

Keilin Memorial Lecture**The Merger of Bioenergetics
and Molecular Biology**

L. ERNSTER

253**Jubilee Lecture****Pathway and Stability of
Protein Folding**

A. R. FERSHT

267**colloquia****649th Meeting Imperial College, London****colloquium: Host/Pathogen Cellular Interactions**

Mechanisms of ligand binding by integrins	M. J. HUMPHRIES	275
Interactions between <i>Plasmodium falciparum</i> and HLA molecules	A. V. S. HILL, M. AIDOO, C. E. M. ALLSOPP, M. DAVENPORT AND S. N. R. YATES	282
Structure and function of infective stage proteins of <i>Leishmania</i>	D. F. SMITH, S. GOKOOL, J. K. KEEN, P. G. MCKEAN AND D. RANGARAJAN	286
Malaria parasites and erythrocyte invasion	A. A. HOLDER, M. J. BLACKMAN, M. BORRE, P. A. BURGHAUS, J. A. CHAPPEL, J. K. KEEN, I. T. LING, S. A. OGUN, C. A. OWEN, AND K. A. SINHA	291
<i>Shigella flexneri</i>: from <i>in vitro</i> invasion of epithelial cells to infection of the intestinal barrier	P. J. SANSONETTI	295
Interactions of herpes simplex viruses with the host cell	A. C. MINSON	298
The molecular genetic bases of <i>Salmonella</i> entry into mammalian cells	J. E. GALÁN AND C. GINOCCHIO	301
Bacterial and host interactions during the biogenesis toxicity and immunogenicity of <i>Escherichia coli</i> heat-labile enterotoxin	T. R. HIRST, S. EAGLESTONE, W. I. LENGER, T. O. NASHAR, H. M. WEBB AND J. YU	306
Chemotactic cytokines and tuberculosis	J. S. FRIEDLAND	310

colloquium: Photosynthetic Oxygen Evolution

Photosystem II: no longer the black box of photosynthesis	J. BARBER	313
--	-----------	------------

Structure–function relationships in photosynthetic water oxidation	G. RENGER, T. BITTNER AND J. MESSINGER	318
The inorganic biochemistry of photosynthetic water oxidation	G. C. DISMUKES, M. ZHENG, R. HUTCHINS AND J. S. PHILO	323
Photosystem II electron transfer: the manganese complex to P680	J. H. A. NUGENT, P. J. BRATT, M. C. W. EVANS, D. J. MACLACHLAN, S. E. J. RIGBY, S. V. RUFFLE AND S. TURCONI	327
Study of the intermediate S-states for water oxidation in the normal and Ca-depleted photosynthetic oxygen-evolving enzyme by means of flash-induced X-ray absorption near edge structure spectroscopy	T. ONO, T. NOGUCHI, Y. INOUE, M. KUSUNOKI, H. YAMAGUCHI AND H. OYANAGI	331
Spectroscopic analysis of redox changes during S-state transitions of the water oxidation complex	M. C. W. EVANS, D. J. MACLACHLAN, P. BRATT AND J. H. A. NUGENT	335
Analysis of water-oxidation mutants constructed in the cyanobacterium <i>Synechocystis</i> sp. PCC 6803	P. J. NIXON AND B. A. DINER	338
Histidine at the catalytic site of the photosynthetic oxygen-evolving complex	R. D. BRITT, X. TANG, M. L. GILCHRIST, G. A. LORIGAN, B. S. LARSEN AND B. A. DINER	343
Studies of Ca²⁺ binding in spinach photosystem II using ⁴⁵Ca²⁺	L.-E. ANDREASSON, P. ÄDELROTH AND K. LINDBERG	347
The oxygen-evolving enzyme: effects of calcium and chloride ions	A. BOUSSAC AND A. W. RUTHERFORD	352

colloquium: Advances in Structural Glycobiology

Akira Kobata	R. C. HUGHES	359
Affinity chromatography with use of immobilized lectin columns	A. KOBATA	360
Hepatocyte growth factor/scatter factor: a heparan sulphate-binding pleiotrophic growth factor	M. LYON AND J. T. GALLAGHER	365
Studies on glycoprotein-derived carbohydrates	J. F. G. VLIEGENTHART	370
Structure and function studies of plant cell wall polysaccharides	P. ALBERSHEIM, J. AN, G. FRESHOUR, M. S. FULLER, R. GUILLEN, K.-S. HAM, M. G. HAHN, J. HUANG, M. O'NEILL, A. WHITCOMBE, M. V. WILLIAMS, W. S. YORK AND A. DARVILL	374
Structure and biosynthesis of carbohydrate ligands for animal lectins involved in cell adhesion	M. J. CHO AND R. D. CUMMINGS	378

colloquium: Elicitors in Plant and Microbial Metabolism

Differential effects of elicitors on secondary metabolism in hairy root cultures of tobacco (<i>Nicotiana tabacum</i>)	S. J. NEILL, J. R. LENTON AND M. S. WIBBERLEY	383
---	---	------------

Induction of metabolic and morphogenetic changes during mycelial interactions among species of higher fungi	A. D. M. RAYNER, G. S. GRIFFITH AND H. G. WILDMAN	389
Polygalacturonase, PGIP and oligogalacturonides in cell-cell communication	G. DE LORENZO, F. CERVONE, D. BELLINCAMPI, C. CAPRARO, A. J. CLARK, A. DESIDERIO, A. DEVOTO, R. FORREST, F. LECKIE, L. NUSS AND G. SALVI	394
Unconjugated N-glycans as a new class of plant oligosaccharins	B. PRIEM, H. MORVAN AND K. C. GROSS	398
Putative biological action of oligosaccharides on enzymes involved in cell-wall development	J. P. JOSELEAU, G. CHAMBAT, A. CORTELZZO, A. FAIK AND K. FUEL	403
Characterization of hepta-β-glucoside elicitor-binding protein(s) in soybean	M. G. HAHN, J.-J. CHEONG, R. ALBA AND F. CÔTÉ	408
Signal transduction in elicitation of phytoalexin synthesis	C. J. SMITH	414

colloquium: Regulation of Fatty Acid Oxidation

Introduction: the regulation of fatty acid oxidation in cells	H. STANLEY AND H. S. A. SHERRATT	421
Regulation of fatty acid oxidation in cells	H. S. A. SHERRATT AND T. D. SPURWAY	423
The mitochondrial long-chain trifunctional enzyme: 2-enoyl-CoA hydratase, 3-hydroxyacyl-CoA dehydrogenase and 3-oxoacyl-CoA thiolase	B. MIDDLETON	427
Intermediates of mitochondrial β-oxidation	K. BARTLETT AND S. EATON	432
Regulation of flux of acyl-CoA esters through peroxisomal β-oxidation	H. OSMUNDSEN, R. HOVIK, K. BARTLETT AND M. POURFAZAM	436
Metabolic control analysis of hepatic β-oxidation: the top-down approach	P. A. QUANT AND R. A. MAKINS	441
Processivity and fatty acid oxidation	P. A. SRERE AND B. SUMEGI	446
Kinetic implications of metabolite channelling in β-oxidation	A. CORNISH-BOWDEN	451

colloquium: G-Proteins and Secretion

Regulation of the Ras signalling pathway by protein-tyrosine kinases	T. PAWSON	455
The ypt proteins of <i>Schizosaccharomyces pombe</i>	J. ARMSTRONG, A. PIDOUX, S. BOWDEN, M. CRAIGHEAD, N. BONE AND E. ROBINSON	460
Both the $G_s\alpha$ and $\beta\gamma$ subunits of the heterotrimeric G-protein, G_s, control sorting of the polymeric immunoglobulin receptor into transcytotic vesicles	M. BOMSEL AND K. E. MOSTOV	463

Control of exocytosis in adrenal chromaffin cells by GTP-binding proteins studied using permeabilized cells and patch-clamp capacitance measurements	R. D. BURGOYNE, S. E. HANDEL AND A. MORGAN	468
---	--	-----

colloquium: Structure and Regulation of Cation Channels

Oligomeric and subunit structures of neuronal voltage-sensitive K⁺ channels	J. O. DOLLY, J. RETTIG, V. E. S. SCOTT, D. V. PARCEJ, R. WITTKAT, S. SEWING AND O. PONGS	473
Structure and function of voltage-gated sodium channels: regulation by phosphorylation	T. SCHEUER	479
Molecular diversity of Ca²⁺ channel β subunits	A. CASTELLANO AND E. PEREZ-REYES	483
Involvement of cation channels in autoimmune disease	A. VINCENT, R. BARRETT-JOLLEY, P. SHILLITO, I. HART, D. BESON, C. MACLENNAN, M. NICOLLE, B. LANG, M. ROBERTS, H. WILLISON AND J. NEWSOM-DAVIS	488
Subunit structure and phosphorylation of the cardiac L-type calcium channel	R. I. NORMAN AND R. N. LEACH	492

colloquium: The Role of Cell Volume Changes in Metabolic Regulation

Control of liver cell function by the hydration state	D. HÄUSSINGER, W. NEWSOME, S. VOM DAHL, B. STOLL, B. NOE, R. SCHREIBER, M. WETTSTEIN AND F. LANG	497
Lysosomal pH: a link between cell volume and metabolism	F. LANG, G. BUSCH, H. VÖLKL AND D. HÄUSSINGER	502
Control of liver carbohydrate and fatty acid metabolism by cell volume	L. HUE	505
Cell swelling and the control of autophagic proteolysis in hepatocytes: involvement of phosphorylation of ribosomal protein S6?	J. J. F. P. LUIKEN, E. F. C. BLOMMAART, L. BOON, G. M. VAN WOERKOM AND A. J. MEIJER	508
Osmotic activation of the Na⁺/H⁺ antipporter during volume regulation	S. GRINSTEIN, M. WOODSIDE, G. G. GOSS AND A. KAPUS	512
The role of ion content and cell volume in insulin action	L. AGIUS, M. PEAK, G. BERESFORD, M. AL-HABORI AND T. H. THOMAS	516
Regulation of mitochondrial metabolism through changes in matrix volume	A. P. HALESTRAP	522
Endotoxin-induced increase in liver mass and hepatocyte volume	J. T. BROSNAN AND D. QIAN	529

colloquium: Recent Biochemical Applications of Mass Spectrometry

The interplay between different mass spectrometric techniques in protein chemistry	P. ROEPSTORFF	533
---	---------------	-----

Biological applications of time-of-flight mass spectrometry	R. J. COTTER, A. S. WOODS AND T. J. CORNISH	539
Application of electrospray ionization mass spectrometry for analysis of haemoglobin adducts with acrylonitrile	R. D. STEVENS, J. BONAVENTURA, C. BONAVENTURA, T. R. FENNEL AND D. S. MILLINGTON	543
Polyvinylidene difluoride: an interface for electrophoresis and matrix-assisted laser desorption/ionization mass spectrometry	M. M. VESTLING AND C. FENSELAU	547
Electrospray ionization mass spectrometric analysis of subunits of NADH:ubiquinone oxidoreductase (complex I) from bovine heart mitochondria	I. M. FEARNLEY, J. M. SKEHEL AND J. E. WALKER	551

Host/pathogen cellular interactions		
Structural investigation of the thiolester-forming region of human complement component C4	J. R. BRIGHT, A. L. GIBB, P. BARLOW, A. C. WILLIS AND E. SIM	85S
Opsonic effect of globulins on phagocytosis of liposomes by bone marrow cells	R. BUMRAH AND H. M. PATEL	86S
A study of brain gangliosides and other glycolipids after infection with semliki forest virus	A. KHALILI-SHIRAZI, N. GREGSON AND H. E. WEBB	87S
Interaction of <i>Pseudomonas pseudomallei</i> with macrophages	V. S. HARLEY, D. A. B. DANCE, G. TOVEY AND B. S. DRASAR	88S
Gene expression of <i>Mycobacterium bovis</i> BCG induced <i>in vitro</i> by stress stimuli associated with infection	I. M. MONAHAN, D. K. BANERJEE AND P. D. BUTCHER	89S
Transformation as an approach to functional analysis of the major cysteine protease of <i>Trypanosoma cruzi</i>	A. M. THOMAS AND J. M. KELLY	90S
Epithelial cell responses to the attachment of apathogenic segmented filamentous bacteria	M. A. JEPSON, M. A. CLARK, N. L. SIMMONS AND B. H. HIRST	91S
Origin, accumulation and mobilization of salivary prostaglandin precursors in the lone star tick	A. S. BOWMAN, J. R. SAUER, M. M. SHIPLEY, R. D. HICKEY, P. A. NEESE AND J. W. DILLWITH	92S
Photosynthetic oxygen evolution		
Photoreduction of iron at physiological pH: Effect of biological buffers	S. MUELLER AND R. J. SIMPSON	93S
Sidedness in cyanobacterial thylakoid membranes	S. M. MCCOLL AND E. H. EVANS	94S
Advances in structural glycobiology		
Altered expression of N-acetylgalactosamine glycoproteins by breast cancers	S. A. BROOKS, A. J. C. LEATHEM AND M. V. DWEEK	95S
Carbohydrate moieties of different kallikrein gene family products in rat submandibular glands detected by means of lectin probes	X. S. ZHANG, G. B. PROCTOR, J. R. GARRETT AND D. K. SHORI	96S
Secreted and cellular mucins show structural changes in adeno- and mucinous carcinoma cells in culture	N. MYERSCOUGH, M. GOUGH, P. DURDEY, C. PARASKEVA AND A. CORFIELD	97S
Slot-blotting with enhanced chemiluminescence detection: An ultrasensitive technique for the quantitative analysis of proteins and glycoproteins	M. T. G. GOODARZI AND G. A. TURNER	98S
Expression of Lewis x antigen on ovarian cancer cells is related to cell growth	L. M. H. JONES, M. J. GARDNER AND G. A. TURNER	99S
Regulation of fatty acid oxidation		
A convenient method for assaying insulin responsiveness of rat adipose tissue in primary culture	R. E. CARR, C. D. BOURGEOIS, K. N. FRAYN AND G. F. GIBBONS	100S
Very low density lipoprotein sub-classes: Separation and characterization from normo and hyper-lipidaemic subjects	S. VENKATESAN, H. IMRIE, P. SMETHURST AND D. HALLIDAY	101S
Comparison of apo C subclasses from normal and hypertriglyceridaemic subjects after 4 days on high (80%) and moderate (50%) carbohydrate diet	S. VENKAESAN, H. IMRIE, S. READ AND D. HALLIDAY	102S

The effect of meal fat content and habitual exercise on postprandial triglyceride rich lipoproteins	S. SETHI, G. ISHERWOOD, J. WRIGHT, B. J. GOULD AND C. M. WILLIAMS	103S
Effects of different dietary saturated fats on plasma lipoprotein levels in hamsters	J. S. BRUCE, E. H. MANGIAPANE, D. WHITE, C. MARENTH AND A. M. SALTER	104S
Hypertriglyceridaemia precedes impaired muscle glucose utilization during fructose feeding	M. J. HOLNESS	105S
Site-selective modulation of enzymes of cardiac fuel utilization by a diet rich in fat	K. A. ORFALI, R. M. GRIMSHAW AND M. C. SUGDEN	106S
Differential hepatic uptake of [³⁵ S]-labelled HDL apolipoproteins in a dual rat spleen-liver perfusion system	M. S. MINDHAM AND P. A. MAYES	107S
Comparison of the hepatic metabolism of chylomicron remnants derived from corn oil or butter fat	M. S. LAMBERT, K. M. BOYTHAM AND P. A. MAYES	108S
The effects of two structural isomers of a dietary triacylglycerol on chylomicron metabolism	A. M. SALTER, D. A. PUFAK AND P. QUINLAN	109S
The effect of fibrin acid derivatives on cholesterol metabolism in rat liver	J. H. SHAND AND D. W. WEST	110S
The effect of probucol and clofibrate on hepatic cholesterol metabolism	J. H. SHAND AND D. W. WEST	111S
The effect of diets containing defined triglycerides on hepatic apolipoprotein B, HMGCoA reductase and LDL receptor mRNA levels in the Syrian hamster	A. J. BENNETT, M. A. BILLET, A. M. SALTER AND D. W. WEST	112S
Modulation of the malonyl-CoA sensitivity of hepatic carnitine palmitoyltransferase (CPT) by phospholipids	R. L. MYNATT AND G. A. COOK	113S
One dimensional high resolution ¹ H NMR spectroscopy of human bile: Lipid-derived resonance shifts	S. S. SEQUEIRA, H. G. PARKES, J. P. M. ELLUL AND G. M. MURPHY	114S
Molecular species of phosphatidylcholine in bile, plasma and red blood cell membranes	T. B. CASSELL, S. P. PEREIRA, D. N. PRASHAD AND G. M. MURPHY	115S
Fatty acid oxidation by lymphocytes	P. YAQOOB, E. A. NEWSHOLME AND P. C. CALDER	116S
Identification and partial characterization of fatty acid-binding sites in sheep placental membranes	F. M. CAMPBELL, M. J. GORDON AND A. K. DUTTA-ROY	117S
Measurement of carnitine palmitoyltransferase I in hepatocyte monolayers	T. D. SPURWAY, L. AGIUS, H. STANLEY, A. SHERRATT AND C. I. POGSON	118S
Production of 3-enoyl-CoA esters from palmitate by liver mitochondria	S. EATON, D. M. TURNBULL AND K. M. BARTLETT	119S

Molecular mechanisms of induction of drug metabolizing enzymes

Cell systems capable of sustaining phenobarbital induction of CYP2B genes	G. CIARAAMELLA, M. EDWARDS, E. A. SHEPHARD AND I. R. PHILLIPS	120S
Identification of DNA sequences involved in the transcription of a CYP2B2 gene	A. SHERVINGTON, E. A. SHEPHARD AND I. R. PHILLIPS	
Expression in a baculovirus system of a cDNA encoding human CYP2A6	M. NANJI, P. CLAIR, E. A. SHEPHARD AND I. R. PHILLIPS	122S
Regulation of CYP2B gene expression in the intestinal mucosa	A. P. ELIA, E. A. SHEPHARD AND I. R. PHILLIPS	123S

Long-term preservation and induction of drug metabolizing enzymes in co-cultured rat hepatocytes	M. AKRAWI, V. ROGERS, A. VERCROYSSE, I. R. PHILLIPS AND E. A. SHEPHERD	I24S
Regulation of cytochrome P4502B2 gene expression	L. A. FORREST, A. SHERVINGTON, I. R. PHILLIPS AND E. A. SHEPHERD	I25S
In vivo hepatic glucose and glycogen metabolism in meal fed rats	K. K. CHANGANI, S. C. R. WILLIAMS AND R. A. ILES	I26S
Immunological cross-reactivity of a mosquito carboxylesterase-A2 antibody to other mosquito and vertebrate esterases and cholinesterases	S. H. P. P. KARUNARATNE, K. G. I. JAYAWARDENA, J. HEMINGWAY AND A. J. KETTERMAN	I27S
The role of CYP1A enzymes in murine activation of the cooked food carcinogen 2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine	K. ZHAO, A. R. BOOBIS, D. S. DAVIES AND N. J. GODDERHAM	I28S
A comparison of the antitumour effects of cyclosporin A in HepG2 and MOLT 4 cells	G. STRACHAN, P. H. WHITING AND H. M. WALLACE	I29S
The metabolism of n-hexane by rat skeletal muscle, liver, lung and brain microsomes	S. J. CROSBIE, F. M. WILLIAMS AND P. G. BLAIN	I30S
Induction of CYP3A enzymes in human and rat hepatocyte cultures	J. A. WILLIAMS, R. J. CHENERY AND G. M. HAWKSWORTH	I31S
Origins of hepatomegaly produced by dexamethasone (DEX), pregnenolone 16α-carbonitrile (PCN) and phenobarbitone (PB) in female Sprague-Dawley rats	N. J. THATCHER AND J. CALDWELL	I32S

G-proteins and secretion

The inhibition of stimulus-secretion coupling in pancreatic islets by volatile anaesthetics does not involve pertussis toxin sensitive G proteins	J. P. DESBOROUGH, P. M. JONES, S. J. PERSAUD AND S. L. HOWELL	I33S
The characterization of a P-element insert into the Gα G protein gene in <i>Drosophila melanogaster</i>	T. DAVIS AND K. LIERUTH	I34S
Release of Gα from rabbit intestinal cells following ADP-ribosylation by cholera toxin	S. NASIM AND S. VAN HEYNINGEN	I35S
Anti-sense to secretory type II phospholipase A2 inhibits fMLP induced arachidonic acid release in differentiated HL-60's	M. A. ELMORE, M. J. CARRIER, R. H. DANIELS, M. E. HILL AND M. J. FINNEN	I36S
Membrane changes associated with secretion occur in the absence of external calcium or after treatment with cytoskeletal disrupting agents	S. J. STAFFORD AND J. G. SCHOFIELD	I37S
Stereoselective antagonism of the metabotropic glutamate receptor mGluR1α by α-methyl-4-carboxyphenylglycine	A. J. SEAL, A. J. IRVING, J. M. HENLEY AND G. L. COLLINGRIDGE	I38S
β-Cell dysfunction in intra-uterine growth retarded infants	S. M. HAMPTON, J. THOMSON, J. B. MORGAN AND M. EVANS	I39S
β-Cell status in infants of diabetic mothers — a pilot study	S. M. HAMPTON, K. HARE, J. B. MORGAN AND M. E. EVANS	I40S
The development and use of a sulphonylurea enzyme linked immunosorbent assay	L. M. WITHEY, B. A. MORRIS, D. TEALE AND S. M. HAMPTON	I41S

Post-prandial B cell secretions in Type II diabetic subjects	J. A. LOVEGROVE, C. J. PINDER, J. JONES, J. A. DAVIS, AND S. M. HAMPTON	I42S
Studies on a chimeric rat D₂-D₃ dopamine receptor	D. A. NORMAN AND L. H. NAYLOR	I44S
Site-directed mutagenesis of Tyr417 in the rat D₂ dopamine receptor	S. J. DANIELL, P. G. STRANGE AND L. H. NAYLOR	I44S
Low density lipoprotein and calcium homeostasis in human vascular smooth muscle cells	A. D. HUGHES, G. F. CLUNN AND M. SCHACHTER	I45S

Structure and regulation of cation channels

Preliminary analysis of the pore dimensions of human annexin V	O. S. SMART, B. A. WALLACE AND J. M. GOODFELLOW	I46S
Differential changes in gene expression in motor neurone disease	L. VIRGO AND J. S. DE BELLEROCHE	I47S
Induction of immediate early genes, interleukin-β and ornithine decarboxylase messenger RNA in spinal cord by seizures	C. HAY AND J. S. DE BELLEROCHE	I48S
More than one locus for familial amyotrophic lateral sclerosis: Absence of linkage to the SMA locus	C. HAY AND J. S. DE BELLEROCHE	I49S
Nitric oxide synthase inhibitors attenuate the neuronal injury response in cerebral cortex	A. W. KING, R. W. ORRELL, R. LANE AND	I50S
Differential effects of dexamethasone on the induction of c-fos, zif-268 and ornithine decarboxylase by excitotoxin	Y. COLLAÇO-MORAES AND J. S. DE BELLEROCHE	I51S
The inositol 1,4,5-trisphosphate-sensitive Ca²⁺ channel is inhibited by polyamines	L. G. SAYERS AND F. MICHELANGELI	I52S
Characterization of a cation binding site of a cloned heteromeric NMDA receptor: Comparison with native receptors	P. L. CHAZOT, M. CIK AND F.A. STEPHENSON	I53S
Subcellular localizations of AMPA receptors in rat hippocampus	J. M. HENLEY	I54S
Modulation of [³H]glutamate release from rat hippocampal synaptosomes by kainate	J. M. BARNES AND J. M. HENLEY	I55S
Molecular dynamics studies of M2 helices of nicotinic acetylcholine receptors	R. SANDKARARAMAKRISHNAN AND M. S. P. SANSON	I57S
Alamethicin channels modelled by simulated annealing and molecular dynamics	J. BREED AND M. S. P. SANSON	I57S
Simplified models of the pore domain of the nicotinic acetylcholine receptor	I. D. KERR, R. SANKARARAMAKRISHNAN AND M. S. P. SANSON	I58S
Analysis of the interactions of calcium and trifluoperazine with skeletal muscle calsequestrin	G. R. BROWN, R. MORGAN AND F. MICHELANGELI	I59S
The effect of a passive avoidance task on the release of amino acids <i>in vitro</i> from the left Intermediate Medial Hyperstriatum Ventrale (IMHV) of the day-old chick	J. N. DAISLEY AND S. P. R. ROSE	I60S

The role of cell volume changes in metabolic regulation

- Chemiluminescent detection of uncoupling protein mRNA on Northern blots with a digoxigenin (DIG) end-labelled oligonucleotide** J. S. DUNCAN, S. LYKE AND P. TRAYHURN **161S**
- Interactive effects of α -adrenergic agonists and increased cell volume on deoxyglucose uptake and phosphorylation in isolated ventricular myocytes** K. A. ORFALL AND M. C. SUGDEN **162S**
- Up-regulation of system A activity by hypertonic shock in CHO-K1 cells and an alanine-resistant mutant** M. GOMEZ-ANGELATS, B. RUIZ-MONTASELL, J. CASADO, A. FELIPE, J. G. McGIVAN AND M. PASTOR-ANGLADA **163S**

Recent biochemical applications of mass spectrometry

- Combined continuous flow isotope ratio mass spectrometry techniques for tracing the metabolism of ^{13}C -labelled fatty acids** S. T. BROOKES, K. S. CRAIG AND S. C. CUNNANE **164S**
- Identification of epoxide metabolites of tamoxifen by on-line liquid chromatography-electrospray ionization mass spectrometry** C. K. LIM, J. H. LAMB, Z. X. YUAN AND L. L. SMITH **165S**

General topics

- Intestinal protein synthesis demonstrates regional sensitivity to surgical stress** J. S. MARWAY AND V. R. PREEDY **166S**
- The effects of thyroidectomy on intestinal protein metabolism *in vivo*** J. S. MARWAY, T. SIDDIQ AND V. R. PREEDY **167S**
- Dysfunctional recovery of prostacyclin synthase in aspirin-treated vascular cells: Implications for prophylaxis of cardiovascular disease** J. M. BAILEY, K. SALATA AND A. H. MAKHEJA **168S**
- The regression of chronic hypertension by a calcium channel antagonist and an ACE-inhibitor** V. B. PATEL, T. SIDDIQ, P. J. RICHARDSON, J. S. MARWAY, A. G. PAICE AND V. R. PREEDY **169S**
- Cardiac contractile protein synthesis in hypertension: Modulation by acute ethanol toxicity** T. SIDDIQ, P. J. RICHARDSON AND V. R. PREEDY **170S**
- The activities of cathepsins B, D and H in the hearts of rats treated with ethanol** T. SIDDIQ, D. K. SHRI, G. B. PROCTOR, C. LUCKHAUS, P. J. RICHARDSON AND V. R. PREEDY **171S**
- Messenger RNA concentrations in gastrocnemius muscles of alcohol-fed rats** E. B. COOK, D. C. MACALLAN, G. E. GRIFFIN, N. T. PALMER, T. J. PETERS AND V. R. PREEDY **172S**
- The interaction between a calcium antagonist and ethanol-induced reductions in rates of cardiac protein synthesis *in vivo*** T. SIDDIQ, V. B. PATEL, P. J. RICHARDSON AND V. R. PREEDY **173S**
- Time course changes in IGF-I in plasma and left ventricular tissue of spontaneously hypertensive rats and the effects of regression** V. B. PATEL, J. P. MIELL, T. SIDDIQ, A. G. PAICE, P. J. RICHARDSON AND V. R. PREEDY **174S**
- Role of the renin-angiotensin system in modulating ventricular protein synthesis in an aortic constriction model of experimental hypertension** T. SIDDIQ, P. J. RICHARDSON, S. E. TROTTER AND V. R. PREEDY **175S**

Nucleotide sequencing of PCR products shows the presence of Coxsackie-B3 virus in endomyocardial biopsies from patients with myocarditis of dilated cardiomyopathy	M. KHAN, H. WHY, P. RICHARDSON AND L. ARCHARD	176S
Cytosolic chaperonin complexes in the 'neurone-like' ND7/23 cell line	A. ROOBOL, F. E. HOLMES, N. V. L. HAYES, A. J. BAINES AND M. J. CARDEN	177S
Local regulation of mammary apoptosis in the lactating goat	L. H. QUARRIE, C. V. P. ADDHEY AND C. J. WILDE	178S
Circadian patterns of mRNA expression in the rat suprachiasmatic nucleus	P. BADAKHCHANI, N. W. S. CHONG, C. W. COEN, I. C. CAMPBELL AND J. F. POWELL	179S
Mapping of osmium tetroxide sensitive sites in the rat prolactin gene	A. J. MANN AND L. H. NAYLOR	180S
Differential expression of mRNA in chick pineal over 24 hours	N. W. S. CHONG, P. BADAKHCHANI, C. W. COEN, I. C. CAMPBELL AND J. F. POWELL	181S
Indices of protein synthesis and RNA translating activities in the major salivary glands of rat and comparison to synthetic rates in liver	D. K. SHORI, G. B. PROCTOR, J. TEARE AND V. R. PREEDY	182S
Identification and characterization of a novel gene expressed in human keratinocytes	J. D. MUR, I. M. KHAN, T. KAMALATI AND L. BULUWELA	183S
Increased expression of decorin but not of biglycan in hyperglycaemic cultures of human mesangial cells	K. HARPER AND R. MASON	184S
Effects of neuroleptic drugs on polyamine synthesis in human neutrophils <i>in vitro</i>	I. DAS	185S
Oxidative stress induces NKB DNA binding and inducible NOS mRNA in the human epithelial cell line A549	I. M. ADCOCK, C. R. BROWN, O. KWON AND P. J. BARNES	186S
Dexamethasone action on <i>c-fos</i> and <i>c-jun</i> mRNA and protein in human lung	I. M. ADCOCK, C. R. BROWN AND P. J. BARNES	187S
Endotoxin and steroid effects on nitric oxide synthase mRNA expression in rat lung and other tissues	I. M. ADCOCK, S. LU, C. R. BROWN, T. W. EVANS AND P. J. BARNES	188S
Environmental control of expression of virulence in <i>Vibrio cholerae</i>	S. LEWIN, P. A. FOXALL AND B. S. DRASAR	189S
The role of caeruloplasmin in copper excretion	G. F. E. CHOWRIMOOTOO AND C. A. SEYMOUR	190S
Is copper incorporation to caeruloplasmin normal in Wilson's disease?	G. F. E. CHOWRIMOOTOO AND C. A. SEYMOUR	191S
Metabolic gradients as the source of differentiation and morphogenesis	Y. SCHIFFMANN	192S
Modulation of plasma IGF-I in response to acute ethanol toxicity	J. S. MARWAY, J. MIELL, J. JONES, M. A. PREECE AND V. R. PREEDY	193S
Contractile and non-contractile protein synthesis in the small and large intestine and their response to acute ethanol dosage	J. S. MARWAY, T. SIDDIQ, P. GIBBS, P. EDWARDS AND V. R. PREEDY	194S
Characterization of human adenosine type 1, 2a and 2b receptors expressed in CHO cells	P. J. ROLIONS, S. J. TURNER, C. I. O. AKPOGUMA AND K. P. RAY	195S

Effects of alcohol on gastric prostaglandin production and glutathione status	N. A. PUNCHARD, D. J. WATSON, J. P. TEARE, E. FITA-ROBINSON AND R. P. H. THOMPSON	196S
Use of viral and cellular oncogenes to immortalise endothelial cells	N. A. PUNCHARD, R. J. JEWERS, M. D. SNAKEY, D. J. WATSON, B. KELL, J. CASON, J. M. BEST AND R. P. H. THOMPSON	197S
Analysis of glutathione in endothelial cells grown in 96 well microtitre plates	N. A. PUNCHARD, D. J. WATSON AND R. P. H. THOMPSON	198S
Histones located on the plasma membrane of T-cells	K. WATSON, R. J. EDWARDS, D. C. PARMALEE, S. SHAUNAK, N. J. GOODERHAM AND D. S. DAVIES	199S
Growth-dependent changes of $\Delta 12$-desaturase activity and unsaturation of membrane fatty acids in <i>Acanthamoeba castellanii</i>	S. A. AVERY, D. LLOYD AND J. L. HARWOOD	200S
Regulation of sulpholipid biosynthesis	C. E. PUGH AND J. L. HARWOOD	201S
The effect of thiolactomycin on fatty acid synthesis in peas (<i>Pisum sativum</i>, cv Onward)	A. L. JONES, J. E. DANCER AND J. L. HARWOOD	202S
The carbon flux to triacylglycerol in maturing oilseed rape embryos	H. J. PERRY AND J. L. HARWOOD	203S
Development of an assay for phosphoenolpyruvate carboxylase from crassulacean acid metabolism plants	K. CHIDWICK	204S
Apolipoprotein B is channelled into different compartments in hepatocytes	I. J. CARTWRIGHT, A.-M. HEBBACHI AND J. A. HIGGINS	205S
Apolipoprotein-a in human liver is not associated with apolipoprotein-B	L. H. MUNRO, J. WILKINSON AND J. A. HIGGINS	206S
Inositol phosphate levels in WRK-I cells during hyperthermia	R. MANNING, L. KWONG AND K. BOWLER	207S
Inhibition of insulin release by staurosporine and Ro 31-8220: A role for protein kinase C?	S. J. PERSAUD AND P. M. JONES	208S
Tyrosine kinase inhibitors inhibit glucose-stimulated insulin secretion	P. M. JONES AND S. J. PERSAUD	209S
Transient elevation of cAMP by prostaglandins triggers subsequent up-regulation of LDL receptor activity in cultured human cells	H. NIELD AND B. MIDDLETON	210S
Immunoinhibition of protein kinase activity of PK-A catalytic subunit	R. A. GARDNER AND R. A. CLEGG	211S
Trans-epoxysuccinyl-L-leucylamido (4-guanidino)-butane (E64) inhibits trypsin-catalysed hydrolysis possible by binding in the S₁-subsite	S. K. SREEDHARAN, H. N. SHAH AND K. BROCKLEHURST	212S
Evidence from activation parameters for enzyme active centre desolvation promoted by specific binding interactions	G. W. MELLOR, M. P. THOMAS, S. GUL, M. A. NOBLE E. W. THOMAS AND K. BROCKLEHURST	213S
Variation in the effects of P₂-S₂ binding contacts on catalytic site chemistry among members of the cysteine proteinase family	M. PAEL, M. P. THOMAS, M. A. NOBLE, S. GUL, E. W. THOMAS AND K. BROCKLEHURST	214S
Existence of the Cys-His ion-pair state of cysteine proteinases may be an insufficient condition for catalytic competence	S. PINITGLANG, M. PATEL, E. W. THOMAS AND K. BROCKLEHURST	215S

Inhibition of isoenzymes of dog heart phosphodiesterase by blue, yellow and red triazine dyes	J. C. CLAPHAM AND A. F. WILDERSPIN	216S
Purification, properties and inhibition of rat liver cytosolic vitamin B12-dependent methionine synthase	T. AST, A. NICOLAOU, M. M. ANDERSON, C. JAMES AND W. A. GIBBONS	217S
Characterization of the aminopropeptide of procollagen ($\alpha 1$) I in human amniotic fluid	K. M. PRICE, R. SILMAN AND J. G. GRUDZINSKAS	218S
Purification and properties of GTP:GTP guanylyltransferase from embryos of the brine shrimp <i>Artemia</i>	J. J. LIU AND A. G. MCLENNAN	219S
Identification of common forms of salicylate esterases in guinea-pig tissues similar to the microsomal aspirinases of liver	K. N. WHITE, V. L. VALE AND D. B. HOPE	220S
Functional reconstitution of the transport activity of a partially purified brain anion channel	A. M. SILVESTRO AND R. ASHLEY	221S
Modification of the catalytic properties of diamine oxidase (DAO) by reducing agents	I. J. SILVA, M. S. AZEVEDO AND C. F. MANSO	222S
The enzymes of β -oxidation in <i>Rhodococcus ruber</i>	N. POUILLY AND C. G. MITCHELL	223S
Role of vitamin B12 enzymes in platelet cell signalling, adhesion and aggregation	A. NICOLAOU, T. AST, M. M. ANDERSON, W. SCHMIDT, A. YEBOAH AND W. A. GIBBONS	224S
Dibutyltin-3-hydroxyflavone titrates a dissociable component (cofactor) of ATP synthase: An energy transfer component linked to the ubiquinone pool	D. E. GRIFFITHS	225S
The actions of abietic acid in mammalian synaptosomal preparations	R. A. NICHOLSON	226S
Characteristics of the goldfish brain adenylyl cyclase system	D. M. KIRKHAM AND J. M. HENLEY	227S
Evidence of hyaluronan in human tears and secretions of conjunctival cultures	M. FRESCURA, M. BERRY, A. CORFIELD, S. CARRINGTON AND D. L. EASTY	228S
The structure of secreted mucins isolated from the adherent mucus gel: Comparison with the gene products	F. J. J. FOGG, A. ALLEN, S. E. HARDING AND J. P. PEARSON	229S
Hepatic uptake and intracellular processing of opioid pentapeptides	K. L. MACKINNON, D. BILLINGTON AND K. A. ZUZEL	230S
Enzymes of diadenosine tetraphosphate (Ap4A) catabolism in the green alga <i>Scenedesmus obliquus</i>	A. G. MCLENNAN, E. MAYERS, R. S. GUNARATNE, M. PRESOTT AND R. POWLS	231S
RNA in ventricular and atrial regions of the spontaneously hypertensive rat: Including comparison of left ventricular protein synthesis rates with other models of hypertension	A. G. PAICE, V. B. PATEL, T. SIDDIQ, J. S. MARWAY, H. WHY, P. J. RICHARDSON AND V. R. PREEDY	232S
Identification of tyrosine as an active site residue involved in the catalytic mechanism of <i>Escherichia coli</i> dUTPase	G. G. VERTUSSY AND M. ZEPPEZAUER	233S
Structure/function analysis of interleukin 4: Interspecies comparison and site-directed mutagenesis	C. G. CHAPMAN, H. E. CLINKENBEARD, K. E. PARKER, V. M. SPACKMAN, D. A. E. DOBBELAERE, J. H. ROBINSON AND M. J. BROWNE	234S

Glucose deficient <i>Micrococcus lysodeikticus</i> cell wall fragment	F. UD DIN, Z. MAHMOOD, F. S. RAHMANI, A. H. KHAN, E. WALKER-NASIR AND N. UD DIN	235S
Spermine incorporation into protein by human vascular endothelial cells	D. M. L. MORGAN, P. REZAEI AND J. D. PEARSON	236S
Effect of glucose and amino acids on insulin-secretion from a novel pancreatic B-cell line produced by electrofusion	N. H. MCCLENAGHAN, T.-W. YOON, C. R. BARNETT, A. M. WILSON, Y. H. A. ABDEL-WAHAB, S. SWANSTON-FLATT, E. AH-SING AND P. R. FLATT	237S
Studies of the effect of glycation of insulin on glucose metabolism in isolated mouse diaphragm muscle	Y. H. A. ABDEL-WAHAB, F. P. M. O'HARTE, C. R. BARNETT AND P. R. FLATT	238S
Characterization of the glycation of human insulin by reversed-phase HPLC	F. P. M. O'HARTE, A. C. BOYD, Y. H. A. ABDEL-WAHAB, C. R. BARNETT AND P. R. FLATT	239S
Purine nucleotide content in mono- and polymorphonuclear leukocytes from normal subjects	R. PAGANI, A. TABUCCHI, E. CONSOLMAGNO, F. CARLUCCI, M. PIZZICHINI, E. MARINELLO AND R. LEONCINI	240S
De novo purine nucleotide synthesis in total peripheral blood lymphocytes from patients with B-chronic lymphocytic leukemia (B-CLL)	D. EGIDIO, F. CARLUCCI, E. CONSOLMAGNO, P. GALIENI, R. LEONCINI, M. PIZZICHINI, A. TABUCCHI AND R. PAGANI	241S
Purine nucleotide metabolism in patients with rheumatoid arthritis	R. PAGANI, E. MARINELLO, F. CARLUCCI, A. TABUCCHI, R. LEONCINI AND M. PIZZICHINI	242S
Purine nucleotide content of polymorphonuclear leukocytes from acute and chronic myeloid leukemia patients	R. PAGANI, A. TABUCCHI, E. CONSOLMAGNO, F. CARLUCCI, M. PIZZICHINI, E. MARINELLO AND R. LEONCINI	243S