Research Reports: 1954

Gonostomum sternuum 20 Halteria grandinella 1, 11, 15, 16, 18, 21, 24 Kalia acrobates 1 Lacrymaria olor 20 Lagnyophrya simplex 17 Loxocephalus sp. 24 Malacophrys rotans 4 Monochilium frontatum 8, 10, 20 Ophyrdium ectatum 17 Oxytricha bifaria 1, 4, 14 Oxytricha fallax 20 Oxytricha setigera 5, 8, 19, 24, 25 Paramecium aurelia 7 Paramecium bursaria 13, 16, 17, 20. 24 Paramecium caudatum 7 Paramecium multimicronucleatum 9 Paramecium trichium 2, 3 Paranassula microstoma 18 Penardiella crasa 13 Pithothorax ovatus 2, 19

Plagiopyla nasuta 2, 20 Platynematum sociale 9 Pseudoprorodon farctus 21 Psilotricha sp. 7, 10 Saprophilus agitatus 17 Spastosoma viride 2, 5 Spirostomum ambiguum 6, 7, 11, 13, 21 Spirostomum filium 12 Stentor coeruleus 13, 18 Stentor igneus 1, 15 Stentor niger 17 Stentor polymorphus 13, 17 Stongylidium sp. 20 Trachelius ovum 7 Trichodina sp. 14 Uroleptus sp. 12 Urotricha agilis 3, 9, 23, 25 Vaginicola amorpha 14 Vorticella campanula 1, 5, 6, 14, 23. 25 Vorticella convallaria 4, 11, 24 Vorticella microstoma 14, 22

Adrenalin Diuresis in the Spiny Dogfish, Squalus acanthias

Wallace McCrory, Albert Biggs, Saul Boyarsky*, Alvin Rieck and Robert Soley University of Pennsylvania, New York University, Marquette University and Yale University

Clarke (Bull., M. D. I. B. L., 1932, 1936) demonstrated that Adrenalin causes a diuresis in *Squalus acanthias*, which is characterized by a marked increase in urea clearance and urea U/P ratio with no change in the sucrose clearance. The nature of this diuresis was re-examined using inulin as a measure of glomerular filtration rate, and freezing point depression as a measure of osmotic pressure. Male dogfish were catheterized and injected intramuscularly with 600 mg. inulin. Urine was collected in a rubber balloon tied to the catheter and blood by percutaneous tail puncture. After two control periods, 1 mg. of Adrenalin chloride (Parke, Davis and Co.) was injected into the tail muscles. Urine and plasma were collected for 2 to 5 periods.

Data from 6 fish showed that:

- 1) Urine volume increased in 5 fish 1-4 fold over control values.
- 2) Filtration rate rose in 3 of 5 fish in which it was measured.
- 3) Osmotic clearance increased in all fish tested, the maximal increase being 3-fold.
- * USPHS Postdoctorate Fellow

Research Reports: 1954

- 4) Urea clearance increased consistently, by as much as 8-fold.
- 5) The duration of diuresis was 2 to 4 hours.
- 6) A second dose of Adrenalin 2 to 4 hours later evoked a second diuretic response.
- 7) Sodium and potassium clearances increased in one fish in which they were measured.
- 8) No significant change occurred in plasma osmolarity.

It is concluded that Adrenalin increases osmotic diuresis, but the osmotic components in the urine are not fully known.

Comparative Histochemistry of Esterases and Mucopolysaccharides

A. G. Everson Pearse University of Alabama. University of London

Tissues from the following species were used in this study.

Strongylocentrotus droehbachiensis	Haliclystus
Cuccumarai frondosa	Buccinum undatum
Patella vulgata	Mytilus edulis
Metridium dianthus	Mya arenaria
Eutaenia sirtalis	Anodonta cygnea
Pseudopleuronectes americanus	Balanus balanus
Lophius piscatorius	Triton rubiculus
Ameirus nebulosus	Pagurus bernhardus
Triturus viridescens	Asterias vulgaris

It was proposed to make a comparative study of the non-specific esterases and their association with mucopolysaccharides and mucoproteins. Phosphatase, 5-nucleotidase, and some other enzymes were studied incidentally. A single method of fixation and embedding was employed (cold neutral formalin fixation, cold acetone dehydration, paraffin embedding) which affords excellent histological preservation together with adequate preservation of alkaline phosphatase, lipase and non-specific esterases. Many of the tissues were also studied as frozen sections after cold formalin fixation. Some estimate was thus obtained of the losses of enzymes due to dehydration, clearing and embedding.

Coupling azo dye methods were used to demonstrate alkaline phosphatase and non-specific esterase and an indoxyl method for lipase and non-specific esterases. A standard Ca-CoS method was used for 5nucleotidase. Polysaccharides and muco-polysaccharides were revealed by the PAS method (McManus - Hotchkiss); Alcian blue and toluidine blue studies of metachromasia were used to define the acid mucopolysaccharides. The whole of the material is now being subjected to a much wider spectrum of histochemical investigation.