

Formation of polar cytoplasmic domains (teloplasms) in the leech egg is a three-step segregation process

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Segregation and proliferation of mitochondria, leading to formation of the teloplasms (pole plasms), were studied in eggs of the leech *T. rude* by immunocytochemistry, fluorescent time lapse video imaging, confocal and electron microscopy. The translocation of mitochondria was analyzed after loading the egg with either Rhodamine 123 or a Mitotracker. Mitochondrial proliferation was assessed after pulse labeling with BrdU. The involvement of the cytoskeleton in the segregation process was determined by drug action. The teloplasms form during the first interphase as consequence of a 3-step sequential process of mitochondrial redistribution throughout the egg cytoplasm. The first step is a microtubule dependent process of ectoplasm thickening due to centrifugal mitochondrial transportation from the neighboring endoplasm. During the second step mitochondria move in the plane of the ectoplasm to become concentrated at the wall of rings (polar rings) and bands of contraction. This process app