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# Quiz Bowl Study Guide
# (High School)

**George Washington Carver**
An American agricultural scientist and inventor who promoted alternative crops to cotton and methods to prevent soil depletion. He is considered to be the most prominent black scientist of the early 20th century. While a professor at Tuskegee Institute, Carver developed techniques to improve soils depleted by repeated plantings of cotton. He wanted poor farmers to grow other crops, such as peanuts and sweet potatoes, as a source of their own food and to improve their quality of life. The most popular of his 44 practical bulletins for farmers contained 105 food recipes using peanuts. Although he spent years developing and promoting numerous products made from peanuts, none became commercially successful.

**Baruj Benacerraf**
A Venezuelan-American immunologist was awarded the 1980 Nobel Prize in Physiology or Medicine for the "discovery of the major histocompatibility complex genes." These genes encode cell surface protein molecules vital for the immune system to distinguish between self and non-self. He shared this honor with Jean Dausset and George Davis Snell. He observed that when antigens (substances that elicit an immune response) were introduced into genetically similar animals, they could be divided into two groups: responders and nonresponders. Upon further research, he identified that dominant autosomal genes, named the immune response genes, determined reactions to specific antigens. This groundbreaking insight paved the way for a deeper understanding of how these genes influence immune responses. His foundational discovery remains valid, and subsequent research over the decades has identified more than 30 genes within the major histocompatibility complex, a DNA segment responsible for governing immune reactions. This line of research has also shed light on autoimmune diseases like multiple sclerosis and rheumatoid arthritis. In recognition of his outstanding contributions, he was elected a Fellow of the American Academy of Arts and Sciences in 1971.

**Guillermo Gonzalez Camarena**
Mexican electrical engineer, González Camarena, pioneered the color-wheel type of color television, revolutionizing global broadcasting. At only 17, he designed the "Chromoscopy Adapter for Television Equipment", an early color transmission system. His U.S. patent application (2,296,019) described a method adaptable to black-and-white televisions. Filed on August 14, 1940, the patent was approved by September 15, 1942. He secured additional patents in 1960 and 1962 and sold the first unit in 1954 for roughly $1,450. On August 31, 1946, from his lab at The Mexican League of Radio Experiments in Mexico City, he transmitted the first color broadcast. González Camarena's achievements peaked with Mexico's first public color broadcast on XHGC-TV, a station he founded in 1952, in 1963. By then, Mexico had adopted the NTSC color system.

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**Aaron Yazzie**
A skilled mechanical engineer based at NASA's Jet Propulsion Laboratory in Pasadena, California, he has been instrumental in devising mechanical systems integral to the study of Mars' atmosphere and its soil samples. Notably, his innovative technology was employed in the Mars Insight Lander's mission.

**Marisa Ponpuak**
Dr. Ponpuak was awarded a National Scholarship from The Development and Promotion of Science and Technology Talent Project (DPST) of Thailand, enabling her to further her studies in the U.S.A. She enrolled at the University of Wisconsin-Madison, where she earned her Bachelor's degree in Molecular Biology with honors in 2001. Pursuing her academic aspirations, she embarked on her Ph.D. journey at Washington University's School of Medicine. During this period, she became a part of Prof. Daniel E. Goldberg's laboratory at the Howard Hughes Medical Institute and the Department of Molecular Microbiology at Washington University. Dr. Ponpuak's doctoral research delved deep into the biology of the human malarial parasite, Plasmodium falciparum, responsible for causing Malaria. Her significant findings, which unveiled and characterized a new function/location of a food vacuole enzyme termed falcilysin, were published in the Molecular Microbiology journal. Notably, a commentary echoing the importance of her research was featured in the same issue of the journal.

**Mary Golda Ross**
A distinguished NASA mathematician and engineer, she was instrumental in propelling the Apollo astronauts to space. While at Lockheed Martin, she contributed significantly to the development of the P-38 Lightning fighter plane. Remarkably, she was one of only two women who were part of the pioneering Skunk Works team. Her contributions extended to the research, assessment, and testing of top-secret rocket and missile systems, with much of her work still remaining classified. Furthermore, Ross was a key contributor to NASA’s Planetary Flight Handbook, which serves as the agency's comprehensive manual for space exploration.

**Jani Ingram**
A respected Professor of Chemistry and Biochemistry at Northern Arizona University, Ingram is renowned for her research into the chemistry and health ramifications of environmental pollutants, with a particular emphasis on uranium and arsenic. As a proud member of the Navajo tribe and the Naneesht’ezhi clan, she spearheads the Bridging Arizona Native American to Bachelor Degrees (NIH Bridges to Baccalaureate) program and the Native American Cancer Prevention Program. Ingram is passionately committed to amplifying educational and professional avenues for Native American students in the field of Chemistry. Through various impactful initiatives, she has championed this cause, earning her the prestigious 2018 American Chemical Society Award for Encouraging Disadvantaged Students into Careers in the Chemical Sciences.

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**Domingo Liotta**
Domingo Santo Liotta, born on November 29, 1924, in Diamante, Entre Rios, Argentina, stands as a trailblazer in the realm of heart surgery. The son of Italian immigrants, Liotta's innovation led to the creation of several cardiac prostheses, notably crafting the first total artificial heart implanted in a human. Completing his foundational education at the "Independencia School" in his native Diamante, he pursued secondary studies at the "Justo Jose de Urquiza School" located in Concepcion del Uruguay, Entre Rios.

**Nasir Gebelli**
Nasir Gebelli, often credited in his games as simply Nasir, is an Iranian-American programmer and video game designer born in 1957. He first gained recognition in the early 1980s for creating swift action games for the Apple II, which included 3D shooters. Initially, Gebelli penned Apple II games under the banner of Sirius Software. Later, he founded his own company, Gebelli Software. His notable association with Squaresoft (now known as Square Enix) cements his position in the gaming industry.

**Felycia Edi Soetaredjo**
Dr. Felycia Edi Soetaredjo earned her master's degree in Chemical Engineering from The University of Queensland, a pursuit sponsored by the Australian Development Scholarship, and graduated in 2005. She furthered her studies at the National Taiwan University of Science and Technology, receiving her doctoral degree in 2013. As a Chemical Engineer, Felycia has a keen interest in wastewater research. She has spearheaded numerous research projects in this domain, with a specific focus on the adsorption of hazardous compounds. Her research endeavors have been supported by IFS, competitive grants from the Indonesian government, and various industries. Driven by environmental concerns, she remains dedicated to this field of research, and her commitment is reflected in the numerous scientific articles she has published.

**Napida Hinchiranan**
Napida Hinchiranan has been a faculty member of the Department of Chemical Technology at the Faculty of Science, Chulalongkorn University since 2005. In her role as a lecturer, she instructs both Bachelor and Graduate program students, specifically within the Department of Chemical Technology and the Program in Petrochemistry and Polymer Science. Her courses include Thermodynamics for Chemical Engineering, Separation Operations with a focus on the Adsorption process, and foundational concepts in Catalyst Technology. Hinchiranan's research prowess lies in the chemical modification of polymers. She is particularly interested in the natural rubber's adaptation as compatibilizers or impact modifiers through graft copolymerization. Furthermore, she delves into reactions like catalytic hydrogenation to enhance the properties of unsaturated elastomers. Her expertise also encompasses the heterogeneous catalytic process, which plays a crucial role in refining alternative liquid fuels.

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**Lucille V. Abad**
Dr. Lucille V. Abad, a distinguished scientist from the Philippine Nuclear Research Institute (PNRI), was spotlighted by the Philippine Commission on Women (PCW) in their Juana Says series as part of the International Women's Day celebrations in 2019. Holding a Ph.D. in Nuclear Engineering and Management from the University of Tokyo, Dr. Abad has made notable contributions to the field of chemistry. A testament to her dedication and passion, she, along with her research team, pioneered the development of Radiation-Modified Carrageenan as a Plant Food Supplement, and their rigorous studies have confirmed its efficacy.

**V. Narry Kim**
V. Narry Kim, a renowned South Korean biochemist and microbiologist, has made significant strides in the field of microRNA biogenesis. Born in 1969 in South Korea, Kim's groundbreaking research has not only established foundational knowledge about the biology of microRNA but also enhanced the methodologies of RNA interference technologies. Her fascination with science ignited during her high school years. Reflecting on her choice to dedicate her life to science, she eloquently expressed, "I was charmed by the simplicity of the principles underlying the complexity of life."

**Akbar Adibi**
Akbar Adibi was a renowned Iranian electronic engineer, VLSI researcher, and university professor. Among his notable achievements, he introduced Iran's first Solar Cell in 1978 and played a pivotal role in initiating Amirkabir University's Graduate Studies in 1984. Under his guidance, Hassan Kaatuzian became Iran's first Ph.D. graduate in electronics in 1994. A prolific scholar, Adibi authored over 100 publications, both domestic and international. In 1995, he attained the esteemed title of Full Professor and was awarded the Kharazmi National Prize for a top project. A year later, he was honored as "The Most Recognized and Elite University Professor of Iran", receiving a prize directly from Iran's President. Moreover, he became a senior member of the IEEE in 1996. Widely celebrated for his vast contributions, Adibi is endearingly remembered as "The Father of Electronics and VLSI in Iran" by scholars and the media alike.

**Benjamin Banneker**
Benjamin Banneker was a remarkable free African-American known for his expertise as an almanac author, surveyor, landowner, and farmer. Despite being born in Baltimore County, Maryland, to a free African-American mother and a former slave father, and having limited formal education, Banneker was predominantly self-taught, showcasing a keen intellect in mathematics and natural history. He gained notable recognition for his collaboration with Major Andrew Ellicott in conducting a pivotal survey that delineated the original boundaries of the District of Columbia, which would become the federal capital district of the United States.

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**John Herrington**
Dr. John Herrington is the first Native American to journey into space and take a spacewalk. He was a crew member of the 16th shuttle mission to the International Space Station in 2002. Honoring his Indigenous roots, he brought with him six eagle feathers, a braid of sweet grass, two arrowheads, and the flag of the Chickasaw Nation during the mission, as noted by the American Indian Education Fund.

**Susan Le Flesche Picotte**
A trailblazer in the medical field as the first Native American to earn a medical degree. After attending the Women's Medical College of Pennsylvania in Philadelphia, she graduated top of her class in 1889. Committed to serving her community, she promptly returned to the Omaha Reservation. There, she provided medical care to thousands and made a lasting impact on healthcare for her people. One of her most notable achievements was establishing the first private hospital on a Native American reservation.

**Percy Julian**
Dr. Percy Julian was an esteemed American research chemist who broke new ground in the chemical synthesis of medicinal drugs derived from plants. He holds the distinction of being the first individual to synthesize the natural product physostigmine. Additionally, Dr. Julian pioneered the industrial-scale chemical synthesis of vital human hormones, progesterone and testosterone, using plant sterols like stigmasterol and sitosterol. This foundational work spearheaded the steroid drug industry's development and production of vital drugs such as cortisone, other corticosteroids, and birth control pills. Recognizing the potential of his discoveries, Dr. Julian later established his own company that focused on synthesizing steroid intermediates from the wild Mexican yam. His innovations substantially reduced the costs of these steroid intermediates for major multinational pharmaceutical firms, facilitating the widespread use and accessibility of several crucial medicines.

**Mae Carol Jemison**
Dr. Mae Jemison is a multifaceted American engineer, physician, and former NASA astronaut. She made history by becoming the first black woman to journey into space, serving as a mission specialist on the Space Shuttle Endeavour. After joining NASA's astronaut corps in 1987, she was chosen for the STS-47 mission. During this mission, she orbited Earth for nearly eight days from September 12-20, 1992. After her illustrious tenure with NASA, which she left in 1993, Jemison ventured into the business world, founding a technology research company. Her passion for education led her to establish a non-profit educational foundation. Through this foundation, she helms the ambitious 100 Year Starship project, which is backed by DARPA. Beyond her scientific and entrepreneurial pursuits, Jemison has authored several children's books and has graced the television screen on multiple occasions.

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**Walter Lincoln Hawkins**

Dr. Walter Lincoln Hawkins was an eminent American chemist and engineer, celebrated for his groundbreaking contributions to polymer chemistry. During his prolific tenure of thirty-four years at Bell Laboratories, Hawkins developed a durable plastic designed to coat telephone cables, paving the way for the expansion of telephone services to myriad Americans, particularly benefiting those in remote areas. Beyond his innovations in polymer science, Hawkins was a passionate advocate for minority students, championing their inclusion and success in the sciences. In 1973, he took on a leadership role, serving as the chairman at Montclair State University. Over his illustrious career, Hawkins received numerous accolades. Notably, he became the first African-American inducted into the National Academy of Engineering in 1975. In recognition of his lifetime of contributions to technology and society, U.S. President George H. W. Bush posthumously awarded him the National Medal of Technology in 1992.

**Fern Hunt**

Dr. Brenda Hunt is a distinguished American mathematician renowned for her contributions to applied mathematics and mathematical biology. Her groundbreaking work spans across diverse areas including probability, stochastic modeling, mathematical biology, computational geometry, nonlinear dynamics, computer graphics, and parallel computing. In recognition of her stellar contributions, Hunt was honored with the prestigious Arthur S. Flemming Award. Further testament to her prominence in the mathematical community, she was inducted as a fellow of the American Mathematical Society in 2019. This accolade was bestowed upon her "for outstanding applications of mathematics to science and technology, exceptional service to the US government, and for her dedicated outreach and mentoring."

**Valerie Thomas**

Dr. Valerie Thomas is a renowned American scientist and inventor, best known for her invention of the illusion transmitter, patented in 1980. She significantly contributed to space science, particularly in the early stages of the Landsat program, where she developed digital media formats and image processing systems. Between 1964 and 1970, Thomas devised real-time computer data systems essential for satellite operations. She later supervised the Landsat program from 1970 to 1981, establishing herself as a global expert on Landsat data products. During her illustrious NASA tenure, she led the Large Area Crop Inventory Experiment (LACIE) in 1974, collaborated with NOAA and USDA, and held various pivotal roles, including being the assistant program manager for Landsat/Nimbus, managing the NSSDC Computer Facility, and overseeing the Space Physics Analysis Network project. She further contributed as associate chief of the Space Science Data Operations Office. A prolific academic, Dr. Thomas authored multiple scientific papers and holds several patents, including her illusion transmitter. In recognition of her groundbreaking work, she has received accolades like the Goddard Space Flight Center Award of Merit and NASA's Equal Opportunity Medal.

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**Mark Dean**

Dr. Mark Dean is a trailblazing inventor and computer engineer renowned for his foundational contributions to the computing industry. He was the brain behind the development of the industry standard architecture (ISA) bus, a crucial innovation that allowed multiple devices, such as modems and printers, to interface with personal computers. Notably, he also spearheaded a design team responsible for crafting a one-gigahertz computer processor chip. As a testament to his pioneering work, he holds three out of the nine foundational patents for the co-creation of the IBM personal computer unveiled in 1981. In recognition of his exemplary contributions, IBM honored him in 1995 by naming him their first African-American IBM Fellow. Further cementing his legacy in the engineering world, Dr. Dean was inducted into the esteemed National Academy of Engineering in 2001, an acknowledgment of his "innovative and pioneering contributions to personal computer development."

**Elbert Frank Cox**

Dr. Elbert F. Cox stands as a monumental figure in the annals of mathematical history. He holds the distinction of being the first Black individual globally to attain a PhD in mathematics, a feat he accomplished at Cornell University in 1925. To honor his groundbreaking achievements and enduring legacy, the National Association of Mathematicians inaugurated the Cox-Talbot Address, an annual presentation delivered at the NAM's national conventions. Further celebrating his contributions and commitment to education, the Elbert F. Cox Scholarship Fund was established, which aids Black students in their academic pursuits in the field of mathematics.

**Alexa Canady**

Dr. Alexa Canady is a distinguished retired American medical doctor renowned for her specialization in pediatric neurosurgery. Born in Lansing, Michigan, she pursued her academic aspirations at the University of Michigan, where she procured both her bachelor's and medical degrees. Following the completion of her residency at the University of Minnesota in 1981, Dr. Canady made history by becoming the first black woman to be certified as a neurosurgeon. This groundbreaking achievement followed in the wake of Ruth Kerr Jakoby, who, in 1961, became the first American woman to gain board certification in neurosurgery. Dr. Canady's expertise and dedication led her to serve as the chief of neurosurgery at the Children's Hospital in Michigan, solidifying her legacy in the field.

**Lloyd A. Hall**

Lloyd Augustus Hall was a renowned American chemist known for his advancements in food preservation. Throughout his illustrious career, he secured 59 U.S. patents, with several of his innovations receiving patents in other countries as well.

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**Alice Ball**

Alice Augusta Ball was a pioneering American chemist celebrated for her "Ball Method", an innovative treatment for leprosy in the early 20th century. Born in Seattle, she made history as the first woman and first African American to earn a master's degree from the University of Hawaii and became its first female and African American chemistry professor. Hailing from a well-off family deeply involved in photography, her father edited the Colored Citizen and was a lawyer and photographer, while her mother also embraced photography. Her grandfather, James Ball Sr., was an early Black adopter of daguerreotypy, a technique of imprinting photos onto metal plates. This family legacy in photography, rich with chemical intricacies, likely influenced Alice's chemistry pursuits. Notably, although her parents championed African American rights, Alice's birth certificate identified them as "White", possibly to shield her from the era's racial biases and facilitate her journey in white-majority environments.

**Patricia Bath**

Patricia Era Bath, born on November 4th, 1942, was a trailblazing American ophthalmologist, inventor, humanitarian, and academic. She pioneered laser cataract surgery, introducing her invention, the Laserphaco Probe. Bath broke multiple barriers in her career: she was the first female member of the Jules Stein Eye Institute, led a post-graduate ophthalmology program as its first female head, and was the first woman elected to the honorary staff of the UCLA Medical Center. Additionally, she became the first African-American ophthalmology resident at New York University and the first African-American woman surgeon at the UCLA Medical Center. Notably, Bath was the first African-American woman doctor to secure a medical patent. Holding five patents in total, she also established the non-profit American Institute for the Prevention of Blindness in Washington, D.C. She recently passed away on May 30th, 2019.

**Luis Federico Leloir**

An Argentine physician and biochemist, Leloir was awarded the 1970 Nobel Prize in Chemistry for unveiling the metabolic pathways in lactose. He was the third Argentine to clinch a Nobel honor in any domain at that time. Leloir's groundbreaking investigations into sugar nucleotides and carbohydrate metabolism significantly advanced our grasp of galactosemia, a congenital ailment. Financial constraints led him to employ makeshift apparatus in his experiments. Today, the Fundación Instituto Campomar, which he was associated with, has been renamed in his honor as Fundación Instituto Leloir. This expanded institute, spanning 21,000 sq ft, houses a large team of researchers, technicians, post-doctorate fellows, and Ph.D. candidates. The institute delves into research areas encompassing Alzheimer's, Parkinson's, and multiple sclerosis.

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**Jacinto Convit**
A celebrated Venezuelan physician and scientist, Convit is renowned for creating a leprosy vaccine and conducting pivotal cancer research. He was instrumental in establishing Venezuela's National Institute of Biomedicine and held prominent roles in leprosy research and treatment. Convit's extensive contributions, especially towards leprosy and tropical diseases, earned him numerous accolades, including Spain's Prince of Asturias Award in Scientific and Technical Research and France's Legion of Honor. In 1988, his groundbreaking work on an experimental anti-leprosy vaccine led to a Nobel Prize in Medicine nomination. Building on Convit's methodology, a leishmaniasis vaccine was subsequently crafted. Additionally, he contributed significantly to research on onchocerciasis, mycosis, and other tropical maladies.

**Luis von Ahn**
Born on 19 August 1978 in Guatemala City, Luis von Ahn is a distinguished Guatemalan entrepreneur and a Consulting Professor in the Computer Science Department at Carnegie Mellon University, Pennsylvania. Recognized as a trailblazer of crowdsourcing, he founded reCAPTCHA, a company acquired by Google in 2009. Further, he co-founded and serves as the CEO of Duolingo, the most widely-used language-learning platform globally. Growing up in an upper-middle-class family with physician parents, von Ahn enjoyed the privilege of attending a private English school in his hometown. His intrigue with technology began at age eight when his mother introduced him to a Commodore 64 computer. He possesses a rich heritage, being of German Guatemalan descent.

**Scarlin Hernandez**
Born in the Dominican Republic in 1991, Scarlin Hernandez moved to Brooklyn, NY at age 4. In 2013, she graduated with a computer engineering degree from Capitol Technology University in Laurel, Maryland, thanks to a full scholarship from the National Science Foundation. Scarlin's journey with NASA began with an internship at the Goddard Space Flight Center. By 20, she was integral to the ground control system team for the Tropical Rainfall Measuring Mission (TRMM) satellite. After obtaining her Bachelor's degree, she led mission planning for the TRMM before transitioning to the James Webb Space Telescope mission. Currently, as a spacecraft engineer for this hallmark NASA mission, set to launch in 2021, she plays a pivotal role in testing the ground systems that will operate the telescope. This advanced telescope aims to uncover new planets and the first stars emerging post the dark ages.

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**Euphemia Lofton Haynes**
An American mathematician and educator, she became the first African-American woman to secure a PhD in mathematics. Her commitment to education led her to establish a trust fund at Catholic University, contributing $700,000 to create a professorial chair and student loan fund in the School of Education. In recognition of her contributions, Pope John XXIII bestowed upon her the Pro Ecclesia et Pontifice, a prestigious Papal honor, in 1959. Later, in 1998, she was honored as a Fellow of the American Association for the Advancement of Science.

**Rebecca Cole**
Rebecca J. Cole, born on March 16, 1846, in Philadelphia, was an American physician, organization founder, and social reformer. In 1867, she became the second African-American woman to earn a medical degree, following Rebecca Lee Crumpler's achievement in 1864. Cole faced numerous racial and gender obstacles throughout her educational journey. She trained in female-only institutions, often led by pioneering women physicians of the time. Cole attended the Institute for Colored Youth, excelling in subjects like Latin, Greek, and mathematics before graduating in 1863. She earned her medical degree from the Woman's Medical College of Pennsylvania in 1867, which was established in 1850 by Quaker abolitionists as the world's first medical school for women. Under the guidance of Ann Preston, the college's first female dean, Cole presented her graduate thesis titled "The Eye and Its Appendages". A poignant reflection of her journey is an article written by her college roommate, Dr. Odelia Blinn, detailing how societal prejudices in Philadelphia almost disrupted Cole's medical aspirations.

**Otis Boykin**
Otis Frank Boykin, born on August 29, 1920, in Dallas, Texas, was a notable American inventor and engineer. He is best known for his innovations in electrical resistors, which are integral components in various devices including computers, missile systems, and pacemakers. Tragically, Boykin's mother, Sarah, a maid, passed away from heart failure when he was just a year old, and this personal loss later motivated him to enhance pacemaker technology. His father, Walter B. Boykin, worked as a carpenter and eventually became a preacher. Demonstrating early academic promise, Boykin excelled at Booker T. Washington High School in Dallas and became the valedictorian of his class in 1938. Subsequently, he pursued higher education at Fisk University on a scholarship. While at Fisk, Boykin gained practical experience by working as a laboratory assistant in a nearby aerospace laboratory. However, he left the university in 1941.

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**Katherine Johnson**
Creola Katherine Johnson was a pioneering American mathematician whose contributions were instrumental to the success of numerous U.S. crewed spaceflights at NASA. Over her 33-year tenure at NASA and its predecessor, she was renowned for her proficiency in manual calculations and was pivotal in ushering in the era of using computers for these computations. Johnson was celebrated as one of the first African-American women to work as a scientist at NASA. Among her significant contributions were determining trajectories, launch windows, and emergency pathways for Project Mercury, which included missions for astronauts Alan Shepard and John Glenn. Additionally, her expertise played a critical role in the Apollo Lunar Module flights to the Moon, the initiation of the Space Shuttle program, and the conceptual plans for a Mars mission.

**Charles R Drew**
Charles Richard Drew was a prominent American surgeon and medical researcher, known for his pioneering work in blood transfusions. He introduced enhanced techniques for blood storage and played a vital role in establishing large-scale blood banks during the early stages of World War II, leading to the saving of countless Allied lives. As a leading African American in his field, Drew staunchly opposed the racial segregation of blood donations, a stance not based on scientific reasoning. Due to his disagreements with the American Red Cross over this policy, he resigned. The organization only changed this policy in 1950.

**Frederick M. Jones**
Frederick McKinley Jones was an esteemed American inventor and entrepreneur, known for his groundbreaking work in refrigeration which revolutionized the transportation of perishable goods. Honored with the National Medal of Technology and inducted into the National Inventors Hall of Fame, he co-founded Thermo King. Born in Cincinnati, Ohio on May 17, 1893, to an Irish father and African-American mother, he faced challenges from a young age. Abandoned by his mother, his upbringing was taken over by a priest after his father's struggles. Despite leaving school after the 6th grade and being largely self-taught, Jones's mechanical prowess and innovative spirit shone through. By 14, he was an automobile mechanic, continuously enhancing his skills through independent study and determination, defying the odds stacked against him.

**Miriam Benjamin**
Miriam E. Benjamin, an American schoolteacher and inventor, made history in 1888 by patenting the Gong and Signal Chair for Hotels, making her the second African-American woman to hold a patent. Though she briefly attended Howard University's medical school between 1894 and 1895, her career took a turn when she passed a civil service examination, leading to roles as a government clerk in various federal departments. Eventually, Benjamin pursued legal training, either through formal education or under the guidance of an established attorney, and successfully became an attorney.

**Carlos Juan Finlay**

Carlos J. Finlay was a Cuban epidemiologist celebrated for his pioneering research on yellow fever. He identified the Aedes aegypti mosquito as the disease's transmitter. To honor his significant contributions to healthcare and medicine, President Gerardo Machado introduced the National Order of Merit Carlos J. Finlay in 1928. This esteemed award, given by the Cuban Council of State, is the highest scientific decoration in Cuba. Though the award was halted from 1959 to 1981, it was eventually reinstated. Furthermore, in 1991, the Finlay Institute for Vaccines was established, named in tribute to his groundbreaking work.