

Modulation of Liver Cell Expression

EDITED BY

W. Reutter

Institute of Molecular
Biology and Biochemistry,
Free University of Berlin
Berlin, West Germany

P. C. Heinrich

Institute of Biochemistry
University of Freiburg-im-
Breisgau, West Germany

H. Popper

Mount Sinai School
of Medicine of the
City University of
New York, USA

D. Keppler

Institute of Biochemistry,
University of Freiburg-im-
Breisgau, West Germany

I. M. Arias

Physiology Department,
Tufts University
School of Medicine,
Boston, Maryland, USA

L. Landmann

Institute of Biochemistry
Basel University,
Switzerland

Proceedings of the 43rd Falk Symposium, held during Basel Liver Week, Basel,
October 14 and 15, 1986



MTP PRESS LIMITED

a member of the KLUWER ACADEMIC PUBLISHERS GROUP
LANCASTER / BOSTON / THE HAGUE / DORDRECHT



Part 4 Cellular Oncogenes and their Products

- 22 Proteins of oncogenes in human tumour cells
K. Moelling, B. Heimann, H. Bading, M. Häder, G. Bepler, K. Havemann and C. Beutler 275
- 23 Regulation of specific gene expression in liver during development, growth, regeneration and fibrosis
A. Panduro, F. Shalaby, L. Biempica and D. A. Shafritz 287
- 24 *Cis*- and *trans*-acting factors in liver cells
M. A. Sells, S. Karpen, H. Popper, F. Hoppe-Seyley, M. Shvartsman, P. M. Price and G. Acs 299
- 25 Strongly conserved segment of gene expression in cancer cells
G. Weber 303
- 26 Role of class I antigens of the major histocompatibility complex in tumorigenicity
K. J. Isselbacher, K. Tanaka, H. Hayashi, G. Khoury and G. Jay 315

SECTION II ACUTE PHASE RESPONSE AND INFLAMMATORY MEDIATORS

- 27 Biological functions of acute-phase proteins and the cytokines involved in their induced synthesis
A. Koj 331
- 28 Induction of acute-phase protein synthesis: studies on the regulation of rat α_2 -macroglobulin *in vivo* and in hepatocyte primary cultures
T. Geiger, T. Andus, D. Kunz, M. Heisig, H. Northoff, J. Bauer, T.-A. Tran-Thi, K. Decker and P. C. Heinrich 343
- 29 Structure and acute-phase regulation of rat liver α -macroglobulins
G. H. Fey, W. Northemann, B. R. Shiels, M. R. Gehring, T. Braciak, G. Hudson and H. Ueberberg 357
- 30 Production of HSF in a murine macrophage cell line
G. M. Fuller, J. E. Nesbitt and R. J. Bunzel 371
- 31 Biochemistry of the liver cell nucleus during the acute-phase response
A. Bernelli-Zazzera 383
- 32 Transcriptional activation of the haptoglobin gene in human hepatoma Hep3B cells
S. Oliviero, G. Morrone and R. Cortese 391
- 33 Eicosanoids as signal molecules between hepatocytes and sinusoidal cells
K. Decker 397

28

Induction of acute-phase protein synthesis: studies on the regulation of rat α_2 -macroglobulin *in vivo* and in hepatocyte primary cultures

T. GEIGER, T. ANDUS, D. KUNZ, M. HEISIG, H. NORTHOFF, J. BAUER, T.-A. TRAN-THI, K. DECKER AND P. C. HEINRICH

INTRODUCTION

Acute inflammation leads to the increased synthesis of an ensemble of proteins designated as acute-phase proteins¹⁻³. The major site of synthesis for these proteins is the liver. Many of the acute-phase proteins are proteinase inhibitors. We study acute-phase protein synthesis in the rat and are interested in

Table 1 The α_2 -macroglobulin family

Species	Protein	Concentration (mg/ml)		Molecular weight of subunits(s)	Number of subunits	Carbohydrate content %
		Normal plasma	AP-plasma			
Rat	α_1 M	3.8	3.9	168 000 38 000	8 (?)	15
	α_2 M	<0.02	2.0	182 000	4	15.9
Human	α_1 I ₃	6.0	2.1	186 000	1	15
	α_2 M	2-4	2-4	179 000	4	10.2
	PZP	<0.01	1-1.4	180 000	4	10-12

a family of high molecular weight proteinase inhibitors, the α -macroglobulins. Table 1 shows the three members of the rat α -macroglobulin family: α_1 -macroglobulin, α_2 -macroglobulin and α_1 -inhibitor III. Although all three proteins are proteinase inhibitors, their regulation is different. Whereas α_1 -