CURSO-TALLER INTERNACIONAL DE POSTGRADO: DIATOMEAS POLARES

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Salamanca

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INFORME:

Como ya se indicó en la propuesta, este curso está dirigido a la formación de estudiantes de másteres y/o doctorado que se están comenzando a especializarse en un grupo de microalgas, las diatomeas de las regiones polares.
En esta ocasión hemos participado 45 personas de las cuales 25 eran estudiantes predoctorales, 10 jóvenes doctores y el resto profesores con sobrada experiencia. Los participantes procedían de 15 nacionalidades distintas: USA, Brasil, Rusia, Reino Unido, Noruega, Alemania, Francia, Polonia, Italia, Grecia, Portugal, Corea, Japón Australia y España. La más numerosa fue la japonesa con ocho participantes.

Se han cumplido con creces los objetivos previstos. Se han organizado 14 sesiones de microscopio impartidas por expertos y en el que se ha discutido temas de actualidad relacionadas con Ecología, Oceanografía y Bioestratigrafía. El listado de las sesiones de microscopio

Armand, L.: *Surface water diatoms from the Sabrina Coast, East Antarctica*

Stroynowski, Z: Detailed observations on *Thalassiosira* spp. from the North Pacific

Fragoso, G: Biogeographical patterns of Arctic and Atlantic diatoms in the sub-Arctic Labrador Sea.

Caissie, B.: Three species of Thalassiosira from the Bering Sea

Leventer, A. : Fossil diatom assemblages from the Sabrina coast, East Antarctica

Pike, J. and Allen, C. : Holocene Antarctic diatom mats

Hoff, U.: Subarctic marine diatom assemblages off the Faroe Islands - warm vs. cold

Rigual-Hernández, A. and Wilks, J.: Seasonal and geographical distribution of diatom species in the Australian sector of the Southern Ocean and their role in the biological pump

Akiba, F.: *Denticulopsis praedimorpha* and *Thalassionema umitakae*; a comparison of the two marine planktonic diatoms with complex and simple valve structures

Suto, I.: Resting spores. Changes in resting strategies of diatoms across the Eocene/Oligocene Boundary and its influence on marine ecosystem

Harrison, M.: Siliceous microfossil response to climatic and paleoceanographic changes across the Eocene-Oligocene Transition, Weddell Sea Margin, East Antarctica

Tolotti, R.: Greenhouse to Icehouse Transition: Diatom Biostratigraphy and Biosiliceous marine organisms response to climatic and environmental changes in the Kerguelen Plateau (Indian Southern Ocean sector of Antarctica)

Harwood, D: Antarctic fossil and modern *Fragilariopsis*

Kloster, M: Findings on morphological variation of *Fragilariopsis kerguelensis* between glacial and interglacial periods

En cuanto a las charlas de los estudiantes de ultimo año de doctorado resaltaré las siguientes:

Eriksen, R., Southern Ocean Time Series, 47ºS: phytoplankton community dynamics sampled using a Remote Automated Sampler

Lopes, C. , North Pacific SST reconstructions based on diatom transfer functions

Abe, K., Middle Eocene sea ice diatom assemblages from the central Arctic Ocean

Es de resaltar la participación de los más jóvenes. Se han presentado un total de 20 posters de diferentes temáticas, pero a mi me gustaría llamar la atención sobre el poster presentado por tres de nuestros estudiantes de Grado en Biología (Virginia García Bernal) y Grado en CC Ambientales (Marta Ortega y David Román) que presentaron conjuntamente los resultados de sus respectivos TFG

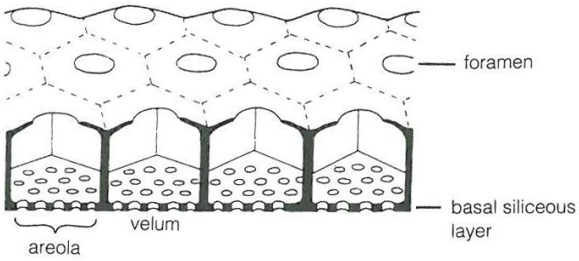
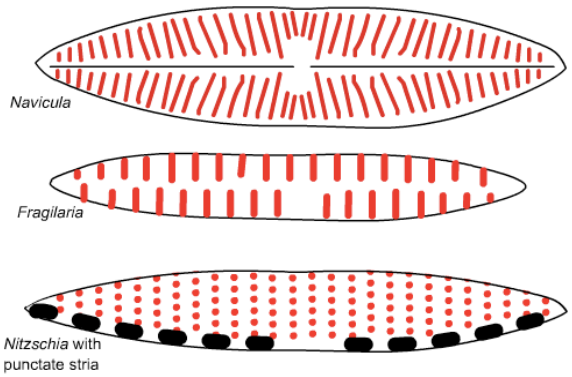
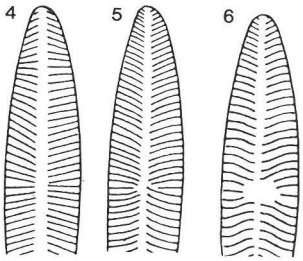
García-Bernal, V., Ortega, M., Roman, D. , Isla, E. ; Zielinski, U. and Bárcena, M. A. *Diatom distribution in surface sediment along key areas from the Antarctic Peninsula and Atlantic Sector of the Southern Ocean*

RECURSOS:

El uso de los Laboratorios Docentes de la USAL ha sido fundamental. He de resaltar que tenemos una gran sala de microscopios biológicos, no todas las universidades disponen de este material, especialmente por la dotación de objetivos de x100 .
Cada uno de los participantes hemos recibido una batería de 30 preparaciones microscópicas sí como el material didáctico de la sesión en papel y en soporte digital (se adjunta el material de la primera sesión de microcopio)

TIME	Monday (20/07)	Tuesday (21/07)	Wednesday (22/07)	Thursday (23/07)	Friday (24/07)
8:30-90:00	opening remarks	Talk 3: Dr. Eriksen	Talk 5: Dr. Lopes	Talk 8: Dr. Crosta	Talk 11: SHERPA
9:00-10:30	S.1 Sabrina Coast Antarctica, surface waters Dr. Armand	S.5 Sabrina Coast Antarctica, sediments Dr. Leventer	S. 7 Faroe Islands Dr. Hoff	S. 10 Resting spores Dr. Suto	S. 14 *F. kerguelensis* glacial and interglacial Michael Kloster
10:30-11:00	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Breaks	Coffee/Tea Break	Coffee/Tea Break
11:00-1:30	Talk 1: Dr. Jordan	Talk 4: Dr. Swann	Talk 6: Dr. Rigual	Talk 9: M. Harrison	Closing remmarks
11:30-13:00	S. 2 Thalassiosira spp North Pacific Dr. Stroynowski	S. 6 Diatom mats Holocene, Antarctica Dr. Pike and Dr. Allen	S. 8 Antarctic Sediment Traps Dr. Rigual / J. Wilks	S 11 Weddell Sea East Antarctica Michael Harrison	
13:00-14:00	LUNCH	LUNCH	LUNCH	LUNCH	
14:00-14:30	Talk 2: G. Fragoso	**Posters**	Talk 7: Dr. Stoll	Talk 10: Kenta Abe	
14:30-16:00	S. 3 Labrador Sea Glaucia Fragoso		S. 9 *D. praedimorpha* *T. umitakae* Mr. Akiba	S. 12 Biostratigraphy Kerguelen Plateau Dr. Tolotti	
16:00-16:30	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	
16:30-18:00	S. 4 *Thalassiosira* Bering Sea Dr. Caissie	Posters	Conference: Dr. Sierro	S. 13 Fossil and modern Antarctic *Fragilariopsis* Dr. Harwood	

TERMINOLOGY TIPS

Term and line drawing
Areola: the regularly repeated perforation through the basal silica layer.    Image source 1
Stria: a row of areolae on a valve.    In some taxa the stria are very fine and close together, and are impossible to see with a light microscope. Image source 2
Hyaline fields: areas where the basal silica layer is not penetrated by areolae. This can occur along the apical axis, in a central area, or laterally so that it divides striae.    Image source 3

Processes: silicified projections through the valve wall (either a tube, spine or clearly differentiated opening).

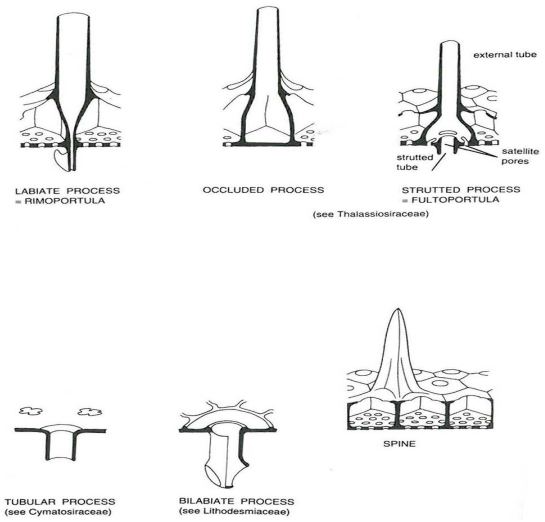


Image source 4

Pseudonodulus: specialised marginal structure, always one per valve, as an open hole or an area covered by densely packed smaller areolae.

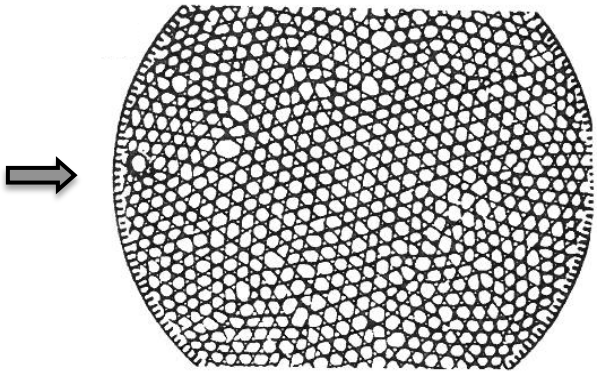


Image source 6

Rosette: an area in the centre of the valve of certain centric diatoms characterised by large elongated areolae arranged in a rosette pattern.

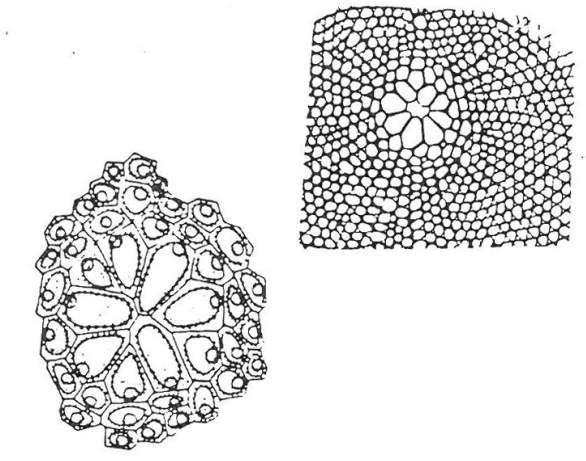


Image source 8

Raphe: an elongated fissure through the valve wall.

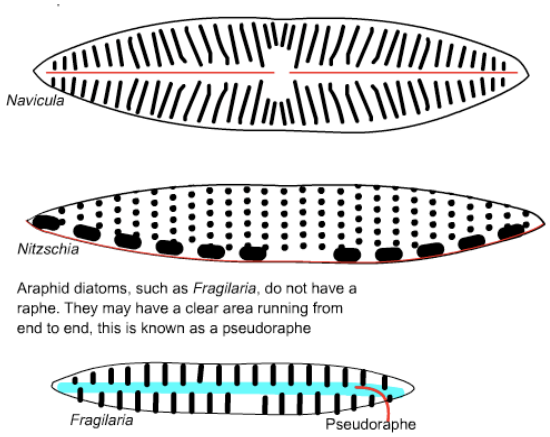


Image source 12

Ray: specialised areola in one diatom family (Asterolampraceae). A hollow chamber that opens to the outside by means of a large hole (process) at the tip.

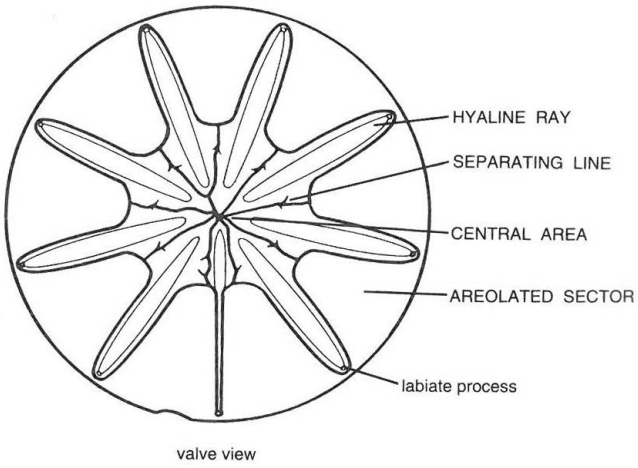


Image source 7

Rhizosolenia cell: A specialised elongated centric diatom with a pen-shaped process and specialised structures (otaria & claspers) to join cells together

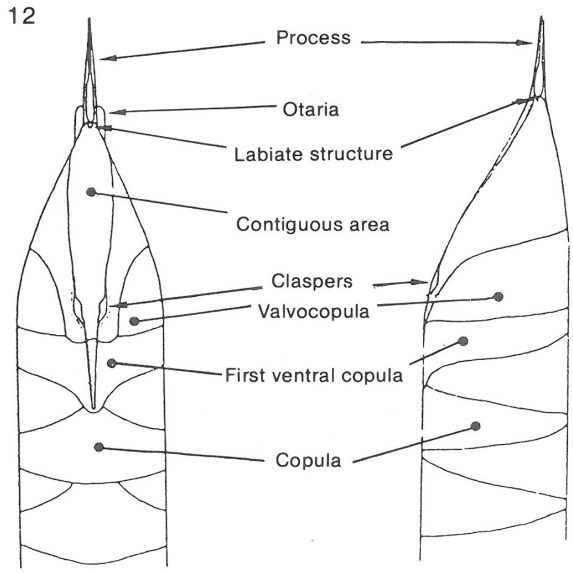


Image source 9

Chaetoceros cell: A specialised chain forming centric diatom. It has spine like appendages called seta. The openings between the cells are called apertures.

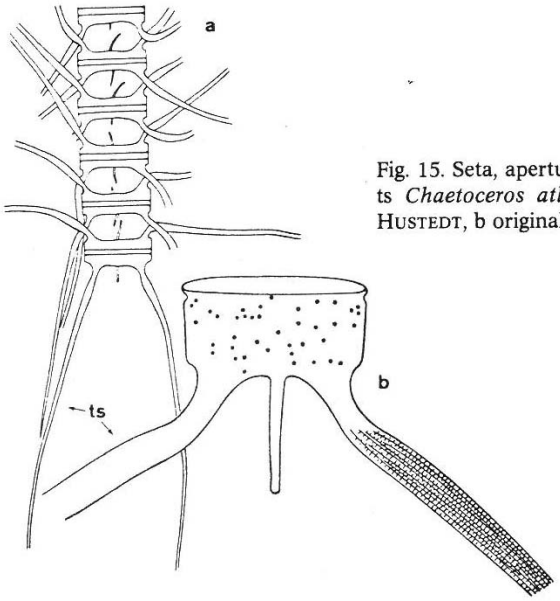
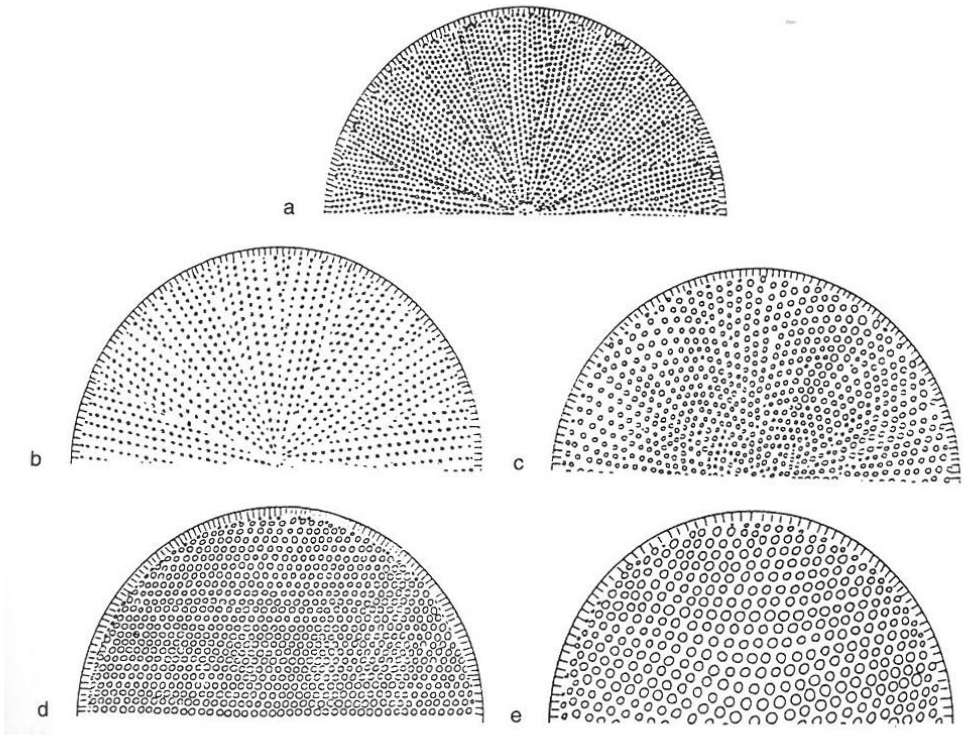


Fig. 15. Seta, aperture, terminal seta ts *Chaetoceros atlanticus*. a from HUSTEDT, b original (HASLE).

Image source 10

CENTRIC Striation patterns:



a) fasciculation, striae parallel with long edge stria of the bundle.

b) fasciculation , striae parallel with long central stria.

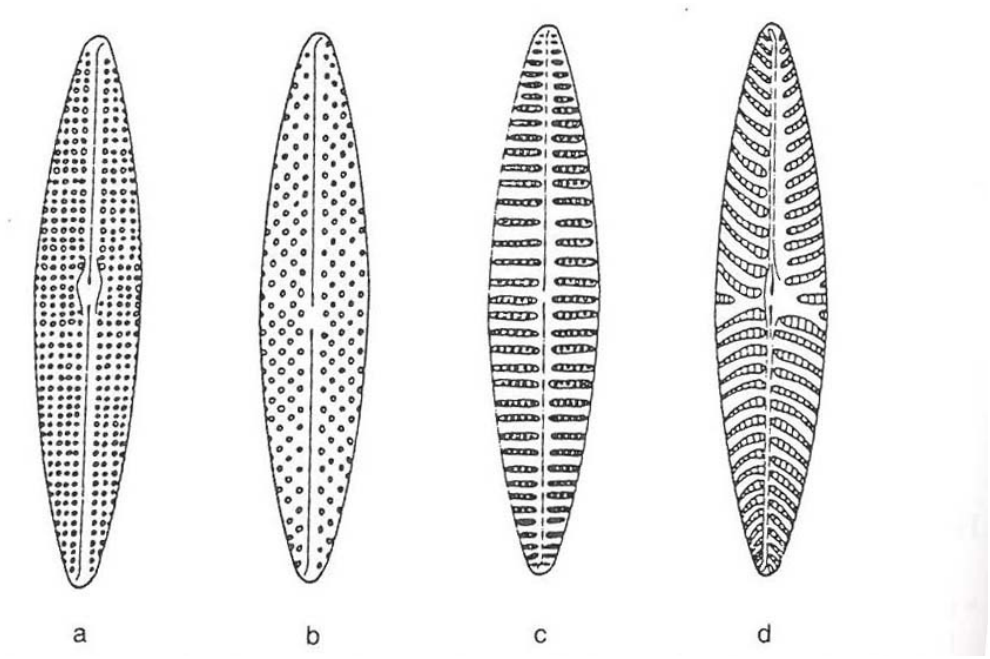
c) radial striae, running from the centre towards the margin of the valve with shorter striae inserted.

d) tangential straight striae.

e) tangential curved striae.

Image source 5

PENNATE Striation Patterns



a = parallel striae, b = radiate striae

c = lineate, parallel striae, d = lineate, radiate striae

Image source 11

Image Source Information:

1. Figure 5. Hasle, G.R., Syvertsen, E.E., 1997. Marine Diatoms. In: Tomas, C.R. (Ed.), Identifying marine phytoplankton. Academic Press, New York, pp. 5-361.
2. Drawn by Richard Telford, Bergen. Used with permission granted L. Armand in 2009.
3. Plate 10.6 figures 4-6. Medlin, L.K., Priddle, J., 1990. Polar Marine Diatoms. British Antarctic Survey, Natural Environment Research Council, Cambridge.
4. Figure 8 (part thereof). Hasle, G.R., Syvertsen, E.E., 1997. Marine Diatoms. In: Tomas, C.R. (Ed.), Identifying marine phytoplankton. Academic Press, New York, pp. 5-361.
5. Figure 10. Hasle, G.R., Syvertsen, E.E., 1997. Marine Diatoms. In: Tomas, C.R. (Ed.), Identifying marine phytoplankton. Academic Press, New York, pp. 5-361.
6. Figure 29. Anon, 1975. Proposals for a standardization of diatom terminology and diagnosis. Beiheft zur Nova Hedwigia Heft 53, 323-351.
7. Figure 14. Hasle, G.R., Syvertsen, E.E., 1997. Marine Diatoms. In: Tomas, C.R. (Ed.), Identifying marine phytoplankton. Academic Press, New York, pp. 5-361.
8. Page 12, Figure 2. Gombos, A. 19??. A handy little guide to diatom terminology. Florida State University (handout).
9. Plate 10.5, figure 12. Medlin, L.K., Priddle, J., 1990. Polar Marine Diatoms. British Antarctic Survey, Natural Environment Research Council, Cambridge.
10. Figure 15. Anon, 1975. Proposals for a standardization of diatom terminology and diagnosis. Beiheft zur Nova Hedwigia Heft 53, 323-351.
11. Figure 17. Hasle, G.R., Syvertsen, E.E., 1997. Marine Diatoms. In: Tomas, C.R. (Ed.), Identifying marine phytoplankton. Academic Press, New York, pp. 5-361.
12. Drawn by Richard Telford, Bergen. Used with permission granted to L. Armand in 2009.