The Department of Microbiology presents
The Henle Symposium on
Viral Oncogenesis
Background

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

<table>
<thead>
<tr>
<th>Hepatitis B Virus</th>
<th>Hepatocellular Carcinoma</th>
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<tr>
<td>Hepatitis C Virus</td>
<td>Head and neck cancers</td>
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<td>Cervical Carcinomas</td>
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<td>Polyoma Virus</td>
<td>Medulloblastomas</td>
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<td>Human Papilloma Virus</td>
<td>Merkel Cell Carcinomas</td>
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<td>Epstein Barr Virus</td>
<td>Hodgkin’s Lymphomas</td>
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<td>Kaposi’s Sarcoma Herpesvirus</td>
<td>Burkitt’s Lymphomas</td>
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<td>Nasopharyngeal Carcinomas</td>
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<td>Gastric Carcinomas</td>
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<td>Pleural Effusion Lymphomas</td>
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<td>Kaposi’s Sarcoma</td>
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<td>HTLV-1</td>
<td>Adult T-Cell Leukemia/Lymphomas (ATL)</td>
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<td>HTLV-2</td>
<td>Hairy cell Lymphomas</td>
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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 10X 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 Henle 1910-1987
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

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

1. 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 Nasopharyngeal 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 - Carol Prives (Columbia University).
What Life Was Like Before 30 Years In Science
THANK YOU