

DIAGNOSTIC EXERCISE No. 26

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HISTOPATHOLOGY

Striated skeletal muscle. Widespread myofibre degeneration associated with many ovoid to ellipsoidal 10-12 micron cells with "multilobate nuclei". Granular and semigranular haemocytes are infiltrating the lesion.

AETIOLOGY

The multilobate nucleated cells are consistent with trophonts of the parasitic dinoflagellate *Hematodinium* sp. which, in severe cases, cause degeneration of the hepatopancreas and skeletal muscle myopathy in the host crustacean.

Note: Dinoflagellates have a dinokaryon which is a special type of nucleus containing condensed chromatin and with far more nuclear material than a typical nucleus. Hence the odd appearance, which shape is sensitive to fixative used. *Hematodinium* sp. (the taxonomy is uncertain) cause "bitter crab" disease in many fisheries around the world, and has been recorded from Moreton Bay, Great Barrier Reef and now Western Australia. See article by Wheeler, K; Shields, J.D.; Taylor, DM. 2007: Journal of Invertebrate Pathology 95:93-100 for pictures. Jeff Shields has confirmed that the WA specimens are *Hematodinium* sp., possibly the same as those previously found in Queensland crabs.

The morphology is greatly influenced by the fixative and the staining regime. We use formalin buffered with seawater while the paper uses Bouins and "Safefix" (possibly an ethanol/salt solution). Bouins is a crappy fixative except for eyeballs and gonads, at which it excels.

As an exercise, it's really informative to fix crustacean hepatopancreas with Davidson's and with seawater formalin; on H&E you will see that the eosin is really strongly taken up by the granulocytes in seawater formalin-fixed material, compared to the Davidsons-fixed material.