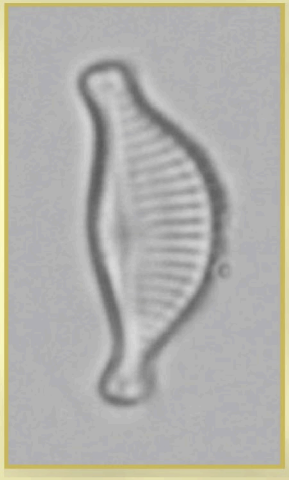
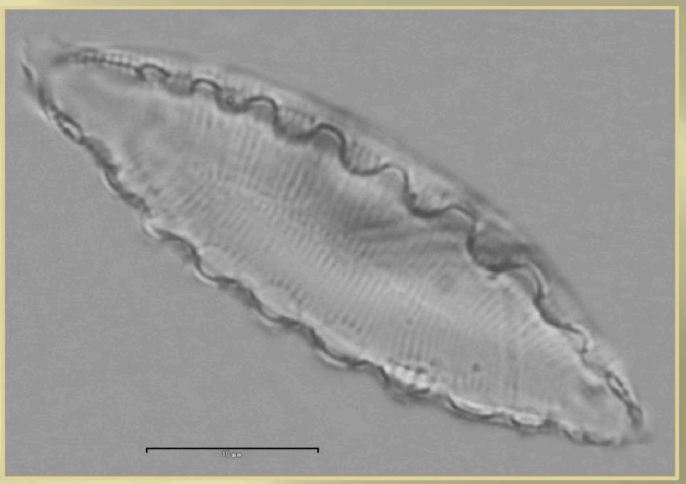
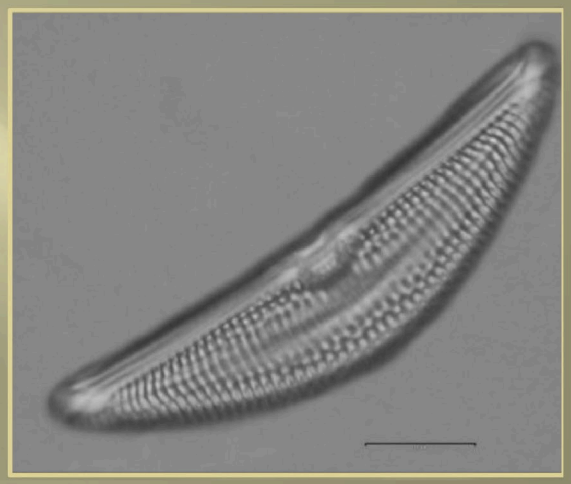
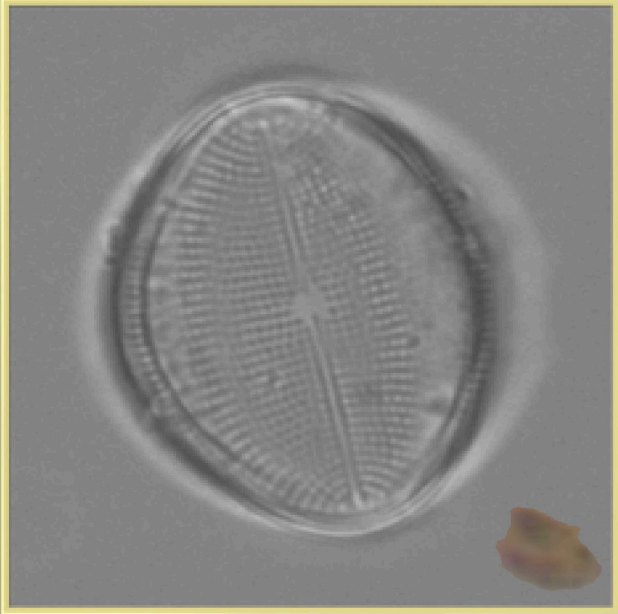
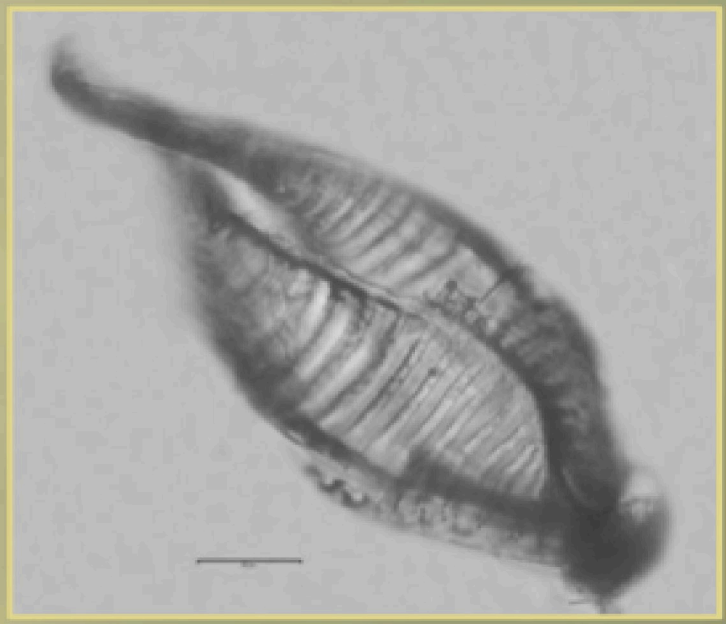




# LE DIATOMEE

Indicatori Biologici





# Cosa sono le diatomee

- Alghe unicellulari, giallo-brune, con guscio siliceo e citoplasma oleoso
- Risalgono al Giurassico Inferiore (140 milioni di anni fa)
- Popolano tutti gli ambienti acquatici
- Migliaia di specie
- Bentoniche e Planctoniche
- Alla base della catena alimentare
- Ruolo ecologico: offrono nutrimento ad animali minuscoli (come i protozoi) e giganteschi (come le balene) e, attraverso la fotosintesi, producono il 25% di ossigeno immesso nell'atmosfera terrestre

**Clorofilla 'a'** e **Clorofilla 'c'**: pigmento sui toni del verde
e pigmenti accessori della fotosintesi come:
**Xantofille**: pigmento bianco-giallastro
**Caroteni**: pigmento arancio-bruno

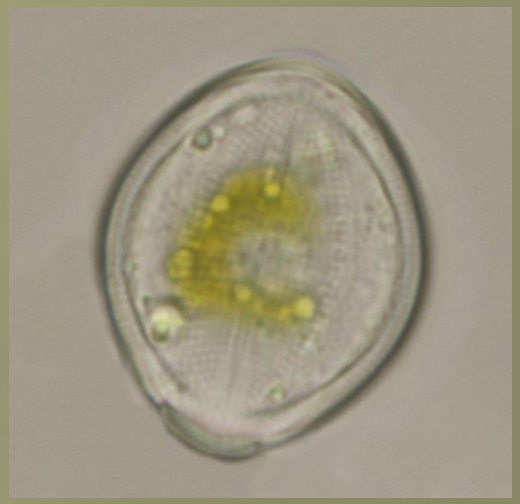
# Quando muoiono… si posano sui fondali, e:

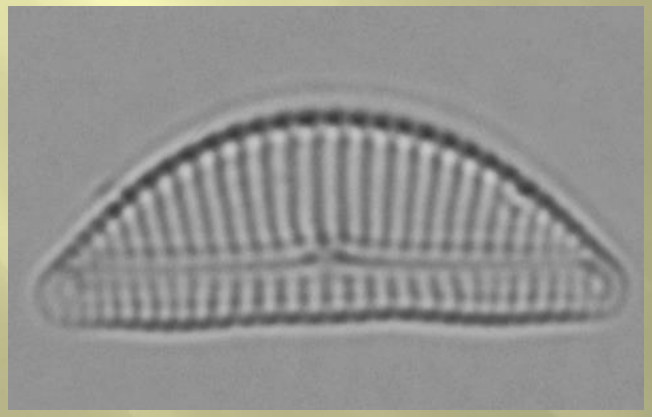
- il citoplasma, *ricco di oli,* si trasforma in petrolio;
- il frustulo dà, invece, origine a rocce friabili, dette "diatomiti" o "farina fossile". Queste, data l'elevata porosità, la durezza e le esigue dimensioni degli elementi silicei che le compongono, vengono usate:
  - insieme alla nitroglicerina nella produzione di dinamite
  - abrasivi (es: nei dentifrici, nella raffinazione dello zucchero) o sostanza assorbente (es: lettiera gatti)
  - nella composizione di filtri (es: piscine, acquari) e traccianti (es: militare)
  - in edilizia (es: nella produzione di mattoni e isolanti) o nell'arte (es: componenti dei colori)
  - in archeologia (es: datazione vasi) o in medicina (es: luogo annegamenti)

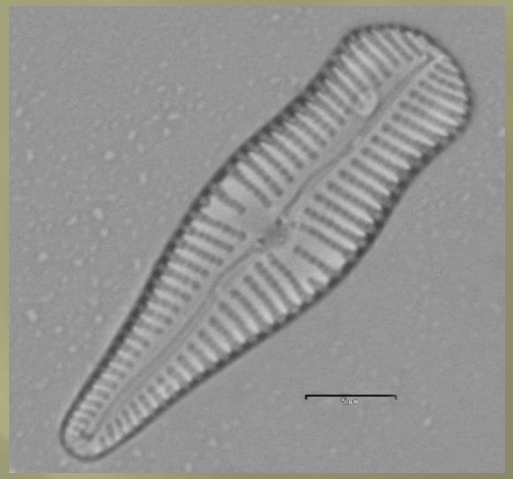
DIATOMITE

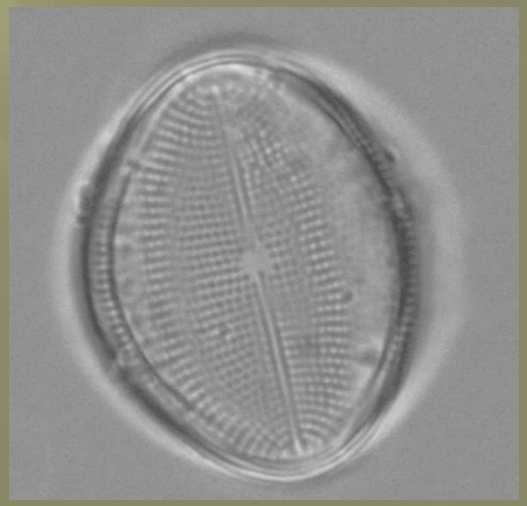
Farina FOSSILE

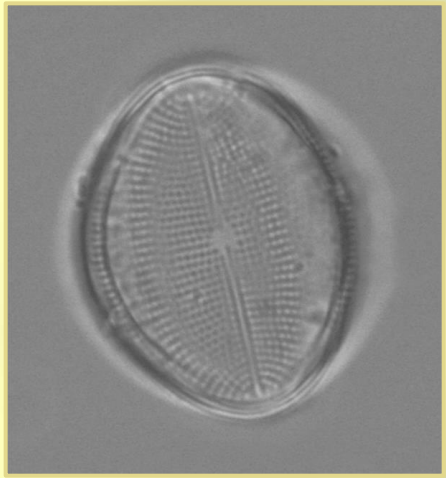
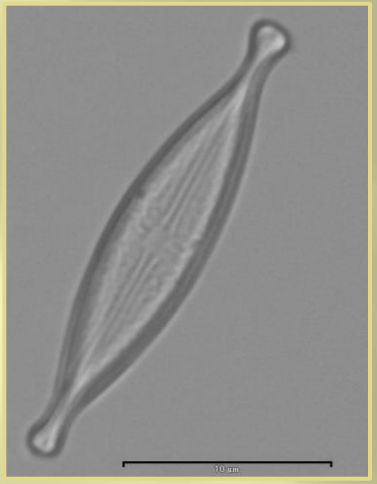
# Dal Vivo e … Non

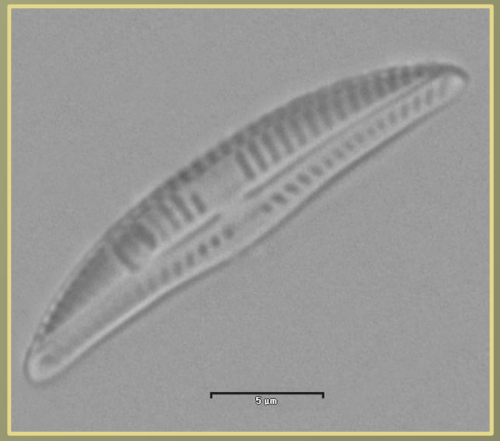
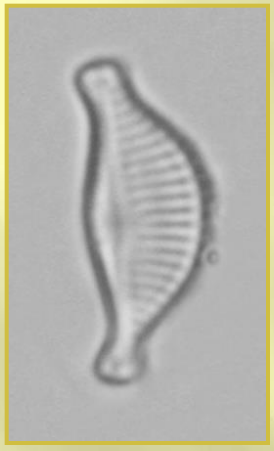
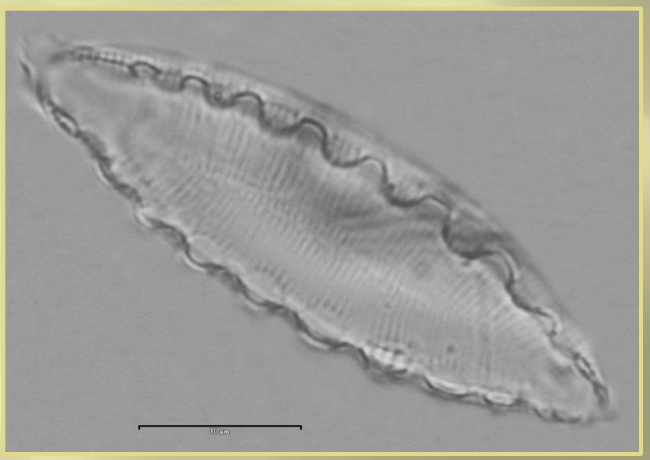
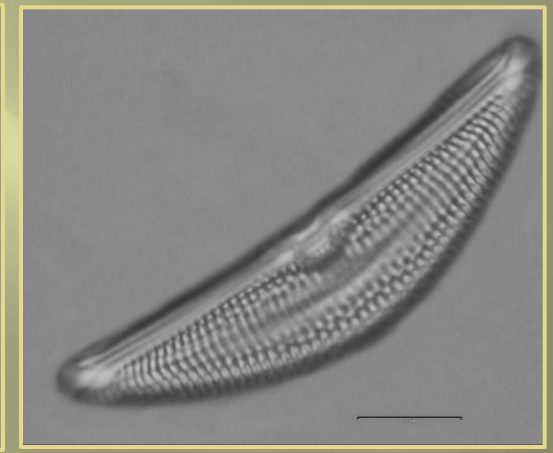


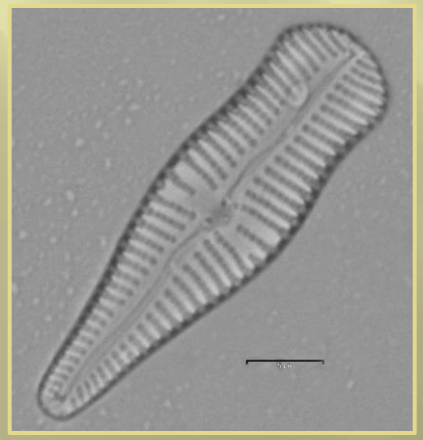


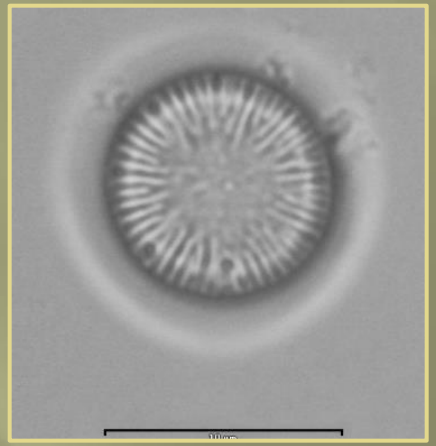
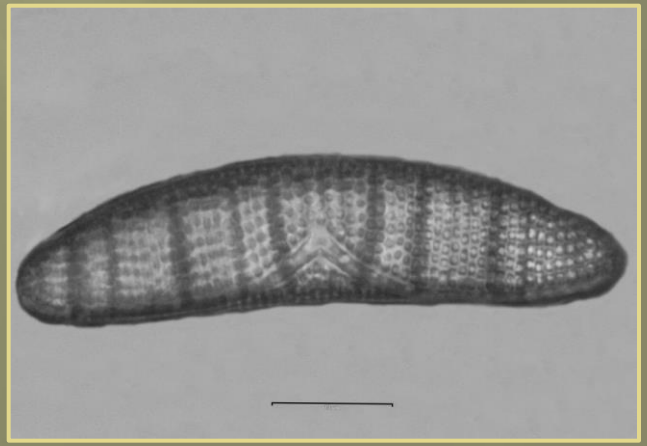






# Come sono fatte

- Frustolo: membrana cellulare fortemente silicizzata
- Rafe: fessura che permette gli scambi tra protoplasma cellulare e ambiente esterno
- Strie: linee che rappresentano l'ornamentazione della valva

# Il FRUSTOLO

# Il FRUSTOLO

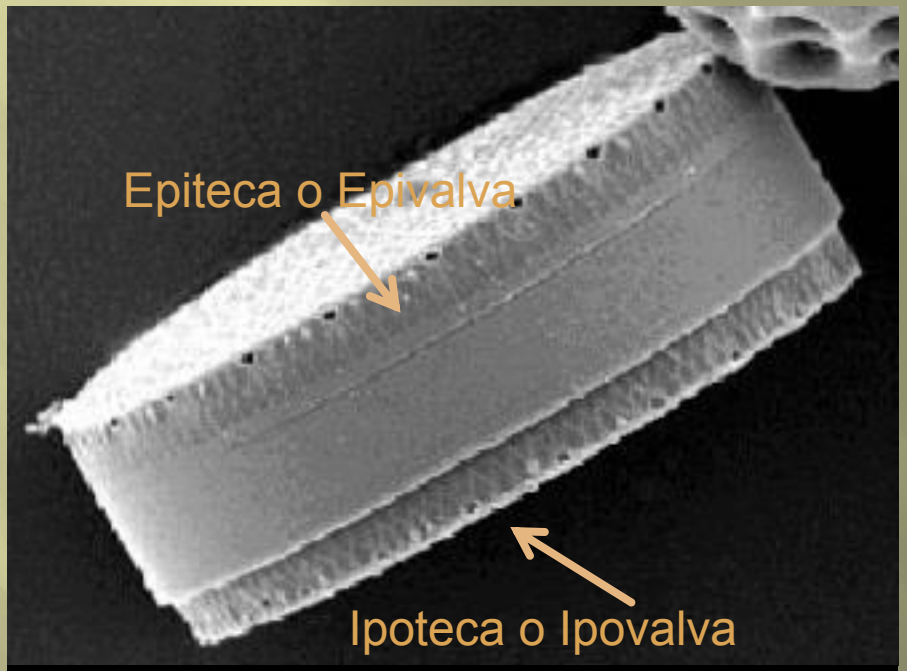
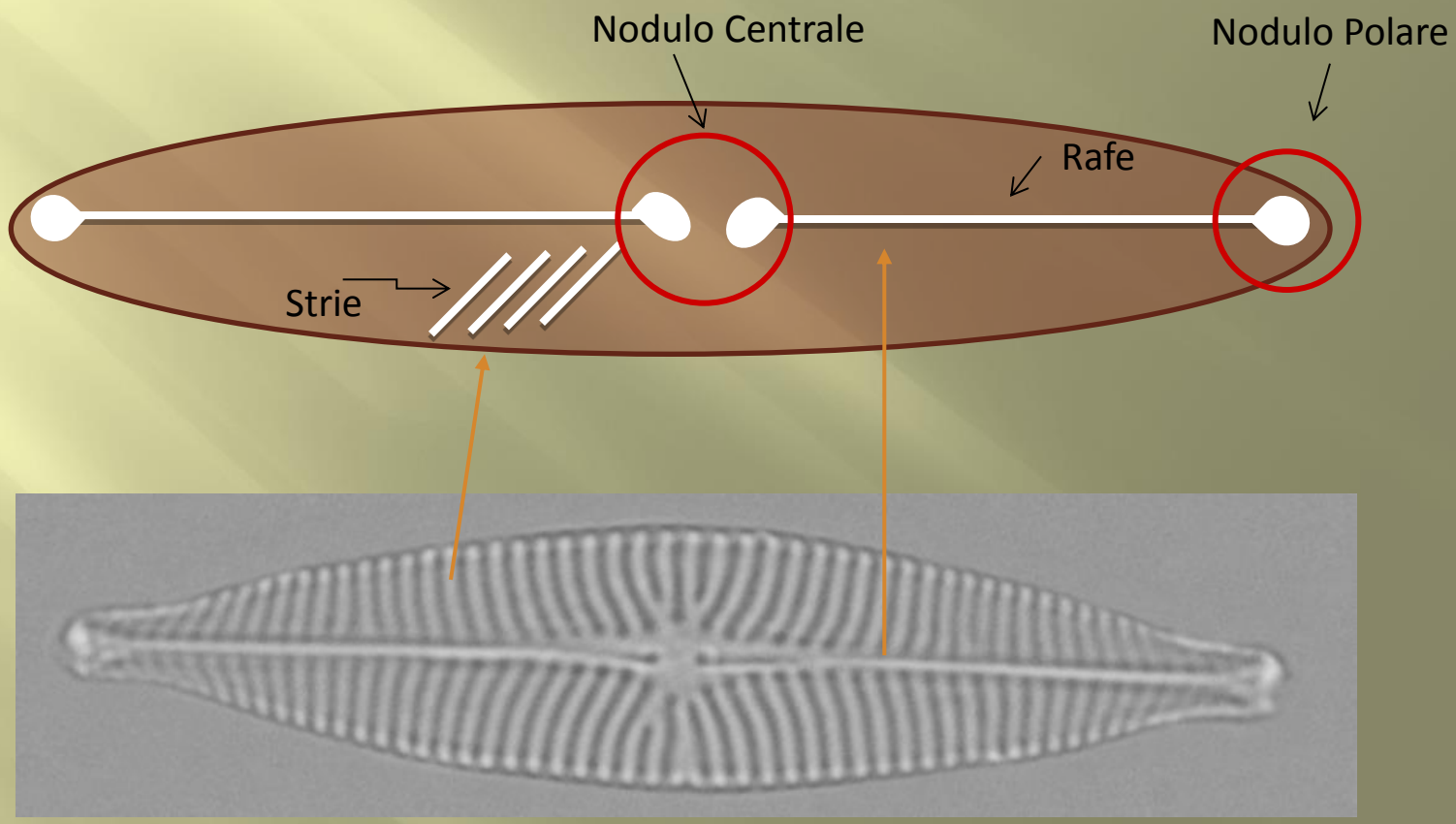


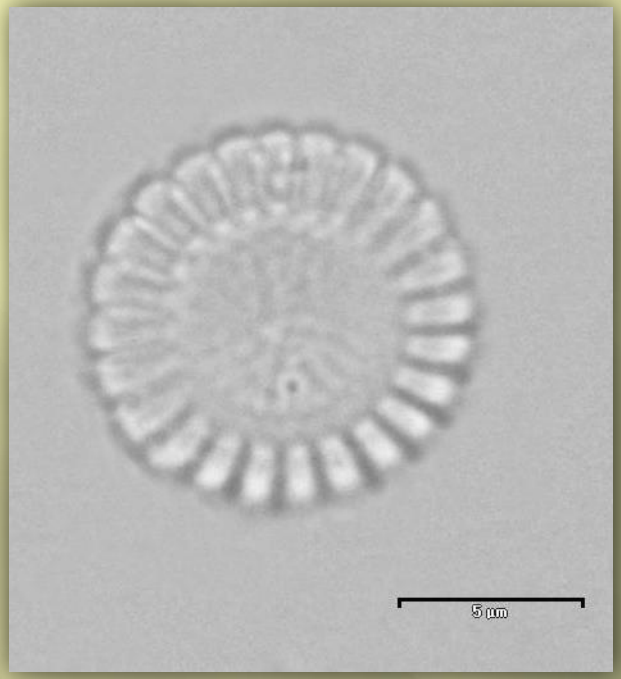

Immagine al microscopio a scansione

# Il RAFE e le STRIE



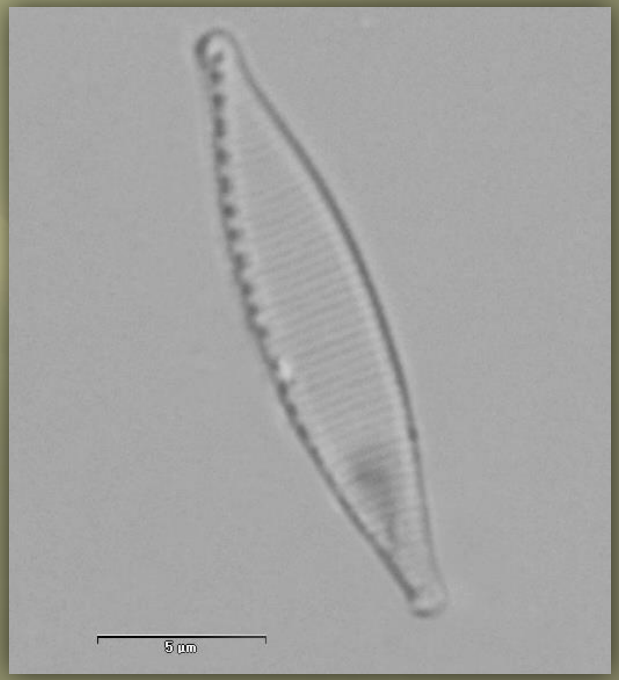
# Chiave dicotomica … … … moooooolto SEMPLIFICATA!!

## CENTRALES




Valve per lo più circolari, triangolari, quadrate. Ornamentazioni disposte come i raggi di una ruota o in cerchi concentrici.

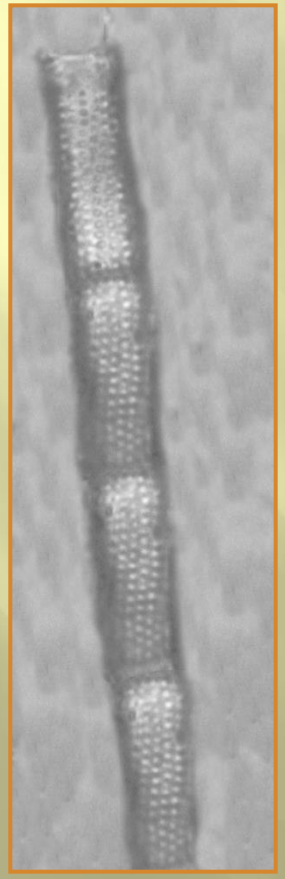
## PENNALES



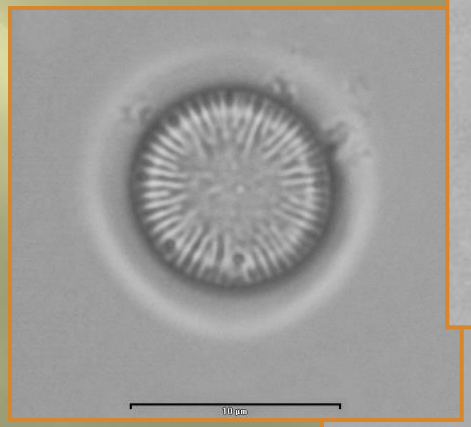

Valve allungate, lanceolate, ellittiche. Ornamentazioni bilaterali e simmetriche rispetto all’asse longitudinale.

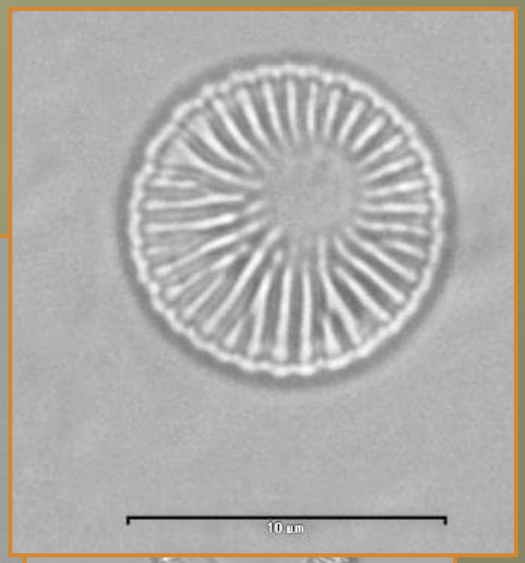
# CENTRALES (arafidee)

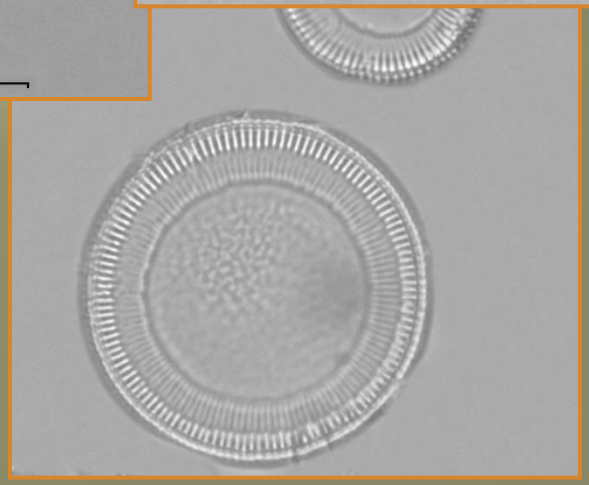
Filamentose e coloniali



Isolate





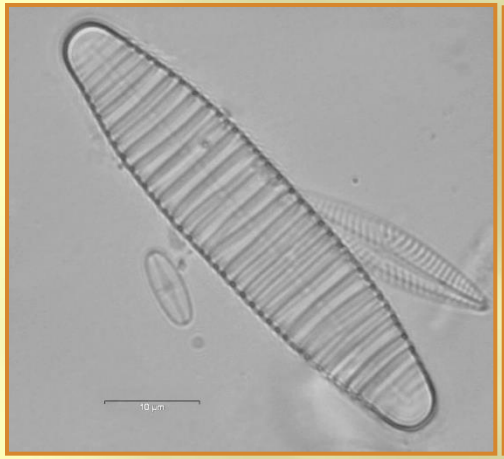
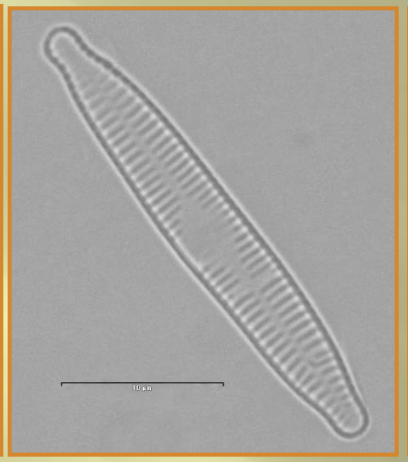
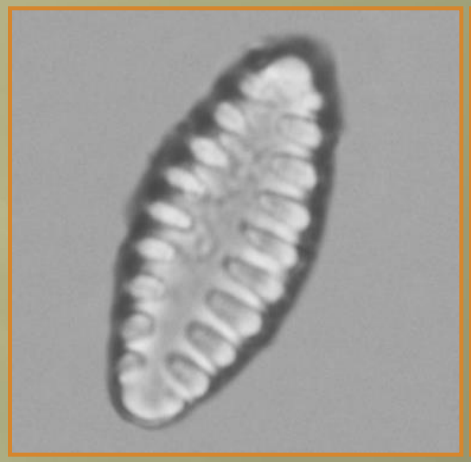
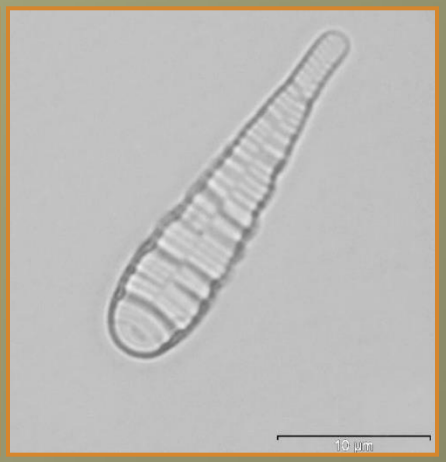



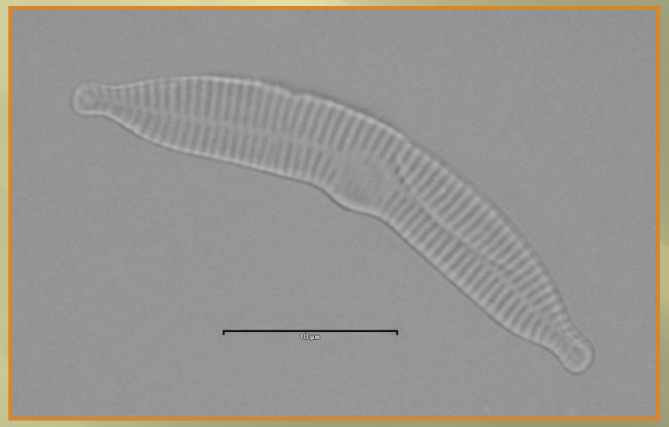
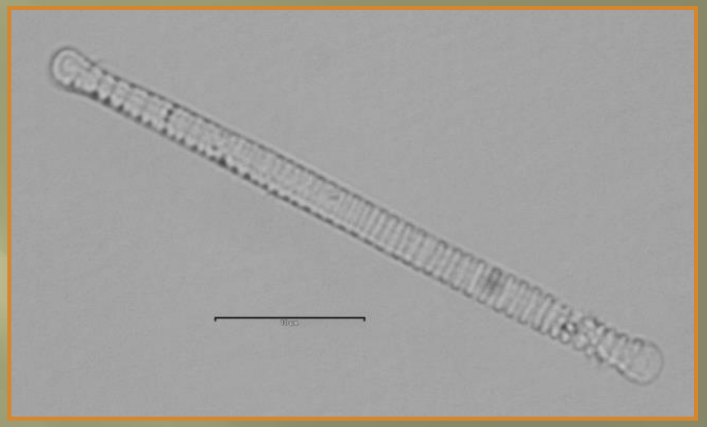
# PENNALES: Il RAFE

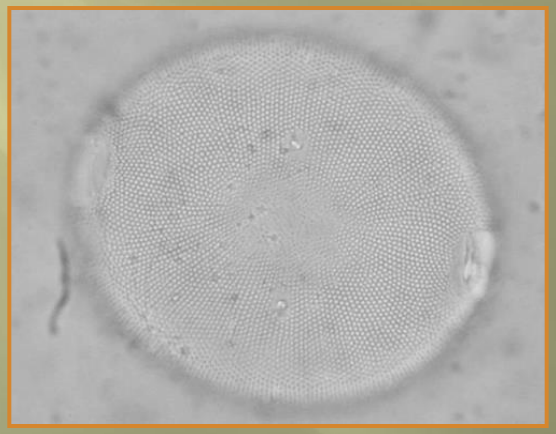
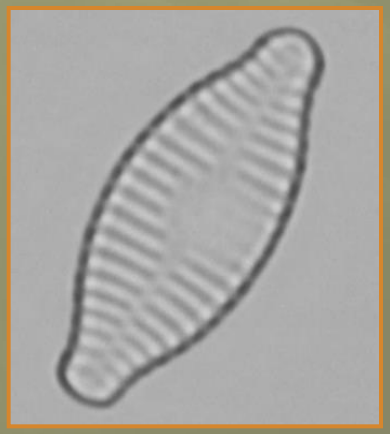
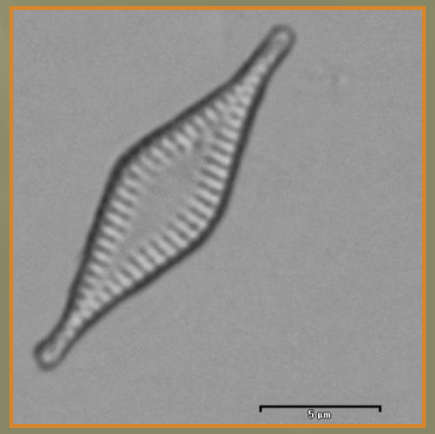
Arafidee: senza rafe

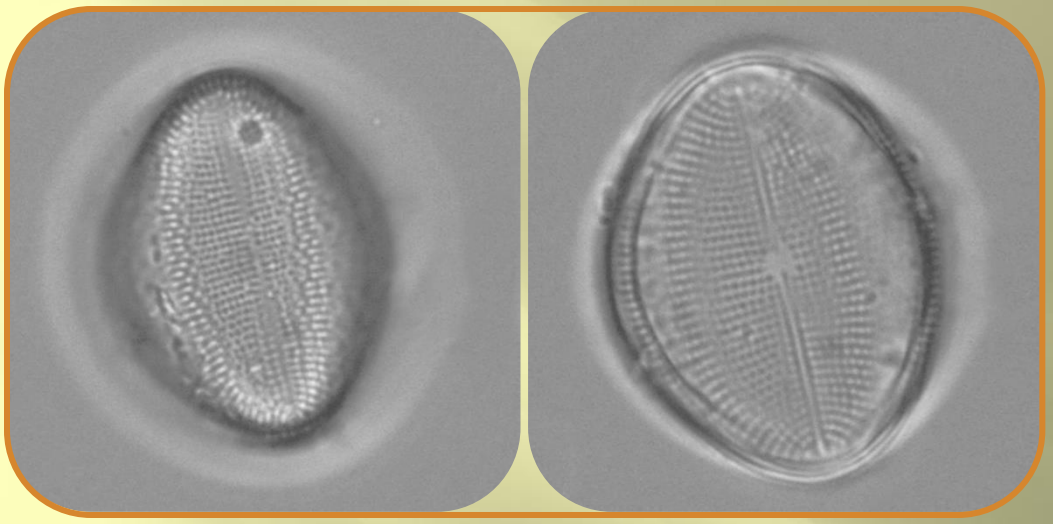
Monorafidee: con il rafe su una sola valva

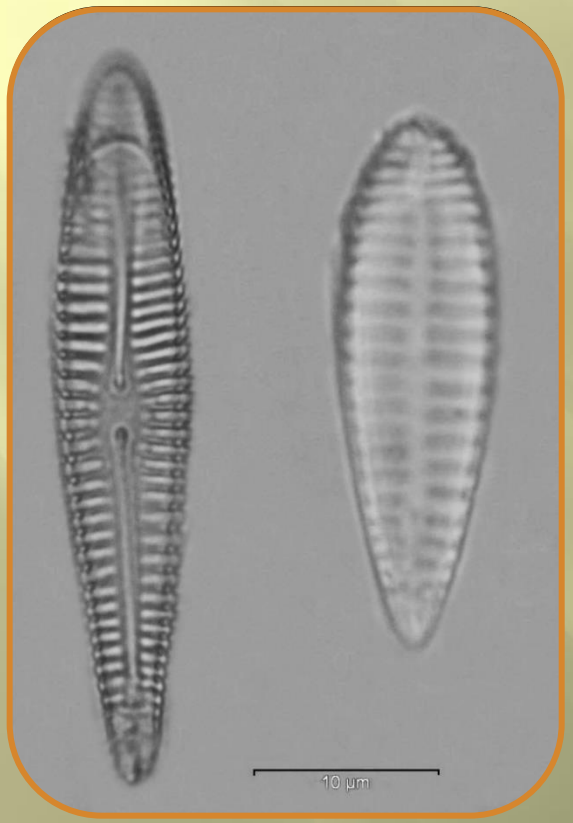
Birafidee: con il rafe su tutte e due le valve

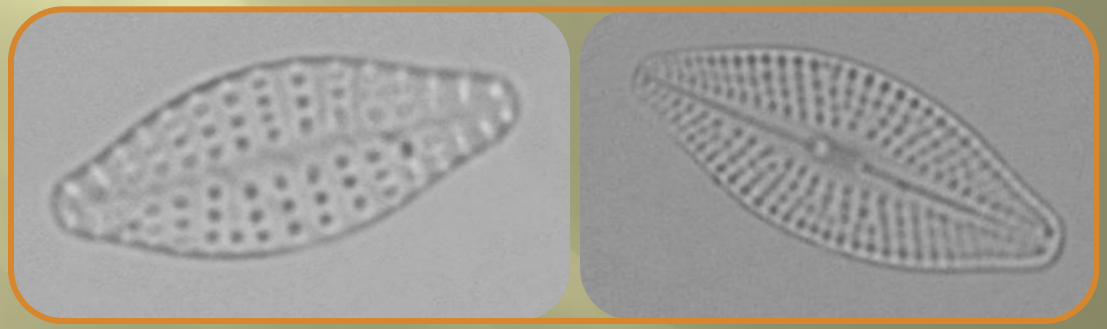

10 µm



10 µm

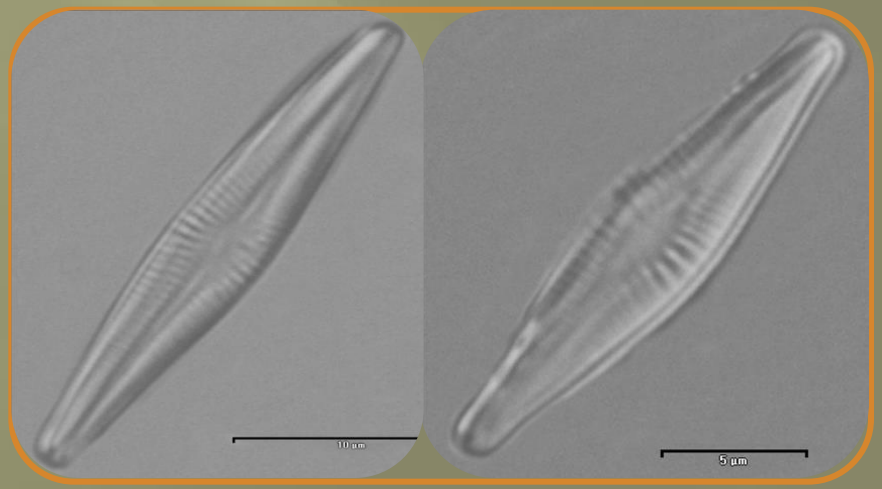
5 µm



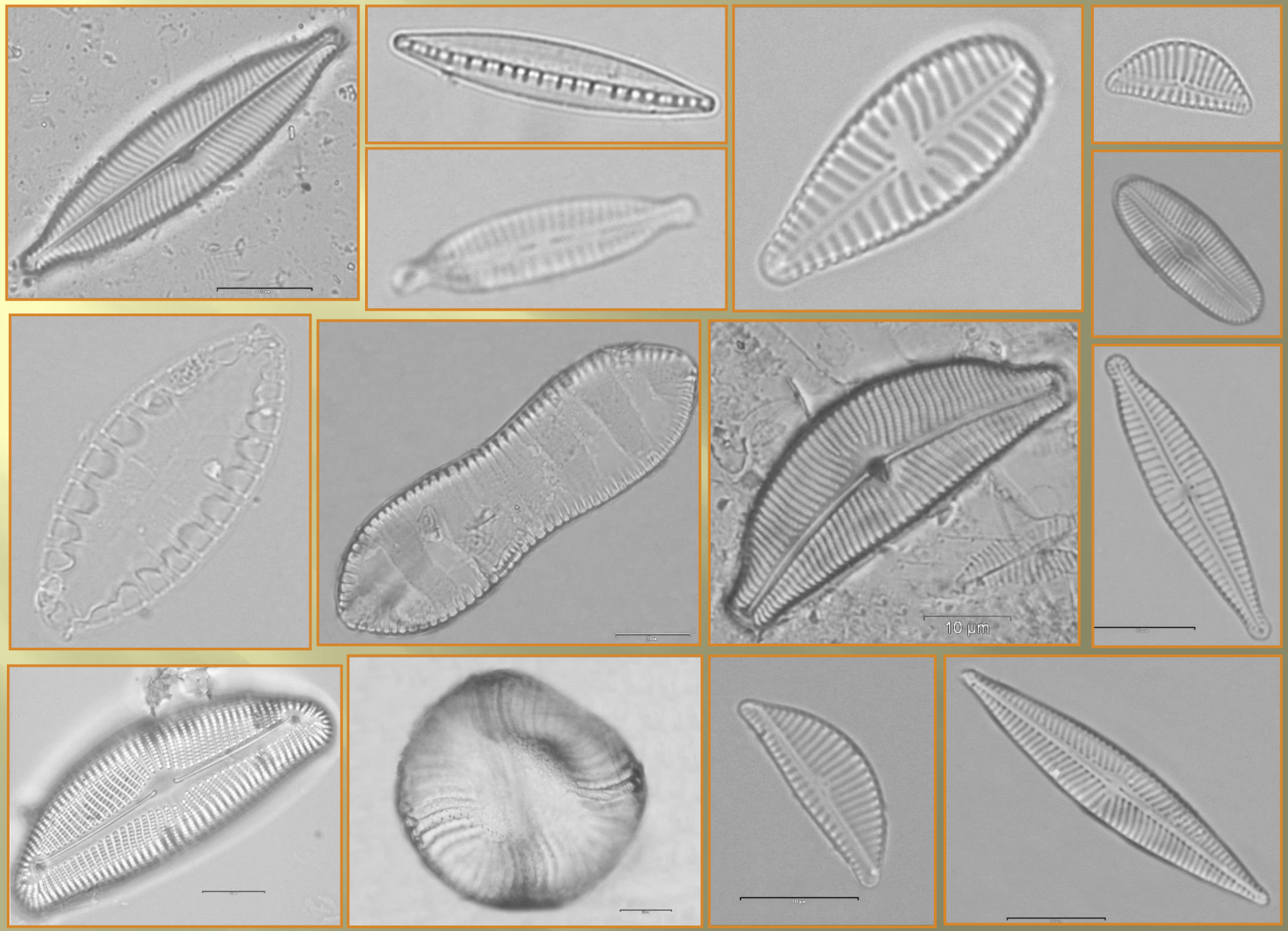



5 µm




10 µm

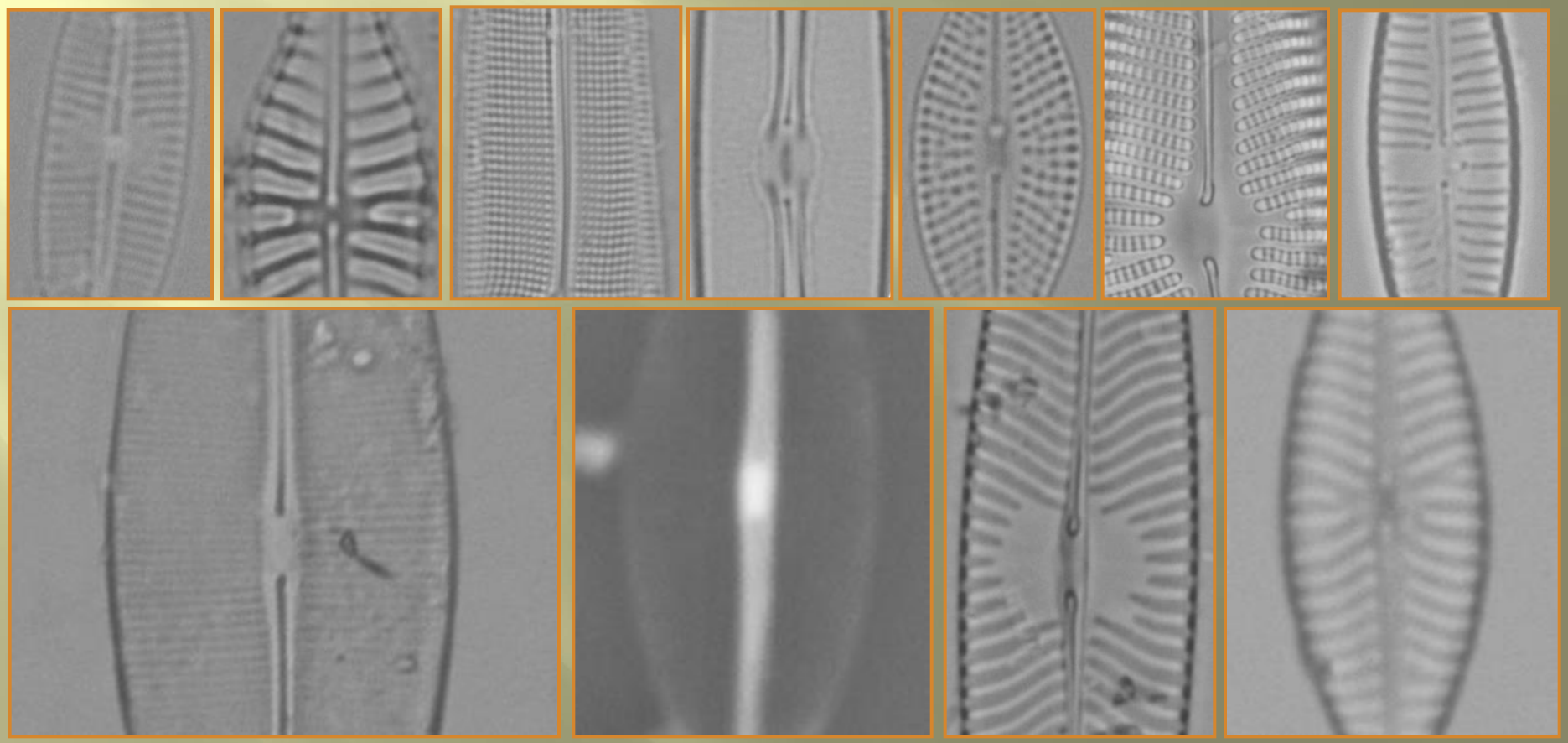



5 µm


10 µm

# PENNALES: Le STRIE

Struttura e Disposizione



# GRAZIE