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THE AUSTRALIAN NATIONAL UNIVERSITY
RESEARCH SCHOOL OF BIOLOGICAL SCIENCES
DEPARTMENT OF BEHAVIOURAL BIOLOGY

ANNUAL REPORT 1975

STAFF

Professor:

Richard Freeman Mark, M.Med.Sc.M.B.Ch.B. (N.Z) Doctorat de Troisieme Cycle (Aix-Marseille), F.A.A.

Fellow:

Ian George Morgan, B.Sc. (Melb). Ph.D. (Monash)

Research Fellows:

John William Hambley, B.Sc. (Hons). (Adel). (From April)
Peter Wilson, B.Sc. (Durham) (U.K.) Ph.D. (N'cle). (U.K.) (From July)

Research Scholars:

Bernadette Therese Johnston, B.Sc. (Monash)
Donald James Wigston, B.Sc. (Otago) (From August)

Research Assistant:

Lauren Rae Marotte, B.Sc. (Hons). M.Sc. (Monash)

Senior Technical Officer:

Robert Jackson

RESEARCH WORK

The department is being set up with the aim of finding out to what extent animal and human behaviour can be understood in terms of current knowledge of the anatomy, physiology and biochemistry of the vertebrate brain. To this end the emphasis is on fundamental research in the various disciplines that contribute to the neurological sciences as much as on the study of behaviour itself. So far the department comprises a section on developmental neurophysiology and neuroanatomy (R.Mark, P.Wilson, L. Marotte) and a section on neurochemistry (I.Morgan, J.Hambley). Already appointed (from March 1976) as Senior Research Fellow is Dr Lesley Rogers who will set up the third section of the department, that on animal behaviour. While encouraging each group to contribute work of high standard in their separate fields, certain common topics are being studied by all groups. Specific projects concern the development and maintenance of neuromuscular connections and those of skin sensory nerves and the biochemical and behavioural development of visual learning abilities in newly hatched chickens. Further work on neuroembryology, neurochemistry and basic mechanisms of memory formation is planned.

OTHER ACTIVITIES

Professor Mark has been appointed as Regional Editor of Physiology and Behavior and also to the Editorial Board of Brain Theory Newsletter. He is currently President of the Australian Society for the Study of Animal Behaviour. Dr Morgan was appointed to the Editorial Board of Neuroscience. Professor Mark lectured during the year at the University of Otago Medical School Centennial Celebrations, at the University of North Carolina and Duke University in February and in December gave a paper at the Royal Society of London Discussion Meeting on Plasticity in the Nervous System. He also visited and spoke at Oxford, Cambridge, London and the Open Universities and the National Institute for Medical Research, Mill Hill, London. He addressed the Australian Society of Neurologists and the Australian Society for Medical Research at their Annual Conferences. Dr Morgan and J. Hambley read papers at the Vth International Meeting of the International Society for Neurochemistry. In addition Dr Morgan read papers at Satellite Symposia on Fractionation Techniques in Neurochemistry (Gottingen) and Gangliosides of the Nervous System (Cortona). Members of the department read papers at meetings of the Australian Physiological and Pharmacological Society in Canberra and Perth, of the Australian Biochemical Society in Melbourne, at the Animal Behaviour Society in Melbourne and at the Australian Neurosciences Society in Melbourne.

PUBLICATIONS

CASS, D.T.⁺ and MARK, R.F.

Re-innervation of axolotl limbs I. Motor nerves. Proc.R.Soc.Lond.B. 190, 45-58.

DAVEY, D.F.,⁺ MARK, R.F., MAROTTE, L.R. and PROSKE, U.⁺

Structure and innervation of extraocular muscles of Carassius. J.Anat. 120, 131-147.

GHANDOUR, M.S.⁺, ROBERT, J.⁺, EBERHART, R.⁺, SARLIEVE, L.⁺, NESKOVIC, N.⁺, ZANETTA, J.P.⁺, MORGAN, I.G., DELAUNOY, J.P.⁺, MANDEL, L.⁺, GOMBOS, G.⁺, VINCENDON, G.⁺, and MANDEL, P.⁺,

Biochemical development of rat cerebellum. Abstracts 5th ISN Meeting, Barcellona, 340.

HAMBLEY, J.W., HAYWOOD, J.⁺ and ROSE, S.P.R.⁺

Regional uptake of amino acids by chick brain after imprinting. Abstracts 5th ISN Meeting, Barcelona, 482.

HAYWOOD, J.⁺, HAMBLEY, J., ROSE, S.P.R.⁺

Effects of exposure to an imprinting stimulus on the activity of enzymes involved in acetylcholine metabolism in chick brain. Brain Res. 92, 219-225.

HAYWOOD, J.⁺, HAMBLEY, J., SINHA, A.K.⁺, ROSE, S.P.R.⁺,

Localisation of enhanced lysine incorporation in chick brain after imprinting. Abstracts 5th ISN Meeting, Barcelona, 481.

JOHNSTON, BERNADETTE T., SCHRAMMCK, JOAN E.⁺, MARK, R.F.

Re-innervation of axolotl limbs II. Sensory nerves. Proc.R.Soc.Lond.B. 190, 59-75.

MARK, R.F.

Topography and topology in functional recovery of regenerated sensory and motor systems. Cell Patterning, Ciba Foundation Symposium 29, 289-313.

MARK, R.F.

Memory and nerve cell connections, Clarendon Press, Oxford . (reprinted book in paperback).

MORGAN, I.G., ZANETTA, J.P.⁺, REEBER, A.⁺, BRECKENRIDGE, W.C.⁺, VINCENDON, G.⁺ and GOMBS, G.⁺

The biochemical specificity of the synaptosomal plasma membrane (SPM). Abstracts 5th ISN Meeting, Barcelona, S4-1a.

WELLER, MALCOLM⁺ and MORGAN, IAN G.

Subsynaptosomal localization of histone, phosphovitin and intrinsic protein kinases in adult rat brain. In Proc.Aust.Biochem.Soc. 8, 10.

WELLER,⁺ and MORGAN, I.

A possible role of the phosphorylation of synaptic membrane proteins in the control of Ca^{2+} movement. Abstracts 5th ISN Meeting, Barcelona, 107.

WILSON, P.

Contractile activation, inactivation and repriming in denervated short scale muscles of the Garter Snake. Exp.Neurol. 46, 244-256.

ZANETTA, J.P.,⁺ MORGAN, I.G. and GOMBS, G.⁺,

Synaptosomal plasma membrane glycoproteins: fractionation by affinity chromatography on concanavalin A. Brain Res. 83, 337-348.

⁺ Not a member of this University