Vascular Endothelium

Physiological Basis
of Clinical Problems

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C. Norman Gillis, and Una S. Ryan

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Vascular Endothelium

Physiological Basis of Clinical Problems

Edited by

John D. Catravas

Medical College of Georgia
Augusta, Georgia

Allan D. Callow

Washington University Medical Center
St. Louis, Missouri

C. Norman Gillis

Yale University
New Haven, Connecticut

and

Una S. Ryan

Monsanto Company
St. Louis, Missouri

Springer Science+Business Media, LLC

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PREFACE

This monograph contains the proceedings from the Advanced Study Institute on "*Vascular Endothelium: Physiological Basis of Clinical Problems*" which took place in Corfu, Greece in June 1990. The meeting consisted of twenty-eight lectures, most of them adapted as full length papers in this volume, as well as numerous short oral and poster communications which are abstracted and also included in alphabetical order (pages 239-302). There were ninety-six participants from ten NATO and four other European countries. The meeting was the second in as many years dealing with a specific subject in Endothelial Cell biology. Following the 1988 discussion on "*Receptors and Transduction Mechanisms*", the present ASI recognized and tried to deal with the increasing overlap in interest between basic scientists studying endothelial cell functions and clinicians facing problems of known or suspected endothelial pathological involvement. As with any similar effort, we opted to be selective, rather than fail by trying to be inclusive, in the subjects covered. We chose to discuss diseases, such as atherosclerosis, sepsis, ARDS and stroke, based on their relevance to endothelial cell function and urgent need for new insights into their pathogenesis and treatment. Similarly, we examined endothelial cell functions by considering their relevance to disease and their potential for elucidating important pathologies. Obviously, some areas were covered superficially or not at all; this should not distract from their importance, but rather reflect on the constraints of time and - not at all negligibly - the bias of the organizing committee.

As a product of the Advanced Study Institute, this book is the result of efforts by many individuals. The International Organizing Committee, composed of the Co-Directors, Dr. Alberto Mantovani (Italy), Dr. Salvador Moncada (U.K.) and Dr. Magdi Yacoub (U.K.), put together the scientific program and selected the Lecturers, each one of whom was kind enough to generously offer time and expertise. The Local Organizing Committee, composed of Drs. Orfanos and Maragoudakis and Ms. Lydia Argyropoulos, assumed numerous important responsibilities, relating to both the scientific aspects as well as the arrangement of local facilities, necessary for the smooth execution of the conference. Dianne Rosenquist was again the Co-ordinator of the ASI who maintained order ably and cheerfully and seemed unflappable at the sight of chaos. As in 1988, Mary Ann Roupp diligently and enthusiastically processed all manuscripts and abstracts, provided original contribution towards the style of the book and, with the help of Jim Parkerson, Connie Snead, Adrienne Grzeskiewicz, Stavros Topouzis, Nandy Marczin and Stelios Orfanos, proofread the entire text. To all these individuals, we are deeply grateful. Lastly, and perhaps most importantly, we express our sincere appreciation to all participants, whose interest in the field of Endothelial Biology and active participation assured the success of this meeting and who were gracious enough to write or call with flattering comments.

John D. Catravas (Augusta)
Allan D. Callow (St. Louis)
C. Norman Gillis (New Haven)
Una S. Ryan (St. Louis)

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ABBREVIATIONS

β -VLDL	beta-very low density lipoprotein
15-HPETE	15-hydroperoxyeicositetraenoic acid
5-HIAA	5-hydroxyindoleacetic acid
5-HT	serotonin, 5-hydroxytryptamine
ACE	angiotensin converting enzyme
ACh	acetylcholine
ADP	adenosine 5'-diphosphate
AECA	anti-endothelial cell antibodies
AI	angiotensin I
AIi	angiotensin II
apo-B100,B48,-E,-E3,-E4	apolipoprotein-B100,B48,-E,-E3,E4
BAE	bovine aortic endothelial
BBB	blood-brain barrier
bFGF	basic fibroblast growth factor
BK	bradykinin
BSA	bovine serum albumin
CHD	coronary heart disease
CR	complement receptors
CVD	cardiovascular disease
CyA	cyclosporine A
DAF	decay-accelerating factor
DMEM	defined minimum essential medium
EC	endothelial cells
ECM	extracellular matrix
EDCF	endothelium-derived constricting factor
EDRF	endothelium-derived relaxing factor
ELAM	endothelial-leukocyte adhesion molecule
ELISA	enzyme linked immunosorbent assay
FDB	familial defective apo-B100
FH	familial hypercholesterolemia
G-CSF	granulocyte-colony stimulating factor
GFR	glomerular filtration rate
GLUT-1,-4	glucose transporter isotype
GM-CSF	granulocyte-macrophage-colony stimulating factor
HPLC	high pressure liquid chromatography
HR	heart rate
HRF	homologous restriction factors
HUE	human umbilical vein endothelial cells
HUS	hemolytic-uremic syndrome

ICAM	intercellular adhesion molecule
IDL	intermediate density lipoprotein
IFN	interferon
IgE,G,M	immunoglobulin E,G,M
IL-1,-6	interleukin-1,-6
L-NMMA	L-N-mono-methylarginine
LDL	low density lipoprotein
LFA	leukocyte function associated molecule
LPS	lipopolysaccharide
MAb	monoclonal antibodies
MAO	monoaminoxidase
MCP	membrane cofactor protein
MEL	mouse endothelial lectin
NAP	neutrophil activating protein
NO	nitric oxide
PA	plasminogen activator
PAF	platelet activating factor
PAI-1	type 1 plasminogen activator inhibitor
PAI-2	type 2 plasminogen activator inhibitor
PCR	polymerase chain reaction
PDGF	platelet-derived growth factor
PGH ₂	prostaglandin H ₂
PGI ₂	prostaglandin I ₂ , prostacyclin
PMA	phorbol myristate acetate
PR	pulse rate
RR	respiratory rate
SDS-PAGE	sodium dodecyl sulfate-polyacrylamide gel electro- phoresis
SHRSP	stroke-prone spontaneously hypersensitive rats
SLE	systemic lupus erythematosus
SNP	sodium nitroprusside
SOD	superoxide dismutase
t-PA	tissue type-PA
TG	triglycerides
TGF	transforming growth factor
TIA _s	transient ischemic attacks
TNF	tumor necrosis factor
TTP	thrombotic thrombocytic purpura
TxA ₂ ,B ₂	thromboxane A ₂ ,B ₂
u-PA	urokinase-type-PA
VCAM	vascular cell adhesion molecule
VEGF	vascular endothelial growth factor
VLDL	very low density lipoprotein
Vn	vitronectin
VPF	vascular permeability factor
VWF	von Willebrand factor
WHL	Watanabe heritable hyperlipidemic
WKY	Wistar-Kyoto