

REVIEW ARTICLE

Dr. Sidney Farber: Pioneer of Pediatric Oncology and Chemotherapy

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ABSTRACT

Dr. Sidney Farber is known as the Father of Modern Chemotherapy. He attended the University at Buffalo before transferring to Johns Hopkins University, where he earned his medical degree in 1927. Despite his clear brilliance, Farber faced a significant early challenge: as a Jew in a time of widespread discrimination, he found it difficult to secure medical internships in the United States. He went to Germany to continue his training in pathology. Upon returning, he became one of the first full-time pathologists at Harvard Medical School, where he later served as a professor. Farber's early experience with inequality and his exposure to dying children during his hospital rotations had a profound impact on his personal and professional mission. He became committed to the idea that no child should have to suffer a hopeless disease an idea that would define his life's work.

He discovered that antifolate drugs (like aminopterin) could induce remission in childhood leukemia. He helped establish the Dana-Farber Cancer Institute in Boston. His work revolutionized cancer treatment and laid the foundation for systemic chemotherapy worldwide.

Key Messages: Dr. Sidney Farber gave the basic idea to world of chemotherapeutic drugs in treatment of leukemia.

KEYWORDS

• Oncology • Chemotherapy

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INTRODUCTION

In the landscape of modern medicine, few individuals have made as profound an impact as, Dr. Sidney Farber, often referred to as the “father of modern chemotherapy.” He is credited with revolutionizing the treatment of childhood leukemia and laying the foundation for pediatric oncology. Dr. Farber was chosen for this paper because of his exceptional dedication to improving the lives of children suffering from cancer. His research not only led to life-saving medical advancements but also inspired a global movement for cancer treatment and research.

Background: Early Life, Education, and Personal Experiences:

Sidney Farber was born on September 30, 1903, in Buffalo, New York, to Jewish immigrant parents. Growing up in a modest household, Farber exhibited a deep interest in science and medicine from a young age. He attended the University at Buffalo before transferring to Johns Hopkins University, where he earned his medical degree in 1927. Despite his clear brilliance, Farber faced a significant early challenge: as a Jew in a time of widespread discrimination, he found it difficult to secure medical internships in the United States. He went to Germany to continue his training in pathology. Upon returning, he became one of the first full-time pathologists at Harvard Medical School, where he later served as a professor. Farber’s early experience with inequality and his exposure to dying children during his hospital rotations had a profound impact on his personal and professional mission. He became committed to the idea that no child should have to suffer a hopeless disease an idea that would define his life’s work.

Scientific Contributions

Dr. Sidney Farber’s most ground breaking work came in the 1940s, at a time when acute lymphoblastic leukemia (ALL) in children was considered universally fatal. There were no effective treatments, and parents were often told that nothing could be done. Farber refused to accept this. He began studying the biology of leukemia and focused on the role of folic acid in cell division. In 1947, he hypothesized that if folic acid stimulated leukemia cell growth, then a chemical that blocked folic acid (a folate antagonist) might inhibit the cancer.

He tested this theory using aminopterin, a folic acid antagonist. The result was revolutionary: for the first time in history, children with leukemia showed temporary remission. This was a monumental moment in medicine it proved that chemotherapy could fight cancer. Though the remissions were short-lived, the discovery changed everything. It gave birth to modern chemotherapy and sparked a new era in pediatric cancer treatment. Farber continued to develop new chemotherapeutic approaches and founded what would become the Dana-Farber Cancer Institute in Boston. He strongly advocated for multidisciplinary care, combining laboratory science with compassionate patient treatment. His model is now standard practice in oncology worldwide.

Challenges and Breakthroughs

Farber’s path to success was far from smooth. In the 1940s, cancer was still a taboo topic, shrouded in fear and ignorance. Most physicians and researchers believed it was incurable.

Efforts to treat it were often considered hopeless or even unethical. Farber’s work with aminopterin drew skepticism from colleagues who doubted its long-term value. Moreover, hospitals were reluctant to support oncology departments or invest in cancer research. Funding was minimal, and the public had little awareness or hope. But Farber was not only a scientist he was a visionary advocate. In one of his most important collaborations, he partnered with Mary Lasker, a powerful health activist and philanthropist. Together, they launched public campaigns, raised money for research, and lobbied the U.S. Congress for funding. This partnership ultimately helped create the National Cancer Institute and contributed to the U.S. government’s declaration of the “War on Cancer” in the 1970s.

Farber’s persistence ensured that pediatric cancer once ignored became a priority in medical research. He also battled the emotional toll of seeing many of his young patients die despite his best efforts. But rather than give in to despair, he used these losses as motivation to push harder for solutions.

Reflection: Lessons Students Can Draw

Dr. Sidney Farber’s journey offers invaluable lessons for students, not just in medicine but in any field where passion and perseverance are essential.

1. **Hope Against Odds:** Farber worked in a time when childhood cancer was a death sentence. Instead of accepting this, he envisioned a future with cures and helped create it.
2. **Scientific Curiosity and Innovation:** Farber questioned assumptions and tested bold hypotheses. His work shows that innovation often begins with courage.
3. **Combining Science with Compassion:** He never lost sight of the child behind the illness. His work is a lesson in empathy.
4. **Advocacy Matters:** He used his voice to raise funding and change public policy. Students can learn the value of action beyond the classroom or lab.
5. **Failure is a Step Forward:** Despite many setbacks, Farber's persistence paid off. Each failure was a lesson that led closer to success.

CONCLUSION

Dr. Sidney Farber's life changed the world of medicine and gave hope to countless children and families. His pioneering use of chemotherapy transformed cancer from a death sentence into a disease that can be treated and in many cases, cured. Beyond the scientific breakthroughs, Farber's legacy is one of hope, courage, and tireless dedication. For students today, he stands as a beacon of what one individual can achieve with determination, compassion, and the refusal to accept the impossible.

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REFERENCES

1. Miller D.R. A tribute to Sidney Farber-the father of modern chemotherapy. British journal of haematology. 2006 Jul; 134(1): 20-6.
2. Upadhyay A.K., Prakash A., Kumar A., Jena S., Sinha N., Sharma S. Dr. Sidney Farber (1903-1973): founder of pediatric pathology and the father of modern chemotherapy. Cureus. 2024 Aug 31; 16(8).
3. Bailey O.T. Sidney Farber, M.D., 1903-1973. The American Journal of Pathology. 1974 Nov; 77(2): 129.
4. Farber S. Tumors of the lymphoma group in children with special reference to the treatment of acute leukemia. C.A: A Cancer Journal for Clinicians. 1953 May; 3(3): 104-10.
5. Farber S. Founders of Pediatric Pathology: Sidney Farber. Perspectives in Pediatric Pathology. 1988; 9: 1-9.
6. Farber S. Chemotherapy in the treatment of leukemia and Wilms' tumor. Jama. 1966 Nov 21; 198(8): 826-36.
7. Farber S. Unexpected death in early life. New England Journal of Medicine. 1938 Nov 24; 219(21): 836-41.
8. Farber S., Diamond L.K., Mercer R.D., Sylvester Jr R.F., Wolff J.A. Temporary remissions in acute leukemia in children produced by folic acid antagonist, 4-aminopteroyl-glutamic acid (aminopterin). New England Journal of Medicine. 1948 Jun 3; 238(23): 787-93.
9. Farber S., Vawter G.F. The Children's Hospital Medical Center, Boston, Mass. The Journal of Pediatrics. 1962 Feb 1; 60(2): 304-14.