THE NINTH KEILIN MEMORIAL LECTURE
The evolution and function of biological molecular assemblies: from catalase to viruses
M. G. ROSSMANN 115

THE TWENTIETH COLWORTH MEDAL LECTURE
DNA: sequence, structure and supercoiling
D. M. J. LILLEY 127

604th MEETING, CAMBRIDGE
Colloquium: Carbohydrate Transport in Micro-organisms
Binding-protein-mediated transport systems in Escherichia coli
W. BOOS 141

Sugar–proton transport systems of Escherichia coli

Reconstitution of the lactose carrier from mutant and parent cells of Escherichia coli
T. H. WILSON, D. SETO-YOUNG & S. BEDU 148

Tightness of energy coupling during carbohydrate uptake in eukaryotic micro-organisms
A. A. EDDY 150

Relation between the protonmotive force and solute transport in bacteria
W. N. KONING, R. OTTO, B. TEN BRINK, G. T. ROBILLARD, M. G. L. ELFERINK & K. J. HELLINGWERF 152

Regulation of sugar transport by the bacterial phosphoenolpyruvate: glucose phosphotransferase system

The role of the phosphoenolpyruvate–phosphotransferase system in inducer exclusion
H. L. KORNBERG, P. BRITTON, M. C. JONES-MORTIMER & L. G. LEE 157

Colloquium: Growth Factors
Studies on the structure and function of the epidermal-growth-factor receptor
M. GREGORIOU & A. R. REES 160

Uptake and intracellular processing of epidermal-growth-factor–receptor complexes
J. BEARMORE & C. R. HOPKINS 165

Transforming growth factors: sources, properties and possible roles in normal and malignant cell growth control
K. D. BROWN & D. M. BLAKELEY 168

Nerve Growth Factor–an enigma still?
B. E. C. BANKS 173
Symposium: Enterotoxins and Anti-toxins

Enterotoxins and ion transport
The mechanism of action of *Escherichia coli* heat-stable toxin
The ADP-ribosyltransferase activity of cholera toxin and *Escherichia coli* heat-labile toxin
Genetics of enterotoxin production in *Escherichia coli*
Cellular location of enterotoxin in *Escherichia coli*
Enteric diseases in animals caused by *Escherichia coli*: their control and prevention
*Clostridium difficile* enterotoxin (toxin A): new results
*Clostridium perfringens* enterotoxin: a brief review
*Bacillus cereus* enterotoxins: present status
Present status of cholera vaccines
Antimotility drugs in the treatment of acute diarrhoea
Opiate agonists and enterotoxins
α₂-Adrenergic agonists and enterotoxins
Inhibition of cholera toxin-induced secretion by neuroleptics

Colloquium: The Application of Recombinant DNA Technology to Enzymology and Membrane Transport Processes
Cloning enzyme genes for overproduction
Use of recombinant DNA techniques to study DNA repair in *Escherichia coli*
Cloning and sequence analysis of the pyruvate and 2-oxoglutarate dehydrogenase complex genes of *Escherichia coli*
Cloning and sequencing of the gene encoding NADP-specific glutamate dehydrogenase in *Neurospora crassa*
Genetic dissection of tyrosyl-tRNA synthetase
Directed mutagenesis as a technique to study protein function: application to β-lactamase
Probing the catalytic mechanism of yeast triose phosphate isomerase by site-specific mutagenesis
Molecular mechanisms of bacterial periplasmic transport systems
Genes for bacterial and mitochondrial ATP synthase
Potassium transport in *Escherichia coli*: genetic and biochemical characterization of the K⁺-transporting ATPase
Isolation and manipulation of genes coding for energy-transducing enzymes from *Neurospora crassa* and *Escherichia coli*
Molecular and genetic aspects of the fumarate reductase of *Escherichia coli*

COMMUNICATIONS

605th MEETING, STRATHCLYDE

COMMUNICATIONS

CHARING CROSS MEETING

Symposium: Use of Liposomes in Medicine
Brenda E. Ryman
W. J. Whelan
CONTENTS

Liposomes: bags of challenge
Interaction of liposomes with hepatocytes and Kupffer cells
in vivo and in vitro
Targeting of small unilamellar liposomes to the galactose
receptor in vivo
Role of lipoproteins in stability and clearance of liposomes
administered to mice
Antibody-directed liposomes: the development of a cell-
specific cytotoxic agent
Natural antibodies against phospholipids and liposomes in
humans
Liposomal drug delivery in chronic ischaemia
Liposomes in diagnostic radiology
Liposomes as aids to tumour detection
Liposomes for gene transfer and expression in vivo

BOOK REVIEWS
COMMUNICATIONS

604th MEETING, CAMBRIDGE

Phosphotransferase system of Clostridium pasteurianum
Regulation of hexose uptake in Chinese-hamster ovary cells
Irreversible uptake of dihydrostreptomycin by Escherichia coli K12
Epidermal growth factor receptors on porcine thyroid cell membranes: lack of receptor antibodies in Graves' disease
Distribution of epidermal-growth-factor receptors in rat skin during embryonic development: evidence for a specific inductive interaction between a mesenchyme and an epithelium
Amidolytic activity of 7S nerve growth factor
The purification by immuno-affinity chromatography of bacterial methionyl-(human somatotropin)
Characterization of mRNA sequences encoding sheep somatotropin (growth hormone) by cloning of pituitary complementary DNA
Monoclonal antibodies that inhibit somatomedin-like activity
The specificity of binding of somatotropin (growth hormone) and prolactin to purified plasma membranes from rabbit liver
Plasma somatomedin activity and tri-iodothyronine and thyroxine concentrations in female rats treated with the growth promoter trenbolone acetate
Posterior pituitary peptides in human foetal and neonatal tissues
The ontogeny of (arginine)vasotocin in the human foetus and newborn
The sympathetic control of brown-fat growth in animals and humans
Is GTPase involved in the stimulation by human chorionic gonadotropin of luteal adenylate cyclase?
Silica-released macrophage factor that stimulates protein synthesis in fibroblasts
Regulation of growth kinetics of endometrial cells in primary culture
Growth potential of endometrial cells in primary culture
Low-molecular-mass tumour angiogenesis factor
The partial purification of colony-stimulating factors from human placental-conditioned medium
The effect of mouse fibroblast interferon on proinsulin biosynthesis
Large-scale production and purification of Clostridium perfringens type A enterotoxin
The effect of Escherichia coli enterotoxin and methotrexate on drug absorption
Development of an inhibition Magnetic Enzyme Immuno-Assay (MEIA) technique for determination of staphylococcal enterotoxin B
Effect of Clostridium botulinum toxin on neuroblastoma cells
Development of a Magnetic Enzyme ImmunoAssay (MEIA) technique for determination of anti-(staphylococcal enterotoxin) immunoglobulin G-type antibodies
The effect of chemical modification on the activity of heat stable enterotoxin from Escherichia coli
Effects on prostaglandin synthesis in WI-38 human lung fibroblasts following inhibition of acylation
Chloroplast genes for components of the ATP synthase complex

W. J. MITCHELL & I. R. BOOTH 239
P. FAIK & M. J. MORGAN 240
S. N. YOUNG & W. W. NICHOLS 240
S. ATKINSON & P. KENDALL-TAYLOR 242
M. R. GREEN & J. R. COUCHMAN 243
W. F. LONG & F. B. WILLIAMSON 244
G. W. JACK & H. J. GILBERT 246
J. M. WARWICK & M. WALLIS 247
D. C. WATKINS & M. WALLIS 249
C. F. LEAROYD, H. F. CADMAN & M. WALLIS 250
P. A. SINNETT-SMITH, A. N. BROOKS, N. W. DUMELOW, B. G. VERNON, N. B. HAYNES & P. J. BUTTERY 251
A. SMITH, N. MCEINTOSH & N. D. CARTER 252
N. MCEINTOSH, A. SMITH & N. D. CARTER 253
G. MORY, D. RICQUIER, M. NECHAD, F. BOUILLAUD & J. THIBAULT 254
G. J. MURPHY & D. A. STANSFIELD 255
E. KULONEN, M. AALTO & M. POTILA 256
R. P. FIELD & R. E. LEAKE 258
I. MUNIR & R. E. LEAKE 259
J. B. WEISS, C. R. HILL & A. SCHOR 260
W. S. GILMORE 261
C. J. RHODES & K. W. TAYLOR 262
D. REYNOLDS, H. S. TRANTER, B. J. CAPEL, B. A. BARTHOLOMEW & M. F. STRINGER 262
J. LYNCH & M. L. LUCAS 263
P. D. PATEL & P. A. GIBBS 264
D. REYNOLDS, H. S. TRANTER, B. J. CAPEL, B. A. BARTHOLOMEW & M. F. STRINGER 266
J. LYNCH & M. L. LUCAS 263
P. D. PATEL & P. A. GIBBS 264
J. LYNCH & M. L. LUCAS 263
B. R. BOOTH, E. J. WOLFFE & M. A. SOWA 268
S. A. HUNTER, S. BURSTEIN & C. SEDOR 269
A. K. HUTTLY, C. J. HOWE, C. M. BOWMAN, T. A. DYER & J. C. GRAY 270
CONTENTS

Chloroplast genes for components of the cytochrome b-f complex from pea
D. L. Willey, A. L. Phillips & J. C. Gray 271

Localization of the gene for the P700-chlorophyll a protein
in chloroplast DNA from pea and wheat
A. G. Smith & J. C. Gray 272

cDNA cloning of rabbit fatty acid synthetase
I. R. Cameron, R. Dils, R. A. Fallon & C. J. Skidmore 273

Subcloning of the Escherichia coli genes aroA (5-enolpyruvylshikimate 3-phosphate synthase) and aroB (3-dehydroquinase synthase)
K. Duncan & J. R. Coggins 274

Subcloning of the Escherichia coli shikimate dehydrogenase gene\(^{\text{aroE}}\) from the transducing bacteriophage \(\lambda\)spc1
I. A. Anton & J. R. Coggins 275

The mercury-resistance genes of transposon Tn501: nucleotide sequence of the \(mer\) operon and a possible mechanism for mercury detoxification
N. L. Brown, R. D. Pridmore & D. C. Fritzinger 276

Cell-free translation of the uncoupling protein of brown-fat mitochondria
F. Bouillaud, D. Ricquier & J. Thibault 277

Purification and expression of an Abelson-murine-leukemia-virus-encoded protein kinase from Escherichia coli
J. G. Foulkes, J. Y. J. Wang, N. C. Andrews & D. Baltimore 277

Investigation of the activity of yeast phosphoglycerate kinase by site-specific mutagenesis

Non-radioactive gene-specific probes
J. L. Woodhead & A. D. B. Malcolm 279

The properties of immobilized horseradish peroxidase
N. Small, J. L. Woodhead & A. D. B. Malcolm 280

Analysis of a retrovirus-like mouse gene family
A. T. Carter, J. D. Norton & R. J. Averly 281

Studies on a human tRNA gene
J. P. Goddard, M. Bienz, M. Squire & J. D. Smith 282

Putative high-mobility-group (HMG) non-histone chromosomal proteins from wheat germ
E. L. V. Mayes & J. M. Walker 283

Restriction-endonuclease digestion of topoisomser families
G. S. Snounou & A. D. B. Malcolm 284

Coloured computergraphic displays of subunit-subunit interfaces of oligomeric proteins
E. J. Milner-White 285

The human glutathione S-transferases: studies on the distribution of the GST1, GST2 and GST3 isoenzymes

605th MEETING, STRATHCLYDE

The effect of microtubule and microfilament disruption on the secretion of fucose- and mannose-containing glycoproteins from normal and cystic-fibrosis fibroblasts
V. Gavrias & C. J. Danpure 287

Biochemical evidence for a case of canine fucosidosis

The role of mannosyltransferase in cellulose synthesis in mung-bean hypocotyls
A. F. D. Kennedy & C. T. Brett 289

Changes in glucuronyltransferase activity during tissue development in pea epicotyls
K. W. Waldron & C. T. Brett 290

The use of concanavalin A as a probe for ADP-ribosylated glycoproteins
L. Minshall & W. J. D. Whish 291

Partial purification of UDP-N-acetyl-\(\beta\)-D-glucosamine-\(\beta\)-D-glucosaminyltransferase from human serum
O. M. P. Singh & R. D. Marshall 292

Location of bi- and tri-antennary N-glycans among the heterogeneous forms of human serum transferrin: a topographical study
M. W. C. Hatton & L. R. Berry 293

Incomplete blood-group substances in the metastases of gastro-intestinal tumours
D. A. R. Simmons 294

The formation of membrane-bound glycoproteins by ex- plants of malignant human breast tissue
A. S. A. Kassab, F. W. Hemming & R. W. Blamey 296

Changes in transglutaminase activity during tumour growth and metastasis
R. N. Barnes, P. J. Bungay, B. M. Elliot, P. L. Walton & M. Griffin 297

A study of the pulmonary toxicity induced by the antitumour compound bleomycin
M. Iqbal, B. Scanlon, L. L. Smith & M. Griffin 298

Multiple antigenic determinants of the Epithelial Membrane Antigen
J. H. Westwood, M. G. Ormerod, K. Steele & M. N. Mazzini 299
Heparin sulphates of chemically transformed BHK cells in which the transformed growth trait is temperature-dependent

C. F. Moffat, D. Grant, W. F. Long & F. B. Williamson

Polarimetry as a technique for the study of glycosaminoglycan-metall-ion interactions

D. Grant, C. F. Moffat, W. F. Long & F. B. Williamson

Altered water structure in mixtures of heparin and metal ions

M. J. Harding & J. T. Gallagher

Binding of the Helix pomatia lectin to the surfaces of normal and leukaemic lymphoid cells

I. N. Hampson & J. T. Gallagher

Sequence analysis of dermatan sulphate oligosaccharides

M. Edward & R. F. Oliver

Ascorbate increases the sulphation of glycosaminoglycans synthesized by human skin fibroblasts

M. Wrightman, D. Furniss & W. J. D. Whish

Effect of phorbol esters on ADP-ribose transferase in cultured mouse lymphoma (Ll210) cells

N. Abed & W. J. D. Whish

Germination and protein ADP-ribosylation


Solubilization from sheep erythrocyte membranes of the potassium-transport-associated antigens L\textsubscript{p}, L\textsubscript{1} and M, and the molecular size determination of the L\textsubscript{p} antigen by radiation inactivation

J. R. McDermott

Isolation of a neurotensin-degrading enzyme from rat brain


1-Homocysteine enhances pyridoxal 5'-phosphate-induced seizures in the rat

A. C. Hall & J. S. Willis

Thermal stability properties of immobilized creatine kinase

J. Rudge & G. F. Bickerstaff

Activation of the Ca\textsuperscript{2+}-sensitive K\textsuperscript{+} channel in erythrocytes at low temperature

N. McIntosh, C. H. Rodeck & R. Heath

Amino acids in the human placental inter villous space

M. P. Weir, J. F. Gibson & T. J. Peters

Plasma amino acids in the mid-trimester human foetus

M. McIntosh, C. H. Rodeck & R. Heath

An electron-paramagnetic-resonance study of ferritin and haemosiderin

I. C. Allen & R. Griffiths

Human placental cell culture

D. M. L. Morgan & V. J. Toothill

Fluorescence-activated sorting of rat uterine deciduomal cells

K. N. McConnell, B. D. Young, J. E. O'Grady & B. Green

Action of growth factors in rat uterine cells

R. P. Field & R. E. Leake

Attachment and growth of rat uterine cells in vitro

I. Munir & R. E. Leake

Factors regulating rat uterine oestrogen-receptor activation

L. Myatt, M. G. Elder & J. O. White

The interaction of oestrogen receptor with oligodeoxy nucleotides

S. M. Hyder, M. G. Elder, L. Lim & L. Myatt

Comparison of the activation of the rat uterine cytosol oestrogen receptor by oestradiol and anti-oestrogens

J. O. White, M. G. Elder & L. Myatt

Effect of oestrogen administration in fatty acid synthetase activity in male chick liver

S. Courtney & R. Manning

Formation of free and sulphated oestrogens in porcine testisellar microsomes: effects of aminoglutethimide on the pathway from 19-hydroxyandrost-4-enedione

R. M. Ayling, C. Lyne & D. B. Gower

The involvement of calcium ions in phosphatidylinsitol hydrolysis in the anterior pituitary

J. G. Baird, R. J. H. Woctikiewicz, P. R. M. Dobson & B. L. Brown

O-Glycosylation of herpes simplex virus glycoproteins carrying high-mannose glycans

F. Serafini-Cessi, F. Dall'olio & G. Campadelli-Fiume