

standing or intermittent unconjugated hyperbilirubinemia, b) exclusion of hepatic disease by clinical examination and by normal findings of the following laboratory tests: fasting total serum bile acids, GOT, alkaline phosphatase, serum protein electrophoresis, hepatitis B_s-antigen, BSP-tests¹⁰ and galactose elimination capacity¹¹. No patient had overt hemolysis.

The distribution of A, B, 0 and AB blood groups and Hp 1-1, Hp 2-1 and Hp 2-2 haptoglobin phenotypes in this sample was compared with a series investigated for forensic purposes¹². The available number of cases allowed analysis of groups 0, A and B + AB combined as well as of Hp 2-1, Hp 2-2, and Hp 1-1 + Hp 2-2 combined. Differences in the proportion of blood groups and haptoglobin phenotypes in Gilbert's syndrome and in the control series were tested for statistical significance according to Woolf¹³.

Results. The incidence of the different genetic traits is detailed in the table. No differences could be detected between the patients with Gilbert's syndrome and the control population.

Discussion. Associations between diseases and some genetic polymorphisms, although rare, are well known phenomena¹⁴. They are usually interpreted as suggestive evidence for genetic factors contributing to the pathogenesis of the diseases in question. The present study is similar to the results obtained by testing the HL-A histocompatibility antigens in subjects with Gilbert's syndrome, by showing that the AB0 blood group system and the haptoglobin phenotypes cannot be used as genetic markers in this conditions. The association between acetylator phenotype and Gilbert's syndrome observed in the same sample of patients becomes the more relevant.

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Chromosomes of the black abalone (*Haliotis cracherodii*)¹

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Summary. The chromosomes of the black abalone *Haliotis cracherodii* are described for the first time. The diploid number is 36, with no apparent sexual dimorphism.

Several gastropod karyotypes are described in the literature appearing from 1905³ to the recent past⁴⁻⁶. These are mainly of snails and nudibrachs. Cytogenetic studies on abalone are lacking. 4-year-old 500 g specimens, 1 male and 1 female, were obtained from the intertidal zone near Diablo Canyon, California, and used for this study. 5 ml of a 0.1% Colcemid solution (in sea water) were injected

into the center of the foot. 4 h later, the animal was dissected² and tissue fragments were obtained from the gill, mantle, digestive gland, gonad and blood. The tissues were placed in Hanks balanced salt solution containing 0.3% trypsin for subsequent mincing. After centrifugation the cell pellet was suspended in 5 ml 0.075 M KCl and allowed to sit for 20 min at room temperature. Following 3 fixations in absolute methanol: glacial acetic acid (3:1) the cells were dropped onto slides, air dried, and stained in Giemsa (10% in Gurr's Buffer).

The digestive gland was the only tissue to yield mitoses. Of 21 total countable metaphases, 15 had 36 chromosomes, 3 had 35, 2 had 34 and 1 had 18. 4 male and 3 female karyotypes were prepared. Examples are shown in figures A and B. These show 16 metacentric, 16 submetacentric, and 4 acrocentric chromosomes. The chromosomes are small, the largest being approximately 4 μ m long. No sexual dimorphism is observable in these karyotypes. Sex determination may be at the intrachromosomal level. It is also possible that these karyotypes could represent tetraploids, especially since these cells came from the liver-like digestive gland. Further work will be necessary to clarify these ambiguities.

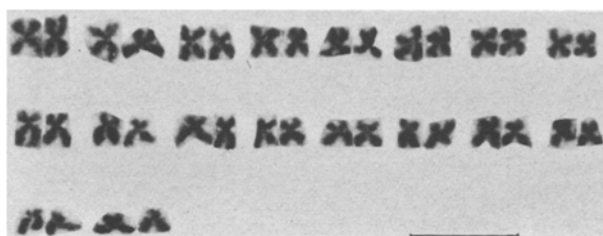


Fig. A. Karyotype of a male *Haliotis cracherodii*.

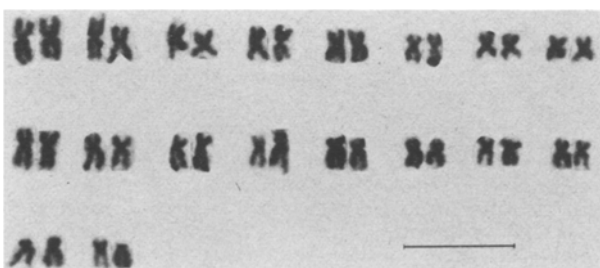


Fig. B. Karyotype of a female *Haliotis cracherodii*. Bar equals 10 μ m.

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- 2 I thank Dr Florence Harrison for her expert dissections.
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