

CELEBRATING JAMAICAN INVENTORS AND INNOVATORS

Groundbreaking innovations by Jamaicans have enhanced the quality of life of the society and contributed to development in several fields, locally and internationally. In health care, for instance, *Canasol*, formulated by Drs. Manley West and Albert Lockhart, has aided hundreds of glaucoma patients. The papaya sector has been fortified by Professor Paula Tennant's disease-resistant variety. In technology, Xormis, a Jamaican start-up company, developed the smartphone application, Grik.Ly, which allows businesses and consumers to share contact information more seamlessly. These are just a few examples of phenomenal Jamaican inventors and innovators whose work has transformed many industries.



Dr. Cicely Williams accepts the Order of Merit from then Governor-General, the Most Honourable Sir Florizel Glasspole.

The Hon. Dr. Cicely Delphine Williams

OM, CMG, DM, MD, DSc, FRCP (1893-1992)

Dr. Cicely Williams was a pioneering physician who specialised in nutrition, paediatrics and maternal care. She became most noted for her discovery of the child malnutrition syndrome, kwashiorkor.

Dr. Williams was born in Westmoreland in 1893 and was one of the first women to be admitted to study medicine at the University of Oxford in England. In 1929, Colonial Medical Services sent her to work in the Gold Coast (present-day Ghana). While working on the West African coast, she noticed a large number of hypo-pigmented children with swollen bellies and legs, and also that there was a higher mortality rate among toddlers than newborns. The toddlers were usually treated for 'vitamin deficiency'. Unfortunately, many of them died. Dr. Williams investigated and discovered kwashiorkor – an acute form of malnutrition resulting from a lack of protein. To treat the condition, she recommended that parents feed their children a high protein diet.

Throughout her career, Dr. Williams worked in several countries as doctor, lecturer and researcher, sharing her findings in medical journals. In 1948, she was appointed adviser for maternal and child health at the World Health Organization (WHO). After her retirement in 1951, she continued to work as an international spokesperson on issues of maternal and child health care. In January 1976, the Government of Jamaica conferred on her the national honour, the Order of Merit.



Dr. the Hon. Thomas Philip Lecky, OM, OBE, DSC, PhD

Dr. the Hon. Thomas Philip Lecky

OM, OBE, DSC, PhD (1904-1994)

Born in Portland, Jamaica in 1904, Dr. Lecky became celebrated for creating new cattle breeds that are more suitable to the Jamaican climate and terrain.

At the centre of Dr. Lecky's research at the University of Edinburgh, Scotland, was the manipulation of species of cattle through natural selection and mutation. He was awarded a PhD in Agriculture in 1951.

In the 1950s, Dr. Lecky successfully developed a new breed of dairy cattle – '*Jamaica Hope*', which was a combination of the British Jersey (a small, light-feeding cow), the Holstein (a heavy milk producer cow) and the Indian Sahiwal that was disease-resistant and suited to the warm climate.

Dr. Lecky followed his Jamaica Hope success with the creation of two cattle breeds – *Jamaica Red* and *Jamaica Black*. The Jamaica Red became the chief cattle reared for beef. In 1965, Dr. Lecky retired from the Government service but continued to work as an agricultural consultant until his death in 1994. He was conferred the national honour, the Order of Merit, for service to the dairy and cattle industries of Jamaica in 1978.

Austin James Thomas (1909-1988)

Austin James (AJ) Thomas was a self-taught marine scientist who led the development of land-based fishing in Jamaica. Born in Westmoreland in 1909, AJ Thomas was instrumental in the creation of the mono-sex cultivation of the African or Nile perch, commonly known as tilapia.

In 1954, Thomas led the development of local aqua farming, while employed as Fisheries Officer at the Fisheries Division in the Ministry of Agriculture. At the time, freshwater fish was imported for local consumption.

Thomas experimented with specimens of the African perch and the Fisheries Division built ponds to start fish farms. However, he was disappointed when the fish did not grow to the expected size as many remained too small. Thomas continued his experiments and later discovered that the male fish grew larger when reared alone in ponds. The technique proved to be successful and the adoption of mono-sex fish cultivation transformed the fishing industry worldwide.

In November 2003, Thomas was posthumously awarded the National Medal for Science and Technology for his work in the fishing industry.



Dr. the Hon. Manley Elisha West working in the lab. (Photo courtesy of UWI Mona)

Dr. the Hon. Manley Elisha West

OM, PhD (1929-2012)

Dr. Manley West, a pharmacologist, was renowned for his pioneering work in the development of medicine from the marijuana plant. In 1985, Dr. West, along with Dr. Albert Lockhart, an ophthalmologist, developed the drug Canasol from cannabis for the treatment of glaucoma. Glaucoma is a condition that damages to the eye's optic nerve. Canasol eye drops reduce the fluid pressure within the eye that is present in late-stage glaucoma.

Canasol is noted for its natural composition and is a quarter of the price of other synthetic eye drops. Both men were awarded the Order of Merit by the Jamaican Government in 1987 for this achievement. In 1981, Dr. West was awarded the Centenary Medal for Outstanding Contribution to Natural Sciences by the Institute of Jamaica. Dr. West died on April 24, 2012.

Professor Emeritus the Hon. Gerald Lalor, OJ, CD (1930-)

Professor Emeritus the Hon. Gerald Lalor is a pioneering Jamaican geochemist. In 1984, Dr. Lalor established the Centre for Environmental and Nuclear Science, now known as the International Centre for Environmental and Nuclear Science (ICENS).

The initiative led to the acquisition of the SLOWPOKE (Safe Low-Power (K)ritical Experiment) Nuclear Reactor. ICENS has the only research nuclear reactor in the English-speaking Caribbean. ICENS works within the "Peaceful Uses of Nuclear Energy" system. Using this Nuclear Reactor, ICENS has been conducting chemical analysis for the mineral, food, environmental and construction industries as well as public sector agriculture and water agencies.



Professor Emeritus the Hon. Gerald Lalor (centre) with then Prime Minister of Jamaica, the Most Honourable PJ Patterson (left); and former Governor-General, the Most Honourable Professor Sir Kenneth Hall.

Professor Lalor is also known for introducing satellite technology to broadcast information remotely. He developed the University of the West Indies (UWI) Distance Teaching Experiment — later Enterprise — (UWIDITE) in 1982. UWIDITE lectures were broadcast from the main campus to centres in rural Jamaica and other Caribbean islands which were equipped to receive the signals.

In 1980, the Government of Jamaica conferred the national honour, Order of Distinction, Commander Class (CD), on Professor Lalor for his work in science and technology. Additionally, in 1990, he was awarded the Order of Jamaica and in 2003, he was awarded the National Medal for Science and Technology.

Robert Rashford (1957-)

Robert Rashford is an aerospace engineer and a leader in inventing tools for outer space exploration missions. In 2000, Rashford along with Puerto Rican scientist, Charles Rivera, invented the world's first portable 3D non-destructive evaluation (NDE) system. The NDE system detects flaws in materials used to construct aircraft, spacecraft and industrial pipelines without having to take these materials apart. The system was used in the maintenance of the United States Government's Hubble Space Telescope.

Rashford was born in Kingston, on June 15, 1957. He attended the Waulgrove College in St. Andrew, and migrated to the United States of America in 1978. In 1982, Rashford graduated from Temple University with a BSc in Engineering. He then did postgraduate studies in Engineering and Management at the University of Maryland.

After studying, he went on to make outstanding contributions to science and technology. Rashford has received four National Aeronautics and Space Administration (NASA) Achievement Awards from the US Government for work on the Upper Atmosphere Research Satellite and the Hubble Space Telescope Servicing Missions in 1993, 1997, 1999 and 2000.

Since 2009, Rashford has served as the main project manager of the Optical Telescope Element Simulator for the James Webb Space Telescope (JWST). The JWST will replace the Hubble Space Telescope and is expected to be launched in October 2018.



Dr. Lawrence (back row 3rd left) with other Musgrave awardees at the Institute of Jamaica, October 2011.

Dr. Lawrence Williams (1963-)

Dr. Lawrence Williams, a consultant at the Scientific Research Council (SRC), isolated and characterised compounds with pharmaceutical potential from tropical plants, such as the guinea hen weed, which have the potential to fight cancers.

Williams was born in St. Elizabeth in 1963. In 1987, he completed undergraduate studies in Zoology and Chemistry at UWI, Mona. Williams continued with post-graduate studies at UWI and his 1991 PhD dissertation at the University of the West Indies was on 'Biological Activity in Leaf Extracts from the *Artocarpus altilis* [the Breadfruit]'.

In 2003, he was awarded the prestigious Alexander von Humbolt Scholarship to do postdoctoral studies on the guinea hen weed (*Petivera alliacea*) at the Hohenheim University in Germany. He was assisted in this research by Professors Harold Rosner and Wolfgang Kraus. Their investigations yielded the compound dibenzyl trisulphide, which has been shown to cure cancer cells inside a laboratory. The compound has been found to cure cells that affect the brain, bladder, breast, skin and lungs.

In 2010, Dr. Williams and colleague, Dr. H.G. Levy, a Jamaican-born medical doctor based in the USA, were awarded an international patent on a protein complex of dibenzyl trisulphide, isolated from the guinea hen weed. In 2011, for his contribution to science, Dr. Williams was awarded the Silver Musgrave Medal by the Institute of Jamaica.



Papaya trees

Professor Paula Tennant (1967-)

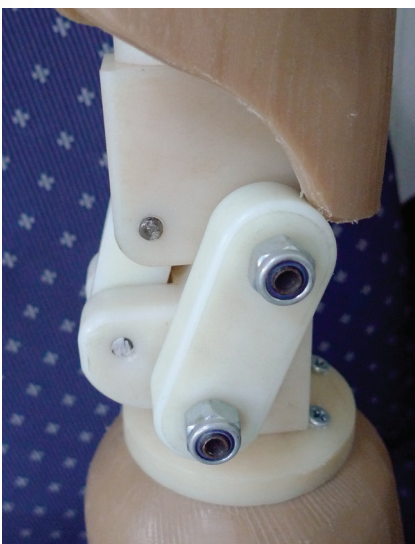
Dr. Paula Tennant is the first person from the Caribbean to develop a bioengineered plant product and the first to create a papaya that is resistant to the Papaya Ringspot Virus (PRSV).

Paula Tennant was born in Kingston in 1967. She studied biology with a special concentration in botany at the University of the West Indies, Mona. In 1990, the pathogenic plant virus, PRSV, devastated the commercial papaya industries of North America and the Caribbean. The affected fruit exhibited yellowing leaf distortion with oily or water-soaked spots and streaks appearing on the trunk. At the time of the PRSV outbreak, Dr. Tennant was working as a summer employee in the Botany Laboratory at UWI, Mona, and met consultants from Cornell University in the United States, who were in the island investigating the PRSV.

After graduating from UWI, with first class honours, Tennant was invited to work at Cornell University where investigations were underway to combat the PRSV. It was soon discovered that the Jamaican strain of the virus was different from the one that had affected papaya crops in Hawaii. The scientists concluded that gene mutation was a viable option to combat the outbreak and worked to create a hybrid papaya that could resist the PRSV.

Dr. Tennant manipulated the genetic make-up of the papaya and produced a new bioengineered variety that was resistant to PRSV. This variant was named *Jamaica Solo Sunrise*. For her work, she received a PhD from Cornell University.

Dr. Tennant has been recognised for her work and was the recipient of the Young Scientist of the Year Award in 1996 from the Scientific Research Council, Jamaica. In 2001, she received the Young Agriculturist Award from the Inter-American Institute for Cooperation on Agriculture (IICA). In the same year, she joined the Department of Life Sciences at UWI, Mona, where she has continued to research viruses affecting papaya, citrus and root crops. In 2012, she was promoted to Professor of Molecular Plant Pathology.




JaipurKnee

Joel Sadler (1985-)

Joel Sadler is a Human Augmentation Engineer and the co-inventor of the JaipurKnee, a budget-friendly prosthetic knee joint, which was listed at number 18 in Times Magazine's "50 Best Inventions of 2009".

Sadler was born in St. Andrew in 1985. He attended Wolmer's Preparatory School and Champion College, before studying engineering at the Massachusetts Institute of Technology (MIT) in the USA.

In 2008, while doing postgraduate studies in Mechanical Engineering at the University of Stanford in California, USA, Sadler, along with classmate Eric Thorsell, designed the device as part of a course project in Medical Device Design.



The JaipurKnee is made of self-lubricating, oil-filled nylon and is both flexible and stable, even on irregular terrain. The device was further developed by Stanford University in collaboration with the Jaipur Foot Group, a charity that provides prostheses to Indian amputees. The JaipurKnee has the potential to benefit amputees in low-income communities worldwide.

Sadler received a bronze medal from the Institute of Jamaica in 2010 for his achievement in science.

Xormis

Xormis is a Jamaican information and communications technology (ICT) start-up. The company creates mobile and web-based applications.

The company grew out of a student group at the Northern Caribbean University (NCU) in Manchester. In July 2010, while students at the NCU, team Xormis won the Interoperability Challenge at the Microsoft Imagine Cup held in Warsaw, Poland. The team's winning project, the Electronic School Aid for Primary Education (eSCAPE), was geared towards improving literacy in primary schools. The winning team members were Dwayne Samuels, Shawn McLean, Derron Brown and Markel Mairs.



xormis
Envision. Create. Innovate

telephone numbers and email addresses.

In 2013, Xormis launched its business networking mobile application known as Grik.Ly on the Microsoft mobile platform. The Grik.Ly Windows Phone application goes beyond standard online address books by integrating location and event details of the contact's meetings, with seamless updates. Grik.Ly monitors changes in job titles,



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