

# Cell kinetics, stomatal differentiation, and diurnal rhythm in *Allium cepa*

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Cell kinetics parameters were obtained for the three mitotic divisions leading to formation of stomata in the epidermis of the cotyledon of *Allium cepa* seedlings. Analysis of mitotic frequencies throughout the course of development showed that the asymmetrical divisions started at about 50 hr after germination, and the symmetrical divisions were first seen a few hours later. Guard mother cell divisions started around 70 hr after germination. The maximal frequency of both symmetrical and asymmetrical division was found between 3 and 5 days after germination, and the highest frequencies of GMC divisions were observed between 6 and 8.5 days. All divisions ceased after 11 days. The three cell populations analyzed displayed diurnal fluctuations of their mitotic frequencies which were characteristic of the type of cell division measured and seemed independent of the region of the cotyledon in which they took place. The symmetrical divisions displayed two diurnal peaks-one at about 0400 and t