SOCIETY OF PROTOZOOLOGISTS

1987 ABSTRACTS

124

Morphogenesis and Systematic Position of Oxytricha gigantea HORVATH 1933 (Ciliophora, Hypotrichida), HELMUT BERGER, Hydrologische Untersuchungsstelle Salzburg, Lindhofstrasse 5, A-5020 Salzburg (Austria/Europe) and WILHELM FOISSNER, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg (Austria/Europe).

KAHL (Tierwelt Dtl., 1935, 30, p841) transferred O. gigantea to the genus Urosoma KOWALEWSKI 1882, because of its elongated and posteriorly converging body shape. To gain more information about the systematic position of this species, the morphogenesis was investigated and compared with that of a typical member of the genus Urosoma, U. macrostyla (FOISSNER, Arch. Protistenkd., 1983, 127, 413). The main difference between the morphogenetic patterns of these species, that argues for the retention of O. gigantea in the genus Oxytricha, exists in the formation of the fronto-ventral-transverse (FVT) streaks. Six "primary primordia" are formed in U. macrostyla. They divide in the middle stages and form the 6 "secondary primordia" of the proter and the opisthe. Contrary, only the streaks IV (?), V, and VI of the proter arise from the streak IV of the opisthe in O. gigantea. This type of FVT streak formation is also known from other Oxytricha species. The classification in this genus is also supported by the position of the cirrus III/2. In Oxytricha this cirrus is always situated more posteriorly than the cirrus 4 of streak VI, whereas it is always situated more anteriorly than the cirrus VI/4 in Urosoma. Very probably, the position of the cirrus III/2 is the most appropriate character to separate Oxytricha and Urosoma, since Urosoma species are known to exist, which do not have the tail-like posterior end of the type-species, U. cienkowski. (Supported by the Fonds zur Förderung der wissenschaftlichen Forschung, Projekt Nr. P 5889).

125

Protozoology in Australia: Current Status, WILHELM FOISSNER, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg (Austria/Europe), and PETER O'DONOGHUE, Central Veterinary Laboratories, Frome Road, Adelaide 5000, South Australia.

The Australian Biological Resources Study (ABRS) sponsored a 5-day (16. - 20. Feb. 1987) workshop on protozoology at the University of Adelaide, Department of Zoology. The meeting was well organized by P. O'DONOGHUE and covered a wide range of free-living and parasitic protozoa. 25 people participated in the workshop, including three overseas speakers (W. FOISSNER from Austria, who demonstrated various silver staining techniques and sampling and investigation of soil protozoa; J. PRATT from USA, who demonstrated sampling techniques from aquatic ecosystems; and A. WARREN from U. K., who exhibited excellent scanning electronmicrographs on Scyphidia). Local speakers conducted specialist workshops on naked and shelled amoebae, parasitic flagellates and sporozoa.

In the past, studies in Australia have concentrated on parasitic protozoa, and information on free-living species is sparse and fragmentary. There is, for instance, not a single study on free-living ciliates available which has used modern silver impregnation techniques. The ABRS has therefore initiated studies on the free-living protista by funding a 3-year project on a large river system in Australia (River Murray/Darling Basin).

(Supported by the ABRS and the Fonds zur Förderung der wissenschaftlichen Forschung, Projekt Nr. P 5889).

126

The Food Spectrum of the Mycophagous Soil Ciliates Grossglockneria acuta and Pseudoplatyophrya nana, WOLFGANG PETZ, KURT HASELWANDTER, WILHELM FOISSNER, and HANS ADAM, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg and Institut für Mikrobiologie, Sternwartestrasse 15, A-6020 Innsbruck (Austria/Europe).

A total of 41 species of fungi were tested as food for G. acuta and P. nana with the method of PETZ et al. (Soil Biol. Biochem. 17, 871-875, 1985): (+ growth, - no growth, * not determined; the first symbol after the fungus name refers to G. acuta/the 2nd to P. nana) Absidia orchidis +/+, Mucor laxorhizus +/+, Phycomyces blakesleanus -/+, Mortierella vinacea +/*, Eurotium chevalieri -/*, Chaetomium globosum -/*, Nectria sp. -/*, Sclerotinia fructigena -/+, Hymenoscyphus ericae strain 100 & 101 -/+, Saccharomyces cerevisiae -/+, Schizosaccharomyces pombe */+, Boletus edulis II -/*, B. edulis V -/-, Suillus placidus II -/-, S. placidus V -/*, S. plorans VI -/*, Filobasidium capsuligenum -/+, Cryptococcus albidus -/*, Rhizoctonia solani -/+, Penicillium citrinum & P. roqueforti -/+, P. clavigerum -/-, P. sp. -/+, Aspergillus clavatus & A. niger -/+, Alternaria sp. -/+, Cladosporium cucumerinum -/+, Verticillium psalliotae -/+, Fusarium oxysporum */+, Botrytis cinerea -/+, Oidiodendron griseum */-, Aureobasidium pullulans +/-, Beauveria bassiana -/+, Phoma betae & P. globerata -/+, Colletotrichum dematicum -/+, Ustilago maydis -/+, Sporobolomyces salmonicolor */+, and mycorrhiza-isolate strain 110 of Vaccinium sp. */+ and strain 099 of Rhodothamnus sp. +/+. G. acuta feeds on 5, mainly saprophytic, out of 36 species tested, P. nana on 28 out of 33, indicating that it is much less specialized than G. acuta. P. nana preys also on plant- and insect-pathogenic fungi. Excellent growth provides U. maydis, a widespread pathogen of maize. (Supported by the FWF, Projekt Nr. P 5889).

127

Bursostoma bursaria: An Ophryoglenid Ciliate, BRUNO GANNER, WILHELM FOISSNER, and HANS ADAM, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg (Austria/Europe).

The morphology, infraciliature, and silverline system of the rare ciliate Bursostoma bursaria VÖRÖSVÁRY, 1950 were investigated. Characteristics are 114 longitudinal kineties on the average, about 10 postoral and 8 vestibular kineties which describe a semicircle on the right wall of the vestibulum. 3 adoral membranelles (M1-3) are located on the right wall of the vestibulum. M1 consists of three obliquely arranged rows of basal bodies; M2 is a huge field of very regularly arranged basal bodies; M3 consists of about six rows of basal bodies. Division commences with the successive resorption of the parental oral structures and the development of 2 large fields of basal bodies which produce the new oral structures of the proter and the opisthe. The development of the paroral membrane during stomatogenesis and its complete resorption at the end of this process is documented. Thus, the morphogenesis of B. bursaria is very similar to that of Ophryoglena mucifera. Further homologies, like the possession of a deep vestibulum, vestibular kineties, and a tetrahymenid silverline system require the inclusion of B. bursaria in the Ophryoglenina CANELLA and ROCCHI-CANELLA, 1964. Thus, this suborder now contains three families, the Bursostomidae VÖRÖSVÁRY, 1950, the Ichthyophthiriidae KENT, 1882, and the Ophryoglenidae KENT, 1882. A comparison shows that the Ichthyophthiriidae and the Ophryoglenidae are closer related to each other than to the Bursostomidae.

(Supported by the Fonds zur Förderung der wissenschaftlichen Forschung, Projekt Nr. P 5889).

128

Morphological, Morphogenetic, and Fine Structural Investigation of Some Species of the Genus Pseudokeronopsis (Ciliophora, Hypotrichida), ERNA WIRNSBERGER and KLAUS HAUSMANN, Institut für Allgemeine Zoologie der Freien Universität Berlin, Königin-Luise-Strasse 1-3, D-1000 Berlin 33, Federal Republic of Germany.

P. rubra, P. carnea, and P. flava differ in the colour of their pigment granules and a few quantitative characters. The multiple comparison of six populations of these species does not show a distinct separation between P. rubra and P. carnea, whereas P. flava can be distinguished by the number of the transverse cirri. The three species are morphogenetically inseparable, but unique within the urostylids, because parental basal bodies do not participate in the formation of the fronto-midventral-anlagen. Additionally, the numerous macronuclear segments divide without prior fusion. These features provide ontogenetic criteria for a solid redefinition of the family Pseudokeronopsidae BORROR and WICKLOW, 1981. In P. carnea two to five layers of undischargable pigment vacuoles form a characteristic ectoplasmic region. In addition, pigmentocysts having a unique channel mainly surround the infraciliature. A special kind of microtubular arrays borders the longer sides of the cirral bases, the margins of the paramembranelles and the membranes of the right buccal area. This peculiar arrangement of microtubules is only shared by the related form, Thigmokeronopsis, possibly indicating a homogeneity of urostylid hypotrichs at the electron microscopic level.

(Supported by the Deutschen Akademischen Austauschdienst).

129

Bioindication by Soil Protozoans - Examplified on a Levelled, Recultivated Ski Slope, GABRIELE LÜFTENEGGER, WILHELM FOISSNER, and HANS ADAM, Universität Salzburg, Institut für Zoologie, Hellbrunnerstrasse 34, A-5020 Salzburg (Austria/Europe).

A study was made of the effects of revegetation with two organic fertilizers, Biosol (B; dried fungal mycelium) and ARA (A; dried bacterial biomass), and one mineral fertilizer, on the structure of the ciliate, testacean, rotatorian, and nematode communities of a levelled ski slope 2800 m above sea level. The applied quantities of the three fertilizers gave a significant increase in the soil fauna as compared with the unfertilized control plots. The organic fertilizers caused a significantly higher increase of diverse pedozoological parameters than the mineral fertilizer. This is probably due to the significantly higher content of organic matter in the (B) and (A) plots and the increased microbial biomass reported by INSAM and HASELWANDTER (Z. Vegetationst. 8, 23-28, 1985) for these plots. The community structures of the ciliates and the abundance of the testaceans suggest that despite three years of recultivation the soil fauna in the levelled ski slope was still far from natural, though there was a trend in this direction, particularly in the organically fertilized plots.

(Supported by Fa. Biochemie, Kundl, and the Fonds zur Förderung der wissenschaftlichen Forschung, Projekt Nr. P 5889).