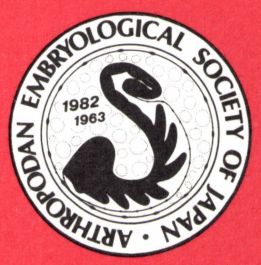
Recent Advances in INSECT EMBRYOLOGY in Japan and Poland

Edited by
H. ANDO
and
Cz. JURA



Recent Advances in INSECT EMBRYOLOGY in Japan and Poland

Edited by
H. ANDO
and
CZ. JURA

Arthropodan Embryological Society of Japan

c/o Sugadaira Montane Research Center
University of Tsukuba
Sanada, Nagano 386-22, Japan

First published 1987

ISEBU Co. Ltd.

Amakubo 2-11-20, Sakura-mura
Tsukuba Science City
Ibaraki 305, Japan

Contents

Preface

This volume represents a new kind of publication, which has been not until now practiced. It surveys various aspects of insect embryology explored during past few months by embryologists of Japan and Poland, the two contries recently most active in studying of normal insect embryogenesis. The main point of veiw, taken in this book, is that science is today collective task. Nothing can be done in science single-handed. Today scientists must cooperate and for this must have fora for discussions and changing ideas. Since approach of insect embryology and skill of their workers have been similar in Japan and Poland the book will give opportunity to confront informations and ideas.

In last years, the study of insect embryogenesis has tendency for selection of particular insect objects and particular problems. Publication containing labors on different insect species and different developmental problems, showing amazing variability of insects, may add momentum for more wide exploration of different insect groups by workers using experimental, biochemical or genetical methods.

Finally, the motivation for producing this book is to encourage international cooperation, to establish more close relationship between embryologists of different countries. The editors of the book would like to see this international spirit to be continued and propagated.

We deeply appreciate the efforts of our Japanese and Polish colleagues who contributed to this volume, and we also wish to express our hearty thanks to Drs. Kazuo Haga and Ryuichiro Machida of University of Tsukuba for their untiring help to publish this book. Publication of this book was financially supported by the Grant-in-Aid for Publication of Scientific Research Result from the Japanese Ministry of Education, Science and Culture and we deeply appreciate. Technical help by ISEBU Co. Ltd. is also greatly acknowledged.

January, 1987

Hiroshi ANDO
Czesław JURA

List of Contributors

H. Ando	Sugadaira Montane Research Center, University of Tsukuba
S. Biliński	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
N. Fujiwara	Department of Oral Anatomy II, School of Dentisty, Iwate Medical University
J. Godula	Department of Systematic Zoology, Jagiellonian University
S. Hashimoto	Agricultural Administration Department, Iwate Prefectural Government
Cz. Jura	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
T. Kishimoto	Kansai Engineering and Environmental Center
E. Kisiel	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
H. Kobayashi	Shiojiri Municipal Junior High School
Yo. Kobayashi	Seikatsu-Gakuen High School
Yu. Kobayashi	Department of Biology, Saitama Medical School
M. K. Kościelska	Department of Animal Systematics and Zoogeography, Institute of Zoology, Wrocław University
B. Kościelski	Department of Systematic Zoology, Institute of Zoology, Wrocław University
A. Krzysztofowicz	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
R. Machida	Sugadaira Montane Research Center, University of Tsukuba
K. Miya	Morioka, Iwate
K. Miyakawa	Kawagoe, Saitama
A. Ogorzałek	Department of General Zoology, Institute of Zoology, Wrocław University
E. Rościszewska	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
S. Shimizu	Sugadaira Montane Research Center, University of Tsukuba

N. Suzuki	Japan Women's College of Physical Education
T. Szklarzewicz	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
M. Tanaka	Kanô High School
W. Tylek	Department of Systematic Zoology, Institute of Zoology, Jagiellonian University
W. Witaliński	Department of Comparative Anatomy, Institute of Zoology, Jagiellonian University