The Many Pharmaceutical Discoveries of Gertrude B. Elion

Alayna Bonse

Parkland College

Recommended Citation
http://spark.parkland.edu/nsps/36

Open access to this Poster is brought to you by Parkland College's institutional repository, SPARK: Scholarship at Parkland. For more information, please contact spark@parkland.edu.
The Many Pharmaceutical Discoveries of Gertrude B. Elion

By Alayna Bonse
Parkland College

Background
- Born January 23, 1918, died February 21, 1999.
- Graduated from Hunter College, a free all-girls college, with a bachelor's degree in chemistry in 1939.
- Graduated from New York University with a master's degree in chemistry in 1941.
- After college, she worked at Wellesley Research Laboratories as an assistant to Dr. George Hitchings.
- Started a PhD at Brooklyn Polytechnic Institute, was unable to complete it due to work complications.
- Awarded honorary degrees from George Washington University, Brown University, and the University of Michigan.

Acyclovir
- Antiviral drug used to fight herpes and shingles.
- Does not cure the disease; offers symptom relief and/or reduction.
- Reduces pain experienced and the length of herpes or shingles outbreaks.
- Treatment has to begin at first signs of an outbreak in order to have best effects.

6-Mercaptopurine (6-MP)
- First drug synthesized by Elion and her team.
- Corrupted purine usage during DNA synthesis.
- First drug found to produce complete remission in the majority of childhood leukemia patients.
- FDA approved in 1957.
- Still in use today, but may harm patients with a genetic flaw on chromosome 4.
- Outside-panel reviewing drug for the FDA currently.

Azathioprine (AZA)
- Converted to 6-MP when taken but has a different effect.
- Prevents the rejection of foreign tissue especially effective in kidney transplants.
- Used started in 1962.
- Still used today for kidney transplants and as a treatment for rheumatoid arthritis and ulcerative colitis.
- Rejection rate in kidney transplants only 15% through the use of AZA.
- Increased effect in people taking allopurinol.

Allupurinol
- Blocks uric acid from forming.
- Uric acid is formed from purines as waste product during cellular respiration.
- Buildup of uric acid can be from kidney disease, gout, chemotherapy drugs, eating foods rich in purines, and a deficiency in the enzyme xanthine oxidase.
- Phosphoribosyltransferase deficiency in Congenital Lesch Nyhan Syndrome.
- Used in the treatment of gout – arthritic painful joints often with hard lumps of uric acid crystals.

Awards & Achievements
- Awarded the Nobel Prize in Physiology or Medicine in 1988 along with Dr. George H. Hitchings and Sir James W. Black (Elion 1988).
- First woman admitted to the National Inventors Hall of Fame in 1991.
- Admitted to Engineering and Science Hall of Fame in 1991.
- Awarded the National Medal of Science in 1991.
- Awarded the Ig Nobel Memorial Award in 1995.

Conclusion
Gertrude B. Elion achieved a variety of things in her brilliant scientific career which was very unusual for a woman born in 1918. She and her fellow researchers pioneered exploration into many areas of pharmaceutical development. Her groundbreaking research into purines led her to develop treatments for childhood leukemia and gout as well as a medication that would prevent the rejection of kidney transplants. From her purine research, she then branched into antiviral research which led to a drug that is used to treat herpes, shingles and chicken pox. She also inspired a new generation of researchers who went on to discover even more revolutionary drugs such as azidothymidine (AZT). Many of these drugs they developed and still used today.

References