

Does endogenous budding result in the formation of 'new' myxosporean cells



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Background:

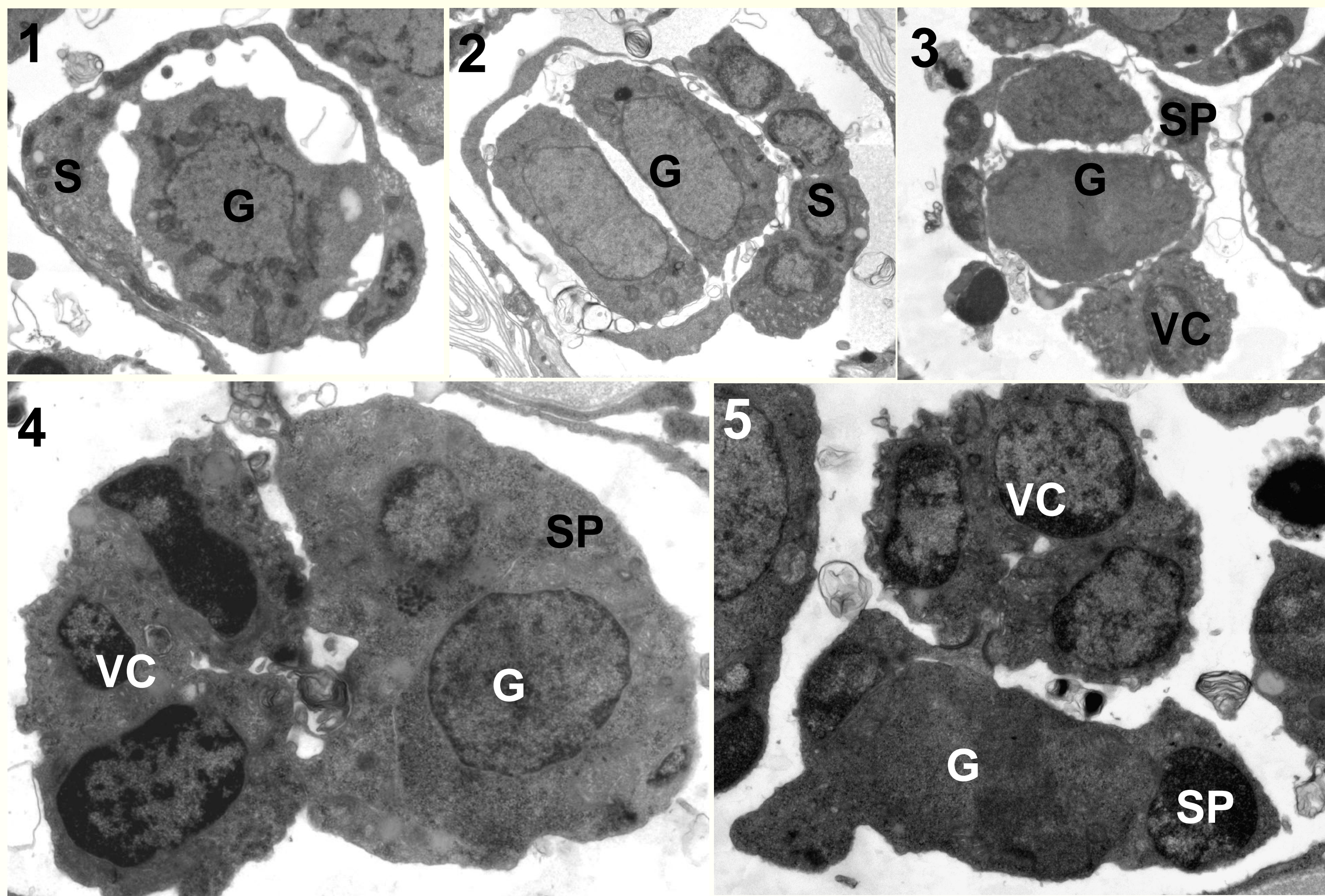
Cells within other cells are one of the phylum Myxozoa's most notable characteristics. The internal cells were first suggested to form within a surrounding cell by Thelohan in 1890. The process is referred to as endogenous budding. Nuclei within syncytial plasmodia are described as generative or somatic. Generative nuclei produce notable endoplasmic reticulum (ER) around them. This develops into a plasma membrane which delimits the nucleus and associated cytoplasm from the rest of the syncytium, thus forming an internal cell. While often reported as occurring, very few studies have detailed this remarkable process ultrastructurally. I therefore conducted a study to specifically examine endogenous budding.

Materials and Methods:

Endogenous budding has been reported during the formation of the actinospore sporoplasm, within the oligochaete host. The pansporocysts present in sections of the *Aurantiactinomyxon* described in poster 83 were therefore examined to determine how the internal 'germ' cells of the sporoplasms are formed.

Results:

Numerous pansporocysts were examined and a clear developmental path was determined for the origin of the internal germ cells and the role of 'endogenous budding'.



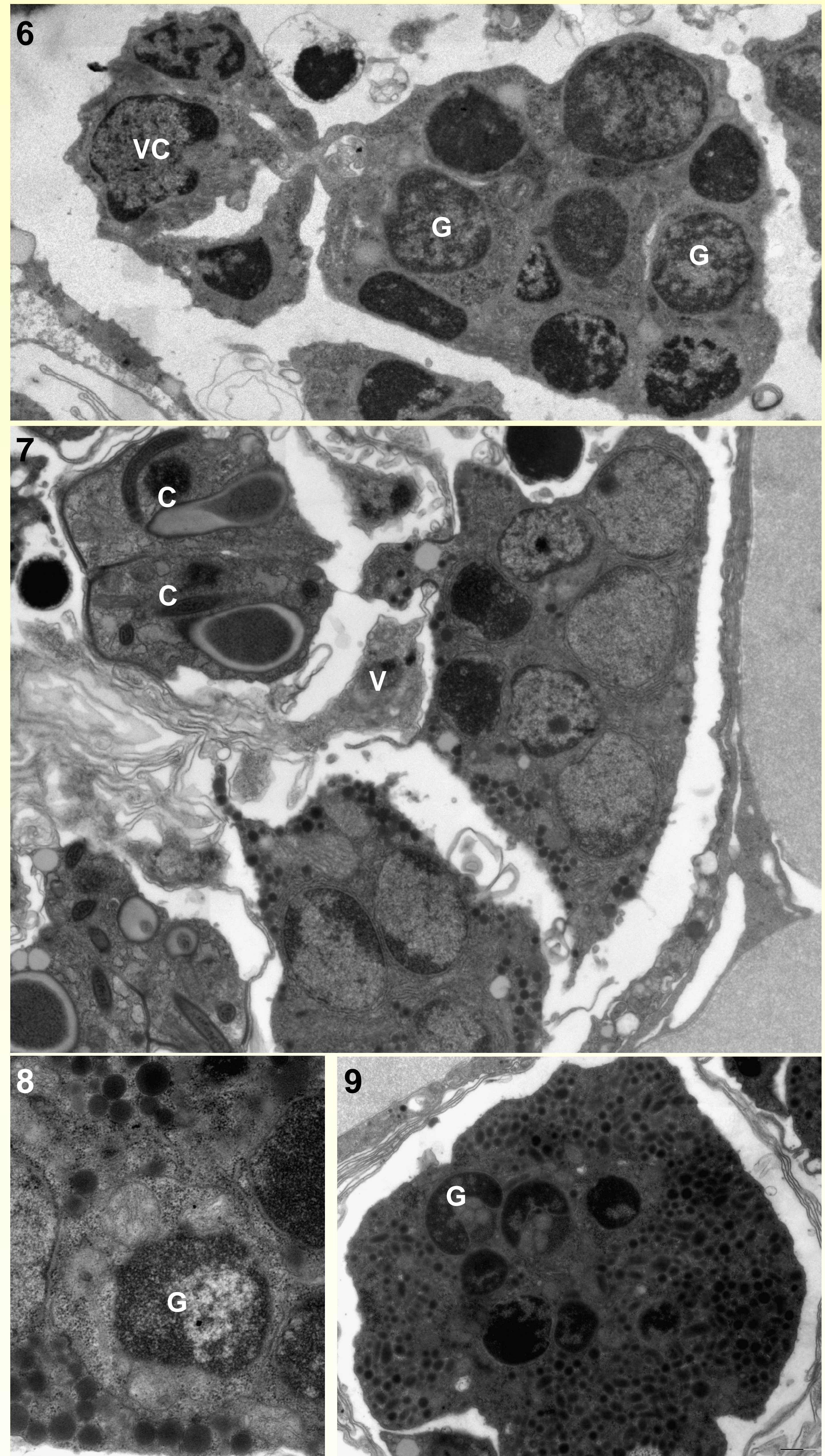
- 1- Sporoblast = germ cell (G) and sporogonic cells (S)
- 2- Cells divide. S cells cluster to polarise sporoblast.
- 3- S cells become organised into valvocapsulogenic (VC) and sporoplasmogenic (SP) cells.
- 4- Fluid separating G from surrounding SP cells removed, resulting in sporoplasm formed by SP cells with internal germ cells.
- 5- Connection between VC and sporoplasm is reduced.

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6- Cells continue dividing.

7- VC cells form capsulogenic (C) and valvogenic cells (V). G cells become indistinct. Sporoplasm appears full of nuclei surrounded by masses of ER.

8- Plasma membrane of individual G cells becomes visible.

9- Mature sporoplasm containing G cells- G cells of this actinospore appear extremely reduced in structure.

Conclusions:

Endogenous budding to form internal cells does not occur. Rather it is a developmental stage of existing cells. All internal cells of myxozoans arise from cells surrounding one another. Plasma membranes of resultant internal cells become indistinct coinciding with a dramatic increase in ER. The individual cells become clearly visible again later in development.