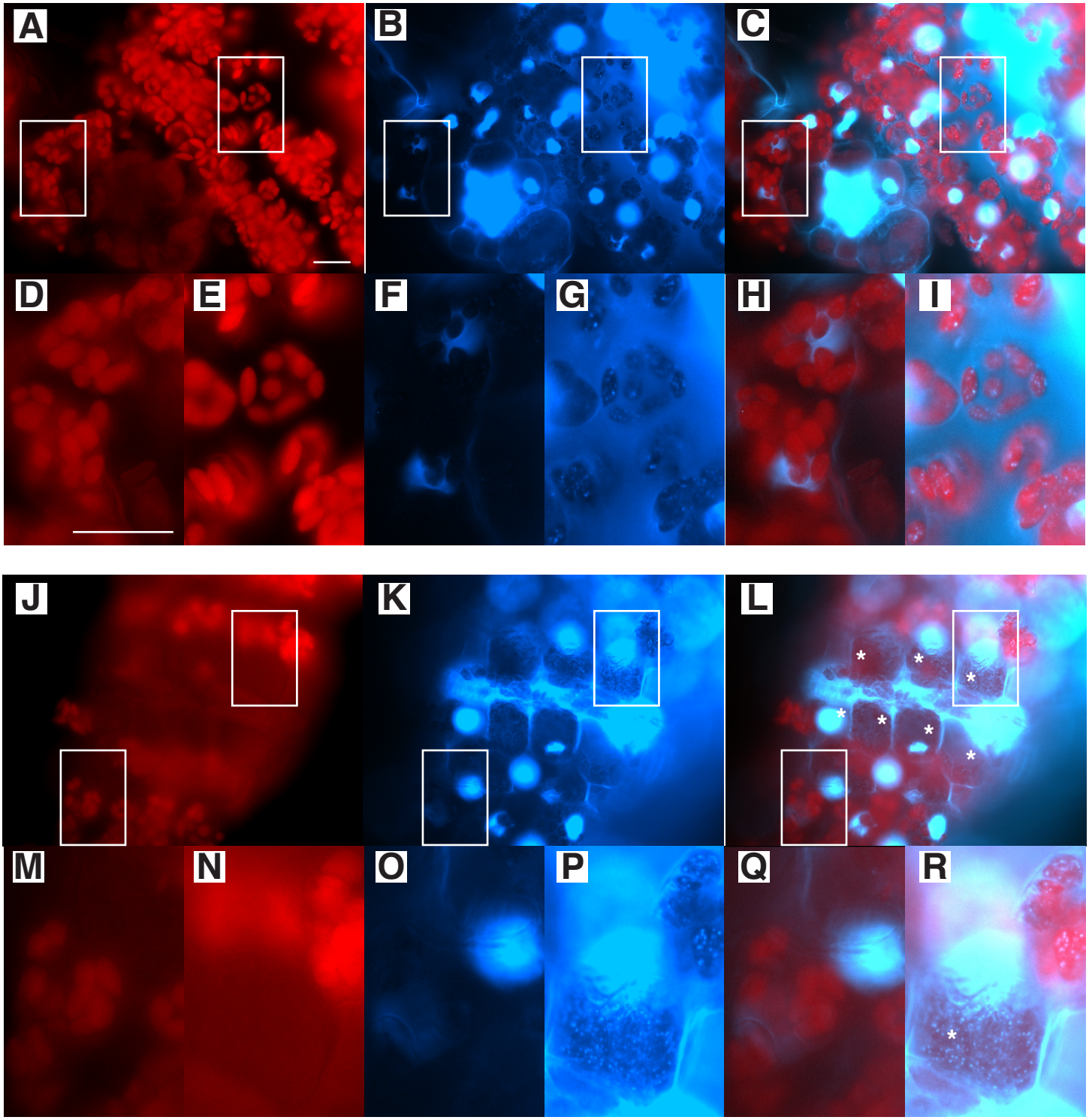
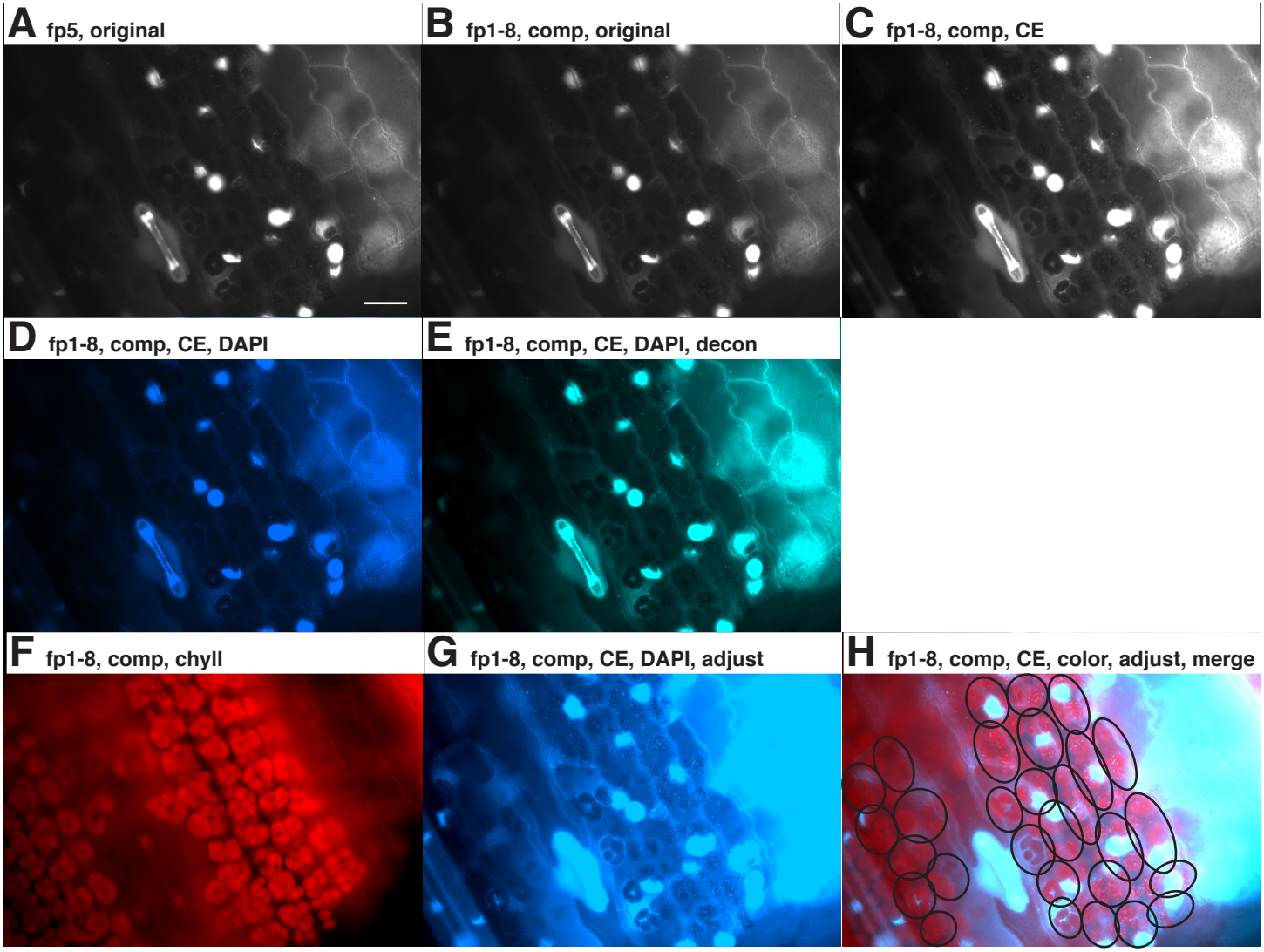
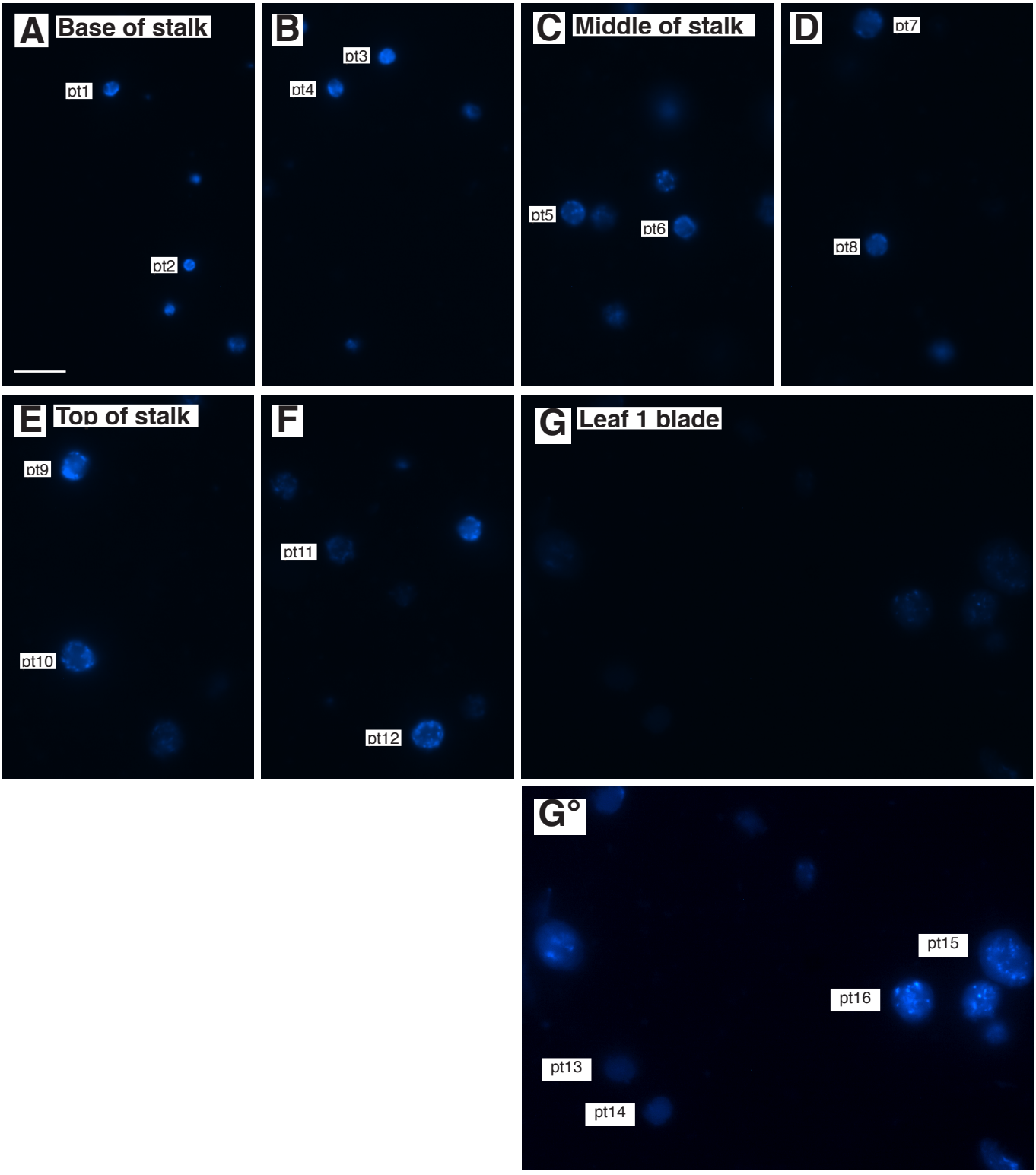


Supplemental Figure 1 Fluorescent microscopy images of tissue sections from the middle of the mature first leaf blade of 11-day maize seedlings.

The left panels show chlorophyll autofluorescence; middle panels show DAPI fluorescence; and right panels are merged images. **D-I** and **M-R** are enlargements of boxed regions in **A-C** and **J-L**, respectively. **F, H, O, Q** show plastids in Category 3 (undetectable DAPI-DNA) and **G, I, P, R** in Category 1 (discrete DAPI-DNA nucleoids). Rectangular-shaped bundle sheath cells are indicated by stars (*) in **L** and **R** and display less chlorophyll autofluorescence than mesophyll cells. Scale bar in **A** is 25 µm for **A-C** and **J-L** and in **D** is 25 µm for **D-I** and **M-R**. Images produced as described in Methods.



Supplemental Figure 2 Process used to optimize visualization of DAPI-DNA signal in plastids.
A Original DAPI image of a single focal plane (fp5) from the middle of a z-stack consisting of eight focal planes through a tissue section from the first leaf blade of maize. **B** Composite (comp) of the original eight focal planes (fp1-8). **C** Contrast enhancement (CE) to increase visibility of DAPI-DNA in plastids. **D** Colorization to DAPI fluorescence. **E** Deconvolution of image **D**. **F** Composite of eight focal planes and colorization to chlorophyll autofluorescence. **G** Adjustment to enhance visualization of colorized image **D**. **H** Merging of images **F** and **G** to illustrate co-localization of DAPI-DNA and plastids. Each circle indicates one "cell" for the purpose of scoring as described in Methods and given in Table 1. Scale bar in **A** is 25 μm for **A-H**.



Supplemental Figure 3 Fluorescent microscopy images of isolated plastids from maize seedlings. DAPI-DNA fluorescence is shown for individual plastids along the developmental progression from proplastid-to-chloroplast. Proplastids from base of stalk **A-B**; developing plastids from middle **C-D** and top **E-F** of stalk; and mature chloroplasts from the first leaf blade **G-G°**. **A-G** are original images, except that grayscale was changed to DAPI color at 460 nm. Image **G°** was adjusted to increase visibility of the DAPI staining in **G**. The genome copy number for individual plastids pt1-pt16 is given in Table 2. These images are examples of those used for the genome copy number determinations shown in Figure 1B of Zheng et al. (2011). All images were recorded using 0.5 sec exposure. Scale bar in **A** is 10 µm for **A-G°**.