

SCIENTIFIC PROGRAM



SUNDAY, SEPTEMBER 12, 1999

Registration opens, America South Foyer, 12 noon
Poster Session I mount, Staffordshire Room and America South,
12 noon to 1:30 p.m.

OPENING REMARKS

1:30 p.m.

Dr. Charles N. Serhan, Professor
Center for Experimental Therapeutics and
Reperfusion Injury
Brigham & Women's Hospital
and Harvard Medical School

**SUNDAY,
SEPTEMBER 12**

**Abstract
Page No.**

PLENARY LECTURE I -- BENGT SAMUELSSON

America South Introduction by **Dr. Lawrence J. Marnett**, Professor,
Vanderbilt University School of Medicine

1:45 - 2:30 p.m. Plenary Presentation

PLENARY LECTURE II -- E.J. COREY

America South Introduction by **Dr. Edward A. Dennis**, Professor,
Chemistry, University of California at San Diego

2:30 - 3:15 p.m. Plenary Presentation

SESSION 1 INFLAMMATION (Leukotrienes & Lipoxins)

America South Chairperson: Dr. Leslie J. Crofford
Co-Chair: Dr. K. Frank Austen

Invited Talks (25 min. plus 5 min. discussion)

3:30 p.m. Prostaglandin Production and Actions in Synovial Tissues - 1
L. Crofford

4:00 p.m. Salicylates, But Not Glucocorticoids, Inhibit Leukocyte 2
Accumulation by an Adenosine-Dependent Mechanism that
is Independent of Inhibition of Prostaglandin Synthesis and
p105 (p50) of Nuclear Factor Kb - **G. Weissmann**

Selected Talks (15 min. plus 5 min. discussion)

4:30 p.m. Anti-Inflammatory Actions of Lipoxin-A₄ Stable Analogs 3
in Human Whole Blood: Modulation of Leukocyte Adhesion
Molecule Expression and Inhibition of Neutrophil-Endothelial
Interactions - **J. Filep**

4:50 p.m. Leukotriene B₄ Receptor: Structure, Transcriptional 4
Regulation, and Intracellular Signaling - **T. Yokomizo**

5:10 p.m. Endotoxin Induction of Luciferase Activity in Mice 5
Transgenic for a COX-2 Promoter-Luciferase Reporter
Construct - **A. Freeman**

5:30 p.m. Interactions Between 5-oxo-EETE and Eotaxin in 6
Stimulating Eosinophil Chemotaxis - **W.S. Powell**

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SESSION 2 **CANCER & SYNTHESIS OF NOVEL
INHIBITORS**

Essex East

Chair: Dr. Lawrence J. Marnett
Co-Chair: Dr. Yusuf A. Hannun

Invited Talks (25 mins. plus 5 min. discussion)

3:30 p.m. Novel COX-2 inhibitors as Cancer Chemopreventive
and Antiangiogenic Agents - **L. Marnett** 7

4:00 p.m. Update on Eicosanoids in Prostate Cancer - **K. Honn** 8

4:30 p.m. Lysolipid Phosphate Receptors and Effects in Ovarian
and Breast Cancer Cells - **E. Goetzl** 9

Selected Talks (15 mins. plus 5 min. discussion)

5:00 p.m. Growth Stimulation and Epidermal Growth Factor
Receptor Induction in Cyclooxygenase-overexpressing
Human Colon Carcinoma Cells - **T. Yoshimoto** 10

5:20 p.m. Cox-2 Inhibitor Enhances Tumor Radioresponse
in vitro and *in vivo* - **S. Petersen** 11

5:40 p.m. Chemopreventive Properties of Nimesulide, a
Selective Cyclooxygenase-2 Inhibitor, against PhIP-
induced Mammary Carcinogenesis in Rats - **T. Kawamori** 12

6:00 p.m. Determination of Cyclooxygenase and Arachidonic Acid
Metabolites in Invasive Human Prostate Cancer Cells -
K. Nithipatikom 13

6:00-7:30 p.m.

**Welcome Reception
Westin Hotel
(America North and Center)**

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SESSION 3

**ENZYMES-LIPOXYGENASES/
CYCLOOXYGENASES & INHIBITORS**

Essex West

Chair: Dr. William L. Smith
Co-Chair: Dr. Jesper Haeggstrom

Invited Talks (25 mins. plus 5 min. discussion)

- | | | |
|-----------|---|----|
| 3:30 p.m. | Molecular Interactions of Arachidonic Acid with Prostaglandin Endoperoxide H Synthase-1 - W. Smith | 14 |
| 4:00 p.m. | Structure and Function of Leukotriene A ₄ Hydrolase - J. Haeggstrom | 15 |
| 4:30 p.m. | Prostaglandin E Synthase: A Microsomal, Glutathione Dependent, Inducible Member of the MAPEG Superfamily - P.-J. Jakobsson | 16 |

Selected Talks (15 mins. plus 5 min. discussion)

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|-----------|--|----|
| 5:00 p.m. | Crystal Structures of Cyclooxygenase-2 Variants with Diarylheterocycle Inhibitors: Contribution of the Side Pocket for Selectivity - R.G. Kurumbail | 17 |
| 5:20 p.m. | Peroxidase Kinetic Differences and Cyclooxygenase Catalytic Control in PGH Synthase-1 and -2 - R.J. Kulmacz | 18 |
| 5:40 p.m. | Manganese-Lipoxygenase: A Novel Model of Lipoxygenation - C. Su | 19 |
| 6:00 p.m. | The Mechanistic Reasons for the Positional Specificity of Lipoxygenase Effective Conversion of 5-Lipoxygenases to a 15-Lipoxygenating Species - H. Kuhn | 20 |

6:00-7:30 p.m.

**Welcome Reception
Westin Hotel
(America North and Center)**

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PLENARY LECTURE -- DR. L. JACKSON ROBERTS

American South Introduction by **Dr. Santosh Nigam**,
Eicosanoid Research Division,
Free University Berlin

8:00-8:45 a.m. Plenary Presentation

SESSION 4 VASCULAR BIOLOGY

America South Chair: Dr. Garrett A. FitzGerald
Co-Chair: Dr. Michael A. Gimbrone, Jr.

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m. Eicosanoids and Isoeicosanoids and the Cardiovascular System - **G. FitzGerald** 21

9:30 a.m. Vascular Endothelium: An Integrator of Biomechanical Stimuli in the Cardiovascular System - **M. Gimbrone** 22

10:00 a.m. *Coffee Break*

Selected Talks (15 mins. plus 5 min. discussion)

10:30 a.m. Vasodilation Produced by Prostaglandin $F_{2\alpha}$ is FP Receptor Mediated and Nitric Oxide and Endothelium Dependent - **J. Chen** 23

10:50 a.m. Modification of Low Density Lipoproteins with Phospholipase A_2 Forms Small, High Density Particles with Increased Affinity for Proteoglycans & Glycosaminoglycans - **P. Sartipy** 24

11:10 a.m. Lipoxins: Anti-inflammatory Actions - **H. Brady** 25

11:30 a.m. Leukotrienes and the Pulmonary Vascular Bed - **C. Brink** 26

12:00-1:00 p.m. LUNCH BREAK

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SESSION 8

PHOSPHOLIPASES

Essex East

Chair: Dr. Edward Dennis
Co-Chair: Dr. Joseph Bonventre

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m. Distinct Function of Each Type of Phospholipase A₂ and Cyclooxygenase in Eicosanoid Production - **E. Dennis** 35

9:30 a.m. Insights from Cytosolic PLA₂ Knockout Mouse - **J. Bonventre** 36

10:00 a.m. *COFFEE BREAK*

10:30 a.m. Role of Cytosolic Phospholipase A₂ *in vivo* and *in vitro* - **T. Shimizu** 37

Selected Talks (15 mins. plus 5 min. discussion)

11:00 a.m. Functional Coupling Among Phospholipase A₂s, Cyclooxygenases, and Terminal Prostaglandin Synthases in Immediate and Delayed Prostanoid Biosynthetic Pathways - **M. Murakami** 38

11:20 a.m. Cytosolic Phospholipase A₂ is Essential for Both the Immediate and the Delayed Phases of Eicosanoid Generation in Mouse Bone Marrow-Derived Mast Cells - **B. Diaz** 39

11:40 a.m. Investigation into the Involvement of Phospholipases A₂ and MAP Kinases in Modulation of AA Release Cell Growth in A549 Cells. - **Q.G. Choudhury** 40

12:00-1:00 p.m. **LUNCH BREAK**

**POSTER
SESSION I**

Staffordshire and America South

Chair: Dr. Kenneth V. Honn
Co-Chair: Dr. Charles N. Serhan

1:00 - 2:30 p.m. **Presentations and poster tour**

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SESSION 5 ENZYMES II (PHARMACOLOGY)

America South

Chair: Dr. Sven-Erik Dahlen
Co-Chair: Dr. Jeffrey M. Drazen

Invited Talks (25 mins. plus 5 min. discussion)

2:30 p.m.	Discovery and Development of COX-2 Specific Inhibitors - J. Talley	n/a
3:00 p.m.	Leukotrienes in Asthma - J. Drazen	41
3:30 p.m.	Antileukotrienes in Aspirin-Intolerant Asthma - S.-E. Dahlen	n/a

Selected Talks (15 mins. plus 5 min. discussion)

4:00 p.m.	Sp1 and Sp3 Function as Key Regulators of Leukotriene C4 Synthase Gene Expression in the Monocyte-Like Cell Line, THP-1 - K. Serio	42
4:20 p.m.	Down-Regulation of 5-Lipoxygenase Activity and Leukotriene Production by Prolonged Exposure to Lipopolysaccharide - T. Brock	43
4:40 p.m.	Characterization of a Distinctive Pharmacological Profile for LTC ₄ Binding Sites in Human Lung Parenchyma Using a Kinetic Approach - G.E. Rovati	44
5:00 p.m.	The Constriction of the Human Pulmonary Artery by LTC ₄ is Mediated Via a CysLT ₂ Receptor and Counteracted by Prostacyclin Release - M. Back	45
5:20 p.m.	Analysis of Cyclooxygenase-Substrate Interactions Using Stereospecifically-Labeled Arachidonic Acids - C. Schneider	46
5:40 p.m.	Localization and Nature of a 5LO Calcium Binding Site - T. Hammarberg	47

7:30 - 10:00 p.m.

**RECEPTION AT FOGG MUSEUM,
CAMBRIDGE (OPEN TO ALL REGISTRANTS)**

SESSION 7

ANANDAMIDES

Essex West

Chair: Dr. Shozo Yamamoto
Co-Chair: Dr. Vincenzo Di Marzo

Invited Talks (25 mins. plus 5 min. discussion)

2:30 p.m. Cannabimimetic Eicosanoids: an Overview of Their Metabolic Pathways and Potential Role in Cancer and Inflammation - **V. Di Marzo** 48

3:00 p.m. Catalytic Properties of Purified Recombinant Anandamide - Amidohydrolase - **N. Ueda** 49

Selected Talks (15 mins. plus 5 min. discussion)

3:30 p.m. Putative Metabolites of Anandamide: Activities and Occurrence - **S. Burstein** 50

3:50 p.m. Dopamine Activation of Endogenous Cannabinoid Signaling in Dorsal Striatum - **D. Piomelli** 51

4:10 p.m. Anandamide Induces Nitric Oxide-Independent Mesenteric Vasodilation Via a Novel Endothelial Site of Action - **G. Kunos** 52

7:30 - 10:00 p.m.

**RECEPTION AT FOGG MUSEUM,
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**SESSION 9 NEW APPROACHES TO CANCER
AND GENE THERAPY**

Essex East

Chair: Dr. Kenneth K. Wu
Co-Chair: Dr. Thomas E. Eling

Invited Talks (25 mins. plus 5 min. discussion)

2:30 p.m.	Enhancement of Vascular Prostacyclin and Nitric Oxide Synthesis by Gene Transfer: Therapeutic Implications - K. Wu	53
3:00 p.m.	Lipoxygenase and Colorectal Cancer - T. Eling	n/a
<i>Selected Talks (15 mins. plus 5 min. discussion)</i>		
3:30 p.m.	15-Lipoxygenase-1 Expression in Prostate Cancer: Correlation with Mutant p53 Expression and Histologic Grade - U. Kelavkar	54
3:50 p.m.	COX-2 as a Target for Chemoprevention of Squamous Cell Carcinomas - K. Muller-Decker	55
4:10 p.m.	Cyclooxygenase-2 Protein Varies with Tumor Progression in Experimental Colon Cancer - C. Compher	56
4:30 p.m.	Inhibition of Translation Initiation Mediates the Anticancer Effect of Eicosapentaenoic Acid - J. Halperin	57
4:50 p.m.	13(S)-HpODE Modulates Mitogenic Signal Transduction Through Enhancing the Phosphorylation and Association of EGF Receptor with the Tyrosine Phosphatase SHP-2 - W. Glasgow	58

7:30 - 10:00 p.m.

**RECEPTION AT FOGG MUSEUM,
CAMBRIDGE (OPEN TO ALL REGISTRANTS)**

**TUESDAY,
SEPTEMBER 14**

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PLENARY LECTURE DR. JUDAH FOLKMAN

America South

Introduction by **Dr. Kenneth V. Honn**, Professor,
Department of Radiation Oncology and Pathology
Wayne State University

8:00-8:45 a.m.

Cryptic Fragments Within the Hemostatic System as
Regulators of Angiogenesis

SESSION 10

**ANGIOGENESIS: CANCER TREATMENT
AND PREVENTION**

America South

Chair: Dr. Raymond N. DuBois
Co-Chair: Dr. Makoto M. Taketo

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m.

Cyclooxygenase and Cancer - **R. DuBois**

59

9:30 a.m.

Role of COX-2 in Colon Tumorigenesis - **M. Taketo**

60

10:00 a.m.

COFFEE BREAK

Selected Talks (15 mins. plus 5 min. discussion)

10:30 a.m.

Relationship Between Apoptosis, Angiogenesis and
Colon-26 Tumor Growth After Oral NSAID-Treatment -
J. Brown

61

10:50 a.m.

Antitumor Effects of Piroxicam in Spontaneous Canine
Invasive Urinary Bladder Cancer, a Relevant Model of
Human Invasive Bladder Cancer - **D. Knapp**

62

11:10 a.m.

15-Lipoxygenase-2 in Human Epithelial Cells and Its
Reduced Expression in Cancer - **A. Brash**

63

11:30 a.m.

Arachidonate 12-Lipoxygenase Stimulates Tumor
Angiogenesis by Up-Regulation of Vascular Endothelial
Growth Factor Expression - **D. Nie**

64

11:50 a.m.

Thromboxane A2 is a Mediator of COX-2 Dependent
Endothelial Migration & Angiogenesis - **T. Daniel**

65

12:00-1:00 p.m.

LUNCH BREAK

**TUESDAY,
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SESSION 12

INFLAMMATION (2)

Essex West

Chair: Dr. Pierre Borgeat
Co-Chair: Dr. Santosh Nigam

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m.	Down-Regulation of Arachidonic Acid Release and Leukotriene Synthesis in Ligand-Activated Human Neutrophils by Autacoids - P. Borgeat	66
9:30 a.m.	Studies on 3-Hydroxy-Oxylipins, a Group of Novel Eicosanoids Produced by Fungi - S. Nigam	67
10:00 a.m.	COFFEE BREAK	
	<i>Selected Talks (15 mins. plus 5 min. discussion)</i>	
10:30 a.m.	EX-FABP, Extracellular Fatty Acid Binding Protein, is Modulated in Culture by Inflammatory-Anti-inflammatory Agents and is Expressed <i>in vivo</i> During Chicken Embryo Development and in Inflammation - F. Descalzi Cancedda	68
10:50 a.m.	Selective Inhibition of Cyclooxygenase-2 Attenuates Expression of Inflammation-Related Genes in CNS Injury Models - M.K. O'Banion	69
11:10 a.m.	Endothelial COX-2 Induction by Hypoxia Liberates 6-keto-PGF _{1α} , a Potent Epithelial Secretagogue - S. Colgan	70
11:30 a.m.	Hepatocytes are a Rich Source of Novel Aspirin-Triggered 15-epi-Lipoxin A ₄ - J. Claria	71
12:00-1:00 p.m.	LUNCH BREAK	

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SESSION 14

**NOVEL SIGNALING PATHWAYS &
NETWORKS**

Essex East

Chair: Dr. Per Hedqvist
Co-Chair: Dr. Aaron J. Marcus

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m.	Roles of Ceramide in TNF Action - Y. Hannun	72
9:30 a.m.	CD39/ecto-ADPase Blocks and Reverses Human Platelet Reactivity. Significance from Thrombosis - A. Marcus	73
10:00	<i>COFFEE BREAK</i>	
10:30 a.m.	Biology of Neutrophil-Epithelial Interactions - J. Madara	74
	<i>Selected Talks (15 mins. plus 5 min. discussion)</i>	
11:00 a.m.	Regulation of Cell-Substrate Adhesion by Lipid and Kinase Second Messengers Activated by the Lipoxygenase and Cyclooxygenase Branches of Arachidonic Acid Metabolism - B.S. Jacobson	75
11:20 a.m.	Lipopolysaccharide-Induced Formation of Prostanoids in Macrophages: Role of Phospholipase A ₂ and Cyclooxygenases - P. Dieter	76
11:40 a.m.	MK 886 Functions as a Radiomimetic Agent: Genomic Responses Related to Oxidative Stress the Cell Cycle, Proliferation and Programmed Cell Death in Panc-1 Cells - K. Anderson	77
12:00-1:00 p.m.	LUNCH BREAK	

**POSTER
SESSION II**

Staffordshire and America South

Chair: Dr. S. Nigam
Co-Chair: Dr. L. Marnett

1:00-2:30 p.m.

Presentations and poster tour

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SESSION 13 RECEPTORS & AGONISTS/ANTAGONISTS

America South

Chair: Dr. Shuh Narumiya
Co-Chair: Dr. Takao Shimizu

Invited Talks (25 mins. plus 5 min. discussion)

2:30 p.m. Physiology and Pathophysiology of the Prostanoid Receptors: 84
Lessons from Knockout Mice Studies - **S. Narumiya**

3:00 p.m. Structure-Activity Relationships of Hepoxilin Actions on 85
Intracellular Calcium Levels in Human Neutrophils -
C. Pace-Asciak

3:30 p.m. Targeted Gene Disruption of the Prostaglandin E2 EP2 86
Receptor - **R. Breyer**

Selected Talks (15 mins. plus 5 min. discussion)

4:00 p.m. Activation-Dependent Internalization of the Human 87
Prostacyclin Receptor - **E. Smyth**

4:20 p.m. The Design and Synthesis of Selective Prostaglandin 88
Analogues as Bone Anabolic Agents for the Potential
Treatment of Osteoporosis - **J. Wos**

4:40 p.m. PPAR Expression and Activity in Murine Skin Tumors - 89
S. Fischer

5:00 p.m. Ocular Hypotensive Activity of Prostaglandin F_{2α} Analogs 90
with Neutral Substituents at Position 1 is Predicted by the
Isolated Cat Iris Sphincter Smooth Muscle Preparation But
Not Ca²⁺ Signaling in Swiss 3T3 Cells - **R. Burk**

5:20 p.m. Signaling to Release Lysosomal Enzyme by Leukotriene 91
B₄ and Platelet Activating Factor - **N. Ito**

7:30-10:00 p.m.

**DINNER AT WESTIN HOTEL
MUSIC
PRESENTATION OF THE YOUNG INVESTIGATOR
AWARDS - SPONSORED WITH BIOMOL
RESEARCH LABORATORIES.**

PLENARY LECTURE -- DR. EVA NEER

America South Introduction by **Dr. Peter Ramwell**, Professor,
Department of Physiology,
Georgetown University Medical Center

8:00-8:45 a.m. Plenary Presentation

SESSION 16 ENZYMES & METABOLIC INACTIVATION

America South Chair: Dr. Robert Murphy
Co-Chair: Dr. Hsin-Hsiung Tai

Invited Talks (25 mins. plus 5 min. discussion)

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|------------|---|-----|
| 9:00 a.m. | Free Radical Oxidation of Plasmeynl
Glycerophosphocholine Containing Esterified
Arachidonic Acid as an Alternative Pathway
for Leukotriene Biosynthesis - R. Murphy | 98 |
| 9:30 a.m. | Structure and Function of Prostaglandin Metabolic
Enzymes - H.-H. Tai | 99 |
| 10:00 a.m. | <i>COFFEE BREAK</i> | |
| | <i>Selected Talks (15 mins. plus 5 min. discussion)</i> | |
| 10:30 a.m. | Purification and Characterization of Membrane-Bound
Bound Prostaglandin E Synthase from Bovine Heart -
K. Watanabe | 100 |
| 10:50 a.m. | cDNA Cloning and Mutagenesis Study of Live-Type
Prostaglandin F Synthase, and Identification of the
Prostaglandin F Producing Cells in the Liver -
T. Suzuki-Yamamoto | 101 |
| 11:10 a.m. | Lipoxin A ₄ and Aspirin-Triggered 15-epi-LXA ₄ are
Protective in Acute Inflammation and Reperfusion Injury
in Leukotriene B ₄ Receptor Transgenic Mice - K. Gronert | 102 |
| 11:30 a.m. | Snapshot of the Cylooxygenase Reaction Pathway:
Structure of Prostaglandin at the Active Site of COX-2 -
J. Keifer | 103 |
| 11:50 a.m. | Substrate Down Regulation of the 12-Lipoxygenase
in Human Platelets - M. Dadaian | 104 |

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SEPTEMBER 15**

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SESSION 17 KNOCK-OUT MODELS & GENE THERAPY

Essex East

Chair: Dr. Colin D. Funk
Co-Chair: Dr. Kamal Badr

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m. Lipoxygenases in Carcinogenesis and Inflammation - 105
C. Funk

9:30 a.m. Transfection of Rat Kidney with Human 15-Lipoxygenase 106
Suppresses Inflammation and Preserves Function in
Experimental Glomerulonephritis - **K.F. Badr**

10:00 a.m. *COFFEE BREAK*

Selected Talks (15 mins. plus 5 min. discussion)

10:30 a.m. Involvement of PGI₂ and PGE₂ in Acetic Acid-Induced 107
Writhing Reaction of Mice - **S. Oh-ishi**

10:50 a.m. Osteoclast Formation is Inhibited in Marrow Cultures from 108
COX-2 Knockout Mice - **C. Pilbeam**

11:10 a.m. The Development of COX-1/COX-2 Double Knockouts - 109
C. Loftin

11:30 a.m. Role of Platelet-Activating Factor in Acid-Induced Lung 110
Injury - **S. Ishii**

11:50 a.m. Effects on the Vascular Wall of Overexpression and 111
Deficiency of Prostacyclin Synthase - **C. Yokoyama**

12:10 p.m. Dietary EPA Reduces Tumor Load in *Apc^{Min/+}* Mice by 112
Altering Arachidonic Acid Metabolism, but Conjugated
Linoleic acid, Gamma- and Alpha-Linolenic Acids Have
No Effect - **J. Whelan**

12:30-12:45 p.m.

CLOSING REMARKS

Charles Serhan and Kenneth Honn

Introducing next Local Organizing Chair, Larry Marnett

SESSION 18

**LIPID-TARGET INTERACTIONS:
STRUCTURE-FUNCTION CHEMISTRY**

Essex West

Chair: Dr. Leslie R. Ballou
Co-Chair: Dr. Peter F. Weller

Invited Talks (25 mins. plus 5 min. discussion)

9:00 a.m. Cellular Basis for Primed Eicosanoid Function in Leukocytes - **P. Weller** 113

9:30 a.m. Regulation of Cyclooxygenase-1 and -2 in Knockout Cells and Mice - **L. Ballou** 114

10:00 a.m. *COFFEE BREAK*

Selected Talks (15 mins. plus 5 min. discussion)

10:30 a.m. Increased Association of G-beta/gamma Subunits to Phospholipase C-gamma1 in LTD₄ Stimulated Epithelial Cells - **C. Thodeti** 115

10:50 a.m. Leukotriene B4 Evokes the Pre-Nuclear Envelope Breakdown Calcium Signal - **R. Silver** 116

11:10 a.m. Essential Role of Mitogen-Activated Protein Kinase Pathway and c-Jun Induction in Epidermal Growth Factor-Induced Gene Expression of Human 12-Lipoxygenase - **W.-C. Chang** 117

11:30 a.m. Acetyl-11-keto-b-boswellic Acid is Cytotoxic for Meningioma Cells and Inhibits Phosphorylation of the Extracellular-Signal Regulated Kinase 1 and 2 - **M. Golubic** 118

11:50 a.m. Intracellular Activation and Induction of 12-Lipoxygenase in Mouse Peritoneal Macrophages - **H. Kawajiri** 119

12:30-12:45 p.m.

CLOSING REMARKS

Charles Serhan and Kenneth Honn

Introducing next Local Organizing Chair, Larry Marnett