COMPREHENSIVE BIOCHEMISTRY

A. NEUBERGER AND L.L.M. VAN DEENEN (EDITORS)

VOLUME 35

A HISTORY OF BIOCHEMISTRY

Selected Topics in the History of Biochemistry
Personal Recollections. I

G. SEMENZA (Vol. Ed.)

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A HISTORY OF BIOCHEMISTRY

COMPREHENSIVE BIOCHEMISTRY

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SELECTED TOPICS IN THE HISTORY OF BIOCHEMISTRY PERSONAL RECOLLECTIONS. I.

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GENERAL PREFACE

The Editors are keenly aware that the literature of Biochemistry is already very large, in fact so widespread that it is increasingly difficult to assemble the most pertinent material in a given area. Beyond the ordinary textbook the subject matter of the rapidly expanding knowledge of biochemistry is spread among innumerable journals, monographs, and series of reviews. The Editors believe that there is a real place for an advanced treatise in biochemistry which assembles the principal areas of the subject in a single set of books.

It would be ideal if an individual or a small group of biochemists could produce such an advanced treatise, and within the time to keep reasonably abreast of rapid advances, but this is at least difficult if not impossible. Instead, the Editors with the advice of the Advisory Board, have assembled what they consider the best possible sequence of chapters written by competent authors; they must take the responsibility for inevitable gaps of subject matter and duplication which may result from this procedure.

Most evident to the modern biochemist, apart from the body of knowledge of the chemistry and metabolism of biological substances, is the extent to which we must draw from recent concepts of physical and organic chemistry, and in turn project into the vast field of biology. Thus in the organization of Comprehensive Biochemistry, sections II, III and IV, Chemistry of Biological Compounds, Biochemical Reaction Mechanisms, and Metabolism may be considered classical biochemistry, while the first and fifth sections provide selected material on the origins and projections of the subject.

It is hoped that sub-division of the sections into bound volumes will not only be convenient, but will find favour among students concerned with specialized areas, and wil permit easier future revisions of the individual volumes. Towards the latter end particularly, the Editors will welcome all comments in their effort to produce a useful and efficient source of biochemical knowledge.

M. Florkin†
E.H. Stotz

Liège/Rochester

There is a history in all men's lives.
W. Shakespeare, Henry IV, Pt. 2

History is the essence of innumerable biographies.
T. Carlyle, On History

PREFACE TO VOLUME 35

Perhaps one of the most exiting developments in biological sciences in our times has been their merging with chemistry and physics with the resulting appearance of biochemistry, biophysics, molecular biology, and related sciences. The nearly explosive development of these "newcomers" has led to the almost unique situation that these new biological sciences have come of age at time when their founding fathers, or their scientific sons, are alive and active.

It was therefore an almost obvious idea to ask them to write, for the benefit of both students and senior scientists, personal accounts of their scientific lives. With this idea in mind I have already edited two volumes for John Wiley & Sons, who had, however, a somewhat different format.

The chapters in this and in future volumes are meant to complement, with personal recollections, the History of Biochemistry in the Comprehensive Biochemistry series (Vols. 30-33, by M. Florkin and Vol. 34 (forthcoming), by E. Schoffeniels). In fact, it is hoped that the biographical or autobiographical chapters will convey to the reader lively, albeit at times subjective, views on the scientific scene as well as the social evironment in which the authors have operated and brought about new concepts and pieces of knowledge. The Editor considered it presumptuous to give the authors narrow guidelines or to suggest changes in the chapters he received; he thinks that directness and straightforwardness should be given priority over uniformity. The contributions assembled in this volume will convey the flavour of each author's particular personality; whatever the optical distortion of one chapter, it will be compensated by the views in another.

The development of today's life sciences was acted upon by serious and often tragic historical events. The Editor hopes that this message also will reach the readers, especially the young ones.

It proved an impossible task to group the contributors in a strictly

logical manner whether according to subject matter, geographical area, or time. In fact, most contributions cross each of these borders. Nevertheless the Editor hopes that the reader will find these contributions as interesting as he did.

The Editor wants to express his gratitute to all individuals who made this series possible; first of all to the authors themselves, who not only wrote the texts, but also willingly collaborated in suggesting further potential contributors, thereby acting as a kind of "Editorial Board at Large". Thanks are due to Ms. U. Zilian who typed most of the correspondence and prepared the index of names.

Swiss Institute of Technology
Zurich, 1983

Giorgio Semenza

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LIST OF PLATES

(Photographs reproduced with permission of authors, publishers, and/or owners)

Plate 1. Carl Ferdinand Cori and Gerty Theresa Radnitz Cori.

Plate 2. The entrance hall of the laboratory of the Instituto de Investigaciones Bioquímicas "Fundación Campomar" during the years 1947 to 1957. Left to right: R. Caputto, A. Paladini, C. Cardini, R. Trucco and L. Leloir.

Plate 3. Robert K. Crane.

Plate 4. Henri-Géry Hers.

Plate 5. Sir Frederick Gowland Hopkins (1861-1947) (Drawing by Kapp, The Fitzwilliam Museum, Cambridge).

Plate 6. Juda Hirsch Quastel (Photograph by M. Saffran, 1979).

Plate 7. Hermann Blaschko

Plate 8. Snapshot taken in March 1932, outside the Heidelberg Institute. From left to right: K.W. Hausser (1887-1933), Director of the Institute of Physics, D. Keilin, R. Kuhn, Director of the Institute of Chemistry. (Photograph kindly provided by Mrs. Joan Keilin-Whiteley, Ph.D.).

Plate 9. Theodor (The) Svedberg.

Plate 10. Arne Tiselius presenting his Ph.D. thesis.

Plate 11. The Svedberg and Arne Tiselius in the old chemical laboratory (about 1926).

Plate 12. The Svedberg lecturing (about 1935).

Plate 13. The Svedberg in his office.

Plate 14. Choh Hao Li.

Plate 15. Alexei Nikolaevich Bach (1857-1946).

Plate 16. Sergei E. Severin.

Section VI

A HISTORY OF BIOCHEMISTRY

Vol. 30. A History of Biochemistry
Part I. Proto-Biochemistry
Part II. From Proto-Biochemistry to Biochemistry

Vol. 31. A History of Biochemistry
Part III. History of the indentification of the sources of free energy in organisms

Vol. 32. A History of Biochemistry
Part IV. Early studies on biosynthesis

Vol. 33. A History of Biochemistry
Part V. The unravelling of biosynthetic pathways

Vol. 34. A History of Biochemistry
Part VI. History of molecular interpretations of physiological and biological concepts, and the origins of the conception of life as the expression of a molecular order

Vol. 35. A History of Biochemistry
Selected Topics in the History of Biochemistry
– Personal Recollections. I

CONTENTS

VOLUME 35

A HISTORY OF BIOCHEMISTRY

Selected Topics in the History of Biochemistry
Personal Recollections. I.

General Preface vii
Preface to Volume 35 viii
Contributors to this volume x
List of Plates xi
Contents xiii

Chapter 1. The Isolation of Cori-ester, "the Saint Louis Gateway" to a First Approach of a Dynamic Formulation of Macromolecular Biosynthesis
by HERMANN M. KALCKAR

The Coris in post-World War I Europe 1
The Coris in the U.S.A. 4
Research at Washington University, School of Medicine 6
The discovery of Cori-ester and the concept of phosphorolysis 7
Polysaccharide synthesis in vitro 9
Isolation of crystalline muscle phosphorylase catalyzing amylose synthesis 9
Phosphorylases α and β and their role in metabolic regulation 13
Regulation of phosphorylase in resting and contracting muscle 14
1947 Nobel Prize for Physiology and Medicine 15
The effect of hormones on carbohydrate metabolism in vitro 16
Personal data from later years 18
Acknowledgements 22

References 23

Chapter 2. The Discovery of Sugar Nucleotides
by LUIS F. LELOIR and ALEJANDRO C. PALADINI

The discovery of sugar nucleotides 25
1948-49 Glucose diphosphate 27
1950 UDPG 30
1951 UDP-galactose 32
1952 UDP-acetylglucosamine 33
1953-55 UDP-glucuronic acid 35
1953 Biosynthesis of disaccarides 35
Final remarks 40

References 41

Chapter 3. The Road to Ion-coupled Membrane Processes
by ROBERT K. CRANE

Washington College 43
Interim 46
Harvard 47
A year with Fritz Lipmann 49
A decade with Carl Cori 50
Hexokinase 50
Metabolite regulation of glucolysis 52
A regulatory site for glucose-6-phosphate 53
Membrane transport 53
Toward the mechanism of glucose active transport 54
Fall of the phosphorylation-dephosphorylation hypothesis 55
Detour 56
A group transfer reaction with glucose is not the mechanism 57
Energy transduction is at the brush-border membrane 58
The idea of Na^+-coupling 59
The first model, convective-coupling 61
Coupling by co-transport 63
Aftermath 66
Epilogue 67

References 68

Chapter 4. From Fructose to Fructose-2,6-bisphosphate with a Detour through Lysosomes and Glycogen
by HENRI-GERY HERS

As a medical student, I participated in the rediscovery of glucagon 73
How the agglutination of microsomes at pH 5 opened the way to several discoveries 74
The metabolism of fructose in the liver 75
The ATP-magnesium complex 79
The publication of the sorbitol pathway was delayed by thermodynamical considerations 79
A call from a paediatrician introduced me into glycogen storage disease 82
The first lysosomal disease was discovered because of the complexity of the reaction catalysed by amylo-1,6-glucosidase 84
The concept of inborn lysosomal disease is a logical deduction made from my observations in type II glycogenosis 85
It took 10 years to have the concept of inborn lysosomal diseases accepted 88
The hepatic threshold to glucose 90
Fructose revisited with a glance to primary gout 92
The futile cycles and the discovery of fructose-2,6-bisphosphate 94
The other face of the story 96

References 98

Chapter 5. Sir Frederick Gowland Hopkins (1861-1947)
by N. WILLIAM PIRIE

Character and outlook 103
Education and early employment 107
Establishment of biochemistry in Cambridge 110
Research 112
  Purines and pterins 112
  Proteins 114
  Vitamins 116
  Muscular contraction 120
  Glutathione 121
Some biographical points 127

References 128

Chapter 6. A Short Autobiography
by JUDA HIRSCH QUASTEL

The War 1917-1919 135
Cambridge 137
Concept of active centers as a possible explanation of enzyme action 147
The effects of malonic acid and substituted malonic acids on bacterial dehydrogenases 149
Cardiff 152
Rothamsted Experimental Station 167
Montreal 178
Vancouver 182

References 186

Chapter 7. A Biochemist's Approach to Autopharmacology
by HERMANN BLASCHKO

Introduction 189
Early influences 191
Medical studies and the role of biochemistry 192
The status of biochemistry as an academic subject 197
Biochemistry in Dahlem and Heidelberg 199
England in the nineteen-twenties and -thirties 207
Humoral transmission and the catecholamines 209
Amine oxidases 215
Biogenesis of adrenaline 218
Intracellular localization of the catecholamines 222
On methods 224
Conclusions: the amine-forming cells 226
Acknowledgements 227

References 228

Chapter 8. The Svedberg and Arne Tiselius. The Early Development of Modern Protein Chemistry at Uppsala
by KAI O. PEDERSEN

The Svedberg 235
The optical centrifuge 239
The first ultracentrifuge 239
The high-speed oil-turbine ultracentrifuge 242
Svedberg's molecular weight hypothesis 247
Arne Tiselius 250

Further development of the high-speed ultracentrifuge 256
Further protein studies 259
Serum and serum proteins 261
The separation cell 265
Ultracentrifuges to go abroad 267
The later periods in Svedberg's life 268
Chromatography of colourless substances 273
The two personalities 277
In retrospect 279

References 280

Chapter 9. Survey of a French Biochemist's Life
by PIERRE DESNUELLE

My grandparents and my parents 283
High school and university studies 287
First contact with biochemistry and research 292
My return to Lyon and World War II 297
Life in Marseille (Act I) 300
Installation 300
Chemistry and physiochemistry of lipids 303
Construction of our first institue at the university 312
Life in Marseille (Act II) 315
Interlude in Paris 315
Creation of a Second Research Center (C.N.R.S.) 316
Proteolytic enzymes and zymogens (second period) 318
Bovine procarboxypeptidase 319
The lipase-colipase system (second period) 322
Miscellaneous 326

Chapter 10. From α-Corticotropin through β-Lipotropin to β-Endorphin
by CHOH HAO LI

Hormone Research Laboratory 335
Chemical messengers 336
α-Corticotropin (ACTH) 339
Peptide synthesis 341
Lipotropins 342
β-Endorphin 345
Concluding remarks 348
Acknowledgment 350

References 351

Chapter 11. A.N. Bach, Founder of the Soviet School of Biochemistry
by W.L. KRETOVICH

Short biography 353
Research 356

References 364

Chapter 12. Sergei E. Severin: Life and Scientific Activity
by S.E. SEVERIN

An autobiographical review 365

References 389

Name Index 391

G. Semenza (Ed.) Selected Topics in the History of Biochemistry: Personal Recollections (Comprehensive Biochemistry Vol. 35)

Chapter 1

The Isolation of Cori-ester, "the Saint Louis Gateway" to a First Approach of a Dynamic Formulation of Macromolecular Biosynthesis

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The Coris in post-World War I Europe

Carl Cori was born in Prague in 1896, when Prague was part of the Austro-Hungarian Empire. He came from a background of university professors on both sides of the family. The grandfather on the maternal side, Ferdinand Lippich, was Professor of Theoretical Physics at the German University of Prague, a spirited mathematician and a skilled instrument builder. His father, Carl I. Cori, got his M.D. and Ph.D. in zoology in Prague at the Carl Ferdinand University, and in 1898 became the director of the Marine Biological Station in Trieste on the Adriatic Sea. Trieste was at that time part of the Austro-Hungarian Empire. Carl Cori Sr., was one of the leading zoologists and marine biologists in Central Europe. The famous Austrian zoologist Karl von Frisch in his memoirs recalls with appreciation the field trips on the boat "Adria" into the Adriatic Sea. Young Carl Cori grew up to appreciate the multicultural seaport of Trieste and the Adriatic as well as the Tyrolean Alps where the family spent summers. During World War I he studied medicine at the German branch of the Charles University in Prague. (This university also had a Czech branch.) Later young Cori served in the Medical Corps of the Austrian Army. Professor Carl Cori Sr. was at that time in charge of an extensive anti-malaria program.

Gerty T. Cori's maiden name was Gerty Theresa Radnitz. She, too, was born in Prague in 1896. Gerty passed the "Matura" (final examination) in record time and decided to study medicine, possibly influenced by an uncle who was professor of pediatrics in Prague. She met Carl Cori at the

Plate 1. Carl Ferdinand Cori and Gerty Theresa Radnitz Cori.

Medical University College in Prague where they both, being of Austrian background studied at the German University.

In the spring of 1920 both Carl Cori and Gerty Radnitz graduated as M.D.s and by summer they married. At that time World War I was finished, Austria had lost the war, and the Empire began to disintegrate. Prague had by now become the capital of the newly formed Czechoslovakia. The emphasis at the Carl Ferdinand University in Prague had become the training of young Czech doctors mainly as practitioners, for which there was a great need. The Coris had always entertained a warm interest for Czech culture and this most certainly included the founder of the young republic, Thomas Garrigue Masaryk. Years later they compared Thomas Masaryk with Abraham Lincoln. However, the newly born Czech nation had quite naturally too many acute needs to be able to promote research, at least for the next couple of years. The Coris found it therefore more realistic to try to keep their affiliations with the Austrian Medical Schools.

At the University Medical Clinic in Prague under the chairmanship of Professor R.v. Jaksch, it was possible to pursue clinical research. The first publication of the Coris dealt with complement in various diseases and appeared in an immunological journal [1].

Part of the year 1919 was spent in a no man's land, since the disintegration of the Austrian Empire developed gradually. In the early summer of 1919 Carl Cori studied under the spirited pharmacologist Professor Geza Mansfeld at the Hungarian Elisabeth University in Pozsony. In the fall of 1919 Pozsony was, however, being "transformed" into Bratislava as part of the new Republic of Czechoslovakia. This meant that the Mansfeld Institute had to be moved across the Danube farther south. Another member of the Institute who helped in this surreptitious transfer was Dr. Albert Szent-Györgyi. In spite of this nomadic existence a publication appeared in Pflügers Archiv on the excitability of the sinus nodes of the heart and the effect of adrenalin and vagus stimulation [2]. This study was probably largely an outgrowth of the Mansfeld work.

During most of the year 1921 the Coris were forced to work separately. Gerty Cori had obtained a position at "Karolinen Kinderspital" in Vienna. This was a pediatrics unit (led by Professor W. Knoepfelmacher) which gave an opportunity to conduct some research. Gerty Cori pursued problems concerning the importance of the thyroid gland for temperature regulation. The problems had been subject to discussions by pharmacologists such as Geza Mansfeld and Otto Loewi. Gerty Cori investigated temperature regulation in congenital myxoedema [3]. In 1921 Carl Cori