UNIVERSITY OF PENNSYLVANIA Abramson Cancer Center and The Department of Microbiology presents The Henle Symposium on Viral Oncogenesis



Recognition of Viruses as causative agents or major effectors in cellular transformation

20% Human Cancers - Virus associated Essential for the genesis of some cancers including those related to HIV or Transplant Associated Malignancies

#### Viruses and Human Cancer

Hepatitis B Virus Hepatitis C Virus

Polyoma Viruse Human Papilloma Virus

Epstein Barr Virus Kaposi's Sarcoma Herpesvirus

HTLV-1 HTLV-2 Hepatocellular Carcinoma

Head and neck cancers Cervical Carcinomas Medulloblastomas Merkel Cell Carcinomas

Hodgkin's Lymphomas Burkitt's Lymphomas Nasopharyngeal Carcinomas Gastric Carcinomas Pleural Effusion Lymphomas Kaposi's Sarcoma Adult T-Cell Leukemia/Lymphomas (ATL) Hairy cell Lymphomas

### Werner And Gertrude Henle

#### Pioneers in Tumor Virology

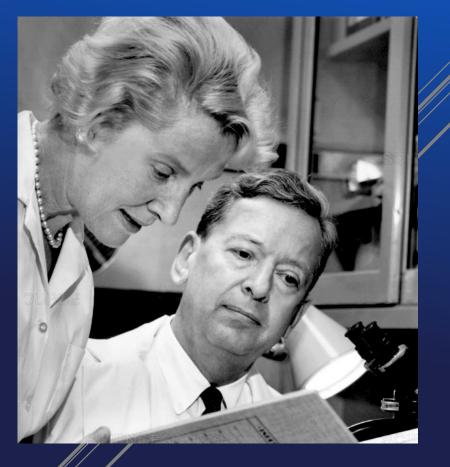
1950's Denis Burkitt Studied Distribution of Cancer in Africa.

1962 Burkitt stated (Novel thought at the time) that this cancer of the jaw was probably caused by a biological agent (a virus) and it may be transmitted by a mosquito vector.

Epstein and Barr cultured cancerous B cells into permanent cell lines.

Werner and Gertrude developed an antibody test against Burkitt's Lymphoma cells w/o reactivity to normal B cells.

Most of the population had the antibody but Burkitt's patients had IOX greater titer.



## EBV As The Etiological Agent Of Infectious Mononucleosis

Infectious Mononucleosis - A self-limiting lymphoproliferative disease. Transmission by oral contact – Replicates initially in the epithelial cells of the oropharynx and then infects B cells.

- Infection of B cells results in Immortalization.

Research Technician E.H. in the Henle's Laboratory at CHOP donated peripheral blood leukocytes in January 1967

- The resulting cells failed to grow out in culture

On August 10, 1967 E.H contracted Infectious Mononucleosis On August 16, 1967 E.H. returned to work. Leukocytes taken from her was cultured as before resulting in proliferation.

Immunofluorescence analysis detected EBV nuclear antigen

#### Werner And Gertrude Henle

#### <u>Werner Henle 1910-1987</u>

Son of a surgeon and grandson of Jacob Henle (anatomist-histologist) was of Jewish decent. Born in Dortmund, Germany (classified as 25% non-Aryan) University of Munich 1929-1930 Transferred to University of Heidelberg 1930 Completing his Medical Degree in 1934. Accepted a Position at UPenn in 1936

<u>Gertrude Szpingier (Henle) 1912-2006</u> Born in Mannheim, Germany 1912 Completed her Medical Degree at the University of Heidelberg in 1936. Joined Werner in 1937 at UPenn.

#### Professional Contributions

- I. Demonstrated effectiveness of an influenza vaccine (1943)
- 2. Development of a rapid test for diagnosing mumps
- 3. Collaborated with Dr. Joseph Stokes to demonstrate that gamma globulin can be utilized to inhibit the development of infectious hepatitis
- 4. Contributed to understanding the states of Viral Infection; Latency, Persistence and Viral Interference
- 5. Demonstrated the causal relationship between EBV and Infectious mononucleosis.
- 6. Supporting evidence linking EBV to Burkitt's lymphoma and Masopharyngeal Carcinoma.
- 7. Hodgkin's Disease, X-Linked Lymphoproliferative Disease The Henle's retired from the University of Penn faculty in 1982

Werner's died in 1987 (Gertrude concluded their work after his death). Gertrude died in 2006 in Pennsylvania.

#### HONORS, AWARDS MEMBERSHIPS (WERNER HENLE)

Member, WHO expert advisory panel on Viral Diseases. Consultant to the Surgeon General, USPHS Consultant to the Surgeon General, Armed Forces Chairman, Epidemiology, Hepatitis group, US Armed Forces Consultant, Virus Cancer Program, National Cancer Institute Scientific Advisory Board, Leukemia Society of America Member, National Cancer Advisory Board Member, General Motors Awards Assembly Bristol-Meyers Award for Distinguished Achievement in Cancer Research Robert Koch-Medaille (One of Germany's Highest Honors) Scientific Award from the Philadelphia Chapter of the ACS Children's Hospital's Gold Medal Award

### Special Thanks

Abramson Cancer Center Dr. Craig Thompson, Director Dr. Jim Alwine Barbara Vance Jennifer McGuire

Department of Microbiology Dr. Robert Doms, Chair Margaret Kimble and Patsy Hooker

#### Previous Henle Lectures

2003 - Peter Howley (Harvard Medical School).
2004 - Elliott Kieff (Harvard Medical School).
2006 - Harald zurHausen (German Cancer Center).
2007 - Donald Ganem (UC San Francisco)
2008 - Arnold Levine (Princeton University)
2008 - Carol Prives (Columbia University)



What Life Was Like Before 30 Years In Science

# **THANK YOU**