LOCALIZATION OF HETEROCHROMATIC SEGMENTS IN *CHARA BRAUNII*

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A STUDY of linear differentiation of chromosome helps in understanding the nature of heterochromatin, chromosome structure and karyotype evolution[1]. In plant chromosomes there are a number of reports available in this regard by various means[1,2]. There has been no report thus far of any technique to reveal banding in algae, presumably due to the difficulty in handling algal chromosomes and obtaining well-scattered metaphase plates. Investigation of heterochromatic segments through Giemsa C-banding technique has been reported[3]. An attempt was thus made to induce banding and to standardize a technique in the case of *Chara* sp where chromosomes are comparatively larger than the other groups of algae. Since our early experiments failed to reveal any constitutive heterochromatin segments employing Giemsa stain, alternative methods were tried to induce banding using 2% acetic orcein[4].

The technique followed in inducing bands in metaphase chromosomes of antheridial filament in *Chara braunii* Gm. f. *perrottettii* (A. Br.) R. D. W. ($n = 14$) is as follows: (1) Pretreatment in 0.1% colchicine for 3 hr at 10°C. (2) Fixation in acetic-ethanol (1:3) for overnight. (3) Squashing of globules in 'subbed' coverslips. (4) Detachment of the coverslips in absolute alcohol and treating the coverslips containing the materials, with 0.2 (N) HCl at room temperature for 1/2 to 1 hr, followed by aqueous 5% $Ba(OH)_2$ solution for 3 min at room temperature, (5) Washing with distilled water. (6) Incubation in 2XSSC at 60°C for 2 to 3 min. (7) Washing in phosphate buffer (pH 6.8) and (8) staining in 1.5% acetic-orcein solution and final mounting in 45% acetic acid.

Centromeric, telomeric and intercalary bands were induced on the chromosomal complements (figures 1–2).

Chromosome 1 is the largest chromosome in the complements and showed a maximum number of 6 bands. Other chromosomes showed centromeric, telomeric or intercalary bands. Chromosomes 9, 10 and 14 did not reveal any bands.

The banding technique employed in the present study reveals that the banded regions probably possess repetitive DNA sequence which get reannealed faster and more completely than unique sequences and thus stain more intensely.

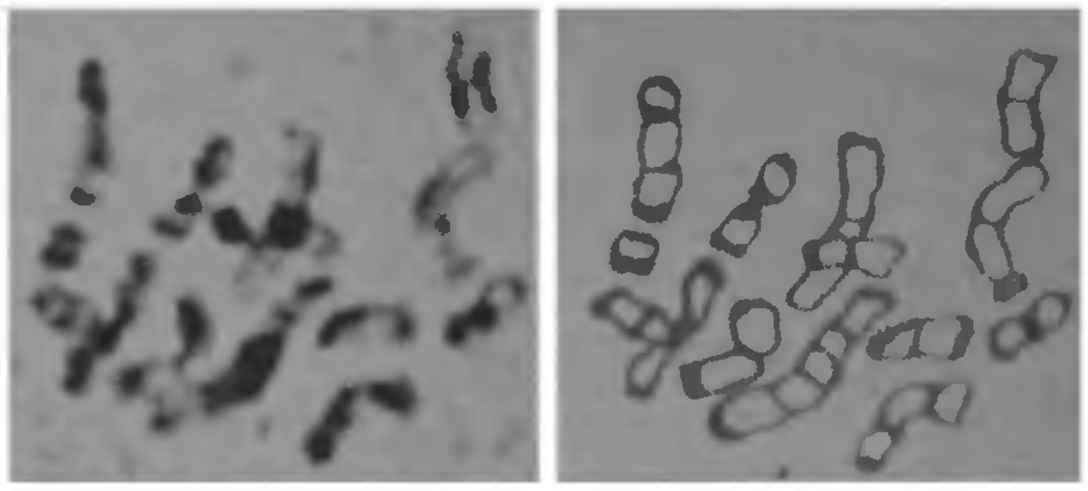

Figure 1. Photomicrograph of a metaphase plate of *Chara braunii* f. *perottettii* showing banding. (× 3000), **1a.** Karyotype drawing of the same.

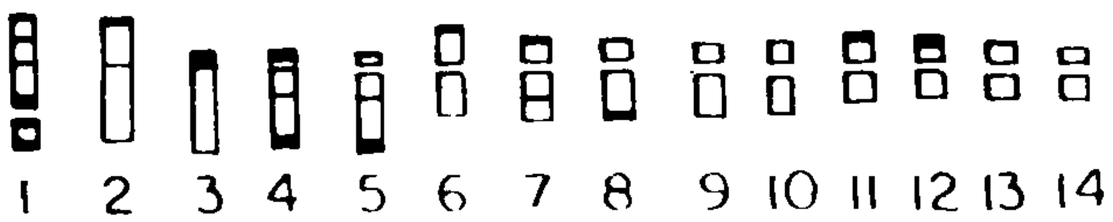

Figure 2. Idiogram showing heterochromatic banding.

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