

FIGURE 9.1 Length-dependent aggregation of polyQ-YFP fusion proteins in *C. elegans* body-wall muscle cells (A) or neurons (B). Epifluorescence micrographs of 3- to 4-day-old *C. elegans* expressing different lengths of polyQ-YFP. Scale bar = 0.1 mm (A), or 50 μ m (B). Arrow indicates circumpharyngeal nerve ring. Expression of a range of polyQ lengths reveals that proteins with tracts that are equal to or less than that of Q40 maintain a soluble distribution pattern, whereas those equal to or more than Q40, in body-wall muscle cells, form foci. [(A) Adapted from [16]. (B) Adapted from [18], with permission of the *Journal of Neuroscience*.]

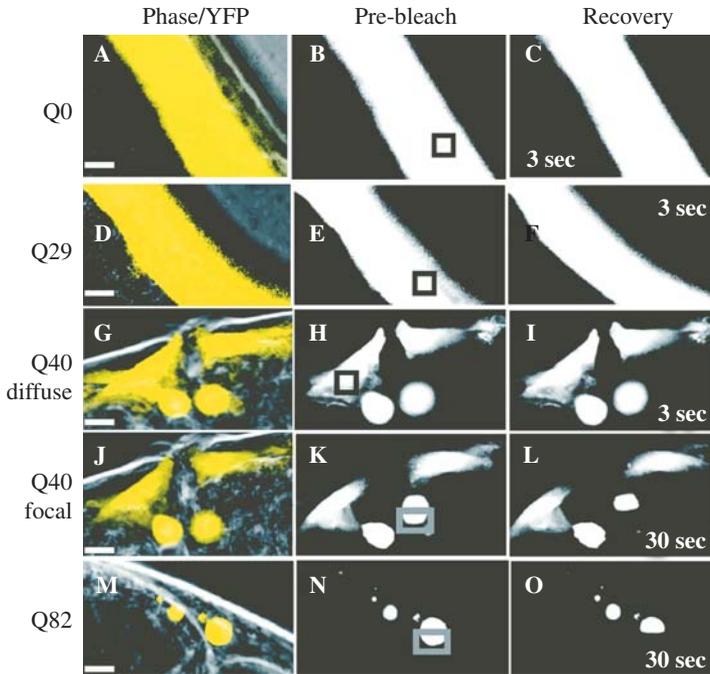


FIGURE 9.2 Determination of polyQ-YFP solubility in living animals by using FRAP: (A, D, G, J, M) merged phase-contrast and fluorescence images; (B, E, H, K, N) fluorescence images of the same region before photobleaching (prebleach) (boxes indicate the area that was subjected to photobleaching); (C, F, I, L, O) fluorescence images of recovery at the indicated times after photobleaching. The earliest time point possible to assess recovery of the chimeric YFP signal was at 3 s. Scale bar = 3 μ m. [Adapted from [16].]

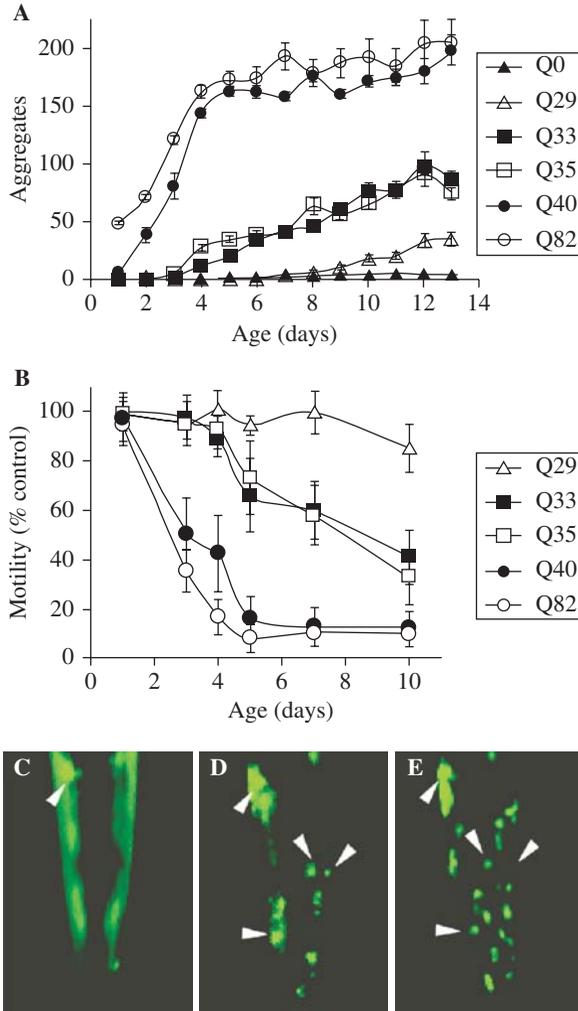


FIGURE 9.3 Influence of aging on polyQ aggregation and toxicity (A) Accumulation of aggregates in Q82 (open circle), Q40 (filled circle), Q35 (open square), Q33 (filled square), Q29 (open triangle), and Q0 (filled triangle) during aging. Data are mean \pm SEM. Twenty-four animals of each type are represented at day 1. Cohort sizes decreased as animals died during the experiment, but each data point represents at least five animals. (B) Motility index as a function of age for the same cohorts of animals described in (A). Data are mean \pm SD as a percentage of age-matched Q0 animals. (C–E) Epifluorescence micrographs of the head of an individual Q35 animal at 4 (C), 7 (D), and 10 (E) days of age, illustrating age-dependent accumulation of aggregates. Arrowheads indicate positions of the same aggregates on different days. In (E), the animal is rotated slightly relative to its position in (D). (Adapted from [16].)