

**IUB**

*Ninth International  
Congress of Biochemistry*

*Stockholm 1-7 July 1973*



ULTRACENTRIFUGE ROTOR 1923

**HANDBOOK**

**IUB**

**NINTH INTERNATIONAL  
CONGRESS OF BIOCHEMISTRY**

Stockholm  
July 1—7  
1973

The Congress is organized by the Swedish National Committee  
on Biochemistry of the Royal Academy of Sciences and  
sponsored by the International Union of Biochemistry

The Congress Emblem was designed by Bo Furugren

Printed in Sweden

Aktiebolaget Egnellska Boktryckeriet, Stockholm 1973

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PATRON

His Majesty the King of Sweden

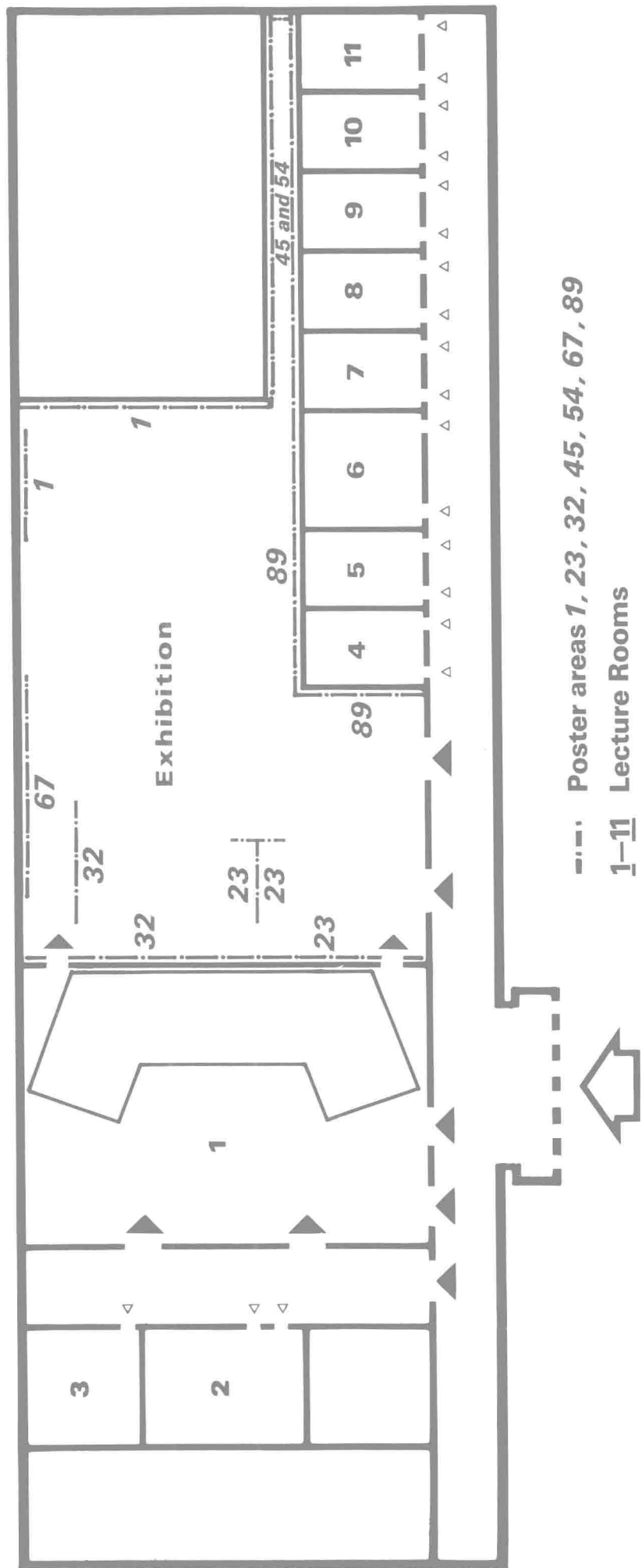




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## Plan of Congress Hall, main floor



## Committees and Functionaries

### Congress President

Hugo Theorell

### Organizing Committee

Per-Åke Albertsson  
Gunhild Aulin-Erdtman (Secretary-General)  
Sune Bergström  
Bengt Borgström  
Henry Danielsson  
Lars Ernster (Chairman)  
Bengt Göransson  
Bo Hallgren  
David Isaksson  
Bo G. Malmström  
Gunnar Samuelsson (Asst Secretary-General)  
John Sjöquist  
Hugo Theorell  
Margit Theorell

### Programme Committee

Per-Åke Albertsson  
Gunhild Aulin-Erdtman  
Herrick Baltscheffsky  
Gustav Dallner  
Lars Ernster  
Edith Heilbronn  
Tore Hultin  
Torvard C. Laurent  
Olov Lindberg  
Bo G. Malmström (Chairman)  
Viktor Mutt  
Bengt Samuelsson  
Gunnar Samuelsson  
John Sjöquist  
Jan Sjövall

### Finance Committee

Bertil Åberg  
Gunhild Aulin-Erdtman  
Sven Boode  
Carl Erik Danielson  
David Isaksson (Chairman)  
Carl Olov Rosén  
Gunnar Samuelsson (Treasurer)  
Ulf Stålkint

## Family Members Committee

Gunhild Aulin-Erdtman  
Maj Bergström  
Edit Ernster  
Kerstin Isaksson  
Gunnar Samuelsson  
Margit Theorell (Chairman)

### Congress Bureau

Christer Carlsson

### Press

Joseph W. DePierre  
Elisabeth Ralf

## Contributors

The Swedish Government  
Swedish Board for Technical Development  
Ekhagastiftelsen  
ACO Läkemedel AB  
Alfa-Laval AB  
Apotekarsocieteten  
Apoteksvarucentralen Vitrum AB  
AB Astra  
AB Bofors Nobel-Pharma  
Essex Läkemedel AB  
Farbwerke Hoechst AG  
AB Felix  
AB Ferrosan  
AB Kabi  
AB Leo  
Erik Lindblom & Co KB  
AB Lars Ljungberg & Co  
LKB-Produkter AB  
Pharmacia AB  
Pfizer AB  
Roche-Produkter AB  
Slakteriförbundet Scan  
Svenska Mejeriernas Riksförening  
Svenska Sockerfabriks AB  
Svenska Tobaks AB  
Svenska Unilever AB  
Wasabröd AB

## General Information

### Congress Bureau, Registration

The Congress Bureau is located at S:t Eriks-Mässan, at Älvsjö railway station. It is open for registration as follows:

|                   |           |
|-------------------|-----------|
| Saturday, June 30 | 1200—2200 |
| Sunday, July 1    | 0900—2200 |
| Monday, July 2    | 0800—2000 |
| Tuesday, July 3   | 0800—1900 |
| Wednesday, July 4 | 0900—1200 |
| Thursday, July 5  | 0800—1800 |
| Friday, July 6    | 0800—1800 |
| Saturday, July 7  | 0900—1500 |

A temporary Post Office and a branch office of the bank, Svenska Handelsbanken, operate in the vicinity of the Congress Bureau. A special cancellation mark is used at the Post Office. Business hours for the Post Office and the Bank Office are as follows:

|                   | Post                   | Bank      |
|-------------------|------------------------|-----------|
| Saturday, June 30 | 1300—1600              | 1400—1700 |
| Sunday, July 1    | —                      | 1230—1700 |
| Monday, July 2    | 1100—1300<br>1400—1700 | 0900—1500 |
| Tuesday, July 3   | 1100—1300<br>1400—1700 | 0900—1500 |
| Thursday, July 5  | 1100—1300<br>1400—1700 | 1130—1500 |
| Friday, July 6    | 1100—1300<br>1400—1700 | 1130—1500 |
| Saturday, July 7  | 1130—1300              | 1130—1300 |

Special rooms for accompanying family members are available, one at S:t Eriks-Mässan, another at Folkets Hus (Barnhusgatan 12—14, Stockholm). Opening hours for these rooms are:

at S:t Eriks-Mässan: as for the Congress Bureau from Sunday onwards;

at Folkets Hus: 0800—1800 from Monday onwards.

Please note that pre-ordered tickets can be collected at S:t Eriks-Mässan only.

Reso Travel Bureau and SAS run Information Desks at the Congress Bureau.

Telephone to the Congress Bureau: 08/99 01 00.

Telephone to Folkets Hus: 08/11 18 52.

Mail, telegrams and messages to participants are distributed through the Congress Bureau. It is helpful for the organizers if the participants collect their mail every day at the Information Desk.

### Rules for Chairmen, Speakers and Discussion Participants

Every effort will be made to keep strictly to the time-table for the scientific sessions. A signal system will be arranged to warn speakers when 3 minutes are left of the time for the paper and to indicate that the time is finished. Chairmen are asked to interrupt speakers or discussion participants if they exceed the period of the paper. Should any paper or discussion end before the following paper is due, the session will be adjourned, to enable the following speaker to start on time. Speakers are kindly requested to be present 10 minutes before the beginning of the session in which their paper is listed, to make themselves known to the session chairmen and to hand their slides over to the projectionist.

### Rules for Poster Presentations

Participants due to present a poster are kindly asked to follow the predistributed "Advice and instructions regarding poster presentations". Extra copies of these are available at the Congress Bureau.

In order for poster presentations to run smoothly it is important that the authors mount their posters *before* the beginning of the session, and that they remove them *immediately* after the end of the session. It is also important that the authors indicate the time for the discussion period on the poster label and that they are present at their posters during that period.

## Exhibition IEB-73

Exhibitors per 16th May, 1973, and their stand numbers:

|                                                          |                     |
|----------------------------------------------------------|---------------------|
| Academic Press, Inc., USA                                | 19:20               |
| Alfa-Laval AB, Sweden                                    | 19:27               |
| Autochem Instrument AB, Sweden                           | 19:19               |
| BDH Chemicals Ltd, UK                                    | 22:20               |
| Bergman & Beving AB, Sweden                              | 22:03               |
| Biotec, AB, Sweden                                       | 19:25               |
| Boehringer Mannheim GmbH, Fed. Rep. of Germany           | 19:01               |
| British Hospitals Export Council, UK                     | 22:07               |
| Bruker Physik AG, Fed. Rep. of Germany                   | 22:27               |
| Calbiochem AG, Switzerland                               | 16:18               |
| Chemoferm AB, Sweden                                     | 16:16               |
| Colora Messtechnik GmbH, Fed. Rep. of Germany            | 19:22               |
| Commissariat à l'Energie Atomique, France                | 19:29               |
| Elsevier (Excerpta Medica), The Netherlands              | 22:30               |
| Evans Electroselenium Ltd., UK                           | 22:17               |
| Gefinge Mekaniska Verkstads AB, Sweden                   | 19:24               |
| Gilford Instrument Lab., USA                             | 19:11               |
| Grant Instruments Ltd., UK                               | 22:05               |
| Hoechst AG, Farbwerke, Fed. Rep. of Germany              | 22:14               |
| Jeol Scandinavia, Sweden                                 | 16:14               |
| Koch-Light Laboratories Ltd., UK                         | 22:16               |
| Labora AB, Instrumentfirman, Sweden                      | 22:21               |
| Labquip, UK                                              | 22:15               |
| Lambda, Instrument AB, Sweden                            | 19:04, 19:06, 19:08 |
| LKB-Produkter AB, Sweden                                 | 22:23               |
| Luning Prak Ass., USA                                    | 19:03               |
| Measuring & Scientific Equipment Ltd., UK                | 22:09               |
| Merck, E., Fed. Rep. of Germany                          | 22:22               |
| Miles Research Division, UK                              | 19:05               |
| Millipore AB, Sweden                                     | 19:18               |
| Nanoteknik AB, Sweden                                    | 19:02               |
| New England Nuclear Chemicals GmbH, Fed. Rep. of Germany | 22:28               |
| Ollituote OY, Finland                                    | 19:13               |
| Ortec Inc., USA                                          | 19:15               |
| Perkin-Elmer AB, Sweden                                  | 16:12               |
| Pharmacia AB, Sweden                                     | 22:02               |
| Philip Instrumentation AB, Bo, Sweden                    | 19:12               |
| Philips, Svenska AB, Sweden                              | 22:01               |
| Projectina Nord AB, Sweden                               | 16:20               |
| The Radiochemical Centre Ltd., UK                        | 22:06               |
| Roche-Produkter AB, Sweden                               | 19:17               |
| Scandia Metric AB, Sweden                                | 22:24               |
| Searle-Products for Research, UK                         | 22:18               |
| Springer-Verlag, Fed. Rep. of Germany                    | 22:29               |
| Technicon AB, Sweden                                     | 16:02               |
| Tekno Maskin Import AB, Sweden                           | 19:07               |
| Ultrasonics Ltd., UK                                     | 22:19               |
| Varian AB, Sweden                                        | 22:11               |
| Warner-Lambert Company, USA                              | 19:26               |
| Waters Associates AB, Sweden                             | 19:16               |
| Vitatron, The Netherlands                                | 19:11               |

## General Programme

### Saturday, June 30

1200 Registration at the Congress Bureau, "S:t Eriks-Mässan", at Älvsjö railway station, southwest of central Stockholm  
—2200

### Sunday, July 1

0900 Registration at the Congress Bureau, S:t Eriks-Mässan  
—2200  
1400 Opening session in the Congress Hall (Room 1), S:t Eriks-Mässan. Plenary lectures by BRIAN S. HARTLEY and GEORGE E. PALADE  
—1600  
Reception in the Stockholm City Hall (Stads-  
huset) (page 68)

### Monday, July 2

0800 Registration at the Congress Bureau  
—2000  
0845 Scientific programme in Sections and  
—1730 Colloquia (page 11)  
1030 Sightseeing tour and Welcome Luncheon for  
registered accompanying family members  
(page 69)  
1430 Professional programmes for registered  
accompanying family members  
1730 Bus tour: Stockholm in a nutshell (page 68)  
2000 Frontiers in Biochemistry, first session (Fol-  
kets Hus, Barnhusgatan 12–14, Stockholm).  
Lecturers: CHARLES WEISSMANN and  
EMIL L. SMITH (page 68)

### Tuesday, July 3

0835 Scientific programme in Sections and  
—1715 Colloquia (page 24)  
Morning Excursions and visits for accompanying  
family members (page 69)  
2000 Special Symphony Concert in the Stockholm  
—2200 Concert Hall (Konserthuset, Hötorget) (page  
68)  
1845 Midnight Sun Tour (page 68)

### Wednesday, July 4

All day Excursions and Visits (page 68)

### Thursday, July 5

0835 Scientific programme in Sections and  
—1745 Colloquia (page 40)  
All day Excursions and visits for accompanying  
family members (page 69)  
2000 Frontiers in Biochemistry, second session  
(Folkets Hus). Lecturers: ALBERT L.  
LEHNINGER and HANS L. KORNBERG  
(page 68)

### Friday, July 6

0835 Scientific programme in Sections and  
—1800 Colloquia (page 54)  
Morning Excursions and visits for accompanying  
family members (page 70)  
2000 Teaching and Careers in Biochemistry.  
Arranged by P.N. CAMPBELL (Folkets Hus)  
(page 68)

### Saturday, July 7

1000 Closing session in the Congress Hall (Room  
—1200 1), S:t Eriks-Mässan, with plenary lectures by  
E.C. SLATER and S. SPIEGELMAN  
1200 Informal farewell gathering (page 68)

## Opening Session

### Sunday, July 1

1400—1600

Room 1

#### Opening remarks

HUGO THEORELL, Congress President and Presi-  
dent of the International Union of Biochemistry

#### Welcome address

LARS ERNSTER, Chairman of the Organizing  
Committee

#### Greeting from the Swedish Government

SVEN MOBERG, Minister for Higher Education and  
Research

#### Introduction to Plenary Lecture 1

BO G MALMSTRÖM (Sweden)

#### Plenary Lecture 1

BRIAN S. HARTLEY (UK): The Evolution of  
Enzymes

#### Intermission

#### Introduction to Plenary Lecture 2

GUSTAV DALLNER (Sweden)

#### Plenary Lecture 2

GEORGE E. PALADE (USA): Interactions among  
Cellular Membranes

## Closing Session

### Saturday, July 7

1000—1200

Room 1

#### Introduction to Plenary Lecture 3

LARS ERNSTER (Sweden)

#### Plenary Lecture 3

E.C. SLATER (The Netherlands): Electron Transfer  
and Energy Conservation

#### Introduction to Plenary Lecture 4

PETER REICHARD (Sweden)

#### Plenary Lecture 4

S. SPIEGELMAN (USA): Molecular Probes for a  
Viral Etiology of Human Cancer

#### A Word of thanks

LARS ERNSTER, Chairman of the Organizing  
Committee

#### Closing remarks

The President of the International Union of Bio-  
chemistry

#### Invitation to the 10th International Congress of Biochemistry

Scientific Programme
Schedule of Scientific Sessions

|                      |                                             | Monday           |                 | Tuesday         |                 | Thursday         |                 | Friday           |                 |
|----------------------|---------------------------------------------|------------------|-----------------|-----------------|-----------------|------------------|-----------------|------------------|-----------------|
|                      |                                             | a.m.             | p.m.            | a.m.            | p.m.            | a.m.             | p.m.            | a.m.             | p.m.            |
| Section 1            | Symposium<br>Oral communications<br>Posters | 1a               | 1Sa             | 1b<br>1c        | 1Sb             | 1d               | 1Sc             | 1e               | 1Sd             |
|                      | 2                                           | 2Sa              | 2a-2c<br>2d, 2e | 2Sb             | 2f-2i<br>2j, 2k | 2Sc              | 2l-2n<br>2o, 2p | 2Sd              | 2q-2s<br>2t, 2u |
|                      | 3                                           | 3a-3c<br>3d, 3e  | 3Sa             | 3f-3h<br>3i, 3j | 3Sb             | 3k, 3l<br>3m     | 3Sc             | 3n-3p<br>3q, 3r  | 3Sd             |
|                      | 4                                           | 4Sa              | 4a<br>4b, 4c    | 4d<br>4e        | 4Sb             | 4Sc              | 4f, 4g          | 4Sd              | 4h<br>4i, 4j    |
|                      | 5                                           | 5a, 5b<br>5c, 5d | 5Sa             | 5Sb             | 5e<br>5f        | 5g, 5h<br>5i, 5j | 5Sc             | 5k, 5l<br>5m, 5n | 5Sd             |
|                      | 6                                           | 6a               | 6Sa             | 6b              | 6Sb             | 6c               | 6Sc             | 6d               | 6Sd             |
|                      | 7                                           | 7Sa              | 7a              | 7Sb             | 7b              | 7Sc              | 7c              | 7Sd              | 7d              |
|                      | 8                                           | 8a<br>8b         | 8Sa             | 8c<br>8d        | 8Sb             | 8e<br>8f         | 8Sc             | 8g, 8h           | 8Sd             |
|                      | 9                                           | 9Sa              | 9a<br>9b        | 9Sb             | 9c              | 9Sc              | 9d<br>9e        | 9Sd              | 9f<br>9g        |
| Coll.                | A                                           | Aa               | Ab              | Ac              |                 |                  |                 |                  |                 |
|                      | B                                           |                  |                 |                 |                 | Ba               | Bb              | Bc               |                 |
|                      | C                                           |                  |                 | Ca              | Cb              | Cc               |                 |                  |                 |
|                      | D                                           |                  |                 |                 |                 |                  | Dc              | Da               | Db              |
| Miscellaneous topics |                                             |                  |                 |                 | M               |                  |                 |                  |                 |

## Section 1

## Separation Methods for Macromolecules

## Session 1a (oral): Chromatography

## Room 6

Chairmen: G. BERNARDI (France) 1–6  
GARY K. ACKERS (USA) 7–12

Co-chairman: JERKER PORATH (Sweden)

- 0900 MALGORZATA MANTEUFFEL-CYMBOROWSKA\* and ZOFIA M. ZIELIŃSKA (Poland): Purification of insect dihydrofolate reductase by gel filtration and affinity chromatography (1a 1)
- 0915 P.-O. LARSSON\*, P. BRODELIUS, H. GUILFORD, R. OHLSSON and K. MOSBACH (Sweden): Synthesis and application of immobilized cofactors in biospecific affinity chromatography (1a 2)
- 0930 C.A. ROSSI\*, G. RONCA and A. LUCACCHINI (Italy): Affinity chromatography in the study of the multiple molecular forms of adenosine deaminase (1a 3)
- 0945 M. ROBERT-GÉRO\* and J.P. WALLER (France): Purification of methionyl-tRNA synthetase by affinity chromatography (1a 4)
- 1000 A. HASSÓN-VOLOCH\*, M. NAZARETH E SANTOS and CECÍLIA SOMLÓ (Brazil): Purification of *Electrophorus* electric organ proteins by affinity chromatography (1a 5)
- 1015 H. TRUONG\*, M. BEST-BELPOMME, C. GEYNET, C. MILLET and O. SOULIGNAC (France): Affinity chromatography for the purification of oestradiol cytosol receptor from calf uterus (1a 6)
- 1030 Coffee break
- 1045 KENT K. STEWART\* and ROBERT F. DOHERTY (USA): The resolution of DL-tryptophan by affinity chromatography on bovine serum albumin-agarose exchangers (1a 7)
- 1100 C. ASTELL, M. DOEL, P. JAHNKE, K. WATERMAN and M. SMITH\* (Canada): The hydrogen-bonding properties of oligonucleotides linked to an insoluble matrix (1a 8)
- 1115 SEPPO LINDY (Finland): Hybridization as a purification method of enzyme proteins (1a 9)
- 1130 MARVIN EDELMAN (Israel): Purification of DNA by affinity chromatography (1a 10)
- 1145 CECILIA TAKADA, HENRI GROSJEAN\* and JEAN PÉTRE (Belgium): Rapid purification of transfer RNA by affinity chromatography (1a 11)
- 1200- LESLIE H. KIRKEGAARD (USA): Ultrarapid enzyme  
1215 purification with sievortptive chromatography (1a 12)

## Section 2

## Structure and Function of Proteins

## Symposium Session 2Sa: Hydrolytic and Oxidation-Reduction Enzymes

## Room 1

Chairman: BERT L. VALLEE (USA)

Co-chairman: INGVAR LINDQVIST (Sweden)

- 0910 H. NEURATH\*, A. GERTLER and K.A. WALSH (USA): Toward a mechanism of zymogen activation (2Sa 1)
- 0945 R.M. STROUD\* and M. KRIEGER (USA): The high resolution structure and mechanism of action of trypsin (2Sa 2)
- 1020 J. KRAUT (USA): A crystallographic view of the serine protease mechanism (2Sa 3)
- 1055 Coffee break and time for visit to exhibition
- 1130 C.-I. BRÄNDÉN\*, H. EKLUND, E. ZEPPEAUER, B. NORDSTRÖM, T. BOIWE, G. SÖDERLUND and I. OHLSSON (Sweden): Structure and function of horse liver alcohol dehydrogenase (2Sa 4)

- 1205- FRANK R.N. GURD\*, WILLIAM H. GARNER, PHILIP  
1240 KEIM, ROBERT C. MARSHALL, JON S. MORROW and RONALD B. VISSCHER (USA): <sup>13</sup>C NMR in the study of the structure and function of myoglobins, hemoglobins and carbonic anhydrase (2Sa 5)

## Section 3

## Biosynthesis of Nucleic Acids and Proteins

## Session 3a (oral): DNA Replication

## Room 7

Chairmen: JOHN S. SUSSENBACH (The Netherlands) 1–5  
NEAL C. BROWN (USA) 6–12

Co-chairman: T. LINDAHL (Sweden)

- 0845 T.S.-F. WANG, W.D. SEDWICK, DAVID KORN\* (USA): Properties of a homogeneous nuclear DNA polymerase from human cells (3a 1)
- 0900 LUCY M.S. CHANG (USA): Initiation and replication of homopolymers catalyzed by calf thymus chromatin DNA polymerase (3a 2)
- 0915 ROGER HAND\* and IGOR TAMM (USA): DNA replication: chain growth in mammalian cells during inhibition of DNA synthesis (3a 3)
- 0930 DANIEL L. FRIEDMAN (USA): Studies on the role of ATP in DNA replication in a HeLa cell free system (3a 4)
- 0945 H. ELFORD\*, R. LUFTIG and E. BARIL (USA): Intracellular distribution of ribonucleotide reductase — evidence for a multiplex enzyme complex for DNA biosynthesis (3a 5)
- 1000 Coffee break
- 1015 MICHAEL D. BICK (USA): Electron microscopy of replicating mammalian DNA (3a 6)
- 1030 P. BORST\*, R.A. FLAVELL, J.P.M. SANDERS and J.N.M. MOL (The Netherlands): Replication of RD1A mtDNA (3a 7)
- 1045 F.D. HAMILTON, F.F. VISSERING and M.V. SIMPSON\* (USA): The biosynthesis of superhelical DNA by isolated mitochondria (3a 8)
- 1100 G.G. GAUSE JR.\* and V.S. MIKHAILOV (USSR): DNA synthesizing system in mitochondria from mature loach eggs (3a 9)
- 1115 J.S. SUSSENBACH\*, D.J. ELLENS, P.C. VAN DER VLIET and H.S. JANSZ (The Netherlands): The replication of adenovirus type 5 DNA in KB cells (3a 10)
- 1130 DAVID BELL (UK): The *in vitro* synthesis of herpes simplex virus DNA (3a 11)
- 1145- J. HAY\*, I.W. HALLIBURTON, A.T. JAMIESON and M.C.  
1200 TIMBURY (UK): DNA metabolism in ts mutants of herpes simplex virus type 2 (3a 12)

## Section 3

## Biosynthesis of Nucleic Acids and Proteins

## Session 3b (oral): Prokaryotic and Phage Transcription

## Room 8

Chairmen: MICHAEL J. CHAMBERLIN (USA) 1–6  
B. MÜLLER-HILL (Fed. Rep. of Germany) 7–12

Co-chairman: LARS RUTBERG (Sweden)

- 0845 PAUL DWORSKY (Austria): The effect of transcription on the structure of the nuclear body of *Escherichia coli* (3b 1)
- 0900 S. ADHYA\*, B. DE CROMBRUGGHE and M. GOTTESMAN (USA): Polarity and transcription termination in bacterial operons (3b 2)
- 0915 B.F. WATSON (USA): RNA synthesis in nucleotide permeable amino acid auxotrophs of *Escherichia coli* (3b 3)
- 0930 DAVID R. MORRIS (USA): A site of polyamine action *in vivo* (3b 4)
- 0945 R. WU and E.P. GEIDUSCHEK (USA): A phage T4 protein required for replication and processing-dependent transcription (3b 5)

- 1000 CLAUDE THERMES and EDWARD BRODY\* (France): T4 transcription after renaturation of the gene 55 product (3b 6)
- 1015 Coffee break
- 1030 WILLIAM C. SUMMERS (USA): Transcriptional controls in coliphage T7 infection (3b 7)
- 1045 J.L. DARLIX (France): The functions of RHO in T7 DNA transcription *in vitro* (3b 8)
- 1100 U. MAITRA\*, P.R. CHAKRABORTY and RINO A. SALVO (USA): Transcription of native and denatured DNA's by T3 induced RNA polymerase (3b 9)
- 1115 P.R. SRINIVASAN\*, S.P. MAHADIK and B. DHARMGROMGARTAMA (USA): An inhibitory protein of *E. coli* RNA polymerase in T3 phage infected cells (3b 10)
- 1130 E. BANDLE\* and C. WEISSMANN (Switzerland): Controlled, stepwise synthesis of RNA by  $Q_{\beta}$  replicase (3b 11)
- 1145- E. GILLIS\*, J. DE BOEVER, J. VAN EMMELO and W. 1200 FIERS (Belgium): Interaction of nucleic acids with the replication enzyme for bacteriophage  $Q_{\beta}$  RNA (3b 12)

## Section 3

## Biosynthesis of Nucleic Acids and Proteins

Session 3c (oral): Eukaryotic mRNA and Initiation

## Room 9

- Chairmen: LUCIANO FELICETTI (Italy) 1-6  
H. BLOEMENDAL (The Netherlands) 7-12
- Co-chairman: TORE HULTIN (Sweden)
- 0845 J. KEMPF\* and P. MANDEL (France): Isolation and characterization of native cytoplasmic mRNA-protein particles (3c 1)
- 0900 MICHAEL HAINES and NORMAN CAREY\* (UK): The purification and molecular weight of ovalbumin mRNA (3c 2)
- 0915 H.H. KAZAZIAN, JR\*, T. CHENG, S.K. POLMAR and P.A. MOORE (USA): Globin mRNA from mouse spleen erythroblasts (3c 3)
- 0930 A. STEWART\*, E. GANDER and K. SCHERRER (Switzerland): Different translational capacities of duck and rabbit globin messenger RNAs (3c 4)
- 0945 CH. FAUST, P. VASSALLI, H. DIGGELMANN and B. MACH\* (Switzerland): Purification of 14 S mRNA of immunoglobulin L-chain (3c 5)
- 1000 U. NUDEL and B. LEBLEU\* (Israel): A mammalian translation initiation factor discriminating between mRNAs (3c 6)
- 1015 Coffee break and time for visit to exhibition
- 1045 M. RABINOVITZ\*, K. BALKOW, J.M. FISHER, M. GROSS and S. MIZUNO (USA): Control of globin biosynthesis by hemin (3c 7)
- 1100 M.S. AYUSO\*, EDGAR C. HENSHAW and CARL A. HIRSCH (USA): The role of 40s ribosomal subunit-bound protein factors in peptide chain initiation (3c 8)
- 1115 DANIEL H. LEVIN\*, DAVID KYNER and GEORGE ACS (USA): Evidence for factor-dependent addition of mRNA to a [40S, Met-tRNA<sub>f</sub>] complex during protein initiation in a eukaryotic system (3c 9)
- 1130 S.N. SEAL and A. MARCUS\* (USA): Translation of the initial codons of satellite tobacco necrosis virus (STNV) RNA in a cell-free system from wheat embryo (3c 10)
- 1145 E. FALCOFF\* and R. FALCOFF (France): Evidence for a specific action of interferon pretreatment on *in vitro* messenger RNA translation in non-infected L cell extracts (3c 11)
- 1200- D.P. WEEKS, R. BAXTER\* and H.J. SOMERVILLE 1215 (UK and USA): MDMP: a specific inhibitor of peptide chain initiation (3c 12)

## Section 3

## Biosynthesis of Nucleic Acids and Proteins

Session 3d (poster): Ribosomes and Translation

## Poster area 23

0900-1200

- F.A.M. ALBERGHINA\* and E. STURANI (Italy): Control of ribosomal RNA synthesis in *Neurospora crassa* (3d 1)
- J. TRAPMAN\* and R.J. PLANTA (The Netherlands): Ribosomal precursor particles from yeast (3d 2)
- P. DETCHON and J.V. POSSINGHAM\* (Australia): Studies on chloroplast rRNA biosynthesis (3d 3)
- R.J. RUTMAN\*, E. DOWDEN and N.G. AVADHANI (USA): Discrete precursors of pre-ribosomal 45S RNA in Ehrlich cells (3d 4)
- JAMES M. HILL\* and RONALD A. MALT (USA): Regulation of rRNA metabolism during compensatory renal hypertrophy (3d 5)
- B.E.H. MADEN\*, M. SALIM and J. SHEPHERD (UK): Mammalian 45S RNA: methylation and maturation (3d 6)
- EGON J. HIDVÉGI\* and ANNA FÓNAGY (Hungary): Synthesis and methylation of ribosomal RNA-precursors in nucleolus (3d 7)
- J. SEIFERT\* and J. VÁCHA (Czechoslovakia): Differences in the turnover of uridylic and cytidylic acids of rat liver cytoplasmic ribosomes (3d 8)
- Y. MOULÉ\* and A. SARASIN (France): Effect of aflatoxin B<sub>1</sub> on the biosynthesis of subribosomal particles in rat liver (3d 9)
- R. HONEYCUTT, M. MARGULIES\* and A. MICHAELS (USA): Probable synthesis of proteins of chloroplastic ribosomes on cytoplasmic ribosomes (3d 10)
- L. PANCHENKO\*, T. SYROTA and N. SHUPPE (USSR): Thermolability of 28S ribosomal RNA from the cells of *Drosophila melanogaster* (3d 11)
- J. DELAUNAY\*, F. CREUSOT and G. SCHAPIRA (France): Studies on the relationship between ribosomal proteins from mammals and other species (3d 12)
- A. PESTAÑA\* and H.C. PITOT (USA): The association of two acetylated proteins with 4S and 5S RNA in rat liver ribosomes (3d 13)
- E. GALANTE\*, R. NUCCA, E. SALA, A. VIOTTI and C. SOAVE (Italy): 5'Phosphates of 5-S RNA in relation to its role and biosynthesis (3d 14)
- C. NWIZY, G. YOSHIDA and H. MOWER\* (USA): Changes in ribosomal phosphorylation in rat liver during starvation and liver regeneration (3d 15)
- G. MARCHIS-MOUREN\*, J. MARVALDI and J. PICHON (France): Individual ribosomal protein pool size in *E. coli* cells (3d 16)
- K. HOSOKAWA\*, Y. KIHO, P. HELE and L.K. MIGITA (USA): Conformation and functional integrity of large ribosomal subunit (3d 17)
- C.J. MICHALSKI, M. MORRISON and B.H. SELLS\* (Canada and USA): Molecular morphology of ribosomes (3d 18)
- J. BROUWER\* and R.J. PLANTA (The Netherlands): Structural heterogeneity of *B. licheniformis* ribosomes (3d 19)
- A. SJÖQVIST\* and T. HULTIN (Sweden): Ribosomal destabilization by Mg<sup>2+</sup> (3d 20)
- P. NÄSLUND\* and T. HULTIN (Sweden): Binding characteristics of monovalent ions to mammalian ribosomes (3d 21)
- M. BELLÍ\*, A. ARACO and A. REALE SCAFATI (Italy): Structural aspects of interactions between ribosomes and cations in "*E. coli*" (3d 22)
- HEINRICH MATTHAEI\*, LOTHAR HAGENBERG, LUDWIG BISPINK and GÜNTER GASSEN (Fed. Rep. of Germany): Studies on codon-anticodon recognition and ribosomal tRNA binding sites (3d 23)
- G. FEY and H. KERSTEN\* (Fed. Rep. of Germany): On the mechanism of inactivation of ribosomes by tetracyclines in growing *E. coli* (3d 24)
- K. OGAWA, A. HIRASHIMA and A. KAJI\* (USA): Factor dependent release of ribosomes at the termination signal (3d 25)
- O. HENRIKSEN\* and E.S. MAXWELL (USA): Interaction of guanosine nucleotides with elongation factor 2 (3d 26)



- ANDRZEJ B. LEGOCKI (Poland): Properties of plant elongation factors (3d 27)
- AUDREY E.V. HASCHEMEYER\* and RITA W. MATHEWS (USA): Rapid kinetic measurement of protein synthesis in rat liver *in vivo* (3d 28)
- G. VASSART\* and J.E. DUMONT (Belgium): Identification of thyroglobulin synthesizing polysomes (3d 29)
- GERHARD WICHE, ARTHUR BLUME and CLAIRE NEURATH\* (USA): Neuroblastoma polyribosomal directed *in vitro* protein synthesis (3d 30)
- NÉSTOR F. GONZÁLEZ-CADAVID\* and FLOR HERRERA (Venezuela): Inhibition of translation in liver polysomes by substituted thiopseudoureas (3d 31)
- A. SARASIN\* and Y. MOULÉ (France): Action of aflatoxin B<sub>1</sub> and its derivatives on *in vitro* protein synthesis (3d 32)
- R. BRENTANI\*, L. WANG and B.B. TÔRRES (Brazil): *In vitro* amino acid incorporation by isolated microsomal membranes (3d 33)
- H. RISTOW, J. SALNIKOW and H. KLEINKAUF (Fed. Rep. of Germany): Studies on the biosynthesis of valinomycin *in vitro* (3d 34)
- H. KOISCHWITZ\*, J.-L. BAILEY and H. KLEINKAUF (Fed. Rep. of Germany): Peptide intermediates bound to subunits of gramicidin S synthetase (GSS 1) (3d 35)

## Section 3

## Biosynthesis of Nucleic Acids and Proteins

## Session 3e (poster): Regulatory Mechanisms

## Poster area 32

0900–1200

- BERNARD PERBAL and GUY HERVÉ\* (France): Correlative biosynthesis of aspartate transcarbamylase subunits (3e 1)
- M. KREIMER-BIRNBAUM\*, J.A. EDWARDS and P.A. RUSNAK (USA): Balanced synthesis of globin subunits possibly due to the coexistence of two independent mutations (3e 2)
- H.M. SCHULMAN\*, J. MARTINEZ-MEDELIN and R. SIDLOI (Canada): The role of ferri-hemoglobin in controlling globin synthesis (3e 3)
- ROBIN LEAKE\* and JACK GORSKI (USA): Studies on the nuclear binding of estrogen in rat uteri (3e 4)
- BILLY BAGGETT\*, ALICE C. DENNIS and BEVAN G. MILLER (USA): Early effects of progesterone on RNA metabolism in the uterus (3e 5)
- E.S. BOS, J. SCHIRM and M. GRUBER\* (The Netherlands): Hormonal induction of specific mRNA (3e 6)
- A.M. KAYE\*, R.J.B. KING, DALIA SÖMJEN and H.R. LINDNER (Israel): Stimulation of synthesis of chromosomal protein by estradiol-17 $\beta$  in rat uterus (3e 7)
- GENEVIEVE S. INCEFY\* and ATTALLAH KAPPAS (USA): Regulation of  $\delta$ -aminolevulinic synthetase activity in avian hepatocyte cultures by the steroid metabolite, etiocholanolone (3e 8)
- M.J. CROZIER\* and W.S. STEVELY (UK): Induction of  $\delta$ -aminolaevulinic acid synthetase by porphyrinogenic drugs (3e 9)
- A. BARNEA\*, M. LIEBERMAN, A. TSAFRIRI, S. BAUMINGER and H.R. LINDNER (Israel): Induction of ovum maturation and of steroidogenesis in the graafian follicle by luteinizing hormone: role of RNA and protein synthesis (3e 10)
- LIDIA D. WASILEWSKA\* and KAZIMIERZ KLECZKOWSKI (Poland): Effects of auxin and gibberellic acid on the nuclear RNA synthesis in maize (3e 11)
- R.W. WANNEMACHER, JR\*, R.S. PEKAREK, M.C. POWANDA, R.T. CURNOW and H.S. EARP (USA): A hormone-like mediator from polymorphonuclear leukocytes which can regulate transcriptional process in liver (3e 12)
- J. HOSHINO\*, B. ROBERT and H. KRÖGER (Fed. Rep. of Germany): Induction *in vivo* of rat liver L-serine pyruvate aminotransferase by dibutyl-cyclic AMP and its inhibition by cortisone (3e 13)
- CHUAH CHONG-CHENG (Malaysia): Role of cyclic AMP in the translation of tyrosine aminotransferase (3e 14)
- J. MAGER\* and H. GILOH (FREUDENBERG) (Israel): Inhibition of protein synthesis in lysates from ATP-depleted reticulocytes and its relief by cyclic 3'5'-AMP (3e 15)
- DANIEL MALAMUD\* and HUA-I CHIU (USA): Cyclic AMP-mediated transport of  $\alpha$ -aminoisobutyric acid preceding the stimulation of DNA synthesis (3e 16)
- D.E. RANNELS\* and H.E. MORGAN (USA): Effect of insulin and fatty substrates on ribosome cycle activity in cardiac muscle (3e 17)
- J. DICH (Denmark): Effects of insulin and streptozotocin on protein synthesis in isolated liver parenchymal cells (3e 18)
- M.N.D. GOSWAMI (France): Hormonal induction of a microsomal factor involved in translational mechanism of protein synthesis (3e 19)
- GUNTHER SCHUTZ\*, MIGUEL BEATO and PHILIP FEIGELSON (USA): m-RNA for hepatic tryptophan oxygenase (TO): its translation *in vitro* and control by glucocorticoids (3e 20)
- D.S. PRADHAN\*, S.B. KULKARNI, M.S. NETRAWALI and A. SREENIVASAN (India): Differential action of hydrocortisone at translational level in rat liver (3e 21)
- K.R. CUTRONEO (USA): Glucocorticoid mediated decrease of peptidyl proline hydroxylase, "proenzyme" and collagen synthesis (3e 22)
- J.P. HJORTH\* and J. TØNNES NIELSEN (Denmark): On the regulation mechanism for amylase syntheses (3e 23)
- H. KRÖGER\*, I. DONNER and G. SKIELLO (Fed. Rep. of Germany): Effect of small amounts of L-tryptophan on the induction of tryptophan oxygenase in rat liver (3e 24)
- S. ŠTRBÁŇOVÁ-NEČINOVÁ\* and O. SVOBODOVÁ (Czechoslovakia): Induced synthesis of L-asparaginase in *E. coli* (3e 25)
- A.J. COZZONE\* and P. DONINI (France, USA): Polysome turnover in amino acid starved *E. coli* (3e 26)
- R.E.H. WETTENHALL\* and D.R. LONDON (UK): Amino acid pools and the regulation of protein synthesis in stimulated lymphocytes (3e 27)
- ALEXANDRA VON DER DECKEN (Sweden): Cytoplasmic inhibitors of protein synthesis in rat liver (3e 28)
- G.A.J. GOODLAD and C.M. CLARK (UK): Studies on skeletal muscle polyribosome activity in tumour-bearing rats (3e 29)
- JOYCE ROTH and JAY S. ROTH\* (USA): Studies on the increase in TMP synthetase activity in Novikoff hepatoma treated with methotrexate (3e 30)
- ROBERT E. OLSON\*, STEVEN R. GOODMAN and JEREMIAH J. MORRISSEY (USA): Delayed prothrombin synthesis in the coumarin-resistant rat (3e 31)
- D. WERNER\* and G. MAIER (Fed. Rep. of Germany): Evidence for the production of a factor and its participation in the reduction of the rate of net protein biosynthesis in nongrowing ascites cells *in vitro* (3e 32)
- PIETRO VOLPE\* and TAMILLA EREMENKO (Italy): Polysomes during the HeLa cell life cycle (3e 33)
- GRACIELA C. CANDELAS\* and SEYMOUR GELFANT (USA): Translational cycle in the mitotic activity of a slow renewal tissue (3e 34)
- C. GREGG\*, D. SMITH, D. OTT, J. MALANIFY, B. MCINTEER, N. MATWIYOFF and D. NEUBERT (USA, Fed. Rep. of Germany): Incorporation of carbon-13 into fetal and maternal protein and nucleic acid during various intervals of pregnancy in mice (3e 35)
- JEFFREY DIAMOND\*, JEROME A. SCHIFF and ALBERT KELLNER (USA): Synthesis of photoreactivating enzyme by *Euglena*: response to light (3e 36)
- J.W. BRADBEER\*, O. WARA-ASWAPATI and G. ARRON (UK): The synthesis of some chloroplast proteins (3e 37)
- STEFAN IVANKO\* and ALEXANDER BRANYIK (Czechoslovakia): The synthesis of different protein fractions during grain development of *Zea mays* (3e 38)
- L. WHEELDON\*, A.C. DIANOUX and M. BOF (France): Products of mitochondrial protein synthesis *in vitro* (3e 39)
- RONALD A. BUTOW\* and ROD KELLEMS (USA): Cytoplasmic 80S ribosomes associated with yeast mitochondria (3e 40)
- J. CHRISTMAN\*, J. WACHSMAN, L. OSSOWSKI, H. KLETT, C. WHALEN and G. ACS (USA): Purification of a fibrinolytic factor unique to transformed cells (3e 41)