CLASS IV

Nominated by a Voluntary Nominating Group

ROBERT C. GALLO

Gallo has made brilliant discoveries in human T cell propagation, and the first human retroviruses that cause T cell proliferation and T cell destruction (leukemia and AIDS). His research on the molecular biology and immunology of human retroviruses is critical to our understanding and control of AIDS, an illness that must be the greatest infectious disease threat to mankind in the present century.

Born March 3, 1937, in Waterbury, Connecticut. B.A., Providence College (Summa Cum Laude) 1959; M.D., Jefferson Medical College, 1963; clinical clerkship, Yale University, 1962-63; internship and residency (medicine), University of Chicago, 1963-65. Clinical associate, Medical Branch, 1965-68; senior investigator, Tumor Cell Biology Branch, 1968-69; head, Section of Cell Control Mechanisms, Tumor Cell Biology Branch, 1969-72; CHIEF, LABORATORY OF TUMOR BIOLOGY, NATIONAL CANCER INSTITUTE, 1972--. Member: American Association for Cancer Research; American Society of Clinical Investigators; Leukemia Society of America (1958); Scottish Royal College of Physicians and Surgeons (honorary member). Hononary Degrees: D.Sc., Thomas Jefferson University, 1984; D.Sc., University of Rochester, School of Medicine, 1985; Ph.D., Tel-Aviv University, 1986; Ph.D., Catholic University, Louvain, Belgium, 1987. Recipient: First Damashek Award, American Society of Hematology, 1974; Ciba-Geigy Award for Research in Biomedical Sciences, 1977-78; Albert Lasker Medical Research Award (1982, 1986); First Otto Herz Memorial Lectureship and Award for Basic Research on the Malignant Processes, Tel-Aviv University, 1982; Griffuel Prize, Association for Research of Cancer, 1983; American Cancer Society's Medal of Honor, 1983; Charles S. Mott Prize, General Motors, 1984; Distinguished Service Medal of U.S.P.H.S. Commissioned Corps, 1984; Lila Gruber Cancer Research Award, American Association of Dermatology, 1984; Armand Hammer Prize for Cancer Research, 1985; Rabbi Shai Shacknai Prize for Immunology, Hebrew University of Jerusalem, 1985; Gairdner Foundation International Award for Basic Biomedical Research, 1987.

Following important early work on reverse transcriptase and human cellular DNA polymerase, Gallo and coworkers developed a technology for long-term growth of leukocytes that permitted the evolvement of major new concepts and applications in cellular immunology. Two examples are: (a) the development of the first myeloid human cell line, HL-60, and (b) the first long-term replication of mature human T cells based on his discovery of Interleukin 2 (IL-2). Having made this initial breakthrough, Gallo and coworkers discovered and established the etiologic relationship to human disease of the first known human retrovirus, HTLV-1, that causes human T cell leukemia/lymphoma. In 1981, Gallo et al. discovered a related human retrovirus (HTLV-II) that they associated with hairy cell leukemia. Following these studies, Gallo and associates, and Montagnier independently discovered the HTLV-III/LAV agents (now called HIV) that cause AIDS and ARC (AIDS-related complex). Gallo and coworkers provided definitive proof for the etiologic cause of AIDS by the HIV viruses, and were the first (a) to

propagate the virus in a permanent cell line, (b) to obtain multiple viral isolates, (c) to develop a diagnostic blood test for infection, (d) to discover HIV heterogeneity, (e) to develop any specific reagent (heterologous antisera and antibodies against HIV), for differentiating and typing HIV isolates, (f) to find heterosexual transmission, (g) to find HIV in human brain, saliva, and semen, (h) to clone HIV molecularly, (i) to express HIV genes by recombinant technology, and (j) to transfect, successfully, the HIV genes into cells. In recent studies, Gallo and coworkers have created an understanding of molecular pathogenesis of these diseases that has opened the door to rational vaccine and chemotherapeutic approaches in control. Most recently, Gallo and colleagues have discovered a new human B cell lymphotropic virus, HBLV, that infects B cells and that is associated with lymphoproliferative disease in human beings.

PRINCIPAL CONTRIBUTIONS TO SCIENCE
By ROBERT C. GALLO

1972 (With M. G. Sarngadharan, P. S. Sarin and M. S. Reitz) Reverse transcriptase activity of human acute leukemic cells: Purification of the enzyme, response to AMV 70S RNA, and characterization of the DNA product. Nature New Biol. 240: 67-72.

1976 (With D. A. Morgan and F. W. Ruscetti) Selective in vitro growth of T-lymphocytes from normal human bone marrows. Science 193: 1007-08.

1980 (With B. J. Poiesz, F. W. Ruscetti, A. F. Gazdar, P. A. Bunn and J. D. Minna) Detection and isolation of type-C retrovirus particles from fresh and cultured lymphocytes of a patient with cutaneous T cell lymphoma. Proc. Natl. Acad. Sci. USA 77: 7415-19.

1980 (With J. W. Mier) Purification and some characteristics of human T cell growth factor from phytohemagglutinin-stimulated lymphocyte conditioned media. Proc. Natl. Acad. Sci. USA 77: 6134-38.

1982 (With V. S. Kalyanaraman, M. G. Sarngadharan, Y. Nakao, Y. Ito and T. Aoki) Natural antibodies to the structural core protein (p24) of the human T cell leukemia (lymphoma) retrovirus found in sera of leukemia patients in Japan. Proc. Natl. Acad. Sci. USA 79: 1653-57.

1982 (With V. S. Kalyanaraman, M. G. Sarngadharan, M. Robert-Guroff, I. Miyoshi, D. Blayney and D. Golde) A new subtype of human T cell leukemia virus (HTLV-II) associated with a T cell variant of hairy cell leukemia. Science 218: 571-73.

1982 (With M. Robert-Guroff, Y. Nakao, K. Notake, Y. Ito and A. Sliski) Natural antibodies to human retrovirus HTLV in a cluster of Japanese patients with adult T cell leukemia. Science 215: 975-78.

1984 (With M. Popovic, M. G. Sarngadharan and E. Read) Detection, isolation, and continuous production of cytopathic retroviruses (HTLV-III) from patients with AIDS and pre-AIDS. Science 224: 497-500.

1984 (With S. Z. Slahuddin, M. Popovic, G. M. Shearer, M. Kaplan, B. F. Haynes, T. J. Palker, R. Redfield, J. Oleske, B. Safai, G. White, P. Foster and P. D. Markham) Frequent detection and isolation of cytopathic retroviruses (HTLV-III) from patients with AIDS and at risk for AIDS. Science 224: 500-03.

1984 (With M. G. Sarngadharan, M. Popovic, L. Bruch and J. Schupbach) Antibodies reactive with human T-lymphotropic retroviruses (HTLV-III) in the serum of patients with AIDS. Science 224: 506-08.

1986 (With S. Z. Salahuddine, D. V. Ablashi, P. D. Markham, S. F. Josephs, S. Sturzenegger, M. Kaplan, G. Halligan, P. Biberfield, F. Wong-Staal and B. Kramarsky) Isolation of a new virus, HBLV, in patients with lymphoproliferative disorders. Science 234: 596-601.

1987 The chronology of AIDS research. Statement by Gallo and Montagnier. Nature 326: 435-36.