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UNIVERSITY OF MISSOURI

AGRICULTURAL EXPERIMENT STATION

STADLER GENETICS SYMPOSIA

Volume 7

Edited by

G.P. Rédei

Columbia, Missouri 1975

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AGRICULTURAL EXPERIMENT STATION

STADLER GENETICS SYMPOSIA

Volume 7

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Columbia, Missouri 1975

This volume is dedicated to

Dr. JOHN H. LONGWELL
Dean Emeritus of the College of Agriculture

The Genetics Faculty wishes you the best on your 80th birthday. We are happy to remember that the development of Genetics on this campus owes much of its success to you. We express our gratitude for the encouragement and support. Although no longer the Director of Special Studies and Progress, in our minds and hearts you remain a guardian of scholarship and progress.

Dean and Mrs. John H. Longwell at the 7th Symposium

PREFACE

Attendance at the 7th Stadler Genetics Symposium has exceeded previous ones. Approximately 230 people participated in the various programs held on April 18-19, 1975. Of these, 97 were out-of-town guests representing 19 states and three foreign countries.

The Genetics Faculty of the University of Missouri is especially pleased that many of its former students use this ocassion to visit with us. It is satisfying to see many of our guests coming to the Symposia year after year; several of our out-of-state colleagues have attended all seven symposia. The presence of Dr. Roger L. Mitchell, Vice-President of Kansas State University, and his wife Joyce was a pleasure. Dr. Mitchell provided invaluable support to the Symposia during his tenure on our campus.

The text of the lectures are reaching now many geneticists world-wide. The Proceedings have been reviewed by several international journals and abstracting services; their comments indicate that the Stadler Genetics Symposia are contributing to the progress of genetical research and education. The organizers of the Symposia are most pleased to learn that the Proceedings are being used in many schools around the world as a major or supplemental text in their advanced courses in genetics.

As in the past, we would like to better meet the needs and interests of as many of our colleagues as possible. Suggestions for improvement are most welcome.

The 8th Symposium is scheduled for April 9-10, 1976. We hope you will come and help us plan the program for the 9th one.

These Symposia are sponsored by the Department of Agronomy (College of Agriculture), the Division of Biological Science (College of Arts and Sciences), the Extension Division, the School of Medicine, and the Graduate School of the University of Missouri-Columbia. Their generous support is gratefully acknowledged by the Genetics Faculty.

N 3315

PROGRAM OF THE 7th STADLER GENETICS SYMPOSIUM

FRIDAY, APRIL 18, 1975

12:30 P. M. REGISTRATION — *CURTIS HALL*

1:00 OPEN HOUSE

J. F. Lasley — *ANIMAL HUSBANDRY*

J. B. Beckett, A. B. Burdick, A. E. Longley, E. H. Coe, Jr., G. G. Doyle, R. L. Larson, W. Q. Loegering, A. E. Longley, M. G. Neuffer, G. P. Redei, E. R. Sears, L. M. Sears, M. S. Zuber — *CURTIS HALL*

R. P. Breitenbach, D. J. Farish — *LEFEVRE HALL*

G. F. Krause — *MATHEMATICS*

C. E. Brooke, H. S. Goldberg, J. T. Parisi, E. Siegel, P. K. Srivastava — *MEDICAL SCI.*

A. B. Stephenson — *POULTRY HUSBANDRY*

D. E. Metter — *STEWART HALL*

P. Agris, J. E. Carrel, J. David, D. D. Dunn, A. Eisenstark, C. S. Gowans, J. A. Grunau, A. Harrison, G. Y. Kikudome, F. Landa, H. A. McQuade, D. Mertz, C. D. Miles, W. F. Sheridan, L. Sherman, R. Wang, J. M. Wood, J. Wyche — *TUCKER HALL*

V. D. Luedders, J. M. Poehlman, W. J. Sappenfield, D. T. Sechler, D. A. Sleper, O. P. Sehgal — *WATERS HALL*

2:00 **DISCUSSION GROUPS**

GENETIC MATERIAL - Hosts: E. CHARGAFF, R. B. HELLING, N. SUEOKA, A. EISENSTARK, C. S. GOWANS, J. WYCHE

EVOLUTION — Hosts: R. FLAVELL, A. C. WILSON, D. DUNN, E. R. SEARS and P. K. SRIVASTAVA

PLANT CELLS — Hosts: O. L. GAMBORG, C. D. MILES, E. H. COE, Jr., G. Y. KIKUDOME, D. RANDALL, W. F. SHERIDAN

4:00 COFFEE — Alumni Lounge, Memorial Union

4:30 **FORMAL SESSIONS**
Welcome: A. Eisenstark (University of Missouri)
Introduction

4:40 **ERWIN CHARGAFF** (Columbia University-New York)
IMPACT OF BIOCHEMISTRY ON GENETICS

6:00 DINNER — Available in the Memorial Union

7:00 SMOKER — Alumni Lounge, Memorial Union

SATURDAY, April 19, 1975

7:30 A. M. LATE REGISTRATION — Memorial Union
LECTURES — Memorial Union Auditorium

8:20 Welcome: E. R. Sears (University of Missouri)

8:30 Chairman: R. A. Gilmore (Southern Illinois Univ.)
ROBERT B. HELLING (University of Michigan-Ann Arbor)
EUKARYOTIC GENES IN PROKARYOTIC CELLS

9:15 Chairman: R. C. King (Northwestern Univ. - Evanston)
O. L. GAMBORG (Nat. Res. Council-Canada)
NEW ADVANCES IN SOMATIC CELL HYBRIDIZATION IN PLANTS

10:00 COFFEE

10:30 Chairman: Melvin Epp (Monsanto-St. Louis)
RICHARD FLAVELL (Plant Breed. Inst.-Cambridge, U.K.)
GENOME ORGANIZATION IN HIGHER PLANTS

11:15 DISCUSSION of the morning papers

12:00 LUNCH Available in the Hawthorne Room, Union

1:30 AFTERNOON SESSION — Memorial Union Auditorium
Convener: A. F. Yanders (University of Missouri)
Chairman: David Apirion (Washington Univ.-St. Louis)
NOBORU SUEOKA (University of Colorado-Boulder)
CHROMOSOME REPLICATION AND GENE EXPRESSION IN BACILLUS SUBTILIS

2:15 Chairman: Thad H. Pittenger (Kansas State-Manhattan)
C. D. MILES (University of Missouri-Columbia)
GENETIC ANALYSIS OF PHOTOSYNTHESIS

3:00 COFFEE

3:30 Chairman: David Schlessinger (Washington U.-St. Louis)
A. C. WILSON (University of California-Berkeley)
RELATIVE RATES OF EVOLUTION OF ORGANISMS AND GENES

4:15 Chairman: H. D. Stalker (Washington U.-St. Louis)
G. B. JOHNSON (Washington University-St. Louis)
ENZYME POLYMORPHISM AND ADAPTATION

4:35 DISCUSSION of the afternoon papers

6:45 BANQUET — Memorial Union Ball Room
Master of Ceremonies: H. S. Goldberg (Univ. Mo.)
Speaker: **DEAN E. METTER** (University of Missouri)
NATURAL SELECTION AND ADAPTIVE RESEMBLANCES
Entertainment: **DR. RICHARD HILLS** WITH THE **FACULTY WOODWIND TRIO**

Stadler Genetics Symposia

Missouri Agricultural Experiment Station, Columbia MO 65201 USA

VOLUME 7 (1975)

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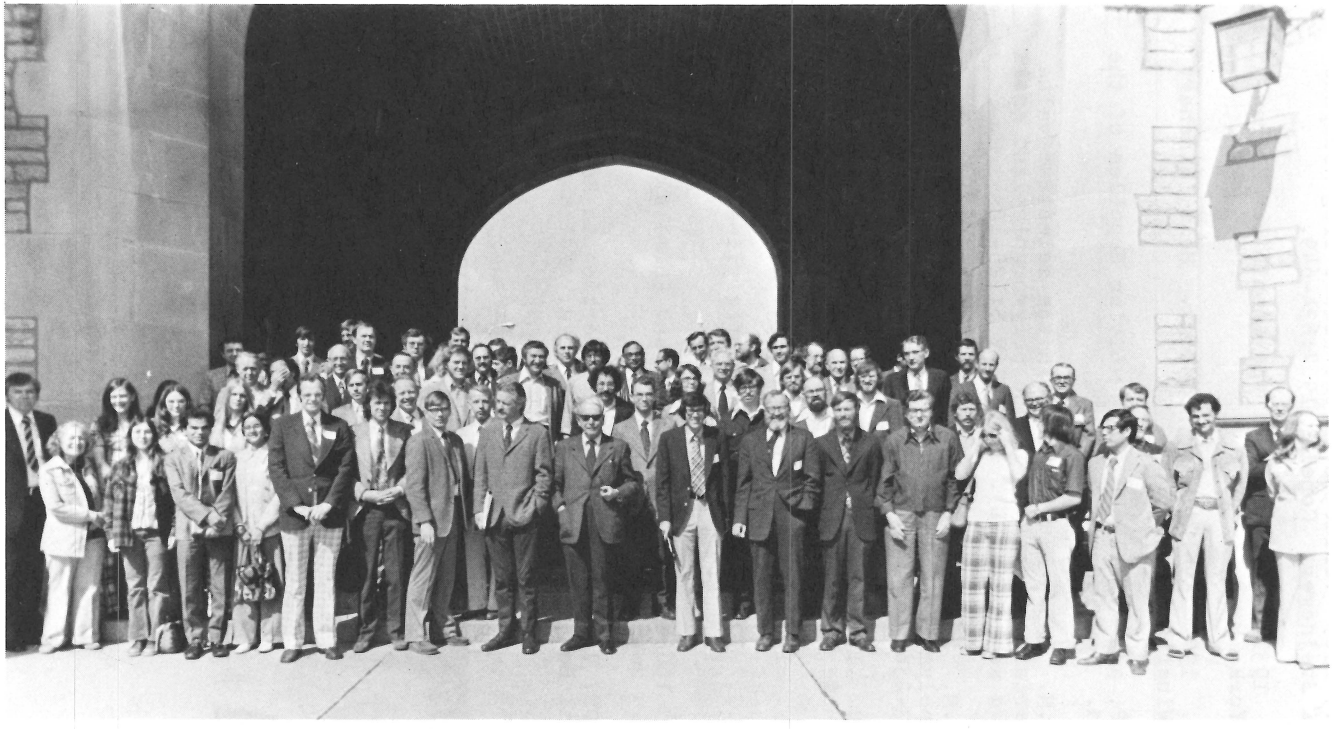

Participants of the 7th Stadler Symposium in front of the Student Union
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