

Popular and Medical Attitudes toward Cancer Virus Research and Cancer Vaccination, Drawn from the Collections of the Rockefeller Archive Center

By Robin Wolfe Scheffler

Ph.D. Candidate, Department of History of Science and Medicine
Yale University
New Haven, Connecticut

robin.scheffler@yale.edu

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In 1913 Richard Broadman, a lawyer from Jersey City, New Jersey, wrote to the Rockefeller Institute of Medical Research (RIMR) with an urgent inquiry. He and his wife had just come into possession of mattresses used during the care of his wife's aunt, who had died after a long illness a decade earlier. Broadman feared that it might pass the illness to those who used the mattress in the future (although this had not prevented him from allowing the household maids to use it). Amidst widespread concern over germ theories of disease in the early twentieth century, this was perhaps not remarkable. What was remarkable, was *what* disease Broadman wrote about to assuage his wife's concerns, querying the staff of the Institute if there was a risk from "the danger of communication of the disease of cancer ... whether there is any danger lurking in the use of these mattresses." Broadman himself was skeptical, but only because he doubted cancer "germs" could have survived in the mattress, not because he doubted the existence of such germs themselves!¹

Broadman might have credited this theory, and written to the RIMR for advice, since in 1911 RIMR researcher Peyton Rous famously observed the existence of "non-filterable" particles which appeared to be capable of transmitting tumors from one chicken to another. These "non-filterable" particles, later identified as viruses, were the objects of fierce controversy,

but also intense study. As Ton van Helvoort and Eva Becsei Kilborn have discussed, Rous's initial discovery that some "non-filterable" substance could be extracted from the tumors of one chicken and used to cause tumors in others, faced considerable difficulties despite the enthusiasm for germ theories of disease at the beginning of the twentieth century.² The concept of a virus was poorly understood and many medical researchers doubted the applicability of animal models of cancer to humans. However, interest in tumor viruses, revived with the discovery of mammalian papilloma viruses in the 1930s, accelerated rapidly in the 1950s thanks to enthusiasm generated by the success of the polio vaccine and new instrumentation, which helped stabilize the definition of viruses as objects, not vaguely defined "factors" or "substances."

In a series of essays and articles Jean-Paul Gaudillière has sketched how cancer virus research benefitted from the emerging infrastructure of animal models used for chemotherapy research and the instrumentation of early molecular biology.³ By the 1960s cancer virus research became the center of what *Life* magazine called a "super program" of directed research uniting government, academia, and industry to produce a vaccine once a virus was identified in a human cancer.⁴ Concurrently, as Daniel Kevles has described, work on Rous's substance (now called Rous Sarcoma Virus or RSV) advanced using tissue culture techniques originally developed for polio research.⁵ The effort to understand the process of viral reproduction resulted in the 1970 discovery of reverse transcriptase, which showed how RNA-based viruses like RSV could transform cellular DNA. When President Nixon lobbied for legislation vastly expanding cancer research in 1971, cancer virus research was one of, if not the most, exciting area discussed. However, this excitement soon created a crushing burden of expectations when no human cancer viruses appeared. Then, in 1976, work on how RSV transformed infected cells resulted in the discovery of cellular oncogenes, leading to a rush out of viruses and into molecular genetics. In

the 1990s, cancer virus research was portrayed as a detour away from the discovery of oncogenes.⁶ More recently the development of the Human Papilloma Virus vaccine to prevent cervical cancer indicates, as the editors of *Science* have recently suggested, that the historical legacy of cancer virus is undergoing a reassessment.⁷

Broadman's letter reminds us that these concerns about cancer viruses were not limited to a narrow community of laboratory researchers, but were taken up by the general public as well. My dissertation, "Cancer Viruses and the Construction of Biomedicine in the United States, 1900-1980," examines the history of cancer virus research as a critical juncture point in the history of biomedicine for laboratory science, public health, and popular expectation. Moreover, cancer virus research, as my brief overview suggests, was a key area of work for figuring out the relationship between individual biomedical researchers, philanthropies, and the Federal government in cancer research during the middle of the twentieth century. Ironically, cancer virus research, a prime area for the intersection of politics and science, has sometimes been neglected on political grounds. Robert Proctor pointedly excluded the cancer viruses from his *Cancer Wars* (1995) on the grounds that they were a distraction from the environmental origins of most cancers.⁸ While historians such as Gaudillière or Ilana Löwy have started to bridge the divide between culture and experimental practices in the history of cancer, their works are in the minority and suggest the dividends of further work using this approach.

I thus approached my research at the Rockefeller Archive Center (RAC) with considerable excitement. With the assistance of Lee Hiltzik and Cathy Brennan, I determined that the RAC not only holds some of the papers of prominent cancer researchers such as Peyton Rous or Richard Shope, but also those of leading centers of biomedical and cancer research such as the Rockefeller University (RU) and Memorial Sloan-Kettering Cancer Center (MSKCC).

These institutions, along with the Rockefeller family's philanthropic activities, provide a unique vantage point to observe the scientific, public, and governmental facets of cancer research, and virus research in particular. The diffuse nature of these materials, however, also makes it difficult to attribute coherence to my findings in the RAC. Rather than attempt this, I will discuss one of the major themes that my research has followed: the relationship between experimental cancer research and public opinion. It provides a site for bridging what the historian David Cantor has termed the "yawning" gap between social and intellectual histories of cancer research.⁹ In particular, many histories of cancer approach the relationship between researchers and the public as if public reception of these discoveries could only distort scientific findings. Instead, I think that it is far more productive to think about the interplay between scientific and popular views of cancer research, with cancer virus research serving as an exemplary example of the tensions that attended cancer research in the middle of the century.

"Almost all public health work involves a large amount of propaganda for public education," the minutes of the Commonwealth Fund (CF) declared in December of 1919. To further that end, a new grant application from the American Cancer Society for the Control of Cancer (the future American Cancer Society), for the "education of the laity" met with the CF's approval.¹⁰ During the early twentieth century, anticancer efforts aimed to strike a balance between raising awareness and negotiating widespread fear and reticence concerning the disease. The Society made the construction of its field organization a key priority as it took shape during the 1920s.¹¹ A Society Field Organizer foresaw that the control of cancer would only arrive after the "education of every single adult of the community."¹²

Alongside public education and fundraising, however, there was also concern with prompting too great a public reaction. The idea of infectious human cancer viruses was often

implicated in concerns of this kind, which also displayed a tension between the biomedical research community and the public in the reception of research results. For example, RIMR personnel resisted enthusiasm over the announcement by a British researcher, William Gye, that he had identified a chicken tumor virus. One of Rous's colleagues, James Murphy, appealed to the *London Times* that "speculation and anticipation ... should be strongly deprecated."¹³ As late as 1957, when he was invited to give the Department of Health, Education, and Welfare's prestigious Dyer Lecture concerning his work with viruses, including animal cancer viruses, Richard Shope worried that "the address is written for a professional audience of knowledgeable scientists," and resisted passing a copy to the *New York Times* on the grounds that it might cause "alarmist headlines if the material is lifted out of context."¹⁴

Indeed, negotiating the relationship between cancer research and the public was one of the major points of definition for what it means to conduct serious scientific research. Shortly after its founding, the director of MSKCC, Cornelius Rhodes, and its main patron, Alfred Sloan, engaged in a long discussion of the uses of media in discussing MSKCC, particularly film. These discussions focused on the tension between public education about cancer research in general and promotion of MSKCC in particular. For example, one scientist worried that the film storyboard presented a picture that should be "less rosy." Ultimately, it appears that the film floundered between appeasing its prospective public and MSKCC's concern for scientific probity.¹⁵

The papers of Memorial Hospital (which later merged with the Sloan-Kettering Institute) also show a keen awareness of the power, possibilities, and peril of publicity. Memorial Hospital depended on fundraising and philanthropy to support its work, so monitoring and burnishing its public image was important work, work reflected in its archives. In the mid-1950s Memorial

Hospital produced a circular on “Principles of Professional Conduct Which Influence Memorial’s Center Mechanics for Publicity.” The memo cited the dual obligations to serve a “common good” by supplying the public with information quickly, versus the appearance of seeking “self-publicity.” Ultimately, the memo conveyed the sentiment that “science-writers are here to stay ... more can be gained by working with them than against them ... work more closely with the men and women who write about us.”¹⁶

Regarding the contributions that MSKCC had made to chemotherapy, in 1956 its president wrote that “the nature of the story is such that it is not easy to get it across to the general public. There has been no single sudden discovery or dramatic event.” Nonetheless, “if we do not pick up this story now it will quickly merge into the background history of medical science.”¹⁷ Alfred Sloan endorsed this idea, urging that these advances be reported “forcibly” to the public to convey the impression “that we are progressive and making progress.”¹⁸ This exchange shows that despite an affective posture of aloofness, cancer researchers and administrators could be deeply concerned with the public reception of their work.

The clippings books maintained by the Hospital, spanning most of the twentieth century, constitute a fascinating resource for tracing the public reception and interpretation of cancer research. In particular, where theories of the viral cause of cancer might have been thought to inspire panic, there was as much enthusiasm for the possibility of developing a vaccine. The work of MSKCC Charlotte Friend—who had not only identified a mouse leukemia virus, but claimed to have successfully inoculated other mice against it, drew considerable attention just after the successful release of the Salk Polio vaccine.¹⁹ In 1956 the New Orleans *Times-Picayune* carried the headline “Virus Seen as Possible Human Leukemia Cause.”²⁰ The *New York Herald Tribune* hailed Friend’s discovery as a “Step Toward a Vaccine” despite the

observation that these “cancer viruses” did not bear any relationship to the viral causes of diseases such as measles, polio, or chickenpox.²¹ In 1960 researchers at the MSKCC, Henle Toolan and Alice Moore, were involved in the possible isolation of a human cancer virus. Thanks to the clippings books it is possible to ascertain not only where the stories appeared, but in this instance—where the stories were syndicated—giving a different sense of the reception of cancer virus work than one would gain from the scientific press or even searches of digitized national newspapers. Coverage of Toolan and Moore’s work appeared in local papers from New Jersey out to Oklahoma.²²

Public, or at least press interest in the possibility of a cancer vaccine continued through the sixties and into the seventies. Writing of Friend’s earlier research, the 1963 Sloan-Kettering Institute Progress Report noted that the “relationship between virus and cell during the stages of leukemia development would seem to hold the key for successful vaccination against leukemia virus.”²³ Heralding the National Cancer Institute’s Special Virus Leukemia program in 1964 the *Ladies Home Journal* reported that “mounting evidence suggests that cancer may be caused by a virus. Scientists across the country are engaged in a massive research program seeking a medical breakthrough like the one that finally conquered polio.”²⁴ In 1965 *Business Week* wrote that “leukemia may be the first form [of cancer] to be brought under control. Tests of vaccine have already begun.”²⁵ The *Medical World News* wrote of efforts aimed at “Coaxing Leukemia Virus Suspect out of Hiding” in 1970, just as legislation to establish a formal “War on Cancer” was under consideration.²⁶ While from the perspective of many cancer researchers and virologists, the possibility of identifying a leukemia virus or developing a vaccine remained slight, this coverage reminds us that the momentum of cancer research often lay as much with its public patrons as with its professional scientists and medical professionals.

Vaccination efforts had a darker side too. One of the most discussed instances involved the efforts of the immunologist Chester Southam to inoculate convicts at an Ohio Penitentiary against infection with cancer. While this episode has often been recalled as a source of controversy, the press clippings collected surrounding the beginning of this project place its origins in a different light.²⁷ Southam's initial work in 1956 was hailed by many newspapers, such as the *Citizen* (Columbus, Ohio), with the announcement that ninety-six inmates had "volunteered" to be "injected with cancer" as "Enthusiastic Cancer Guinea Pigs." Although it was years from verification, the possibility of such a vaccine was discussed favorably by virologists working at the MSKCC.²⁸ Later in the 1960s, similar tumor immunology experiments carried out by Southam with New York area patients (where consent was never sought) faced legal challenge and public censure; and Southam's medical license was suspended for a year.²⁹ Despite this ruling, memoranda from the MSKCC's board of Scientific Advisors show his attempts to continue support for his Ohio research in the midst of this controversy. Southam wrote to the director that, "funds should be available for follow-up of past participants in the Ohio Penitentiary studies in order to salvage as much as possible from the curtailed research programs." Southam expressed frank astonishment that his work was subject to critical review, claiming that it represented a "retreat by our Institute from the responsibility of leadership ... it is possible that [the board of Scientific Advisors] do not realize what a detrimental effect their decisions can have."³⁰ It appeared, in the view of one of Southam's collaborating doctors in Ohio, that "the climate favoring suits ... has changed considerably ... since the notoriety surrounding the affair in New York state." However, the doctor hoped that following the abatement of publicity, the administrators of the MSKCC would "see their way clear to a more reasonable amount of support for this very exciting and interesting project."³¹

In the context of other inquiries into the ethics of human experimentation in the United States, this exchange buttresses the claim made by historians of bioethics that the medical community did not move as a group to a particular standard of patient rights and informed consent after Nuremburg. Rather, along with the Tuskegee Experiment and other work with cancer patients, many doctors assumed the human experiments they were carrying out in the aftermath of the Second World War were not ethically suspect.³² Indeed, the positive press coverage given to the initial trial suggests that this type of research warranted mainstream endorsement even after the revelations regarding the acts of Nazi doctors at the Nuremburg trials.

These are only some of the initial findings and observations I have arrived at after my research at the Rockefeller Archive Center and I expect other themes to emerge as well as I examine these documents further and integrate them with the research I have conducted in the papers of the National Cancer Institute and other cancer virus researchers. In closing, I would like to extend my thanks for the support which enabled me to undertake this research, and the welcoming and collegial environment which I found at the RAC during this research.

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The ideas and opinions expressed in this report are those of the author and are not intended to represent the Rockefeller Archive Center.

ENDNOTES:

- ¹ Richard Broadman to Rockefeller Institute, October 29, 1913, Rockefeller University Archives, Record Group (RG) 210.3—Business Series, Box 1, Folder 3.
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- ³ Jean-Paul Gaudillière, “Molecularization of Cancer Etiology.” In Soraya de Chadarevian and Harmke Kamminga, editors, *Molecularizing Biology and Medicine: New Practices and Alliances, 1910s-1970s*. Amsterdam, The Netherlands: Harwood Academic Publishers, 1998, pp. 139–170.
- ⁴ Albert Rosenfeld, “A Superplan to Cut Years Off the War.” *Life* 61: 21 (November 1966), pp. 108–116a.
- ⁵ Daniel J. Kevles, “Howard Temin: Rebel of Evidence and Reason.” In Oren Solomon Harman and Michael Dietrich, editors, *Rebels, Mavericks, and Heretics in Biology*. New Haven, Connecticut: Yale University Press, 2008, pp. 248–264.
- ⁶ George Klein, “The Tale of the Great Cuckoo Egg.” *Nature* 400 (1999), p. 515 and p. 6744.
- ⁷ Paula Kiberstis and Eliot Marshall, “Celebrating an Anniversary.” *Science* 331: 60 (March 2011), p. 1539.
- ⁸ Robert Proctor, *Cancer Wars*. New York: Basic Books, 1995.
- ⁹ David Cantor, “Cancer.” In W.F. Bynum and Roy Porter, editors, *Companion Encyclopedia of the History of Medicine*. London and New York: Routledge, Volumes 1 & 2, 1993, pp. 537–561.
- ¹⁰ Minutes of Commonwealth Fund Board of Directors Meeting, December 13, 1919. Commonwealth Fund (CF) Archives, Series 18.1, Box 12, Folder 123.
- ¹¹ “Preliminary Report of the Field Service of the American Society for the Control of Cancer,” 1 March 1, 1915–June 1922. CF, Series 18.1, Box 12, Folder 123.
- ¹² “Medical Practitioner and the ACSS,” February 15, 1923. CF, Series 18.1, Box 12, Folder 123.
- ¹³ Editorial, *London Times*, November 11, 1925.
- ¹⁴ Eugene H. Kone [Public Relations Consultant for Rockefeller Institute for Medical Research] to Director of Information US DHEW, November 1, 1957, Rockefeller University (RU), RG 450Sh77, Box 1, Folder 13.
- ¹⁵ Reginald Coombe to Alfred Sloan, June 27, 1952, Laurance S. Rockefeller Papers, RG 2, Memorial Sloan Kettering Cancer Center (MSKCC) Series, Box 39, Folder 512. Also see other correspondence in this folder.
- ¹⁶ Laurance S. Rockefeller Papers, RG 2 OMB Files, Box 40, Folder 527.
- ¹⁷ Frank A Howard to Alfred Sloan, September 18, 1956. Laurance S. Rockefeller Papers, RG 2 OMB Files, Box 40, Folder 527.
- ¹⁸ Alfred Sloan to Frank A Howard, September 21, 1956. Laurance S. Rockefeller Papers, RG 2 OMB Files, Box 40, Folder 527.
- ¹⁹ Charlotte Friend, “Cell-Free Transmission in Adult Swiss Mice of a Disease Having the Character of a Leukemia.” *The Journal of Experimental Medicine* 105: 4 (March 1957), pp. 307–318.
- ²⁰ MSKCC Papers, RG375, Series 4.3, Reel 5, Volume 40.
- ²¹ MSKCC Papers, RG375, Series 4.3, Reel 6, Volume 41.
- ²² MSKCC Papers, RG375, Series 4.3, Reel 8, Volume 62.
- ²³ *Progress Report XV of the Sloan-Kettering Institute* (1963), p.45. MSKCC Papers, RG 201, Series 2, Box 1.
- ²⁴ MSKCC Papers, RG375, Series 4.3, Reel 10, Volume 79.
- ²⁵ MSKCC Papers, RG375, Series 4.3, Reel 10, Volume 80.
- ²⁶ MSKCC Papers, RG375, Series 4.3, Reel 11, Volume 88.
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- ²⁹ Elinor Langer, “Human Experimentation.” *Science* 151: 3711 (February 1966), pp. 663–666.
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- ³¹ Henry E. Wilson to Chester Southam, October 12, 1966. Warren Weaver Papers, Series 7, Box 35, Folder 333.
- ³² Nathaniel Comfort, “The Prisoner as Model Organism.” *Studies in History and Philosophy of Biological and Biomedical Sciences* 40: 3, (September 2009), pp. 190–203; Gerald Kutcher, *Contested Medicine*. Illinois: University of Chicago Press, 2009; Susan Reverby, *Examining Tuskegee*. Chapel Hill: University of North Carolina Press, 2009.