

# Radiolaria

## Taxonomy:

Subphylum *Sarcodina*

Class *Actinopodea* Müller, 1858

*Radiolaria* Ehrenberg, 1838

*Polycystina* Ehrenberg, 1847

*Spumellaria* Ehrenberg, 1875

*Nassellaria* Ehrenberg, 1875

## History of study

- First discovered 1834 in plankton tow

## General Biology

- Granular rhizopods or pseudopodia.
- Basically organic with opaline spicular cytoskeleton. Solid spicules
- Spumellaria with inner opaline capsule
- Typically unicellular, some forms colonial
- Holomarine
- Depth range from pole to pole, surf to abyss
- More abundant in deeper water deposits
- Length of life relatively unknown, although a few that have been studied have short lives (i.e. 1-2 weeks).

## Collecting

- Plankton tows
- Thin-sections of mudstones
- Disaggregation through HF, HCl or Acetic acids
- Typically rads are concentrated by dropping a wet rad residue on a glass slide and heating the slide to remove the liquid to concentrate the dried rad residue

## Taphonomy:

- Diagenetically, rads are Opal A, but are commonly transformed to Opal CT.
- Thin-sections reveal small silica-filled outlines.
- In many cases rads are partially pyritized, which is easily altered to  $\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O}$

## Biostratigraphy:

- Oldest radiolaria (thin-sections) are early Cambrian Spumellarians.
- 3-D forms occur in Ordovician conodont residues.
- 1<sup>st</sup> Nassellarians appeared in the Triassic
- ½ of all extant groups appear in Mesozoic i.e. an adaptive radiation
- Radiolarian populations restructured in Permo-Triassic, with the suturing of Pangaea, followed by glacially induced extinction and subsequent adaptive radiation.

## Paleoecology/Ecology

- Number of radiolarian tests increase with depth
- Typically not found in shelf deposits
- Studies of California Borderland indicate abundance related to depth of rad populations
- Bob Folk discovered that some radiolarian deposits in Italy have shallow concentrative mechanism