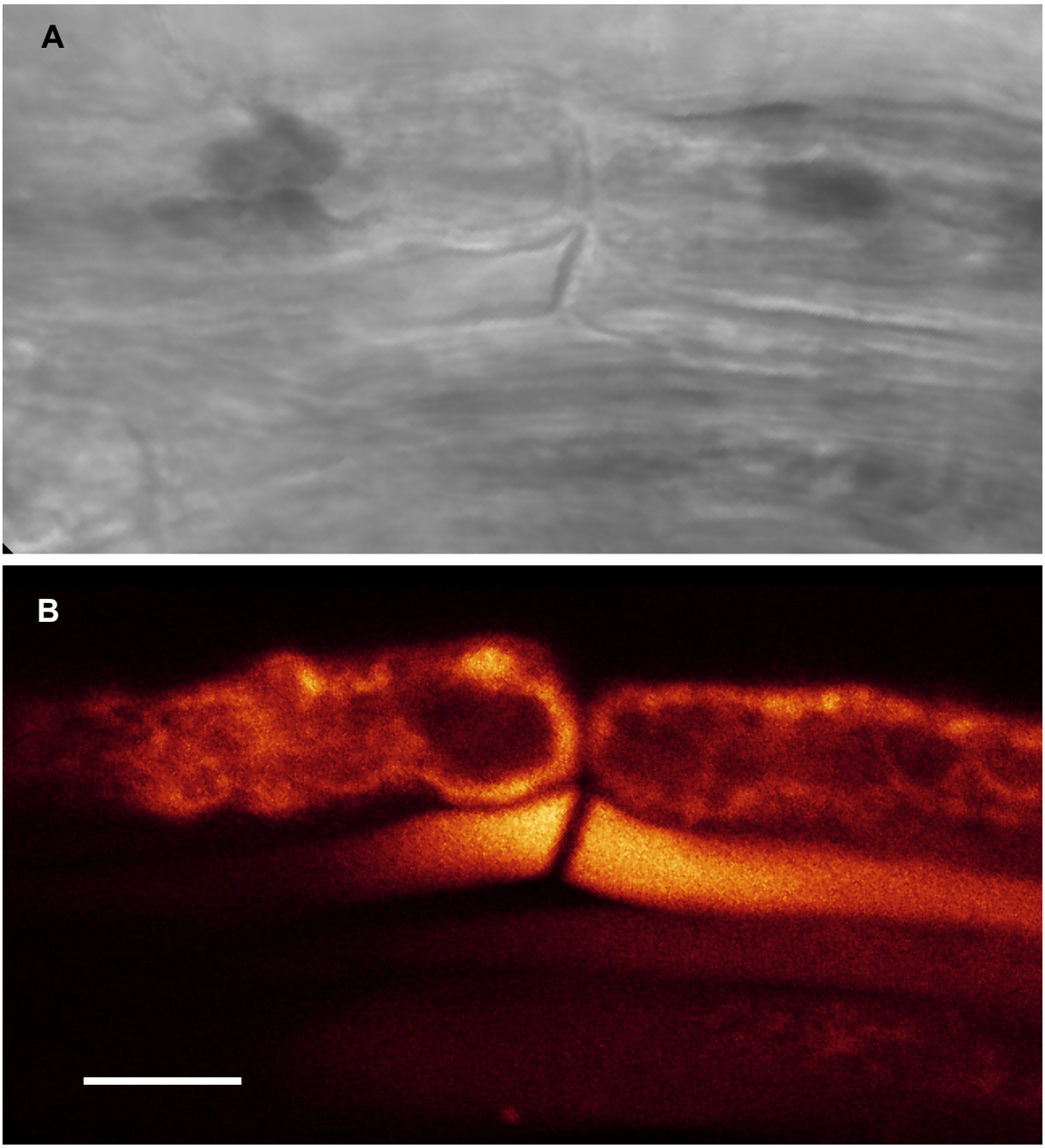
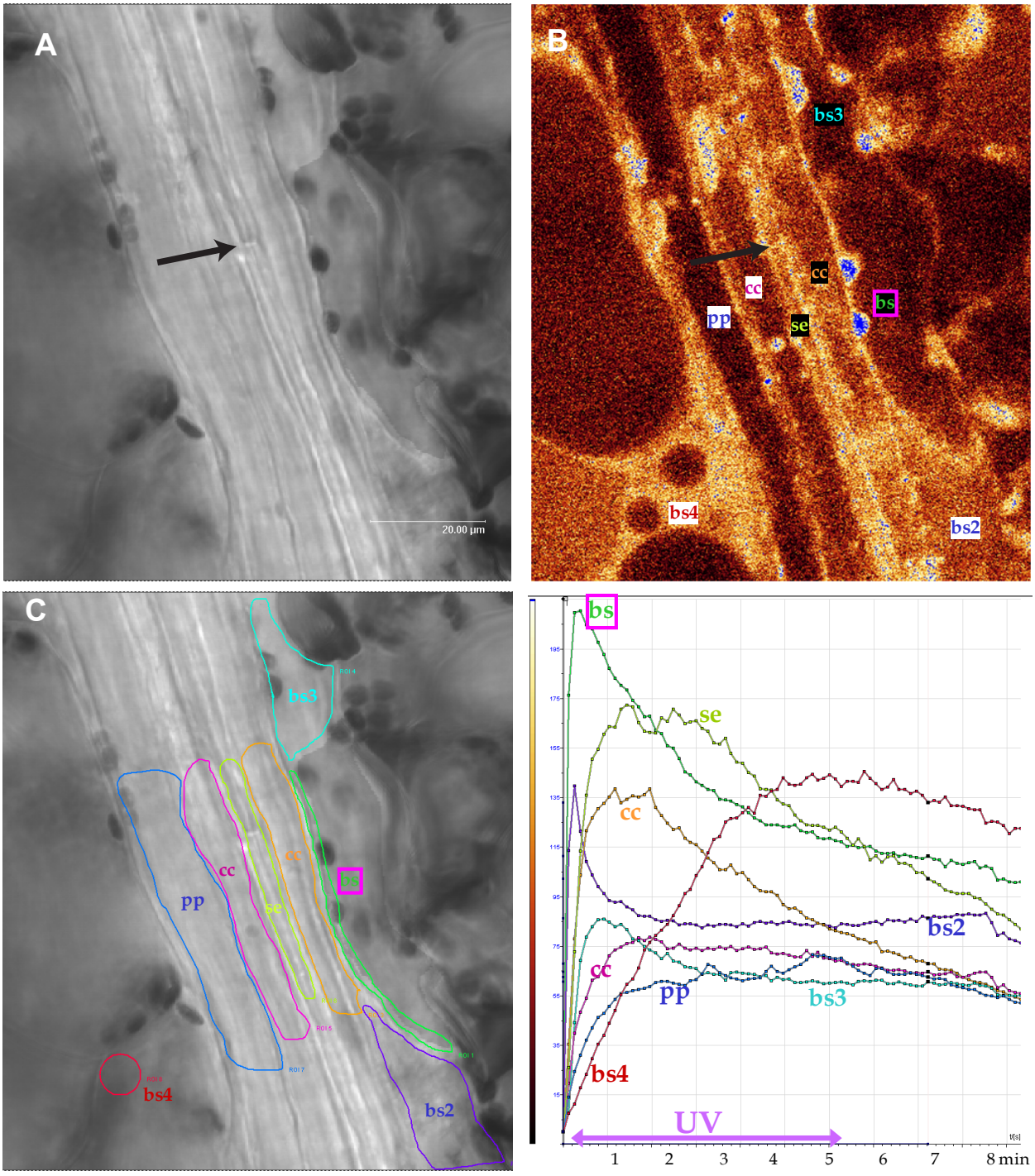


Supplemental Figure 1. The minor vein phloem of a minor vein from *V. faba* after photoactivation as bright field (A) confocal image (B). Two sieve elements connected by a sieve plate, which matches the ends of the companion cells. Cytosolic fluorescence in the transfer-type companion cells is uneven due to vacuoles and wall labyrinth.



Supplemental Figure 2. Minor vein of *Cucurbita maxima* with one sieve tube in the focal plane (arrow on the sieve plate in A), post-activation image from a time series (xyt; see supplemental movie) (B), location of selected regions of interest (C) and analysis of the changes in fluorescence intensity over time (D). The inner part of a bundle sheath cell (boxed bs in B and C) was uncaged. In contrast to the experiments used for quantification, the ROIs cover only parts of the studied cells, such as the cytosol of one bundle sheath cell (bs4), vacuole and cytosol of a phloem parenchyma cell (**pp**), and the sieve elements (**se**) up- and down-stream of the sieve plate. Analysis of the changes in fluorescence intensity during the experiment show that fluorescence import into the companion cells (**cc**) occurs simultaneously with that into the sieve element. Analysis is based on non-normalized raw data.

Supplemental movie Movie showing photoactivation of a bundle-sheath cell of *Cucurbita maxima* (see supplemental Figure 2).