Comment 1: Diversity of mitotic patterns

The general picture that is emerging on the structural organization in mitosis and meiosis, and even the specific molecules involved, are turning out to apply to a vast range of phyla. Perhaps this is not surprising for such an essential event required for the perpetuation of cellular life. At the same time, it will be well to note those cases which depart from generally conceived patterns. Samples include: partitioning of male from female chromosomes by a monopolar spindle (Fig. 1; Metz 1933; see also Schrader 1923, 1929), formation of multiple spindles which coalesce and complete anaphase within the persistent nuclear envelope (Fig. 2; Hughes-Schrader 1924), and diverse patterns of mitotic organizations found among protists (Fig. 3; Bělař 1926; see also Bělař 1928, Cleveland et al. 1934). Studies of these exceptional cases may well reveal overlooked, important aspects of mitotic mechanisms.

Figures

Figure 1. Chromosome segregation on a monopolar spindle in the first spermatocyte division of a dung fly *Sciara* (reprinted from Metz 1933 with permission from the Marine Biological Laboratory, Woods Hole, MA). Paternal chromosomes are stippled; maternal chromosomes are white or black.
Figure 2. Formation of multiple spindles (around each chromosome) and their bipolarization within the intact nuclear envelope of the egg of a parasitic wasp Acroschismus sp. (reprinted from Hughes-Schrader 1924, copyright 1924, with permission of Wiley-Liss, Inc., a subsidiary of John Wiley & Sons, Inc.).

Figure 3. Nuclear components before and during mitosis in various protist genera (Bělař 1926; see also Bělař 1928; Cleveland et al. 1934). While Bělař assigns the following color codes, he qualifies some of the assignments where footnote marks appear: Chromatin, red; "Centrosome," blue; "Nucleolar substance," black. The diagrams also indicate the degree of integrity of the nuclear envelope and nucleoli.

Full page images of Figure 253 from Bělař K 1926: (click on the thumbnail to view)


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