

Morphology and distribution of antennal sensilla in a mealybug parasitoid, *Anagyrus sp. near pseudococci* (Hymenoptera, Encyrtidae)

Taiadjana Fortuna ¹, José Carlos Franco ², Maria Teresa Rebelo ^{3*}

1) Department of Terrestrial Ecology, Netherlands Institute of Ecology (NIOO-KNAW), 6700 AB Wageningen, The Netherlands

2) Centro de Estudos Florestais, Instituto Superior de Agronomia, Universidade de Lisboa, 1349-017 Lisboa, Portugal

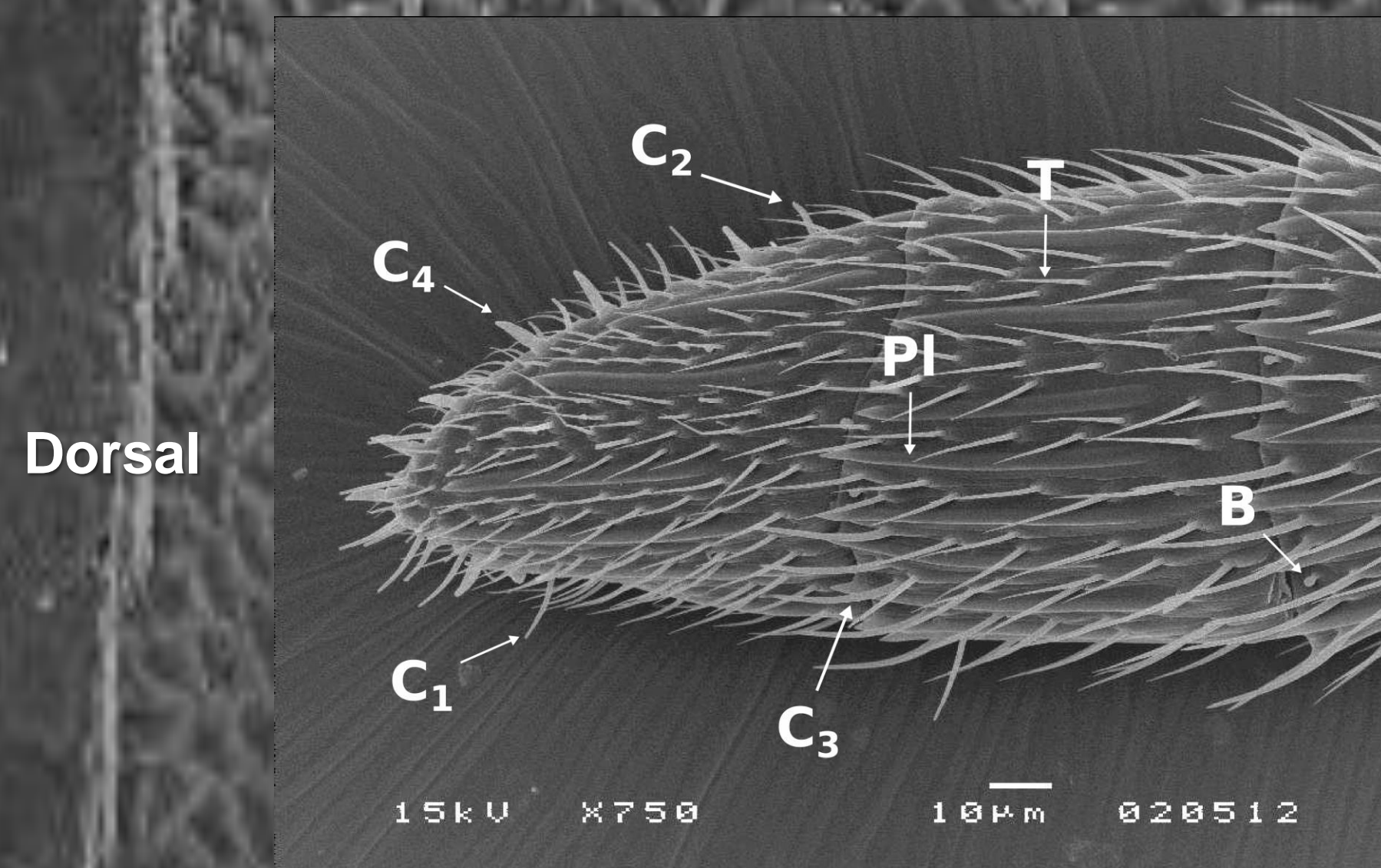
3) Departamento de Biologia Animal (DBA)/ Centro de Estudos do Ambiente e do Mar (CESAM), Faculdade de Ciências da Universidade de Lisboa, 1749-016 Lisboa, Portugal

*corresponding author: mtrebelo@fc.ul.pt

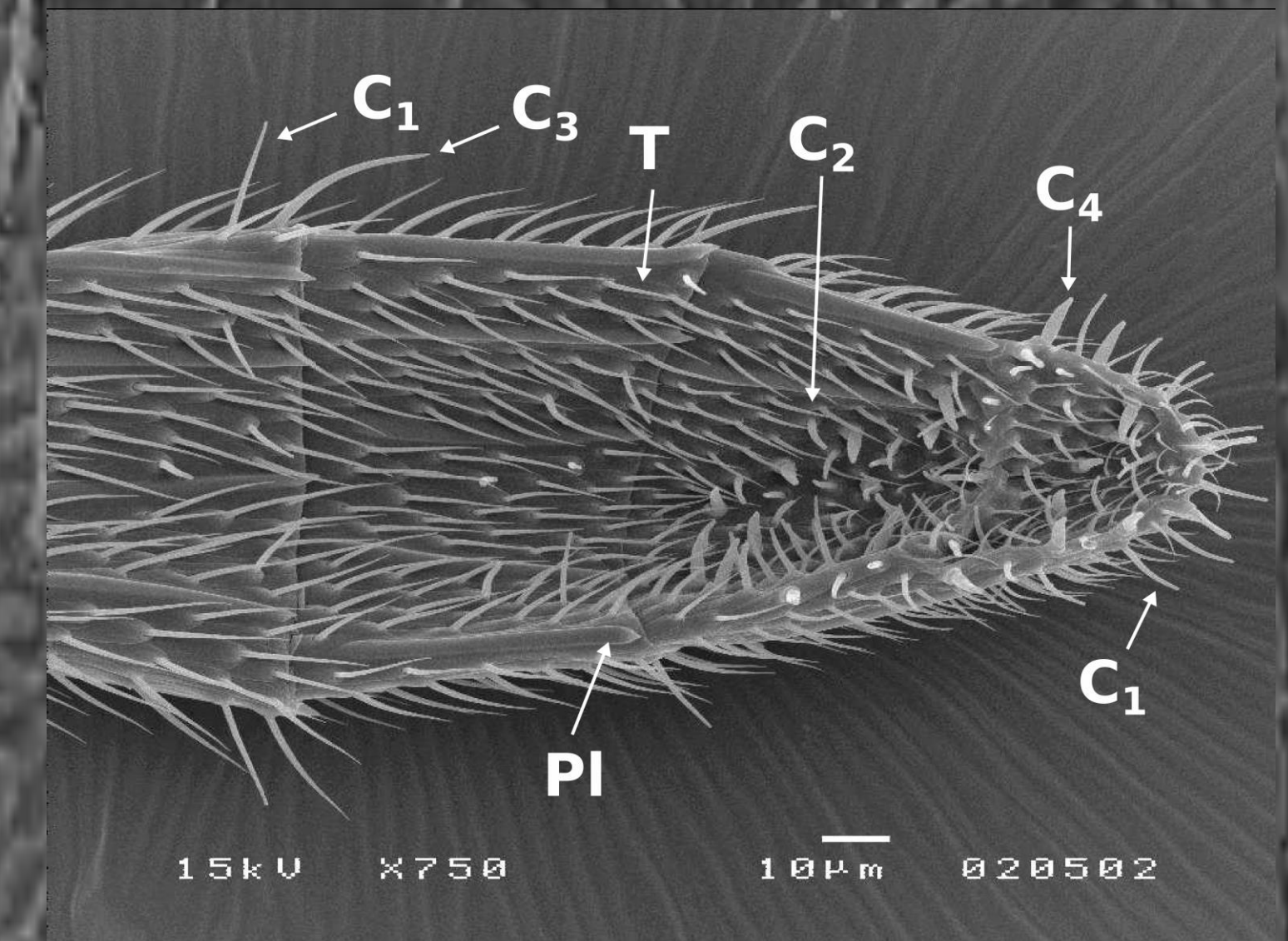
- Parasitoid females rely on antennal sensory receptors, sensilla to locate and select their hosts.
- *Anagyrus sp. near pseudococci* is a solitary endoparasitoid of pest mealybugs (Hemiptera, Pseudococcidae), such as *Planococcus ficus* (Signoret). Female wasps use the sex pheromone of *P. ficus* in their host location.
- Description of morphology and distribution of female and male wasps antennal sensilla.
==> involved in host selection behaviour?



Segments of female antenna: Scape (S), Pedicel (P), Funicle (F1-F6), Club (C). SEM x100. Scale bar = 100 µm.

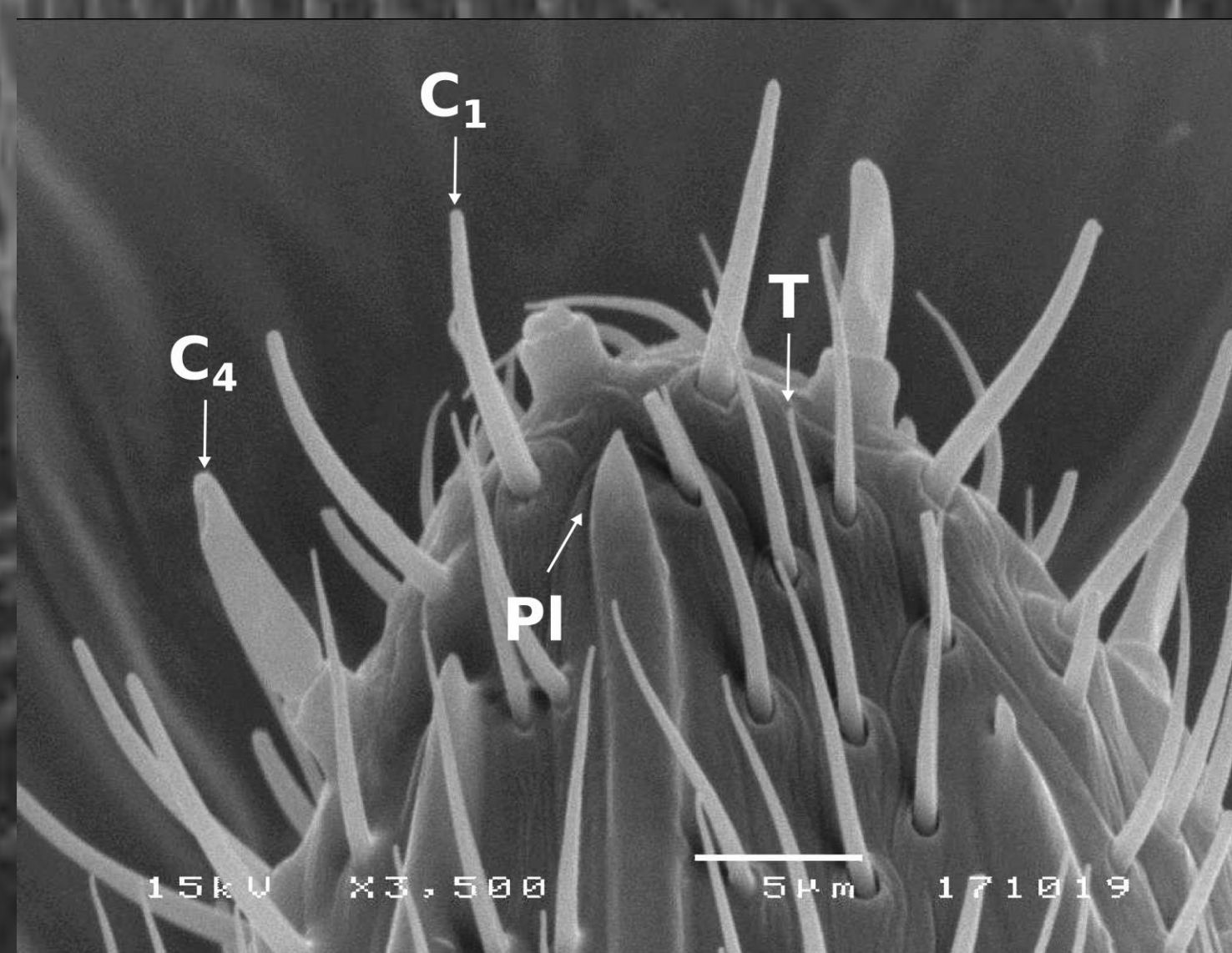


Dorsal



Ventral

Dorsal and ventral side of the female antennal club where most sensilla types are located: *Trichodea* (T) => mechanoreceptors; *Chaetica* type 1, type 2 (C1,C2) => contact chemoreceptors *Placodea* (P), *Basiconica* (B), *Chaetica* type 3, type 4 (C3,C4) => olfaction SEM x750. Scale bar = 10 µm.



Female antennal tip on the dorsal side. Sensilla chaetica type 4 (C4) are mostly concentrated in the female antennal club. SEM x3500. Scale bar = 5 µm.

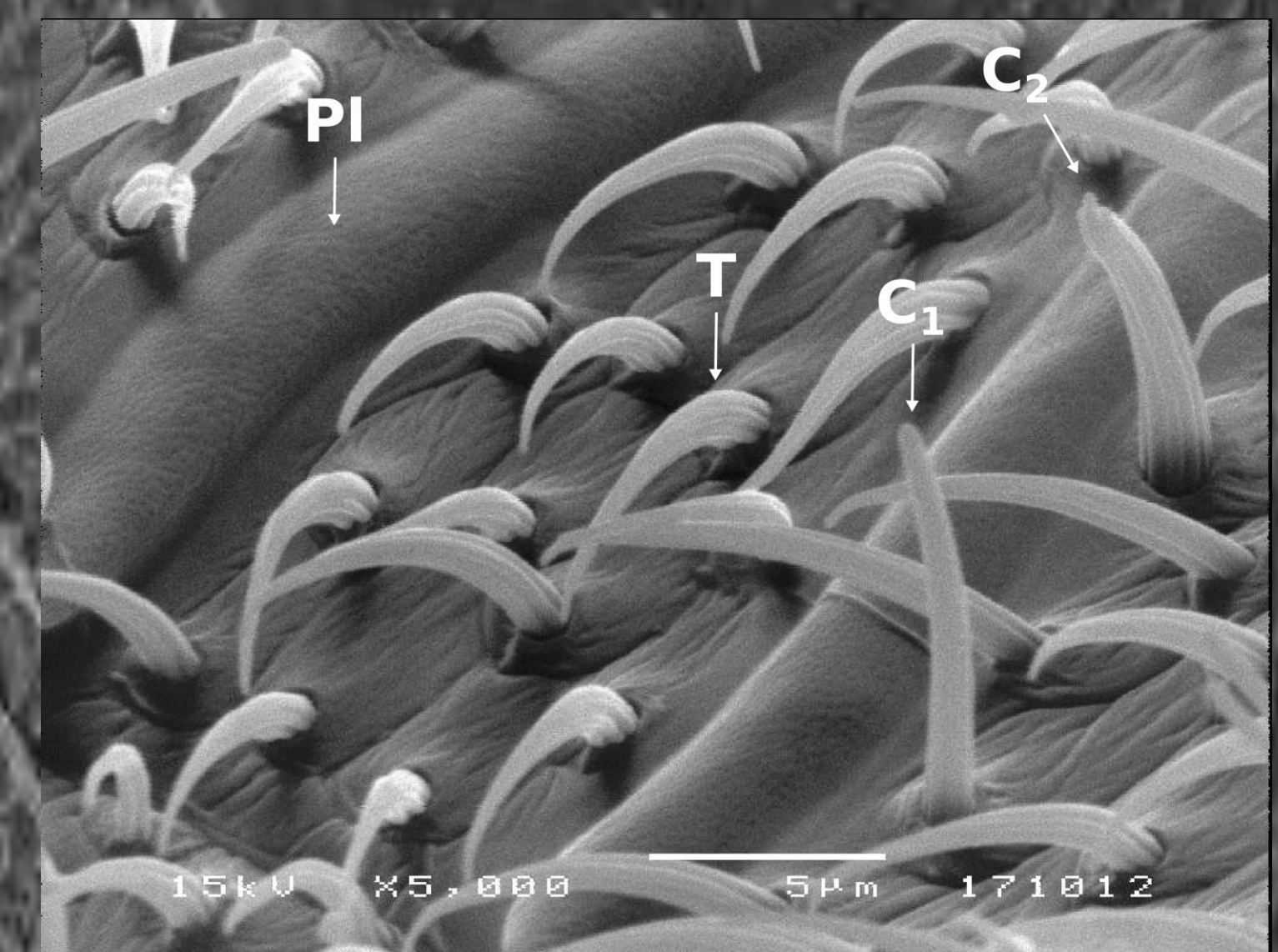
M & M:

Antennae fixation: alcohol 70% or saturated ether;

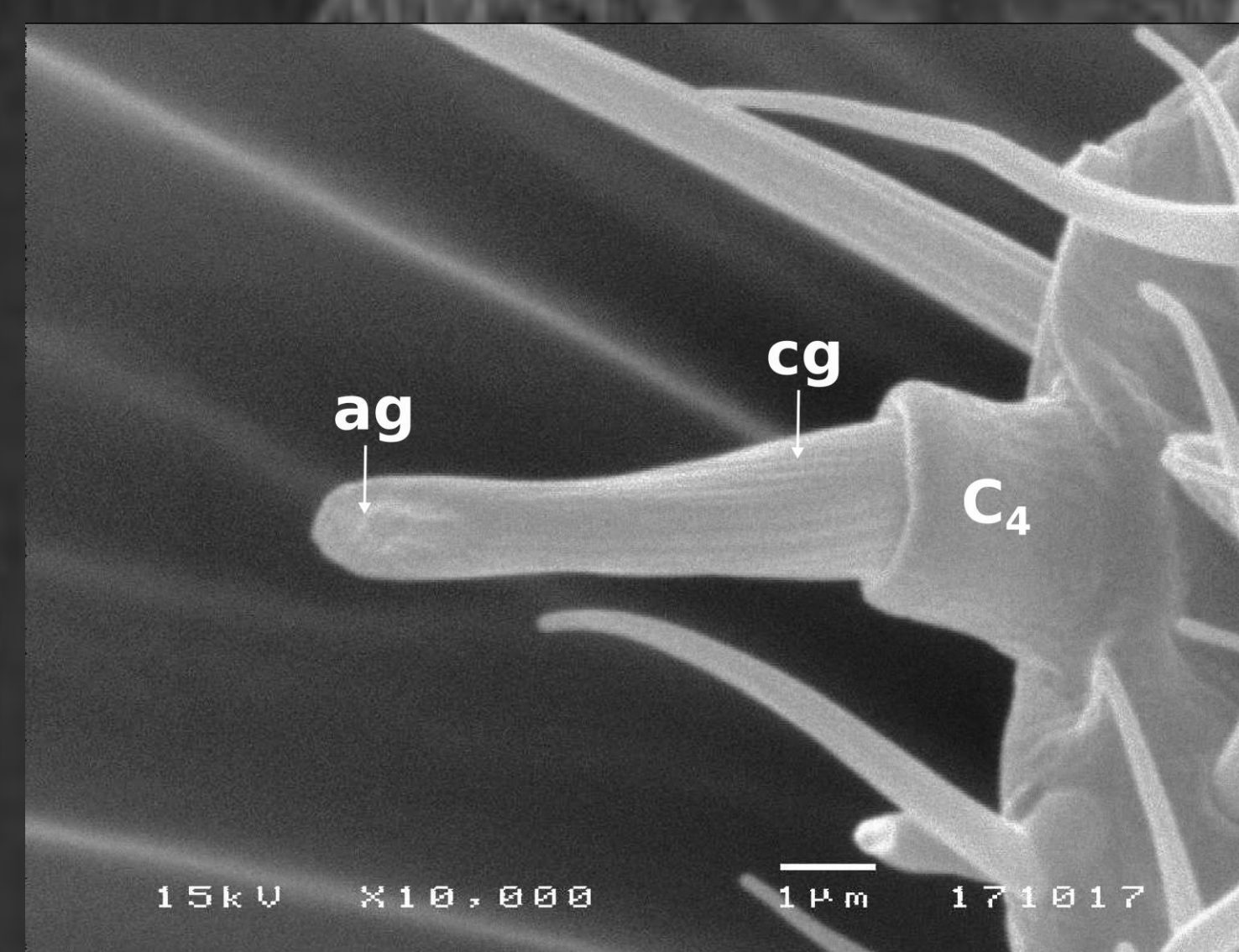
Pore visualization: absolute alcohol, glacial acetic acid, chloroform (3:1:1);

Gold sputter-coated: JEOL JFC 1200;

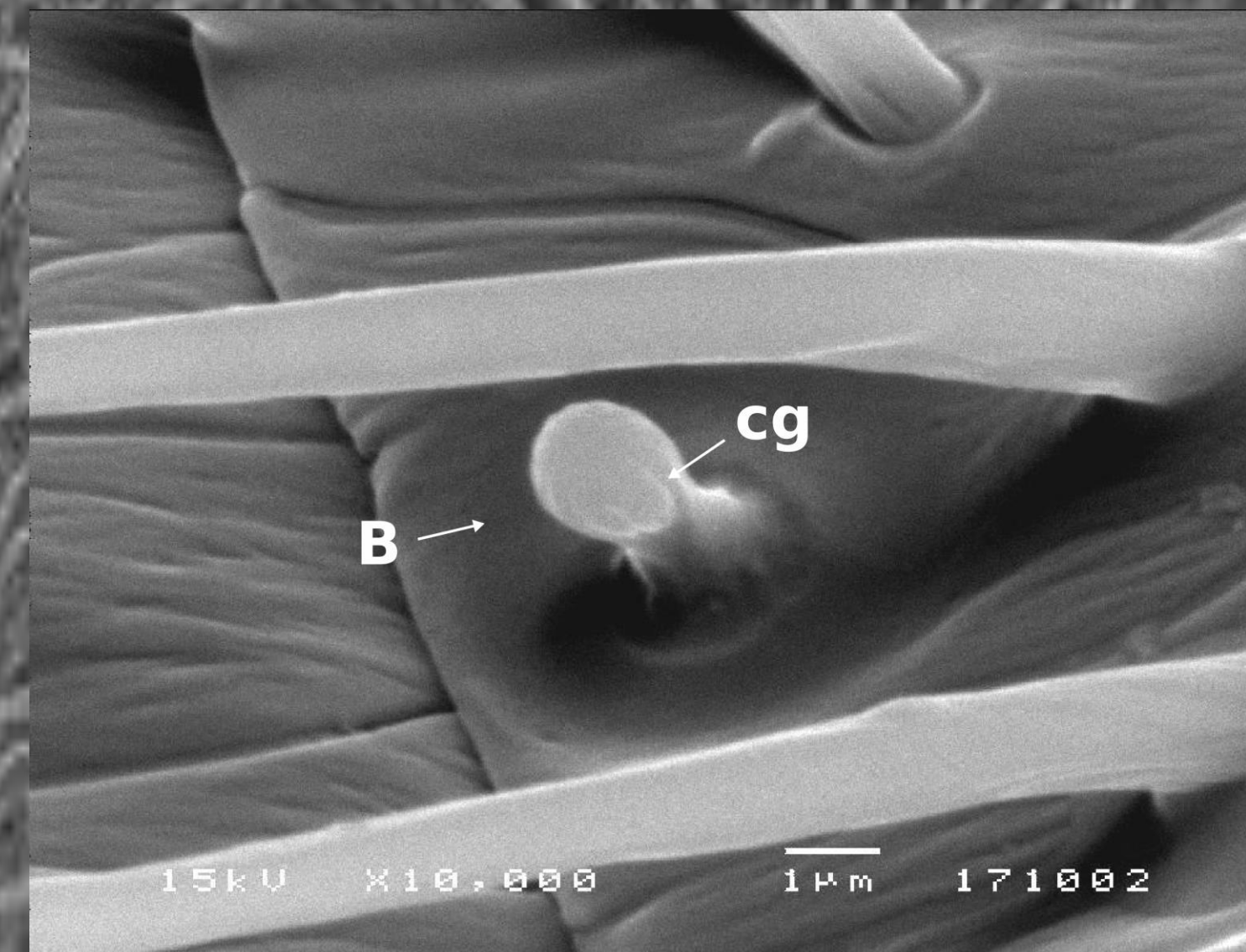
Scanning Electron Microscope: JEOL JSM 5200 LV



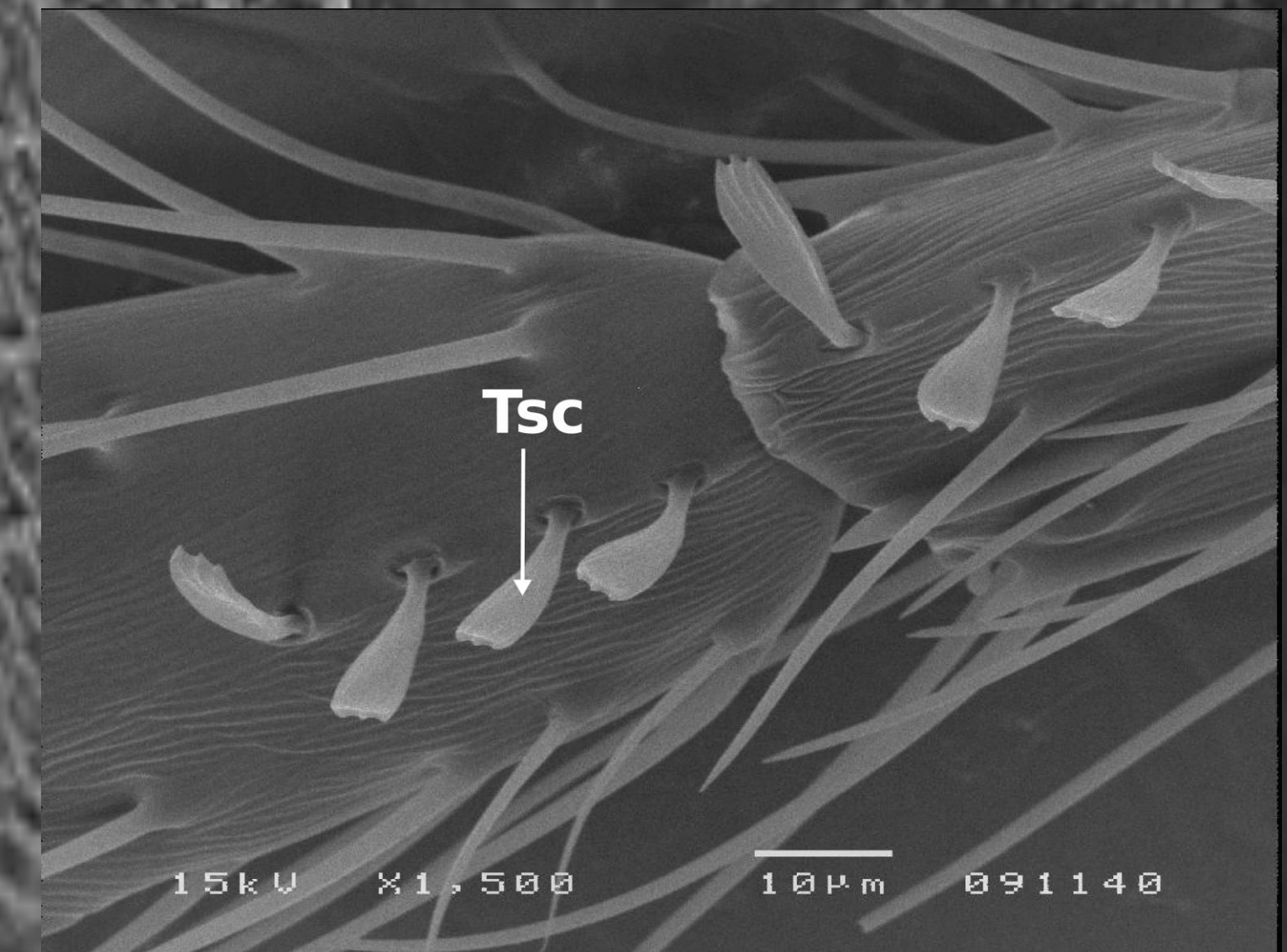
Ventral side of female antennal club showing: *placodea* (PI) sensillum with multiple pores; *trichodea* (T) sensillum with helicoidal cuticular grooves; *chaetica* sensillum type 1 (C1); type 2 (C2) with longitudinal cuticular grooves and the sensillum projection with a potential pore. SEM x5000. Scale bar = 5 µm.



Detail of a *chaetica* sensillum type 4 with apical pore (ap) and cuticular grooves (cg). SEM x10000. Scale bar = 1 µm.



Detail of a *basiconica* sensillum with cuticular grooves (cg). SEM x10000. Scale bar = 1 µm.



Tridentate scale-shaped type sensilla in male antennae located in the club and the last funicle segment. SEM x750. Scale bar = 10 µm.

• Eight sensilla type found:

- *Trichodea*, *placodea*, *basiconica*, and *chaetica* (type 1, type 3, type 4) (in both sexes);
- *Chaetica* type 2 (only in females); and Tridentate scale-shaped type sensilla (only in males).

• **Females** > chemoreceptors than males in the ventral side of antenna club => **antennation** behaviour

• Sensilla *chaetica* type 2 and type 4 in females=> **host selection**