

Cancer Research

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PART 1 OF TWO PARTS

ALTERIVS NON SIT. QVI SVVS ESSE POTEST



THEOPHRASTI AB HOHENHEIM.
EFFIGIES SVÆ. ETATIS 45



IOHANNES BAPTISTA
AB HELLMONT.

Erster Theil
Der grossen Wundartz-
ney desz weibberhümpften / bewerten / vnd
erfahrenen Theophrasti Paracelsi von Hohenheim
der Leib vnd Wundartzney Doctores / von allen Wunden
Stich / Schüss / Brendt / Thierbiss / Beinbrüch / Was nemlich die gangg / Heil-
lung / Zufell vnd Gebrechen / gegenwertig vnd zukünftig / in sich verweist
Aus rechtem grundt vnd erfahrung treulich an Tag gebend vnd auß
seinen selbst geschriebnen Exemplar wider auffo new
in Truck verfertigt.



Mit Röm. Keis. Majestat Freyheit nicht
nachzdruckten. Späus für Aug 1619

Becton Dickinson FACS Systems ADVANCES IN IMMUNOLOGY

The Fluorescence Activated Cell Sorter (FACS) has become a powerful means of identifying and separating cells and cell constituents according to distinctive properties of **FLUORESCENCE** and **SIZE**. FACS makes possible multi-parameter measurement of individual cells, providing the distribution of these measurements in a sample. Evaluation against operator-selected criteria, at rates to 5,000 cells per second, forms the basis for physical separation of viable subpopulations. FACS measurements have been documented for sensitivity to as few as 3,000 fluorescent molecules per cell. Light-scatter measurements are sensitive to particles as small as 0.3 microns in diameter, and can be used to detect viability, without staining, in homogenous populations such as lymphocytes. FACS Systems are accepted as the standard of comparison for quality, performance and reliability, and are in daily use in top laboratories

worldwide. Following is a brief view of recent FACS advances:

Detection of Neoplastic Cells

Use of specific antibodies to tumor cell-surface antigens, in conjunction with FACS analysis, represents a promising new approach to phenotyping the surface of neoplastic cells and differentiating them from normal cells in mixed populations. Lymphocytes from peripheral blood have been stained with fluorescein-conjugated anti-light chain reagents and analyzed with FACS for the presence of monoclonal neoplastic B cells.

Cell Surface Changes During T-Cell Maturation

FACS examination of Lyt-1 and 2 expression on murine T cells has been facilitated by use of monoclonal antibodies to Thy-1 and Lyt antigens. These antibodies have been conjugated with

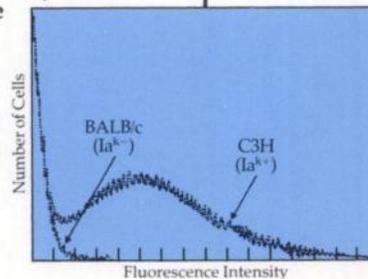
fluorescein and used in quantitative cell-by-cell FACS assays of determinant expression. Data are indicative of several surface changes during T-cell maturation.

Sorting of Bone Marrow Cells

Mouse bone marrow cells have been analyzed and sorted for biochemical studies of cellular differentiation in the hemopoietic system. Multi-parameter sorting—based on autofluorescence, 90° and forward angle light scatter—has provided marked enrichment of neutrophils (97%), lymphocytes (95%) and immature myeloid cells (89%).

For additional information, including an extensive bibliography, call or write

Becton Dickinson FACS Systems.

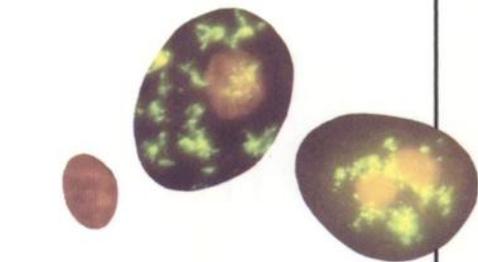


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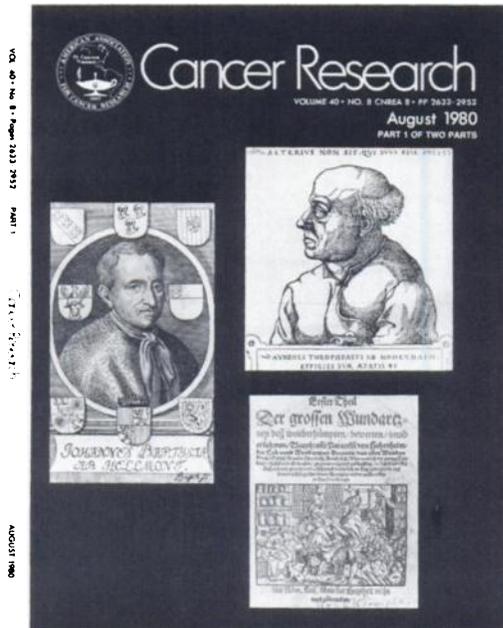
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COVER LEGEND



Cancer as an excess of Black Bile, one of the Four Humors, was the prevailing theory for two millenia after Hippocrates. In 1527, as a medical counterpart of the Reformation, Aureolus Theophrastus Bombastus von Hohenheim—better known as Paracelsus (1493–1541)—burned the works of Galen and Avicenna in the streets of Basel, ushering in a century of iatrochemical theory of medicine, in which all vital

phenomena, including disease, were considered chemical in essence. According to Walter Pagel, Paracelsus accused any corrosive and styptic internal “flow” as being potentially carcinogenic; cancer also could be “arsenical” (*morbus arsenicalis*) and hence cured by arsenic, just as “poison cures poison” (see Pagel, W. Paracelsus. Basel: S. Karger AG, 1958).

The Belgian mystic, Jean Baptiste van Helmont (1577–1644), the pinnacle of the iatrochemical school, believed that body processes were regulated by special archæi or spirits (Blas), through special chemical ferments (Gas). Van Helmont emphasized trauma in the causation of cancer of the breast but retained belief in endogenous poisons as well (see Pagel, W. Religious and Philosophical Aspects of van Helmont’s Science and Medicine. Bull. Hist. Med., Supl. 2, 1944).

The two centuries of iatrochemical theories regarding cancer were gradually replaced by the concepts of lymph stasis and of localized origins that encouraged wider surgical extirpation.

We are indebted to Professor Walter Pagel for information and to the National Library of Medicine for the illustrations. The portrait of Paracelsus (*circa* 1538), by Augustin Hirschvogel, is accepted as authentic by Pagel. The woodcut on the transportation of sick and wounded is the title page of Paracelsus’ *Der grossen Wundartzney . . .* Franckfurt am Mayn, 1536.

M. B. S.