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I. Wissenschaftliche Mittheilungen.

1. Preliminary Note on the Chromatin Reduction in the Spermatogenesis of Pentatoma.

Thos. H. Montgomery, Jr., Ph.D.

eingeg. 12. November 1897.

Detailed descriptions and figures of this object, as well as comparison of the literature, are reserved for a future publication. The material was fixed in Hermann's fluid and aqueous solution of corrosive sublimate. The outlines of the figures are drawn with the camera lucida, with the 1/12 immersion lens and ocular 4 of Zeiss, length of the microscope tube, 180 mm. The details of the spindle fibres are not reproduced.

Each of the testicles consists of a number (apparently 7) of parallel, longitudinal tubules, and within each of the latter all the spermatogenetic stages may be found. The division zone of the spermatogonia is found at the proximal end of the tubule, the growth zone occupies the remainder of about the proximal end of the tubule, on the latter follows the zone of the spermatocytic divisions, next the zone of the spermatids, while about the distal half of the tubule contains spermatozoa. The succession of these different zones is clearly marked.

In the spermatogenetic mitoses (fig. 1*a*; 1*b*, pole view) 14 chromosomes are present; they are usually so densely grouped, that on lateral view of the spindle the chromatin mass appears as a solid, heavy band, quite different from the relations in the spermatocytic divisions. In the metaphase a synaptic phase of the chromatin occurs before the latter resumes the usual arrangement characteristic for the resting cell. In the growth period the spermatogonia become considerably larger, and show yolk (?) globules in the cytoplasm. Within the nucleus at this period are two nucleoli, the one peripheral and corresponding to the true nucleolus of somatic cells, the other more central, larger and staining like the chromatin.

Fig. 1*a*.

Fig. 1*b*.

In the prophase of the 1st spermatocyte the chromatin gradually becomes arranged into the form of a single, thick, winding thread (spirem). At no stage is there any evidence of longitudinal division of this thread. The latter then breaks, by transverse division, into 3 or 4 large portions (figs. 2, 3), which are irregular in size and form, and only rarely appear ring-shaped; and in the latter cases the rings are clearly seen to be each composed by a single thread, with its ends in mutual contact. These larger thread-fragments then divide transversely until 7 elongate chromosomes are produced (fig. 4). These chromosomes appear in the reduced number, and hence are bivalent. Of importance is the fact that they appear transversely constricted (fig. 4) before they become arranged in the equatorial plane of the

Fig. 2.

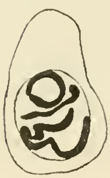


Fig. 3.

Fig. 4.

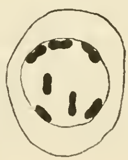


Fig. 5*a*.

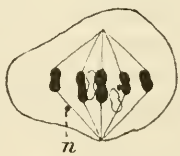
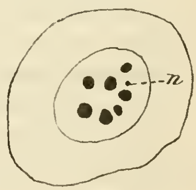


Fig. 5*b*.



spindle; and usually, also, this constriction is apparent on them before they are segmented off from the spirem thread (fig. 3). The 7 chromosomes then become arranged in the equatorial plane of the spindle (figs. 5*a*, *c*, 5*b*, pole view), with their long diameter perpendicular to this plane. They then, at the commencement of the dyaster (fig. 6), divide transversely at the point where the constriction was already present, and 7 halves wander to one pole, 7 halves to the other.

In the preceding, more than in subsequent divisions, the chromosomes are seen to be of irregular size in the same nucleus.

Towards the end of the dyaster stage of the 1st spermatocyte (fig. 7*a*;

7*b*, pole view), but before the daughter nuclei have separated, 7 chromosomes are seen in each daughter cell, and each of these chromosomes is transversely constricted. That this is a transverse and not a longitudinal constriction is proved by the numerous cases where the constriction is already well marked on the daughter chromosome, before it has left the spindle of the first spermatocyte (fig. 6); and also by the fact that the constriction is perpendicular to the long axis of the chromosome (figs. 7*a*, *b*).

Fig. 5*c*.

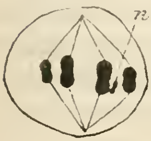


Fig. 6.

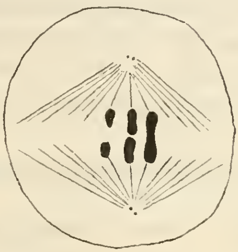


Fig. 7*a*.

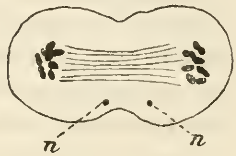


Fig. 5*d*.

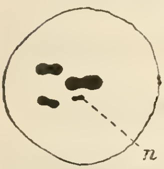
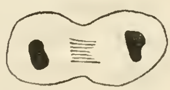


Fig. 7*b*.

Without any intervening resting stage, the cell then passes into the 2nd and last spermatocytic division. In the monaster of the latter (fig. 8) the 7 chromosomes become transversely split, the line of their transverse constrictions coinciding with the equatorial plane of the spindle. Finally, in the succeeding dyaster (fig. 9), the 7 daughter chromosomes of each daughter cell (spermatid) fuse together and form a flattened disc of chromatin.

Fig. 8.

Fig. 9.



In figs. 5*a*, *b*, and 6 all the chromosomes are not reproduced.

It is interesting to note that the true nucleolus divides into two, about the time of, or a little before, the chromosomes become arranged in the equator of the 1st spermatocyte spindle (*n* in figs. 5*c* and 5*d*, the latter presenting a stage where the chromosomes have not yet become arranged in the equator). Fig. 5*a* shows the nucleolus already divided, before the chromosomes have done so; and in fig. 7*a* we find, outside of the spindle fibres, half of the original nucleolus in each daughter cell. Very frequently the nucleolus is seen on pole views of the chromosome monaster of the 1st spermatocyte (*n* fig. 5*b*), and in such cases might be mistaken for a small chromosome, since it stains like one of the latter with the safranine-gentian violet stain of Hermann. Equal division of the nucleolus in mitosis is of very rare occurrence.

Thus the chromosomes appear in the reduced number in the 1st spermatocyte, namely 7; in the succeding divisions they undergo two transverse divisions (reduction divisions), and at no stage is there any evidence of a longitudinal division (equation division). It seems very probable that in the spermatogenesis of the allied *Pyrrhocoris*, as figured by Henking (Zeit. wiss. Zool. 1890), two transverse divisions of the chromosomes likewise occur, through Henking assumes, in order to accord with a more widely accepted view, that the second division is longitudinal. *Pyrrhocoris* differs from *Pentatoma* in the regular occurrence of chromatin rings in the prophase of the 1st spermatocytic division; and on account of the larger number of chromosomes (24—12) is a less favorable object for study.

Wistar Institute of Anatomy, Philadelphia, U. S. America. 29. Oct. 1897.

2. Die Sipunculiden-Gattung Phymosoma.

Von Emil Selenka.

eingeg. 12. November 1897.

In der systematischen Monographie der Sipunculiden, welche ich in Gemeinschaft mit Dr. C. Bülow und Dr. J. G. de Man im Jahre 1883 herausgegeben habe, wurde die von Quatrefages 1865 aufgestellte Gattung *Phymosomum*, von mir in die Bezeichnung *Phymosoma* umgeändert und genauer abgegrenzt, in das System aufgenommen.

Freund Sluiter in Amsterdam macht mich darauf aufmerksam, daß dieser Gattungsname bereits im Jahre 1853—54 von d'Archiac und J. Haime (Description des Animaux fossiles du groupe nummulitique de l'Inde etc. Paris) vergeben wurde, und außerdem von A. Agassiz in seiner »Revision of the Echini« 1872—1874, pag. 487 auf's Neue für eine recente Form, *Phymosoma crenulare*, gebraucht wurde.

Ich schlage daher vor, die Sipunculiden-Gattung *Phymosoma* umzutaufen und in Zukunft als *Physcosoma* zu bezeichnen (ὁ φύσκων, Schmeerbauch).

3. Zur Epithelfrage bei Cestoden.

Von F. Blochmann, Rostock.

eingeg. 13. November 1897.

Die Anschauungen über die Epithelverhältnisse der Cestoden und Trematoden, die ich auf Grund der von Zernecke, Zander, Betten-