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LEUKEMIA RESEARCH 1972: AN INTRODUCTION¹ A SYMPOSIUM

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This Symposium, presented by the Medical Sciences Section of The Ohio Academy of Science during the 1972 annual meeting at Marietta College, achieved one major goal of its organizers. It brought together five outstanding researchers representing three distinct approaches to a common goal: the cure of leukemia. The participants and audience gained much from the interaction of these differing viewpoints, although the attendance was smaller than had been hoped for. The editors of The Ohio Journal of Science have greatly increased the value of the Symposium by graciously agreeing to publish, as a group, three papers resulting from the meeting and the abstract of a fourth presentation. Unfortunately it was not possible to include the fifth paper.

A copy of the symposium program, as given in the Academy annual meeting program follows.

MEDICAL SCIENCES SECTION

OHIO ACADEMY OF SCIENCE

MARIETTA COLLEGE

April 21, 1972

SYMPOSIUM: LEUKEMIA RESEARCH 1972

Introduction	James D. Graham	<i>Bowling Green State Univ.</i>
Reverse Transcriptase in Leukemia Viruses and Cells (<i>paper not included here</i>)	Robert C. Gallo	<i>National Cancer Institute</i>
Immunologic Aspects of Leukemia Research	David S. Yohn	<i>Ohio State University</i>
Cell Kinetics in Acute Leukemia	Alvin M. Mauer and Beatrice C. Lampkin	<i>University of Cincinnati</i>
Alterations of Developmental Control in Myelogenous Leukemia	James D. Graham	<i>Bowling Green State Univ.</i>
Recent Advances in the Treatment and Control of the Leukemias and Lymphomata (<i>abstract only included here</i>)	Charles A. Doan	<i>Ohio State University</i>

¹Symposium manuscripts received October 10, 1972.

The overall tone of the Symposium was highly optimistic and the findings presented and reviewed were both challenging and exciting. Knowledge of leukemia has increased voluminously in the past decade, including the first real evidence that human leukemia is caused by a virus. Now in 1972 leukemia research has matured into a three-pronged study delving into (1) the cause of the disease, (2) the mechanism through which symptoms are produced, and (3) the improvement of clinical treatment of leukemia patients. All three approaches are vital to the eradication of the leukemias and their threat to human life.

The virus suspected of causing leukemia in humans is of the RNA-type and its genome may be incorporated into the genetic material of the host cell, thus making it difficult to vaccinate against or to destroy by other means. Nevertheless, the likelihood of a viral origin of the leukemias gives new direction to other avenues of research. Among these are the study of the "reverse transcriptase" enzymes, used for the incorporation of the genetic information of the virus into the chromosomes of the host cell. The work on leukemia viruses and "reverse transcriptases" was brilliantly described by Gallo during the Symposium and may be reviewed in his many recent publications. Another major area is the study of tumor and viral antigens, a study important both with the goal of identifying "suspected cancer viruses," and with the possibility of an immunologic approach to the cure of leukemia. The immunology of leukemia is reviewed by Yohn in his paper appearing in this published symposium.

Another avenue of research is the study of the way the causative agent (virus) produces the clinical symptoms of myelogenous or lymphocytic leukemia. The study of normal white-blood-cell development (leukopoiesis) is fraught with great complexities. The alterations of leukopoiesis during the various leukemias are even more difficult to determine. Perhaps because of this, the control of blood-cell development is a fascinating area of research. One of the most intriguing segments of this problem is that of the kinetics of human leukemic cells. How are the rates of proliferation, maturation and destruction altered in the several types of leukemia? The modern understanding of this question is described in the paper by Mauer and Lampkin, who are among the foremost authorities on the kinetics of leukemic cells.

The control of proliferation and differentiation of leukocytes may be the cause of the altered kinetics observed in the leukemic patient. Although the control mechanisms of human blood-cell development are still far from understood, several substances appearing to regulate segments of leukocyte development have been isolated. A description of the current knowledge of the development of granulocytic leukocytes (granulopoiesis) and recent studies on the effects of rat granulopoietic control factors on murine myelogenous leukemia is presented by Graham in the third full paper in this published symposium.

Although the basic research into the cause and nature of the leukemias has progressed dramatically in recent years, as is well described in the first four papers in the Symposium, today's hope and encouragement for the leukemia patient lies in the exciting advancements in modern therapeutic means. Dr. Charles Doan, dean emeritus of The Ohio State University College of Medicine, concluded the Symposium with a dramatic reminder that, although the cure of leukemia lies in the future, drug and radiation therapy have made possible survival for many of today's patients. An abstract of his remarks concludes the collection of published symposium materials.

Leukemia Research in 1972 can perhaps best be summarized with the thought that both the Present and the Future are bright in cancer research. The symposium brought word both of major breakthroughs on the near horizon and of hope and relief available today. It is to be hoped that the following papers will serve both to encourage the lay reader that great progress is being made in cancer research and to stimulate young people entering the field of medical science in the knowledge that much remains to be done.