

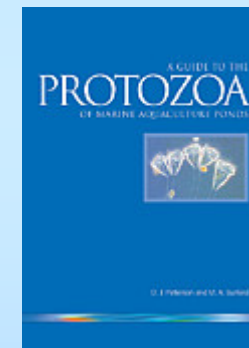
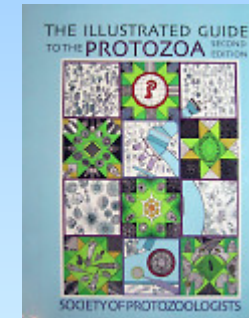
# Chapter 4 Protozoa

- **Protozoa are the most primitive unicellular animals.**
- **Protozoa possess all the essential life characteristics of Metazoa. It has organelle to perform various life functions.**

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Xiamen University**

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# Contents

## 4.1 General morphology

### 4.1.1 Size and form

### 4.1.2 cytosome

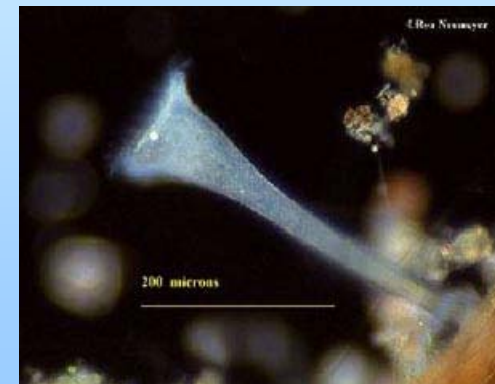
### 4.1.3 Shell and skeleton

### 4.1.4 Nucleus

### 4.1.5 Organelle

## 4.2 Classification

## 4.3 Biology and Significance



# 4.1 General morphology

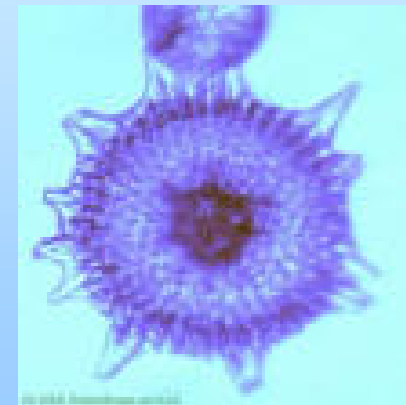
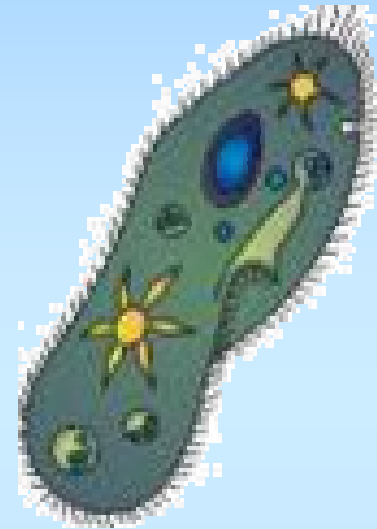
## 4.1.1 Size and form

- size: smaller than  $250\mu\text{m}$
- form: varies greatly

## 4.1.2 Cytosome

- endoplasm
- ectoplasm

**pellicle: hard thin membrane**



## 4.1.3 Shell and skeleton

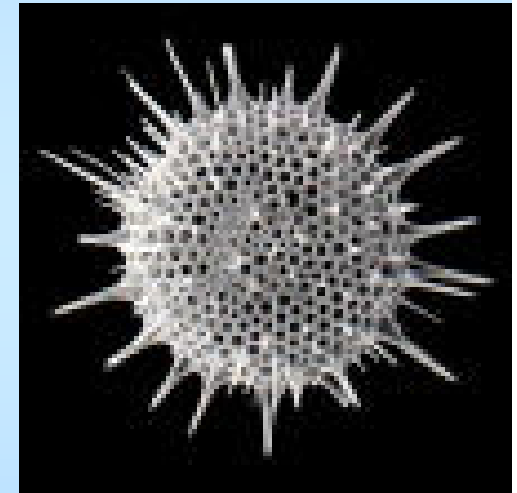
protect cell

1 shell:

- siliceous: *Distephanes* and Radiolaria
- calcareous: *Globigerina*
- pseudochitinous or tectin: Tintinnida

2 spicules:

- siliceous: Radiolaria
- calcareous: Foraminifera



## **4.1.4 Nucleus**

- **vesicular nucleus: less chromatin, uneven distribution**
- **massive nucleus: more chromatin, even and massive distribution**

## **4.1.5 Organelle**

**differentiated from cytoplasm for serving particular vital functions**

**1 locomotive organelle**

**(1) pseudopodia**

**(2) cilia**

**2 nutritive organelle: cytostome, cytopharynx, food vacuole, cytophyge etc.**

**3 excretive organelle: contractile vacuole**

# Contents

## 4.1 General morphology

## 4.2 Classification

4.2.1 Class Sarcodina (肉足虫纲)

4.2.2 Class Ciliophora (纤毛虫纲)

## 4.3 Biology and Significance



## **4.2 Classification**

**4.2.1 Class Sarcodina (肉足虫纲)**

**4.2.2 Class Ciliophora (纤毛虫纲)**

**4.2.3 Class Sporozoa (孢子虫纲)**

**4.2.4 Class Suctoria (吸管虫纲)**

## **4.2.1 Class Sarcodina**

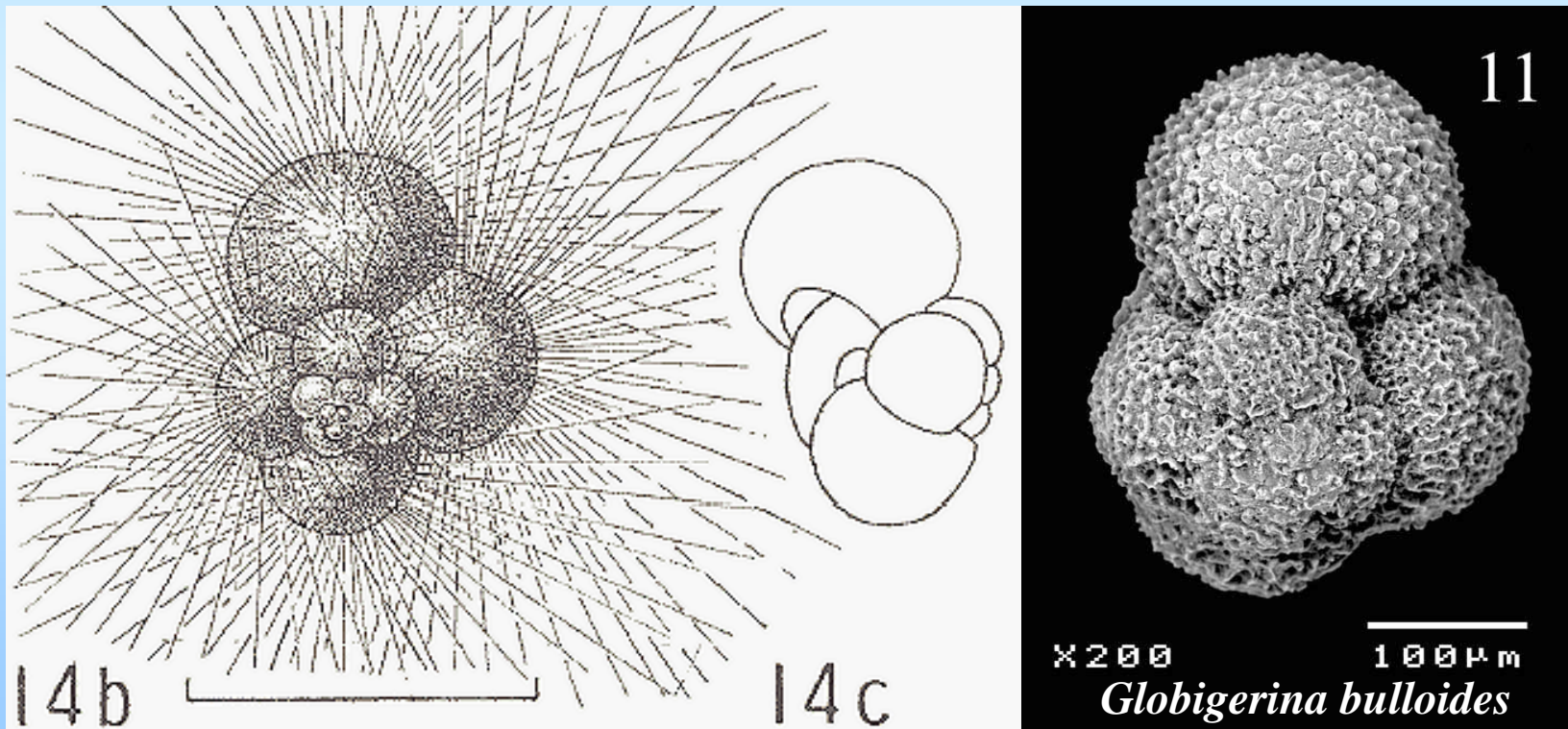
- (1) pseudopodia as locomotive and feeding organelles**
- (2) no hard pellicle, shape of body can change**
- (3) coated with out shell which bears pores, pseudopodia stretching out from shell pores**

**1 Subclass Rhizopoda (根足亚纲)**

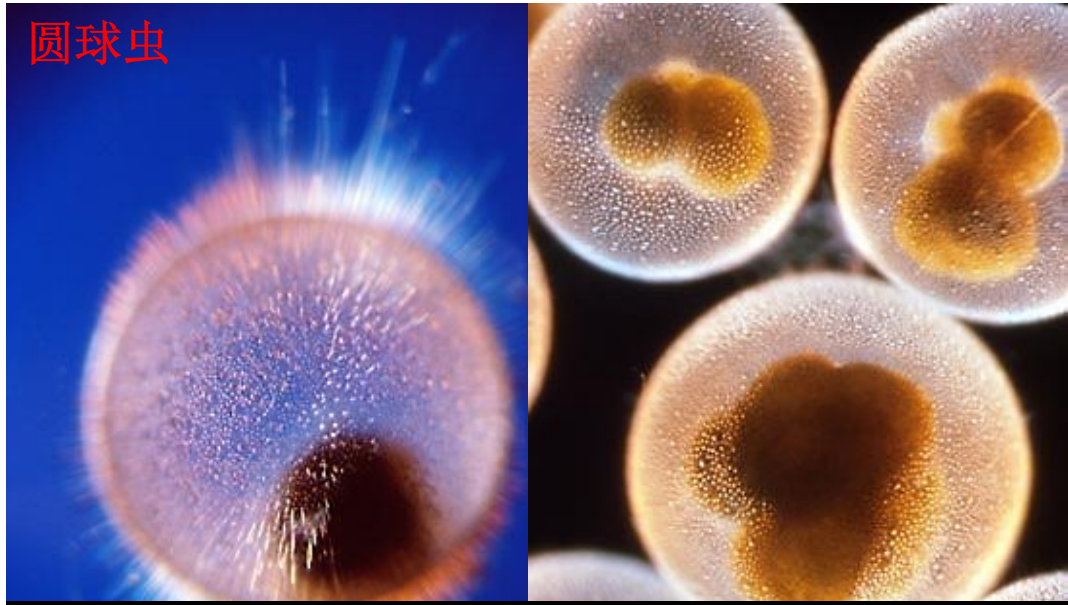
**Foraminifera (有孔虫目)**

**2 Subclass Radiolaria (放射虫亚纲)**

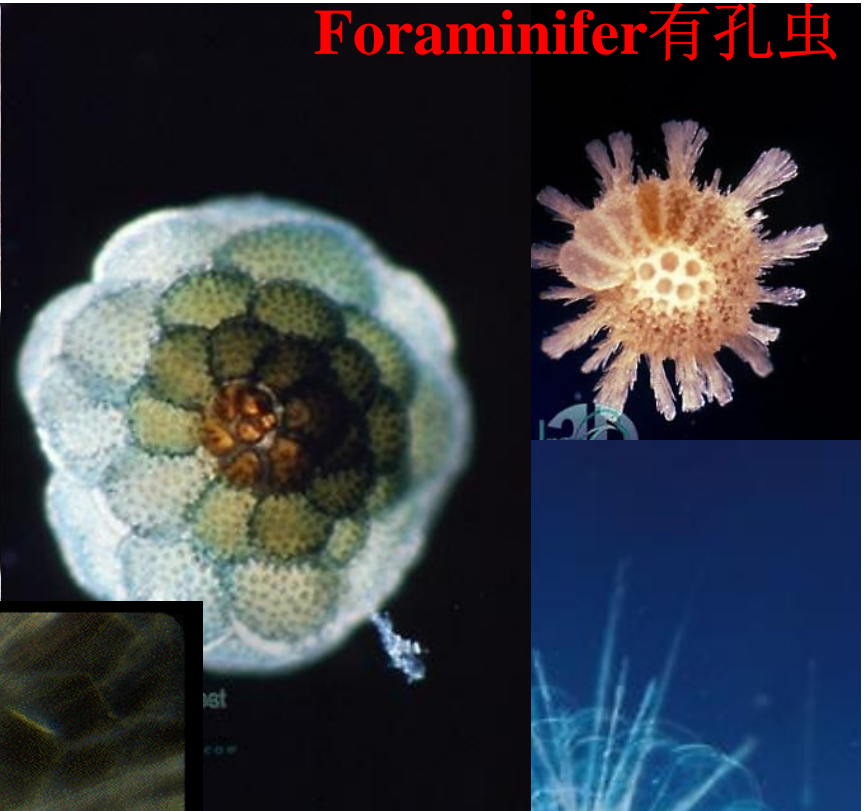
# *Globigerina* 抱球虫属



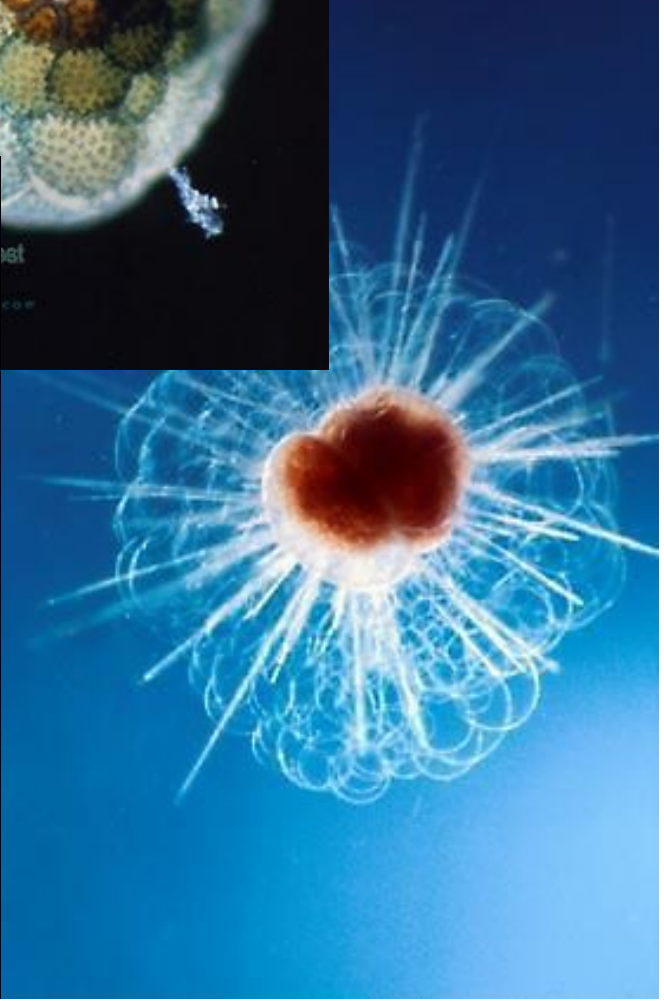
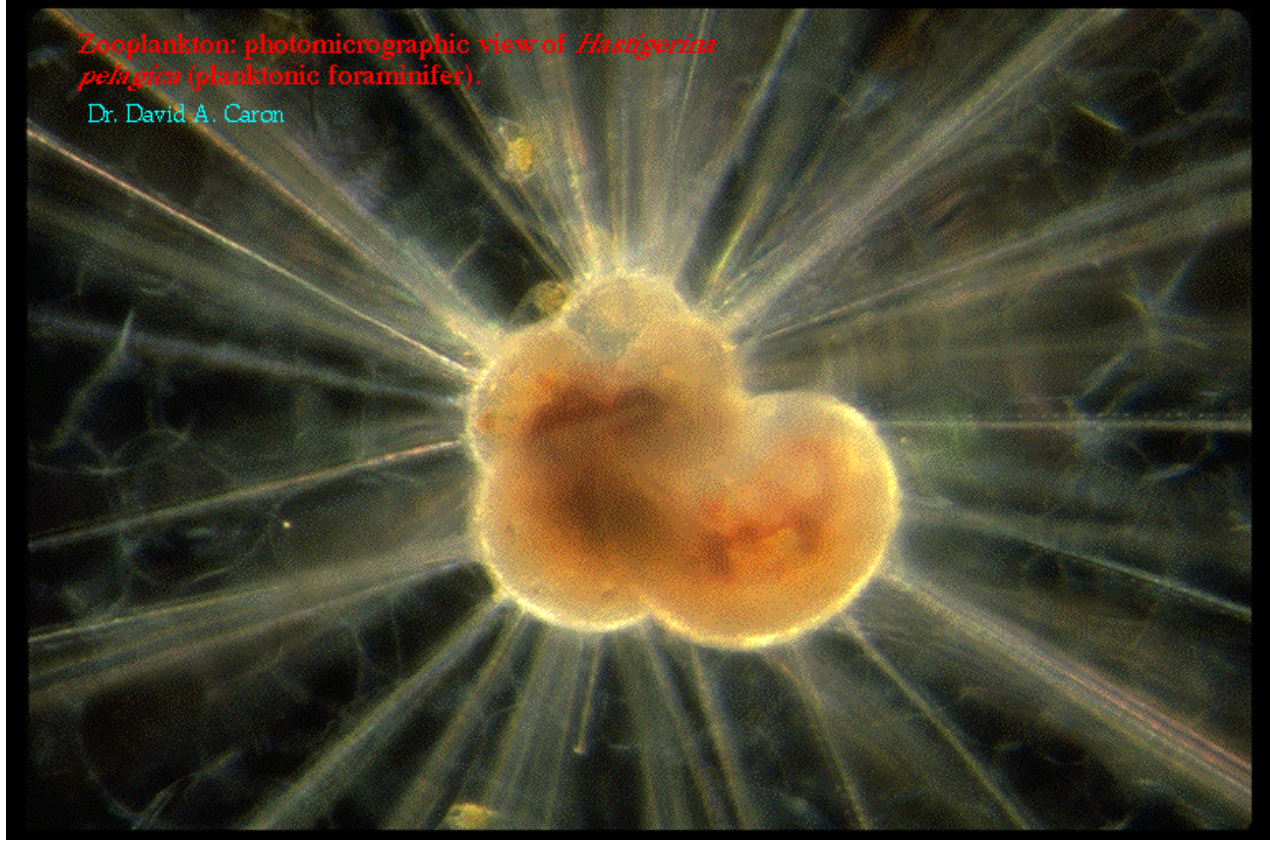
圆球虫



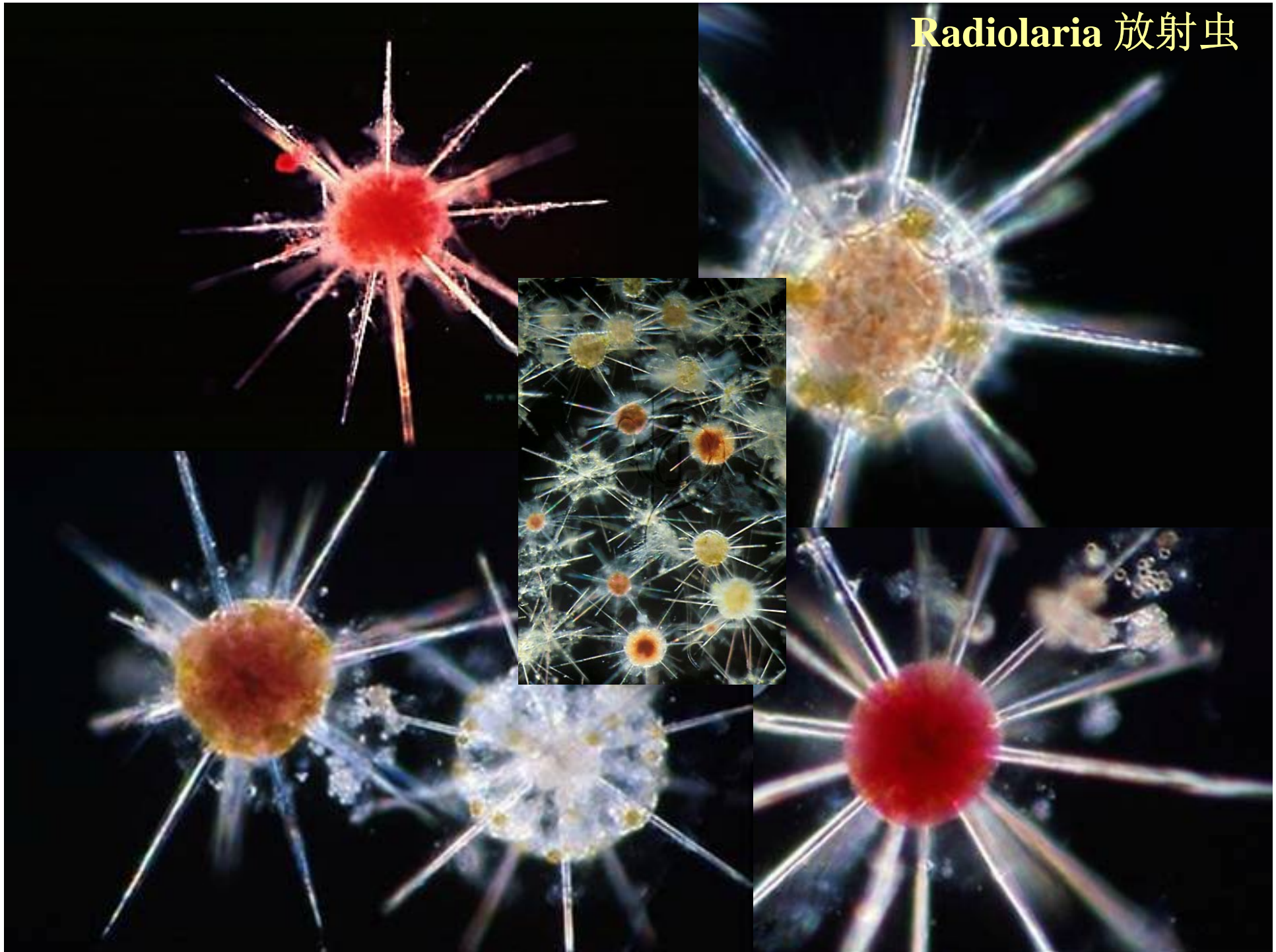
Foraminifer 有孔虫

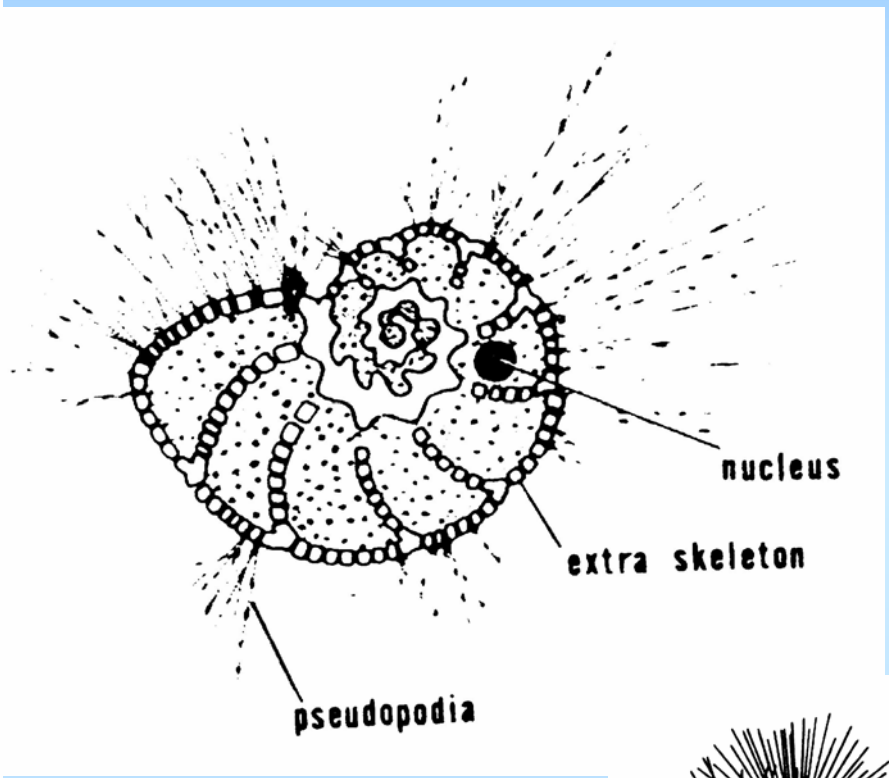
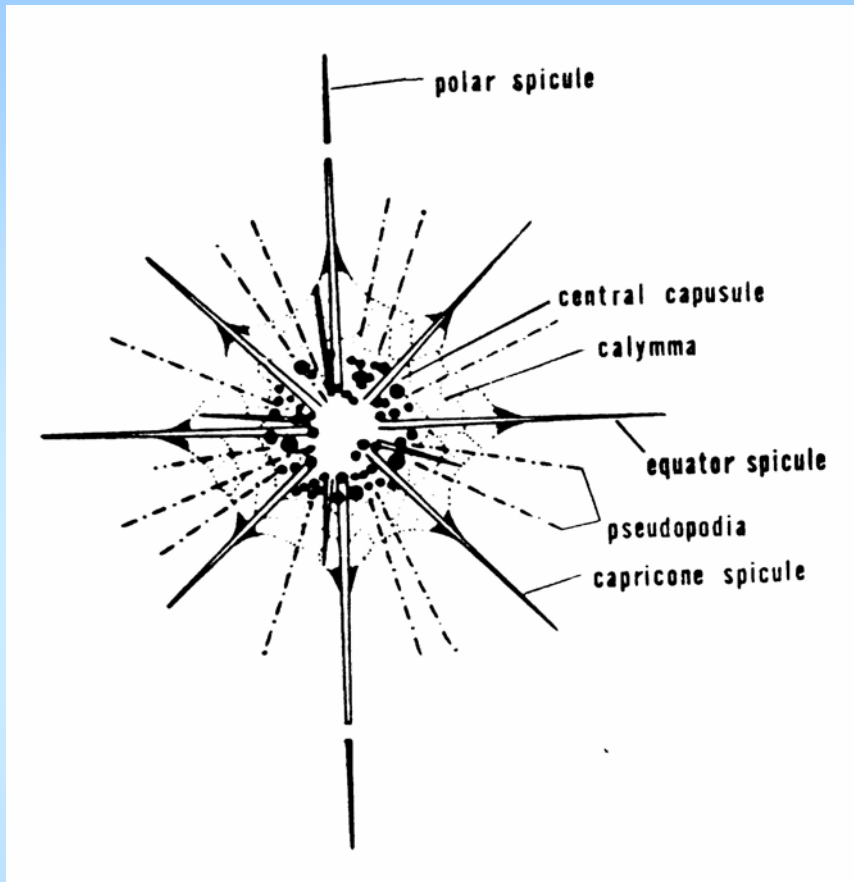


Zooplankton: photomicrographic view of *Hastigerina pelagica* (planktonic foraminifer).  
Dr. David A. Caron



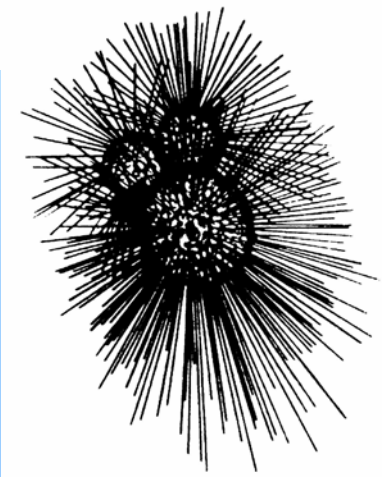
Radiolaria 放射虫





***Radiolaria Acanthometron***

***Foraminifera Globigerina***



## 4.2.2 Class Ciliata

- (1) cilia are the locomotive and food-catching organelles
- (2) cell has a layer of pellicles on the surface for protection and to prevent it from deformation

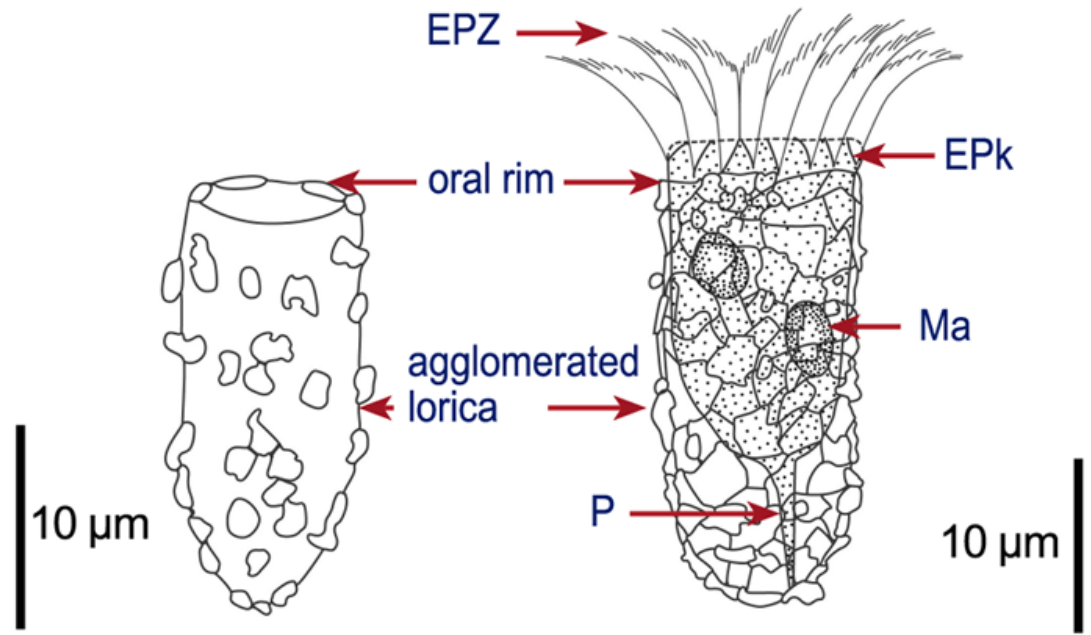
### Order Tintinnida (沙壳纤毛虫目)

gelatinous or pseudochitinous lorica

- (1) Family Tintinnididae: *Leptotintinnus*
- (2) Family Codonellidae: *Tintinnopsis*
- (3) Family Codonellopsidae: *Favella*

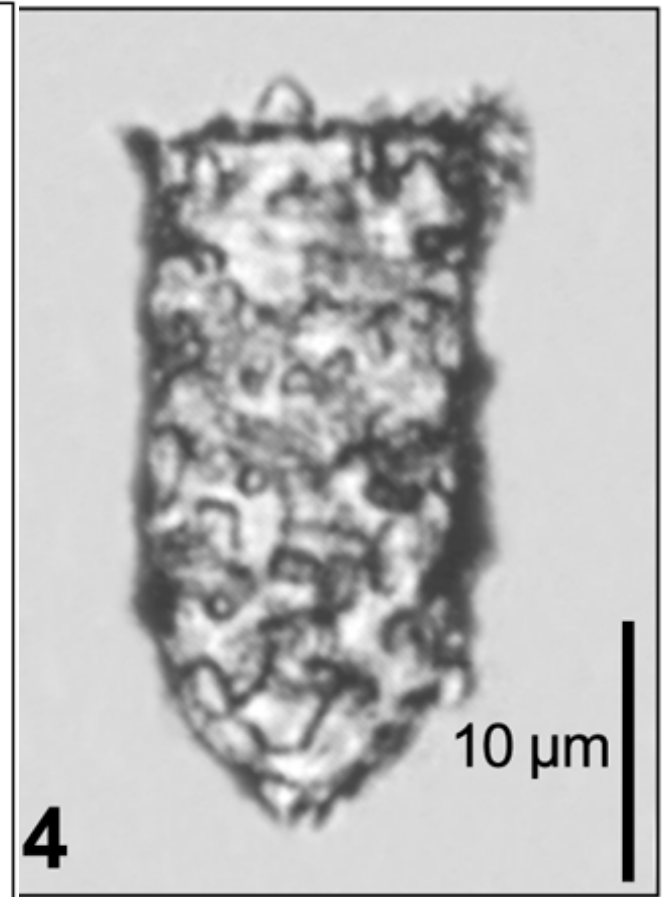
# *Tintinnopsis* 拟铃虫属

*Tintinnopsis nana*



1 a

b



4



# *Favella* 网纹虫属

