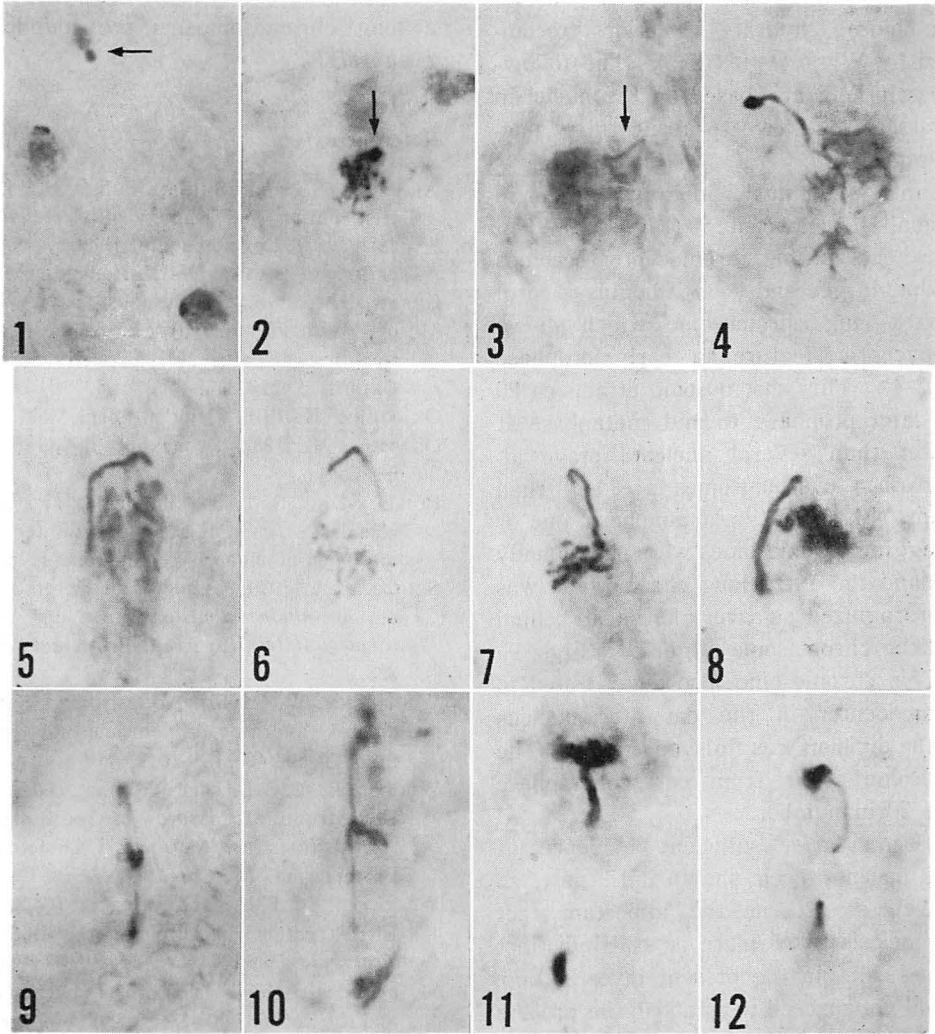


**Hiroshi YABU and Ikuko SHIHIRA-ISHIKAWA: A long chromosome  
in the cyst of *Acetabularia ryukyuensis* OKAMURA et YAMADA**

*Acetabularia ryukyuensis* which was first described as *A. mediterranea* by OKAMURA (1916) and renamed the present name (OKAMURA, 1932) is known to be distrib-

uted only in Okinawa and its neighbours (ARASAKI and SHIHIRA-ISHIKAWA, 1979). During the recent investigation on this alga to observe the nuclear divisions in the cyst



Figs. 1-12. Various stages of nuclear division in the cysts of *Acetabularia ryukyuensis* OKAMURA et YAMADA. 1. Part of the cyst with two interphase nuclei (seen in the lower side) and one late telophase nucleus (seen in the upper side). Arrow indicates the chromocenter which was transformed from a long chromosome; 2. Early prophase. Arrow indicates the chromocenter which began to transform into a long chromosome; 3. More advanced stage than Fig. 2. Arrow indicates V-shaped long chromosome; 4. Nearly the same stage as Fig. 3. The substrate of chromocenter still remains at the terminal portion of a long chromosome. 5. Late prophase; 6-8. Metaphase; 9-12. Anaphase; Magnification: All Figures.  $\times 1900$ .

leading to gamete formation, we found the presence of an extra long chromosome in its nuclei. The examined plants were collected on March 15, 1981 at Nagura Bay in Ishigaki Island, Okinawa Prefecture and were brought to the laboratory in Osaka University to be kept alive in Jamarin artificial seawater for 9 weeks until the time of fixing. They were fixed in acetic alcohol (1:3) and stained with aceto-iron-haematoxylin-chloral hydrate solution recommended by WITTMANN (1965). The following descriptions are based on the nuclei in the cysts at their two to about thirty nucleate stages.

The interphase nuclei in a cyst comprise one small chromocenter (Fig. 1). When prophase sets in, this chromocenter becomes somewhat larger and soon it begins to form the extra long chromosome which shows heteropycnotic feature in early prophase (Figs. 2-4). This chromosome attains ca 20  $\mu\text{m}$  in later prophase to mid metaphase at not later than several nucleate stage although other chromosomes are less than ca 4  $\mu\text{m}$ . (Figs. 5-8). At anaphase, one or more lagging chromosomes were occasionally visible and the extra long chromosome was easily recognized as a very long trail behind the chromosome alignment (Figs. 9-12). This chromosome also degenerated to a chromocenter in the daughter nucleus when the division was finished (Fig. 1). The chromosome count from early metaphase was ca 20 in number.

In *Acetabularia*, sufficient evidence of meiosis has not been shown until now, so that even at present the important fact where meiosis takes place is still indistinct (GREEN 1976). In the present investigation, we could not succeed to establish the process of meiosis in the cysts of gametangia.

The genus *Acetabularia* has been studied

cytologically using *A. mediterranea* and *A. wettsteinii* by SCHLZE (1939), and with *A. mediterranea* by PUISEUX-DAO (1966) and WOODCOCK and MILLER (1973a, b), and the chromosome number was reported in *A. mediterranea* as  $2n=20$  by SCHLZE (1939) and  $2n=8-10$  by PUISEUX-DAO (1966). In both *Acetabularia mediterranea* and *A. wettsteinii* investigated by those workers there has not been recorded the presence of such a long chromosome as we found in *A. ryukyuensis*.

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### 篠 熙・石川依久子\*\*：カサノリの胞嚢内核分裂で見られる長い染色体

沖縄県石垣島名蔵湾で採集したカサノリの胞嚢内に於ける核分裂を観察した。分裂核では約20の染色体が認められ、このうちの1個の染色体は極めて長く、これは休止核内に存在する染色中心粒から生ずることを見た。(\*Faculty of Fisheries, Hokkaido University, Hakodate, Hokkaido, 041 Japan; \*\*Department of Biology, College of General Education, Osaka University, Toyonaka-shi, Osaka, 560 Japan)