MALACOLOGIA, 1966, 5(1): 37-39

PROC. SECOND EUROP. MALAC. CONGR.

CHROMOSOME NUMBERS AND SYSTEMATICS IN STREPTONEURAN SNAILS[1]

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(Read at the morning session, 13 August, 1965)

ABSTRACT

An increasing number of studies of molluscan chromosomes and cytogenetics are now being published. Burch (1965) summarized current information on chromosome numbers in regard to systematics in the Euthyneura. The present report summarizes information known for the Streptoneura.

Reliable reports of chromosome numbers exist for only 26 of the 121 recent families of the Streptoneura. Of the estimated 2,800 recent genera and subgenera in this subclass, there is information available on only 64 genera (or 1 out of every 45).

In the Archaeogastropoda, 25 species representing 7 of the 21 recent families have chromosome information available. Haploid chromosome numbers in this order range from n=9 in the superfamily Patellacea to n=18 in the superfamily Trochacea. The superfamily Pleurotomariacea has information for one family, Haliotidae, where n=17. In the Fissurellacea, chromosome numbers are known only for 3 species of the Fissurellidae, which have haploid numbers of n=16 and n=17. In the Patellacea, all members of the 2 families investigated, Acmaeidae and Patellidae, have the haploid chromosome number 9. The Trochacea has cytological information for the Trochidae and Turbinidae; all species investigated had a haploid number of n=18. In the Neritacea, 3 species of the Neritidae have haploid chromosome numbers ranging from n=11 to n=14.

Sixty-six species representing 13 of the 81 recent families in the Mesogastropoda have been investigated cytologically. Chromosome numbers in this order range from 7 haploid in the Viviparacea to 20 haploid in the Pleuroceridae. Both recent families of the Viviparacea, Viviparidae and Pilidae, have cytological information available. Chromosome numbers range from n=7 to n=14. One species of the Valvatidae (Valvatacea) has been studied. It had a haploid chromosome number of 10. In the Littorinidae (Littorinacea) chromosome numbers range from n=15 to n=17. In the Rissoacea, chromosome numbers are known for 3 families: Hydrobiidae (n=16 and n=17), Bithyniidae (n=17) and Assimineidae (n=12 and n=15). Four families of the superfamily Cerithiacea have information on chromosome numbers. The haploid chromosome numbers for these families are n=16 to n=19 (excluding possible polyploidy) in the Thiaridae; n=9 to n=20 in the Pleuroceridae; and n=18 in both the Potamididae and Cerithiidae. In the Hipponicacea n=17 occurs in the Hipponicidae, and in the Naticacea

[1]This work was supported (in part) by a research grant from the National Institute of Allergy and Infectious Diseases, U. S. Public Health Service (grant 2 T1 AI 41).

n=16 occurs in the family Naticidae.

There are 19 recent families in the Neogastropoda, but chromosome numbers are available for only 6 of them (23 species). The range in haploid chromosome numbers is from a low of 28 to a high of 36. Both of these extremes occur in the Buccinacea. The one reported exception occurs in the Muricacea, i.e., a species with races of 13 and 18 pairs of chromosomes. Other chromosome numbers in the Muricacea range from n=30 to n=35 (family Muricidae). The Buccinacea has information on 4 families; Pyrenidae (n=28 to n=35), Buccinidae (n=35 and n=36), Nassariidae (n=34) and Fasciolariidae (n=35). One family, Mitridae, of the Mitracea, has 1 species studied, which showed a haploid chromosome number of n=30.

The Streptoneura, like the Euthyneura, exhibits a conservativeness in regard to chromosome numbers, with variation in chromosome numbers seldom more than ± 2 bivalents in the lower taxa. With the fragmentary information now available, there appears to be no general clear-cut correlation between low chromosome numbers and "primitiveness" among the various groups, as apparently can be shown for the Euthyneura (Burch, 1965). However, within the Viviparacea such a correlation may exist.

Reliable cytogenetic studies on hybridity and sex determination in the Streptoneura are very few. Staiger (1954) found that hybrids between n=13 and n=18 forms of *Thais* (*Purpura*) *lapillus* had 5 metacentric chromosomes paired with 10 acrocentrics. Burch (1964) studied F_1 hybrids among 4 nominal species of *Oncomelania* (n=17) and found them all to have 17 normal bivalents during meiosis and concluded that the 4 species were in reality only races of one species.

Studies on sex chromosomes in mollusks include those of Jacob (1959a, b) who reported an X-O sex determining mechanism for *Melania crenulata* and an X-Y mechanism for *Paludomus tanschaurica*. Burch (1960) and Patterson (1963) showed *Pomatiopsis lapidaria* to have an X-O sex determining mechanism and *P. cincinnatiensis* to have an X-Y mechanism. *Tulotoma angulata* shows a similar sex chromosome dimorphism, with X-X in the females and X-Y in the males (Patterson, 1965).

Much work is still needed on cytology of the Streptoneura, since such an extremely small number of species have been studied. It is hoped that our work, and that of our colleagues, will fill much of the existing void in the next few years.

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A more detailed account of these studies will be published in a later issue of *MALACOLOGIA*.