

Colworth Medal Lecture

- Detection, Repair and Signalling of DNA Double-Strand Breaks** S. P. JACKSON 1

Hopkins Memorial Medal Lecture

- Pleasant Surprises En Route from the Biochemistry of Collagen to Attempts at Gene Therapy** D. J. PROCKOP 15

colloquia**667th Meeting, University of Leicester****colloquium: Enzyme Catalysis: Structure, Dynamics and Chemistry**

- Single molecule enzyme kinetics: applications to myosin ATPases** C. R. BAGSHAW AND P. B. CONIBEAR 33
- The structure of bovine mitochondrial F₁-ATPase: an example of rotary catalysis** A. G. W. LESLIE, J. P. ABRAHAMS, K. BRAIG, R. LUTTER, R. I. MENZ, G. L. ORRIS, M. J. VAN RAAIJ AND J. E. WALKER 37
- Visualizing enzyme intermediates using fast diffraction and reaction trapping methods: isocitrate dehydrogenase** B. L. STODDARD 42
- DNA gyrase as a drug target** A. MAXWELL 48
- Dehydropteroate synthase: an old drug revisited** H. G. VINNICOMBE AND J. P. DERRICK 53
- Mechanistic diversity of β -lactamases** J.-M. FRÈRE, A. DUBUS, M. GALLEN, A. MATAGNE AND G. AMICOSANTE 58
- Protein antibiotics and their inhibitors** C. KLEANTHOUS, R. JAMES, A. M. HEMMINGS AND G. R. MOORE 63

colloquium: Endocrine Control of Perinatal Programming in Health and Disease

- The maternal, fetal and postnatal somatographic axes in intrauterine growth retardation** M. H. OLIVER, F. H. BLOOMFIELD, J. E. HARDING, B. H. BREIER, N. S. BASSETT AND P. D. GLUCKMAN 69
- Glucocorticoids and fetal programming** J. R. SECKL, M. J. NYIRENDA, B. R. WALKER AND K. E. CHAPMAN 74
- The Cre/loxP system – a versatile tool to study glucocorticoid signalling in mice** H. M. REICHARDT, C. KELLENDONK, F. TRONCHE AND G. SCHÜTZ 78

Development effects of thyroid hormone: the role of deiodinases in regulatory control	D. L. ST. GERMAIN	83
Intrauterine programming of hypertension: the role of the renin–angiotensin system	S. C. LANGLEY-EVANS, R. C. SHERMAN, S. J. M. WELHAM, M. O. NWAGWU, D. S. GARDNER AND A. A. JACKSON	88
Programming of hepatic and peripheral tissue insulin sensitivity by maternal protein restriction	S. E. OZANNE	94
Maternal nutrition and endocrine programming of fetal adipose tissue development	M. E. SYMONDS AND T. STEPHENSON	97

colloquium: The Biology of Hyaluronan

Properties of the hyaluronan synthase from Group A <i>Streptococcus pyogenes</i>	V. L. TLAPAK-SIMMONS, C. HELDERMON, E. S. KEMPNER AND P. H. WEIGEL	105
Mammalian hyaluronan synthases: investigation of functional relationships <i>in vivo</i>	A. P. SPICER AND T. K. NGUYEN	109
The structure and regulation of hyaluronan-binding proteins	A. J. DAY	115
The conformations of hyaluronan in aqueous solution: comparison of theory and experiment	J. SHEEHAN, A. BRASS AND A. ALMOND	121
New approaches to the investigation of hyaluronan networks	T. HARDINGHAM, B. C. HENG AND P. GRIBBON	124
Hyaluronan in joint cavitation	A. C. WARD, G. P. DOWTHWAITE AND A. A. PITSILIDES	128
Receptor for hyaluronan-mediated motility (RHAMM), a hyaladherin that regulates cell responses to growth factors	W.-F. CHEUNG, T. F. CRUZ AND E. A. TURLEY	135
The chondrocyte pericellular matrix: a model for hyaluronan-mediated cell–matrix interactions	C. B. KNUDSON, G. A. NOFAL, L. PAMINTUAN AND D. J. AGUIAR	142

colloquium: G-Protein-Coupled Receptor Signalling in the Central Nervous System

Diversity in the signalling and regulation of G-protein-coupled receptors	G. MILLIGAN, D. A. GROARKE, A. MCLEAN, R. WARD, C. W. FONG, A. CAVALLI AND T. DRMOTA	149
Regulatory mechanisms of α_{1B}-adrenergic receptor function	S. COTECCHIA AND S. MHAOUTY-KODJA	154
Promiscuity and fidelity in receptor–G-protein coupling: cell cycle-dependent coupling of the vasopressin V₁ receptor	F. KALKBRENNER, A. ABEL, N. WITTAU AND G. SCHULTZ	158
Heterologous mammalian expression systems for investigating the properties of metabotropic glutamate receptors	E. HERMANS, S. R. NAHORSKI AND R. A. J. CHALLISS	164

Evidence that a novel metabotropic glutamate receptor mediates the induction of long-term potentiation at CA1 synapses in the hippocampus	Z. A. BORTOLOTTO AND G. L. COLLINGRIDGE	170
Mechanisms of action of anti-psychotic drugs	P. G. STRANGE	175

colloquium: Enzyme-Catalysed Electron/Radical Transfer

Flavocytochromes: structures and implications for electron transfer	L. M. CUNANE, Z.-W. CHEN, R. C. E. DURLEY, J. D. BARTON AND F. S. MATHEWS	179
Flavocytochromes: transceivers and relays in biological electron transfer	S. K. CHAPMAN, F. WELSH, R. MOYSEY, C. MOWAT, M. K. DOHERTY, K. L. TURNER, A. W. MUNRO AND G. A. REID	185
Flavocytochrome P-450 BM3: a paradigm for the analysis of electron transfer and its control in the P-450s	A. W. MUNRO, M. A. NOBLE, C. S. MILES, S. N. DAFF, A. J. GREEN, L. QUARONI, S. RIVERS, T. W. B. OST, G. A. REID AND S. K. CHAPMAN	190
Electron transfer in trimethylamine dehydrogenase and electron-transferring flavoprotein	N. S. SCRUTTON, J. BASRAN, E. K. WILSON, K. K. CHOCHAN, M.-H. JANG, M. J. SUTCLIFFE AND R. HILLE	196
Methylamine dehydrogenase: structure and function of electron transfer complexes	V. L. DAVIDSON	201
Electron transfer and coupled processes in protein film voltammetry	F. A. ARMSTRONG	206

colloquium: Membrane Protein Secretases

Generation and function of the soluble interleukin-6 receptor	J. MÜLLBERG, P. VOLLMER, K. ALTHOFF, P. MÄRZ AND S. ROSE-JOHN	211
Characterization of the tumour necrosis factor α-converting enzyme, TACE/ADAM17	D. P. CERRETTI	219
Interleukin-6 receptor shedding: a possible role for members of the ADAM family	P. I. CROUCHER, F. WANG AND P. G. HARGREAVES	224
Angiotensin-converting enzyme and the amyloid precursor protein secretases	N. M. HOOPER, S. PARVATHY, E. H. KARRAN AND A. J. TURNER	229
Proteolytic processing and degradation of Alzheimer's disease relevant proteins	H. STEINER, A. CAPELL AND C. HAASS	234
Mechanisms controlling the shedding of transmembrane molecules	A. MERLOS-SUÁREZ AND J. ARRIBAS	243
Proteinase-activated receptors: a growing family of heptahelical receptors for thrombin, trypsin and tryptase	O. DÉRY AND N. W. BUNNETT	246
Role for ADAM-family proteinases as membrane protein secretases	A. J. TURNER AND N. M. HOOPER	255

colloquium: Modelling Metabolism: Experimental and Theoretical Approaches to Modelling Metabolism

Live control of the living cell	W. C. VAN HEESWIJK, B. M. BAKKER, B. TEUSINK, B. N. KHOLODENKO, O. J. G. SOMSEN, J. L. SNOEP AND H. V. WESTERHOFF	261
Design of gene circuitry by natural selection: analysis of the lactose catabolic system in <i>Escherichia coli</i>	M. A. SAVAGEAU	264
Theoretical studies on how ATP supply meets ATP demand	B. KORZENIEWSKI	271
New insights into metabolic pathway optimization by analogy with industrial manufacturing processes	F. ORTEGA, E. MARTÍ AND M. CASCANTE	276
Enzyme kinetics from a metabolic perspective	A. CORNISH-BOWDEN	281
Modelling lipid metabolism in plants: a slippery problem?	J. L. HARWOOD, U. S. RAMLI, R. A. PAGE AND P. A. QUANT	285
Modelling metabolism <i>in vivo</i>: approaches using NMR	R. A. ILES, J. S. BEECH, S. P. BURNS AND R. D. COHEN	289
The structural design of glycolysis: an evolutionary approach	R. HEINRICH, E. MELÉNDEZ-HEVIA, F. MONTERO, J. C. NUÑO, A. STEPHANI AND T. G. WADDELL	294

colloquium: Oestrogen Metabolism and Breast Cancer Risk

Importance of oestrogen, xenoestrogen and phytoestrogen metabolism in breast cancer risk	H. WISEMAN	299
Metabolism of oestrogens and phytoestrogens: role of the gut microflora	I. ROWLAND, H. WISEMAN, T. SANDERS, H. ADLERCREUTZ AND E. BOWEY	304
Phytoestrogens in human biomatrices including breast milk	A. A. FRANKE, M. C. YU, G. MASKARINEC, P. FANTI, W. ZHENG AND L. J. CUSTER	308
4-Hydroxylation of oestrogens as a marker for mammary tumours	J. G. LIEHR	318
Regulation of steroid sulphatase and oestradiol 17β-hydroxysteroid dehydrogenase in breast cancer	A. PUROHIT, A. SINGH AND M. J. REED	323

colloquium: Biosensors: Into the 21st Century

Analysis of structure–activity relationships with biosensors	M. H. V. VAN REGENMORTEL	329
Biosensors: past, present and future	H. A. O. HILL AND J. J. DAVIS	331
BIACORE: an affinity biosensor system, for characterization of biomolecular interactions	M. MALMQVIST	335
Cholera toxin and G_{M1}: a model membrane study with IA_{Sys}	N. ATHANASSOPOULOU, R. J. DAVIES, P. R. EDWARDS, D. YEUNG AND C. H. MAULE	340
Molecularly imprinted polymers in chemical and biological sensing	K. HAUPT AND K. MOSBACH	344