

Chromosomes of two species in two families of Pteriacea (Bivalvia)

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Abstract

Chromosomes in two species of the superfamily Pteriacea have been studied. In *Pteria breviaalata*, chromosome numbers of 28 (2n) and 14 (n) were observed. The karyotype has roughly 6 pairs of meta- or submetacentrics, 3 pairs of subtelocentrics and 5 pairs of telocentrics. In *Isognomon (Isogonum) perna*, a chromosome number of 28 (2n) was counted. The karyotype consists of about 7 pairs of meta- or submetacentrics and 7 pairs of subtelocentrics.

Introduction

Recent chromosome studies have been important in aspects of medical science, cytogenetics and cytotaxonomy. The author has been investigating the chromosomes with the object of analyzing the systematics of Pteriomorphia. The superfamily Pteriacea of the subclass is made up of four families, Pteriidae, Isognomonidae, Vulsellidae and Malleidae. Chromosomes of the Pteriacea have been studied for 9 species of two families, Pteriidae and Isognomonidae.¹¹⁻⁵⁾ The author studied the chromosomes of *Pteria breviaalata* in Pteriidae and *Isognomon (Isogonum) perna* in Isognomonidae. This paper reports the chromosome numbers and karyotypes of these two species.

Materials and Methods

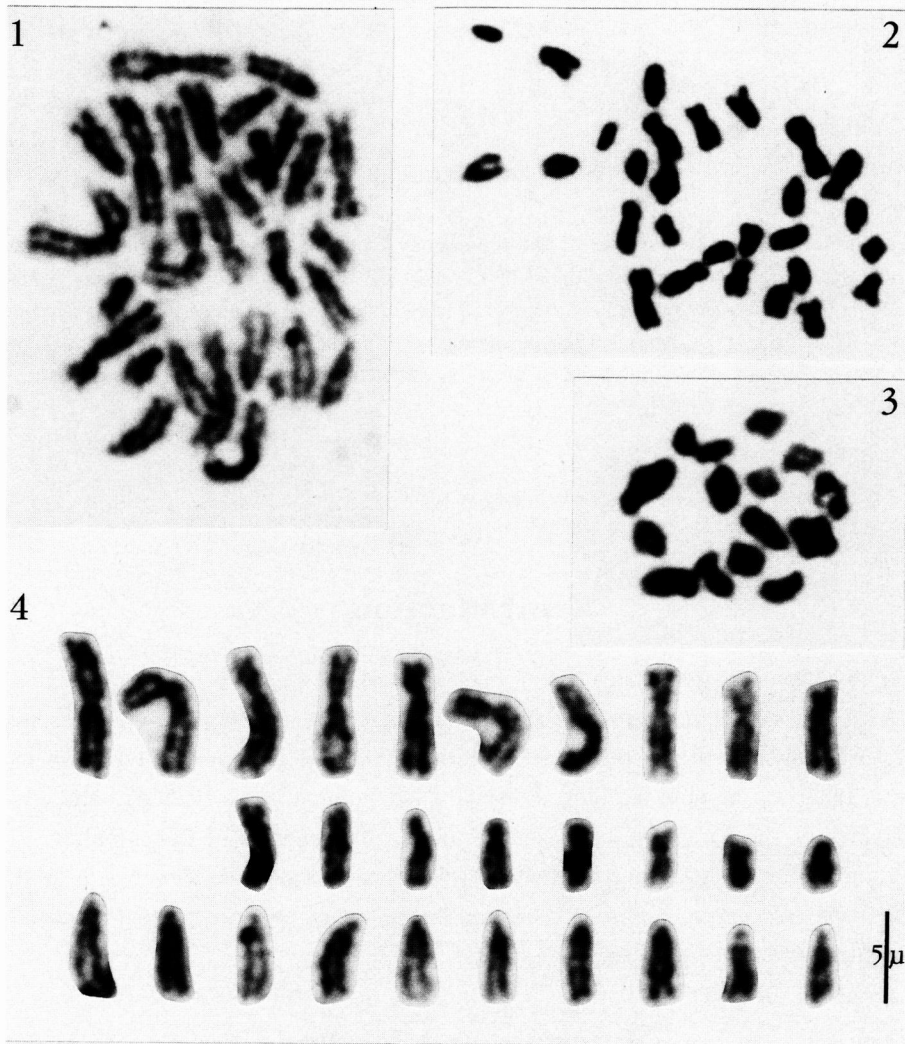
Specimens of *P. breviaalata* were collected in August in 1984 and 1985 from Nishiumi, Minamiuwagun, Ehime Pref.. Specimens of *I. (I.) perna* were collected in October in 1985 from Muroto Point, Muroto C. Koochi Pref.. The testes and gills were examined by air-dry-

ing method modified by Nakamura (1982)⁶⁾. Prior to fixation, specimens were kept for twenty hours in sea water containing colchicine at a concentration of 0.005%, and explants of tissues immersed for 30 minutes in hypotonic solution (0.075m KCl).

Results

1. *Pteria brevia lata* (Dunker, 1872)

Chromosomes were observed in 5 males. Maturation divisions of spermatocytes were observed in many cells (Fig. 3). Somatic chromosomes were observed in fifty gill tissue



Figs. 1-4. *Pteria brevia lata*

- 1,2. Somatic chromosomes of gill tissue cells
3. Chromosomes at prophase of 1st spermatocyte
4. Tentative arrangement of Fig. 1

cells (Figs. 1, 2). In these, twenty-eight (2n) and 14 (n) chromosomes were counted. Fig. 4 shows a tentative karyotype : usually 6 pairs of meta- or submetacentrics, 3 pairs of subtelocentrics and 5 pairs of telocentrics were observed.

2. *Isognomon (Isogonum) perna* (Linnaeus, 1758)

Somatic chromosomes in gill tissue were observed in over fifty cells, and twenty-eight (2n) chromosomes were counted (Figs. 5, 6). Fig. 7 shows a tentative karyotype : 7 pairs of meta- or submetacentrics and 7 pairs of subtelocentrics were observed.



Figs. 5-7. *Isognomon (Isogonum) perna*
 5,6 Somatic chromosomes of gill tissue cells
 7. Tentative arrangement of Fig. 5

Discussion

Table 1. Karyotypes in 10 species of the superfamily Pteriacea

Species	Karyotype				References
	n	M-SM	ST	T	
Pteriidae					
<i>Pteria penguin</i>	14	2	10	2	Wada & Komaru, 1985
<i>Pteria breviaalata</i>	14	6	3	5	Present study
<i>Pinctada fucata</i>	14	12	1	1	Komaru & Wada, 1985
<i>Pinctada maculata</i>	14	13	1	—	Wada Komaru, 1985
<i>Pinctada albina</i>	14	14	—	—	"
<i>Pinctada maxima</i>	14	11	1	2	"
<i>Pinctada margaritifera</i>	14	10	2	2	"
<i>Pinctada imbricata</i>	14	11	3	—	Wada, 1978
Isognomonidae					
<i>Isognomon alatus</i>	14	14	—	—	Duran, et al, 1984
	14	11	3	—	"
	13	11	2	—	"
<i>I. (Isogonum) legumen</i>	13	11	2	—	Ieyama, 1984
<i>I. (Isogonum) perna</i>	14	7	7	—	Present study

Table 1 shows the chromosome numbers of Pteriidae and Isognomonidae which have been reported in the literature and by the present study. 8 species of Pteriidae have the same chromosome number, but the karyotypes of individuals are different. this is very unlike from Ostreidae which has the same chromosome number ($2n = 20$) and nearly like karyotypes in 10 species studied. Chromosome numbers and karyotypes in the family Isognomonidae vary with the species. In *I. alatus*, both chromosome number and karyotype were different. Durán-González, et al (1984)¹⁾ have described that these differences may have resulted from the geographic separation of the populations and their adaptation to different environmental conditions. Intraspecific variation of chromosome number had not indicated to this report. *I. (I.) legumen* and *I. (I.) perna* belong the same subgenus, but their chromosome numbers are different. this is also without precedent. It is necessary to research into the chromosomes of more species in Isognomonidae.

Literature cited

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