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Curriculum Vitae of Dr. John W. Gofman, M.D., Ph.D.

The following comes from [pages 379-381](#) of *Preventing Breast Cancer: The Story of a Major, Proven, Preventable Cause of this Disease*, by Dr. John W. Gofman, M.D., Ph.D., 2nd Edition, 1996.

About the Author

John William Gofman is Professor Emeritus of Molecular and Cell Biology in the University of California at Berkeley, and Lecturer at the Department of Medicine, University of California School of Medicine at San Francisco.

He is the author of several books and more than a hundred scientific papers in peer-review journals in the fields of nuclear / physical chemistry, coronary heart disease, ultracentrifugal analysis of the serum lipoproteins, the relationship of human chromosomes to cancer, and the biological effects of radiation, with especial reference to causation of cancer and hereditary injury.

A Narrative Chronology

While a graduate student at Berkeley, Gofman co-discovered protactinium-232, uranium-232, protactinium-233, and uranium-233, and proved the slow and fast neutron fissionability of uranium-233.

Post-doctorally, he continued work related to the chemistry of plutonium and the atomic bomb development. At that early period, less than a quarter of a milligram of plutonium-239 existed, but a half-milligram was urgently needed for physical measurements in the Manhattan Project. At the request of J. Robert Oppenheimer, Gofman and Robert Connick irradiated a ton of uranyl nitrate by placing it around the Berkeley cyclotron (to capture neutrons), for a total exposure period of six weeks, with operation night and day. In 110 Gilman Hall, they scaled up Gofman's previous test-tube-sized sodium uranyl acetate process for the plutonium's chemical extraction. Dissolving 10-pound batches of the "hot" ton in big Pyrex jars, and working around the clock with the help of eight or ten others, they reduced the ton to a half cc of liquid containing 1.2 milligrams of plutonium (twice as much as expected).

After the plutonium work, Gofman completed medical school. In 1947, he began his research on coronary heart disease and, by developing special flotation ultracentrifugal techniques, he and his colleagues demonstrated the existence of diverse low-density lipoproteins (LDL) and high-density lipoproteins (HDL). Their work on lipoprotein chemistry and health consequences included the first prospective studies demonstrating that high LDL levels represent a risk-factor for coronary heart disease and that low HDL levels represent a risk-factor for coronary heart disease. His principal book on the heart disease research is *Coronary Heart Disease* (1959, Charles C. Thomas, Publisher).

In the early 1960s, the Atomic Energy Commission (AEC) asked him if he would establish a Biomedical Research Division at the Lawrence Livermore National Laboratory, for the purpose of evaluating the health effects of all types of nuclear activities. From 1963-1965, he served as the division's first director, concurrently with service as an Associate Director of the entire Laboratory, for Biomedicine. Later he stepped down from these administrative activities in order to have more time for his own laboratory research in cancer, chromosomes, and radiation, as well as his analytical work on the data from the Japanese atomic-bomb survivors and other irradiated human populations.

In 1965, Dr. Ian MacKenzie published an elegant report entitled "[Breast Cancer Following Multiple Fluoroscopies](#)" (*British J. of Cancer* 19: 1-8) and in 1968, Wanebo and co-workers, stimulated by MacKenzie's work, reported on "[Breast Cancer after Exposure to the Atomic Bombings of Hiroshima and Nagasaki](#)" (*New England J. of Medicine* 279:667-671), but few were willing to concede that breast-cancer could be induced by low-LET radiation.

Gofman and his colleague, Dr. Arthur Tamplin, quantified the breast-cancer risk (1970, *The Lancet* 1:297), looked at the other available evidence, and concluded overall that human exposure to ionizing radiation was much more serious than previously recognized ([Gofman 1969](#); [Gofman 1971](#)).

Because of this finding, Gofman and Tamplin spoke out publicly in favor of re-examining two programs which they had previously accepted. One was the AEC's "Project Plowshare," a program to use hundreds or thousands of nuclear explosions to liberate natural gas in the Rocky Mountains and to excavate harbors and canals. Experimental shots had already been done, for example, in Colorado and Nevada. The second program was the AEC's plan to license about 1,000 nuclear power plants as quickly as possible and to build a "plutonium economy" based on breeder reactors. In 1970, Gofman and Tamplin proposed a five-year moratorium on licensing of commercial nuclear power plants.

For Gofman and Tamplin, the public health was the issue of prime importance. The Atomic Energy Commission was not pleased. In 1973, Gofman returned to full-time teaching at the University of California at Berkeley, until choosing an early and active "retirement" --- a retirement to full-time research on

radiation health-effects. This research led to publication of four scientific books, and to the current work, *Preventing Breast Cancer*. The previous books are:

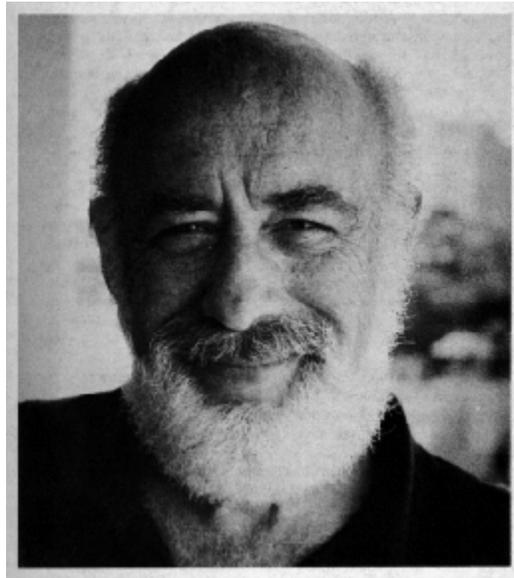
1. *Radiation And Human Health*, 908 pages (1981).
2. *X-Rays: Health Effects of Common Exams* (with Egan O'Connor), 439 pages (1985).
3. *Radiation-Induced Cancer From Low-Dose Exposure: A Independent Analysis*, 480 pages (1990).
4. *Chernobyl Accident: Radiation Consequences for This and Future Generations*, 574 pages (1994). It is in the Russian language. An English-language edition will be published in the future.

Recent Honors and Awards

December 1992, in Stockholm, Sweden: [The Right Livelihood Award](#) of the Right Livelihood Foundation. Dr. Jakob von Uexkull's statement, in presenting the award for John Gofman's "pioneering work in exposing the health effects of low-level radiation," was:

"The Right Livelihood Award for vision and work forming an essential contribution to making life more whole, healing our planet, and uplifting humanity."

November 1993, in Atlanta, Georgia: Selection as Honored Speaker for the 1993 Meeting of the Arteriosclerosis Section of the American Heart Association, in recognition of work described by Donald S. Fredrickson in *Circulation* (Suppl., Vol.87, No.4: 1-59, April 1993).



Curriculum Vitae

Birth: September 21, 1918 in Cleveland, Ohio.

Education:

- Grade and high school in Cleveland. A.B. in Chemistry from Oberlin College, 1939.
- Ph.D. in Nuclear/Physical Chemistry from the University of California at Berkeley, 1943.

Dissertation: Discovery of Pa-232, U-232, Pa-233, and U-233. Proof of the slow and fast neutron fissionability of U-233. Discovery of the $4n + 1$ radioactive series.

- M.D. from the School of Medicine, University of California at San Francisco, 1946. Internship in internal medicine at the University of California Hospital, San Francisco, 1946-1947.

Positions:

- Academic appointment in 1947 in the Division of Medical Physics, Department of Physics, University of California at Berkeley. Advancement in 1954 to the full professorship, a position held to the present time, with shift to Emeritus status in December, 1973. Under recent University reorganization, the affiliation is now the Division of Biochemistry, Department of Molecular and Cell Biology.
- Concurrent appointment since 1947 as either Instructor or Lecturer in Medicine in the Department of Medicine, University of California, San Francisco.

Additional appointments held:

- Associate Director, Lawrence Livermore National Laboratory, 1963-1968. Resigned this post to gain more time for research and teaching. Remained as Research Associate at Livermore through February, 1973.
- Founder and first Director of the Biomedical Research Division of the Lawrence Livermore Laboratory, 1963-1964. This work was done at the request of the Atomic Energy Commission.
- Member, Advisory Board for NERVA (Nuclear Engine Rocket Vehicle Application), approximately 1963-1966. Member of the Reactor Safeguard Committees University of California, Berkeley, approximately 1955-1960.
- Group Co-Leader of the Plutonium Project (for the Manhattan Project) at the University of California, Berkeley, 1941-1943. This work included meetings at Chicago and Oak Ridge to exchange information and to help DuPont engineers prepare for the reprocessing operations at Hanford, Washington.
- Physician in Radioisotope Therapy, Donner Clinic, University of California, Berkeley, 1947-1951.
- Medical Director, Lawrence Radiation Laboratory (Livermore), 1954-1957.
- Medical consultant to the Aerojet-General Nuclear Corporation, with special emphasis on the hazards of ionizing radiation, for approximately eight years during the 1960s.
- Consultant to the Research Division of the Lederle Laboratories, American Cyanamid, 1952-1955.
- Consultant to the Research Division of Riker Laboratories, approximately 1962-1966.
- Scientific consultant to Vida Medical Systems, 1970-1974; co-invented the VIDA heart monitor, a pocket-worn computer to detect and announce the occurrence of serious cardiac arrhythmias; invented a skin cardiographic electrode subsequently used widely throughout the USA.
- Chairman of the Committee for Nuclear Responsibility, 1971 to the present; pro-bono work; no book-royalties or compensation of any type has ever been accepted.

Patents:

- # 3,123,535 (Glenn T. Seaborg, John W. Gofman, Raymond W. Stoughton): The slow and fast neutron fissionability of uranium-233, with its application to production of nuclear power or nuclear weapons.
- # 2,671,251 (John W. Gofman, Robert E. Connick, Arthur C. Wahl): The sodium uranyl acetate process for the separation of plutonium in irradiated fuel from uranium and fission products.
- # 2,912,302 (Robert E. Connick, John W. Gofman, George C. Pimentel): The columbium oxide process for the separation of plutonium in irradiated fuel from uranium and fission products.

Earlier honors and awards:

- Gold-Headed Cane Award, University of California Medical School, 1946, presented to the graduating senior who most fully personifies the qualities of a "true physician."
- Modern Medicine Award, 1954, for outstanding contributions to heart disease research.
- The Lyman Duff Lectureship Award of the American Heart Association in 1965, for research in atherosclerosis and coronary heart disease; lecture published in 1966 as "Ischemic Heart

Disease, Atherosclerosis, and Longevity," in *Circulation* 34: 679-697.

- The Stouffer Prize (shared) 1972, for outstanding contributions to research in arteriosclerosis.
- American College of Cardiology, 1974; selection as one of twenty-five leading researchers in cardiology of the past quarter-century.
- University of California, Berkeley, Bancroft Library, 1988; announcement of the "Gofman Papers" established in the History of Science and Technology Special Collection (October 1988, *Bancroftiana*, No. 97: 10-11).

See Also:

- Gofman on the health effects of radiation:
`[There is no safe threshold](#)', and `[Challenging The Nuclear Establishment](#)'
- [A Conversation with John Gofman, Ph.D. '43](#),
- The Plowboy Interview: [Dr. John W. Gofman, Nuclear And Antinuclear Scientist](#)
- *Nuclear Witnesses, Insiders Speak Out*: [John W. Gofman, Medical Physicist](#)

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