= Gerty Cori =

Gerty Theresa Cori (née Radnitz ; August 15 , 1896 ? October 26 , 1957) was a Czech @-@ American biochemist who became the third woman ? and first American woman ? to win a Nobel Prize in science , and the first woman to be awarded the Nobel Prize in Physiology or Medicine .

Cori was born in Prague (then in the Austro @-@ Hungarian Empire , now the Czech Republic) . Gerty was not a nickname , but rather she was named after an Austrian warship . Growing up at a time when women were marginalized in science and allowed few educational opportunities , she gained admittance to medical school , where she met her future husband Carl Ferdinand Cori ; upon their graduation in 1920 , they married . Because of deteriorating conditions in Europe , the couple emigrated to the United States in 1922 . Gerty Cori continued her early interest in medical research , collaborating in the laboratory with Carl . She published research findings coauthored with her husband , as well as publishing singly . Unlike her husband , she had difficulty securing research positions , and the ones she obtained provided meager pay . Her husband insisted on continuing their collaboration , though he was discouraged from doing so by the institutions that employed him .

With her husband Carl and Argentine physiologist Bernardo Houssay , Gerty Cori received the Nobel Prize in 1947 for the discovery of the mechanism by which glycogen ? a derivative of glucose ? is broken down in muscle tissue into lactic acid and then resynthesized in the body and stored as a source of energy (known as the Cori cycle) . They also identified the important catalyzing compound , the Cori ester . In 2004 , both Gerty and Carl Cori were designated a National Historic Chemical Landmark in recognition of their work in clarifying carbohydrate metabolism .

In 1957 , Gerty Cori died after a ten @-@ year struggle with myelosclerosis . She remained active in the research laboratory until the end . She received recognition for her achievements through multiple awards and honors . The Cori crater on the Moon and the Cori crater on Venus are named after her .

= = Life and work = =

Gerty Theresa Radnitz was born into a Jewish family in Prague in 1896 . Her father , Otto Radnitz , was a chemist who became manager of sugar refineries after inventing a successful method for refining sugar . Her mother , Martha , a friend of Franz Kafka , was a culturally sophisticated woman . Gerty was tutored at home before enrolling in a Lyceum for girls , and at the age of 16 she decided she wanted to be a medical doctor . Pursuing the study of science , Gerty learned that she lacked the prerequisites in Latin , physics , chemistry , and mathematics . Over the course of a year , she managed to study the equivalent of eight years of Latin , five years of science , and five years of math .

Her uncle , a professor of pediatrics , encouraged her to attend medical school , so she studied for and passed the University entrance examination . She was admitted to the medical school of the Karl @-@ Ferdinands @-@ Universität in Prague in 1914 , which was unusual for a woman to achieve at that time . While studying she met Carl Cori who was immediately attracted to her charm , vitality , sense of humor and her love of the outdoors and mountain climbing . Gerty and Carl had both entered medical school at eighteen and both graduated in 1920 . They married that same year . Gerty converted to Catholicism , enabling her and Carl to marry in the Roman Catholic Church . They moved to Vienna , Austria , where Gerty spent the next two years at the Carolinen Children 's Hospital , and her husband worked in a laboratory . While at the hospital , Gerty Cori worked on the pediatrics unit and conducted experiments in temperature regulation , comparing temperatures before and after thyroid treatment , and published papers on blood disorders .

Carl served in the Austrian army during World War I after being drafted . Life was difficult following World War I , and Gerty suffered from xerophthalmia caused by severe malnutrition due to food shortages . These problems , in conjunction with the increasing anti @-@ Semitism , contributed to the Coris ' decision to leave Europe .

In 1922 , the Coris both immigrated to the United States (Gerty six months after Carl because of

difficulty in obtaining a position there) to pursue medical research at the " State Institute for the Study of Malignant Diseases " (now the Roswell Park Cancer Institute) in Buffalo , New York . In 1928 , they became naturalized citizens of the United States . The director for the Institute threatened to dismiss Gerty if she did not cease collaborative research with her husband . She continued to work with Carl and was also kept on at the Institute .

Although the Coris were discouraged from working together at Roswell , they continued to do so , specializing in investigating carbohydrate metabolism . They were particularly interested in how glucose is metabolized in the human body and the hormones that regulate this process . They published fifty papers while at Roswell , with first author status going to the one who had done most of the research for a given paper . Gerty Cori published eleven articles as the sole author . In 1929 , they proposed the theoretical cycle that later won them the Nobel Prize , the Cori cycle . The cycle describes how the human body uses chemical reactions to break some carbohydrates such as glycogen in muscle tissue into lactic acid , while synthesizing others .

The Coris left Roswell in 1931 after publishing their work on carbohydrate metabolism . A number of universities offered Carl a position but refused to hire Gerty . Gerty was informed during one university interview that it was considered " unamerican " for a married couple to work together . Carl refused a position at the University of Buffalo because the school would not allow him to work with his wife .

In 1931 , they moved to St. Louis , Missouri , as Washington University offered both Carl and Gerty positions although Gerty 's rank and salary were much less than her husbands . Despite her research background , Gerty was only offered a position as a research associate at a salary one tenth of that received by her husband ; she was warned that she might harm her husband 's career . Washington University 's Chancellor , Arthur Holley Compton made a special allowance for Gerty to hold a position there , going against the university 's nepotism rules . Gerty had to wait thirteen years before she attained the same rank as her husband . In 1943 , she was made an associate professor of Research Biological Chemistry and Pharmacology . Months before she won the Nobel Prize , she was promoted to full professor , a post she held until her death in 1957 .

They continued their collaboration at Washington University . While working with minced frog muscle , they discovered an intermediate compound that enabled the breakdown of glycogen , called glucose 1 @-@ phosphate , now known as the Cori ester . They established the compound 's structure , identified the enzyme phosphorylase that catalyzed its chemical formation , and showed that the Cori ester is the beginning step in the conversion of the carbohydrate glycogen into glucose (large amounts of which are found in the liver) . It can also be the last step in the conversion of blood glucose to glycogen , as it is a reversible step . Gerty Cori also studied glycogen storage disease , identifying at least four forms , each related to a particular enzymatic defect . She was the first to show that a defect in an enzyme can be the cause of a human genetic disease .

Gerty and Carl Cori collaborated on most of their work , including that which won them the 1947 Nobel Prize in Physiology or Medicine " for their discovery of the course of the catalytic conversion of glycogen " . They received one half the prize , the other half going to the Argentinian physiologist , Bernardo Houssay " for his discovery of the part played by the hormone of the anterior pituitary lobe in the metabolism of sugar " . Their work continued to clarify the mechanisms of carbohydrate metabolism , advancing understanding of the reversible conversion of sugars and starch , findings which proved crucial in the development of treatments for diabetics .

= = Awards and recognitions = =

In 1947 Gerty Cori became the third woman ? and the first American woman ? to win a Nobel Prize in science , the previous recipients being Marie Curie and Irène Joliot @-@ Curie . She was the first woman to be awarded the Nobel Prize in Physiology or Medicine . She was elected a Fellow of the American Academy of Arts and Sciences in 1953 .

The twenty @-@ five square foot Cori laboratory at Washington University was deemed a National Historic Landmark by the American Chemical Society . Not only did the Cori 's conduct groundbreaking research there , but they mentored many scientists . Six of these went on to win

Nobel Prizes , which is unmatched in scientific history .

The crater Cori on the Moon is named after her . So is the Cori crater on Venus . She also shares a star with Carl on the St. Louis Walk of Fame .

Gerty and Carl Cori were late members of the American Society of Biological Chemists , the National Academy of Sciences , the American Chemical Society and the American Philosophical Society . They were presented jointly with the Midwest Award (American Chemical Society) in 1946 and the Squibb Award in Endocrinology in 1947 . In addition , Gerty Cori received the Garvan Medal (1948) , the St. Louis Award (1948) , the Sugar Research Prize (1950) , the Borden Award (1951) and honorary Doctor of Science degrees from Boston University (1948) , Smith College (1949) , Yale (1951) , Columbia (1954) , and Rochester (1955) . Carl Cori , a Member of the Royal Society (London) and the American Association for the Advancement of Science , also received the Willard Gibbs Medal (1948) , the Sugar Research Foundation Award (1947 , 1950) and honorary Doctor of Science degrees from Western Reserve University (1946) , Yale (1946) , Boston (1948) , and Cambridge (1949) . He was President of Fourth International Congress of Biochemistry (Vienna , 1958) .

Cori was honored by the release of a US Postal Service stamp in April , 2008 . The 41 @-@ cent stamp was reported by the Associated Press to have a printing error in the chemical formula for glucose @-@ 1 @-@ phosphate (Cori ester) . The stamp is being distributed despite the error . Her description reads : " Biochemist Gerty Cori (1896 ? 1957) , in collaboration with her husband , Carl , made important discoveries ? including a new derivative of glucose ? that elucidated the steps of carbohydrate metabolism and contributed to the understanding and treatment of diabetes and other metabolic diseases . In 1947 , the couple was award a half share of the Nobel Prize in Physiology or Medicine . " The other scientists on the " American Scientists " sheet include Linus Pauling , chemist , Edwin Hubble , astronomer , and John Bardeen , physicist .

In 1948 , Cori was awarded the Garvan @-@ Olin Medal , an award that recognizes distinguished work in chemistry by American women chemists . She was appointed by President Harry S. Truman as board member of the National Science Foundation , a position she held until her death . She was elected to the National Academy of Sciences , the fourth woman so honored .

In 1949 she was awarded the Iota Sigma Pi National Honorary Member for her significant contribution .

In 2004 the research of Gerti and Carl Cori on carbohydrate metabolism was recognized by the American Chemical Society as a National Historic Chemical Landmark at the Washington University School of Medicine .

The US Department of Energy named the NERSC @-@ 8 supercomputer installed in 2015 / 2016 after Cori .

Although prejudiced against in her time for being a woman , today Gerty is the more celebrated of the Coris , as she considered a pioneer as a woman of science .

= = Final years = =

Just before winning the Nobel prize and while they were on a mountain climbing trip , the Coris learned that Gerty Cori was ill with myelosclerosis , a fatal disease of the bone marrow . During her years at the Institute for the Study of Malignant Disease , Gerty had studied the effects of X @-@ rays on the human body , which was thought to contribute to her illness . She struggled for ten years with the illness while continuing her scientific work ; only in the final months did she let up . In 1957 , she died in her home . Gerty was cremated and her ashes scattered . Later , her son erected a cenotaph for Gerty and Carl Cori in Bellefontaine Cemetery in St. Louis , Missouri .

She was survived by her husband and their only child , Tom Cori who married the daughter of conservative activist Phyllis Schlafly .

Carl remarried in 1960 to Anne Fitzgerald @-@ Jones . The two later moved to Boston , where Carl taught at Harvard Medical School . He continued to work there until his death at the age of eighty @-@ eight .