

# Systematic Studies on the Conducting Tissue of the Gametophyte in Musci (17) On the Relationships between the Stem and the Rhizome (Forecast)

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# Systematic Studies on the Conducting Tissue of the Gametophyte in Musci

## (17) On the Relationships between the Stem and the Rhizome (Forecast)

Eugenia RON\* and Isawo KAWAI\*\*

**ABSTRACT** : In the research of relationships between the stem and the rhizome of *Polytrichum*, two drops of methyl green solution (0.01g/100cc) were put on the sections, and after 50 seconds, two drops of eosin solution (0.3g/100cc) were put on the methyl green solution. After two hours, the sections were washed with water.

Through the method above mentioned, each tissue of stem is stained with different colors, but the rhizome is not stained with different colors.

In the rhizome method of staining with different colors is a subject in future.

**Key words** : Stem—Rhizome—Leptome—Hydrome—Hydrome sheath

### Introduction

Experiments on the absorption of pigments by the gametophyte of *Polytrichum*, in which tissue within the stem was dyed with different dyes, led to the following results : (1) The cell walls of the epidermis were dyed red with eosin solution. (2) The cell walls of the cortex were dyed blue-green with methyl green solution. (3) The cytoplasm of the leptome was dyed red with eosin solution. (4) The cell walls of the hydrome were dyed violet-brown with solution of aniline blue and eosin. But by this method, the stems of all species are not always dyed. So experiment on staining of sections is made and the results were compared between the stem and the rhizome.

### Materials and Methods

The materials used in this research were collection of fresh mosses of *Polytrichum* from the Botanical Garden, Kanazawa University.

**Methods** : Two drops of methyl green solution (0.01g/100cc) let fall on the sections of the stem. After 50 seconds, two drops of eosin solution (0.3g/100cc) let fall on the methyl green solution. After the two hours the sections are washed with water and observed.

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\* Present address : Department of Botany, Faculty of Biology, Complutense University, 28040 Madrid, Spain.

\*\*Department of Biology, Faculty of Science, Kanazawa University, Kanazawa 920, Japan.

### Results

In sections of the stem, cell walls of the epidermis were dyed red, and cell walls of the cortex were dyed blue-green. Cytoplasm of the leptome was dyed red. Cell walls of the hydrome sheath and the hydrome were dyed brown. The lower part of the stem is smaller and has a rounded triangular shape.

The highest part of the rhizome also has this shape and three parts of its central strand (inside the hydrome sheath) are hollow.

The leptome outside the hollow parts of the central strand get bigger, and shoot out from there to the three apexes of triangle.

Ring of the cortex is divided in three parts, and in the central layer of the cortex, cells are very big.

On the surface of the three apexes special tissues are formed, and several rhizoids shoot from them. The rhizome becomes larger and has a round shape.

### Summary

The stem is differentiated into concentric circles, and in the rhizome the cortex is like a three-leaved clover, and several rhizoides shoot out from three parts of the surface. But each tissue of the rhizome is not dyed with different colors in full.

In the future all tissues of the rhizome will dyed with different colors, and the relationships between the stem and the rhizome will be researched.

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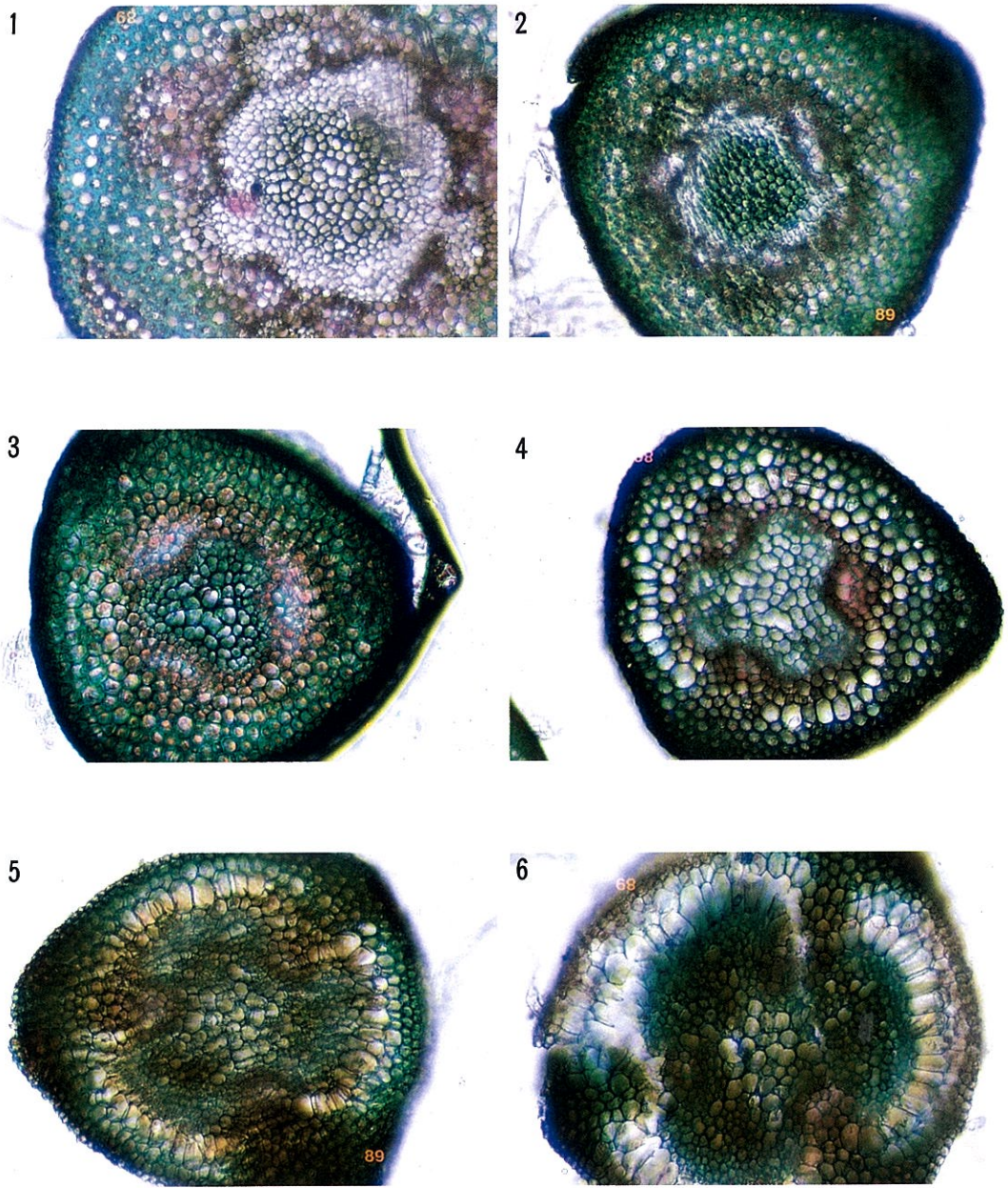


Fig. 1 : Upper part of the stem (cell walls of the epidermis are red, cell walls of the cortex are blue-greens, cytoplasm of the leptome is red, cell walls of the hydrome sheath and the hydrome are brown).

Fig. 2 : Lower part of the stem (smaller than the upper, and triangular round shape).

Fig. 3 : The highest part of the rhizome. The central strand (inside the hydrome sheath) is triangular round shape.

Fig. 4 : The leptome becomes three parts of round shape.

Fig. 5 : The cortex is divided into three parts, and in the central layer of each round cortex, cells get bigger and the central strand becomes smaller.

Fig. 6 : The rhizome becomes round shape, and in three parts of the surface special tinnues are formed.