

# Prof. Gordon Shirley



## The Principal's Research Day Message

It is my pleasure to welcome all of you to Research Day 2008. This year is very special because it marks the tenth anniversary of Research Day and the 60th anniversary of the UWI. Not only is the year special but the event we are celebrating today is also special.

Fulfilling our research mandate is what defines us as a university. Research Day provides the forum for us to showcase the evidence that we are indeed a first rate university producing research to advance and expand the existing knowledge in Jamaica, the region and the wider world. It is our research output that builds our reputation and the quality of that research influences the rating we receive from colleague universities and stakeholders.

Our favorable reputation has redounded to our benefit. We have been able to attract more and better qualified staff, and students. So outstanding are our staff and the quality of their research that this year, three members shared in the prestigious Nobel Peace Prize for their work on climate change. We also attract the brightest and best students. This year all 7 of the 2007 recipients of the coveted Jamaica Scholarship Awards chose to attend the UWI. As a consequence of this trend to make UWI the preferred place of study our student enrollment stands at an all time high of 33,140.

As our high quality research enhances our reputation, there is a corresponding rise in our ability to attract research funding and awards. Last year, funds to support research on the Mona Campus alone amounted to \$198.3m and several influential donors have also funded scholarships. This academic year, 2 of 3 lucrative and well sought-after Erasmus Mundus scholarships were awarded to students from the Mona and St. Augustine Campuses and we are in negotiations for 10 new OAS scholarships for a duration of up to two years. The increase in the number of UWI graduate scholarships further exemplifies our success in attracting funds.

I am fairly certain you will agree with me, that our research agenda is headed in the right direction and yielding the desired results. In this spirit of optimism I invite you to participate fully in the many experiences we have planned for you and I trust you will leave here confident that the UWI, through its research programme and output, is well placed to maintain its position as the premier university in the region and the ideal agent for regional development.

# Dr. Dillon Alleyne



## Leveraging the Impact of the Caribbean Diaspora and Remittances for Development

**T**his research project examines ways of leveraging the impact of remittances and the Caribbean Diaspora for the development of the region. This project is also being done in collaboration with research work being conducted by the Caribbean Diaspora and Economy Research Group (CDERG), Department of Economics, UWI, Mona, of which Dr. Alleyne is a member.

The research is being carried out in six Caribbean countries: Jamaica, Barbados, Dominica, Guyana, St. Lucia and Grenada. The study argues that despite the considerable impact of the diaspora through remittances and other benefits there has been no consistent diaspora policy either at the national and regional levels. The study also argues that the Caribbean faces several major challenges and among these are the following:

- (1) The new trade rules under the World Trade Organisation will no longer support generous preferences which the region once enjoyed.
- (2) Regional firms will have to become competitive to raise their market share of income.
- (3) Firms will have to undergo considerable technology upgrade to compete.
- (4) The knowledge base or domestic capital will have to increase to meet the challenge of a knowledge intensive business environment.

For these reasons new growth engines will have to be developed in the economies of the Caribbean if the region is to maintain its gains in education, health and social stability. It is in this context that diaspora communities offer several opportunities:

- (1) They provide a flow of foreign exchange through the flow of remittances, which can aid economic restructuring.
- (2) They are a source of skill and expertise for the domestic economy.
- (3) They offer a ready market for goods and tradable services.

The study thus examines how public policy can be crafted for better utilization of the skills, resources and expertise of the Caribbean diaspora. The specific outputs are as follows:

- (1) To develop a theory of diaspora relations and development.
- (2) To examine the current policy landscape in the Caribbean and to suggest how

- this needs to be changed to encourage a greater flow of skills from the diaspora.
- (3) To determine how remittances can be better utilised for development and what regulatory changes might be necessary.
  - (4) To examine what incentives can be employed to increase the flow of remittances?
  - (5) To understand what mix of institutions will better answer questions (2) and (3) above.

Dillon Alleyne in collaboration with other members of the Caribbean Diaspora and Economy Research Group (CDERG) has done a number of studies related to remittances and other aspects of diaspora relations. Among these are the following:

*Alleyne, D., G. McLeod, C. Kirton and M. Figueroa 2008. Short-Run Macroeconomic Determinants of Remittance Flows to Jamaica: a time varying parameter approach. Applied Economics Letters(forthcoming).*

*Alleyne, D., and I. Solan. 2007. A Theory of Motivations to Remit in the Caribbean with the Possibility of Return Migration. Global Development Studies.V4.No.3-4 Winter 2006 Spring 2007.*

*Alleyne, D. 2007. The impact of Remittances on Poverty and Inequality in Jamaica. Global Development Studies. V4.No.3-4 Winter 2006 Spring 2007.*

*Alleyne, D., C. Kirton, and M. Figueroa 2008. Macroeconomic Determinants of Migrant Remittances to Caribbean Countries. Panel Unit Roots and Cointegration. Journal of Developing Areas: V.41.No2(forthcoming).*

*Alleyne, D., and A. Francis 2008. Balance of Payments Constrained Growth in Developing Countries: A Theoretical Perspective. Metroeconomica: 59(3).(forthcoming)*

*Alleyne, D. 2006. Motivations to Remit in CARICOM: A GMM approach. Social and Economic Studies, 55(3): 68-87.*

**Dr. Dillon Alleyne is a Lecturer in the Department of Economics, Faculty of Social Sciences, UWI, Mona and Visiting Fellow, Centre for Global Development, Washington DC..**

# Dr. Helen Henningham



In collaboration with: Professor Susan Walker & Dr. Christine Powell, Child Development Research Group, Epidemiology Research Unit, and Dr. Julie Meeks-Gardner from the Caribbean Child Development Centre, UWI.

## Promoting Young Children's Social and Emotional Competence and Preventing Aggression in Basic Schools.

**Y**oung children who have social, emotional and behaviour problems are not only more likely to have antisocial behaviour in later childhood and adolescence but they are more likely to experience academic failure and early school drop out.

Important risk factors for social, emotional and behaviour problems in early childhood include inappropriate parenting, poor teacher-child relationships, poor home-school bonding and peer rejection at school. Schools provide a logical public health setting for addressing each of these risk factors and for reaching a high proportion of young children.

This project involved implementing and evaluating interventions to promote young children's social and emotional competence and reduce aggression at a strategic developmental period – during the early childhood years. Five basic schools in urban areas of Kingston and St Andrew were randomly assigned to an intervention

(n = 3) or no intervention group (n = 2). Intervention was school-wide and over 1 school year. The interventions used 'The Incredible Years' teacher training program and aspects of the Incredible Years child classroom curriculum.



The teacher training curriculum included modules on partnering with parents, developing positive relationships with students, motivating children, preventing and reducing inappropriate behaviour

and teaching social and emotional skills in the classroom. The curriculum was delivered over 7 full days of training - once a month from October 2006 to April 2007. Teachers were also visited at least once a month individually to assist them in applying the skills they learn to their own classroom context.

The child training curriculum used in this study involved fourteen lessons that were



conducted by the research team in each classroom in the intervention schools from January to May. The lessons covered the following concepts: 1) learning the school rules and skills required for school success, 2) understanding emotions, 3) anger management and 4) friendship skills. Each lesson consisted of a 15 minute circle time discussion with the whole class followed by a 15 minute follow up activity. Training involved the use of stories, songs, drama and role

plays and life-sized puppets were used to model problem situations and to share feelings and mistakes. The lessons were co-led by the classroom teachers and the teachers repeated the lesson at least once during the week and they promoted the skills learnt throughout the school day.

The intervention was evaluated, through direct observation, for its impact 1) on teacher positive behaviour, negative behaviour, teacher commands and promotion of social and emotional skills and 2) classroom ratings of children's behaviour, children's interest and enthusiasm, opportunities to share and help each other and teacher warmth. The intervention was also evaluated for its impact on the behaviour of a subsample of children with the highest level of behaviour problems at baseline and the quality of the teachers' contacts with their parents.

The intervention resulted in significant benefits to the observations of the number of positive teacher comments, negative teacher comments and teachers' promotion of social and emotional skills. The children in intervention classrooms were rated as being less disruptive and more interested and involved in the lessons than children in the comparison classrooms. Teachers in the intervention groups were rated as showing more warmth and providing more opportunities for children to share and help each other than the teachers in the comparison group. Teachers in the intervention group also reported significantly more positive contacts and significantly fewer negative contacts with the parents of the children with behaviour problems in their classroom than teachers in the comparison group. The intervention resulted in non-significant benefits to the selected children's prosocial behaviour and to the children's behavioural difficulties but the size of these benefits were such that they are likely to be important to the children's behavioural development.

A qualitative evaluation of the project was also conducted and the results showed that the programmes were extremely well-received by the teachers who reported wide ranging benefits of the intervention on their own behaviours and attitudes, on their relationships with parents and on the behaviour of children in their class.

***Dr. Helen Baker-Henningham is Lecturer in Special Education, Department of Educational Studies, Faculty of Humanities & Education.***

***Acknowledgements:***

***The project was funded by the Environmental Foundation of Jamaica, UNICEF Jamaica, The Office of the Principal UWI Mona. We would like to thank the teachers, parents and children who participated in the study and Yakeisha Townsend who was the full-time research assistant on the project.***

# Dr. Hopeton **Dunn**



## Usage Patterns for Mobile Phones in Jamaica

### *Survey of Usage Patterns*

**A**n island-wide household survey of mobile telephone usage patterns, particularly among low income Jamaicans was conducted by the Mona School of Business. A total of 1,182 respondents comprised the sample, drawn from all parishes in Jamaica. They were selected using established Statistical Institute of Jamaica (STATIN) criteria, mainly from among those who are considered poor or in poverty, on the basis of a combination of income, occupation and location variables. The fieldwork yielded a wide array of data to help understand this growing and important sector in Jamaica and the wider region.

The Jamaica survey is part of a 7-country study being spearheaded by the small research grouping Dialogue on Digital Poverty (DIRSI) and funded by the IDRC. Other countries forming part of the regional survey include Trinidad and Tobago, Peru, Columbia, Mexico, Brazil and Argentina.

### *The Findings*

- Over 96% of Jamaicans surveyed are users of mobile phones, confirming speculation of an extraordinarily high level of mobile phone penetration in Jamaica.
- Mobile phones are a pervasive, constant, and longstanding feature in the lives of the majority of respondents from all age groups and both genders.
- Jamaicans are not averse to adoption of accessible emerging technologies in their daily lives.
- Mobile telephony may have the capability to improve the lives of the economically marginalized.
- Cell phones may well provide an entry opportunity for underserved citizens into more wide-scale adoption of broadband applications, whether through more advanced mobile handsets or via data rich platforms and wider e-applications.



**For further information contact: Dr. Hopeton Dunn, TPM Programme, Mona School of Business. Email: [hopeton.dunn@uwimona.edu.jm](mailto:hopeton.dunn@uwimona.edu.jm)**

# Dr. John Lindo



## Malaria testing in Haitian Refugees



**M**alaria is an infectious disease which is caused by protozoan parasites. It is usually found in tropical regions, including Latin America and the Caribbean, Asia and Africa. There are four species of parasite that commonly cause malaria infections in humans. The most serious and potentially fatal form of the disease is caused by *Plasmodium falciparum*. *Plasmodium vivax* is the most frequent and widely distributed cause of benign, but recurring malaria. Malaria is transmitted by the female *Anopheles* mosquito.

Between February 29 and April 13, 2004, 361 Haitian refugees arrived by boat in Jamaica. Included in their health status screening was malaria since the disease is well established in that country. The screening is especially important since timely diagnosis and treatment of patients with malaria is necessary to prevent reintroduction of the disease into Jamaica. (Malaria was subsequently reintroduced into Jamaica).

The refugees were treated for *Plasmodium falciparum* and *P. vivax* infections at the point of first contact based on reports that in Haiti over 90% of malaria cases are caused by *P. falciparum* and the remainder by *P. vivax*. During microscopic examination of blood films in Jamaica *P. falciparum*, *P. vivax* and *P. malariae* were reported. This was the first report of *P. malariae* from Haiti and there was disagreement among microscopists regarding the cause of malaria in this population. There were also several cases in which the microscopists were unable to determine the species and reported only “*Plasmodium* sp.” This has important implications for treatment since there are different drugs used to treat the various causative agents of malaria.

The only way to reconcile these equivocal results was by using the Polymerase Chain Reaction (PCR) which identifies species based on their DNA sequences. Working with colleagues at the Malaria Reference Laboratory (London School of Hygiene and Tropical Medicine) we were able to achieve the following:

1. Confirm the presence of *Plasmodium falciparum* in the refugees. This is the most serious cause of malaria in humans and is associated with cerebral infections and death (especially in children).
2. Confirm the presence of *Plasmodium malariae* among Haitians for the first time. This is despite several surveys for malaria infection in Haiti and among refugee populations (especially in Guantanamo Bay, Cuba). The presence of this form of malaria among the refugees also presents a serious threat to public health in Jamaica since it can go undetected for long periods.



Haitian refugees crowd a boat on the open sea.

3. The study also showed that there were no cases of *Plasmodium vivax* among the refugees. Earlier reports may reflect misdiagnosis of *P. malariae* as *P. vivax*.

There are several implications from the study including the need to employ procedures which will diagnose both *Plasmodium falciparum* and *P. malariae*. These assays should be used if there are future waves of refugees, and for malaria surveillance in Jamaica and Hispaniola.

***Dr. John Lindo is Senior Lecturer in the Department of Microbiology, Faculty of Medical Sciences.***



# Dr. Parris Lyew Ayee, Jr.



## Mona GeoInformatics Institute (MGI): Developing Spatial Tools to Fight Crime

**C**rime is a severe problem affecting Jamaica, impacting different sectors of society and the economy. A comprehensive system that allows for the nature and patterns of crime to be determined, as well as explanations for these, is crucial to effecting any meaningful response in the short- and long-term.

### ***MGI's Crime-Fighting Initiative***

MGI has been involved in assisting with operational and analytical uses of geographic information systems (GIS) to help the security forces – both JCF and JDF – in collecting and properly analyzing data, as well as equipping them with training, software, and data support. MGI has also written and presented several presentations to the security forces, community organizations, and aid organizations.

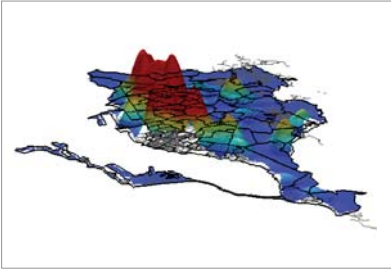
MGI has also developed innovative analytical tools and concepts, including a quantitative definition of hot-spots of crime, simulations of police responses and infra-structural developments on crime patterns, and error detection and control on input primary data.

MGI brings a very high level of analytical capabilities to approach crime-fighting from a results-oriented approach, not just relying on technology to do this, but

understanding the problems and situation dynamics, appreciating also the requirements and priorities of the security forces and government.



MGI presenting Supt Hewitt, Commandant West Kingston Division, JCF, with detailed map of the division. The map defines the boundary of the police division, all communities contained within it, including informally-defined enclaves, streets, police stations, schools, and other major assets. MGI also equipped the Denham Town Police Station with software and data to assist with their operational programme there.

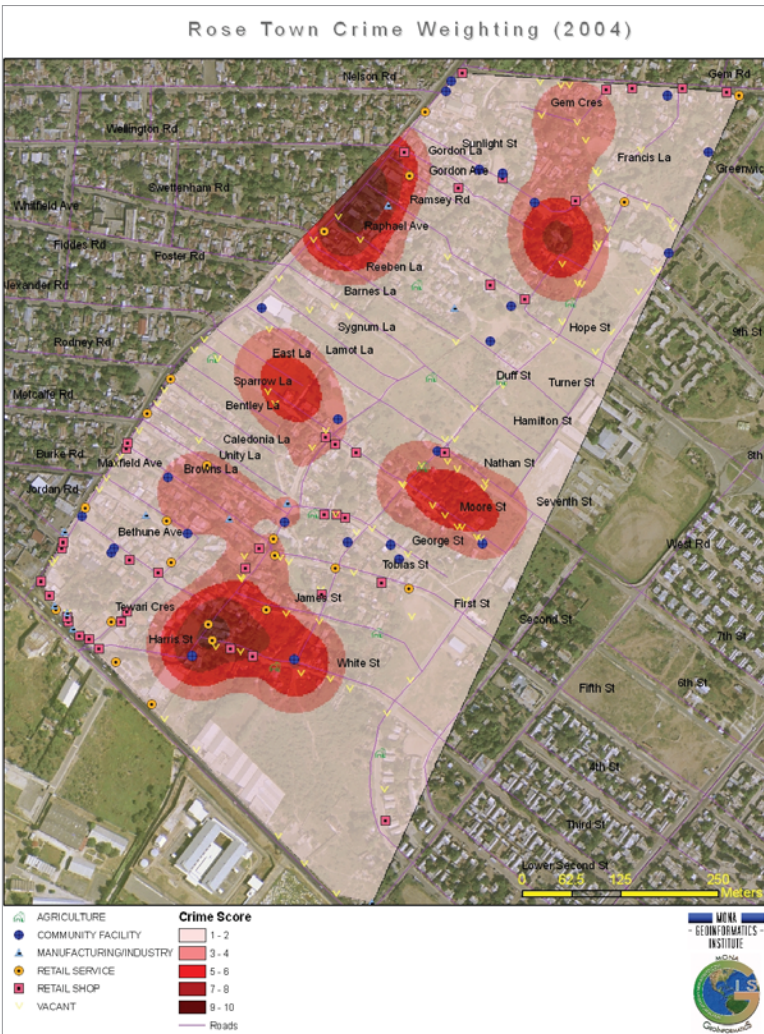


**“Mountains of Murder” – Hot Spots of Crime Modeling**

This map presents an innovative concept of visualizing the patterns of murders in Kingston. Murders, largely concentrated in parts of the city, are displayed here in 3D, showing peaks in areas of high murder concentrations

**(BOTTOM) Rose Town – Community-scale Modeling.**

Crimes are modeled based on severity of crime, juxtaposed against social infrastructure and community assets. Vacant lots and abandoned buildings show a spatial correlation with more severe crimes; the simulation of restoration of these assets – for example, a vacant lot into a proper playground – resulted in a reduction of the crime weight in that area.



**Dr. Parris Lyew Ayea, Jr. is Director of the Mona Geoinformatics Institute.**

# Dr. Susan Mains



## Mobility and Migration: Documenting Jamaicans in 'Foreign'

**R**esearch and analysis on movement and migration of Caribbean nationals are of great importance to governments, policymakers and other stakeholders because of its influence on decisions relating to these Diaspora populations and development in the region.

Thus, efforts by researcher Dr. Susan Mains to document Jamaican migrant experiences in 'foreign' should prove useful for the findings highlighted.

The project sought to throw light on crucial details of the process - who moves, reasons why people leave, where Jamaicans settle overseas, why people return to the Caribbean, and what challenges or opportunities migrants face and the implications of migration for Caribbean states.

The findings are being put together in the form of a documentary, film and book, as well as articles highlighting the diverse experiences of Jamaicans who have moved, since the 1940s, to form settlements in large urban areas. The main areas of settlement include London, Manchester, Birmingham (United Kingdom); New York, Miami, Philadelphia, Atlanta (United States) and Toronto, Quebec and Ottawa (Canada).

### ***The major findings are:***

- Migrants come from diverse social and economic groups.
- Jamaicans cluster in these cities for a number of reasons, including the presence of family and friends; information available about the destination from friends/family/neighbours/international media; employment and educational opportunities; to be closer to Jamaica in a location with similar climate (e.g. Miami/New York); to access Caribbean-oriented business organizations and community event overseas.
- Migrants remain in their destination for multiple reasons, including family/friendship ties; employment and income opportunities; career development; financial obligations; concern over crime levels in Jamaica; difficulties reintegrating into Jamaican workplace/culture.
- Those who return to Jamaica do so for many reasons: to retire and settle in a place in which they feel they have strong emotional connection; to continue working and contribute to the island with their skills; maintain and strengthen ties with family/friends; to feel a stronger sense of community in daily life.

- Some Jamaicans move regularly between destination and island locations and feel a sense of 'home' in several places.
  - While migrating has offered economic, social and educational opportunities, many Jamaicans have had to make sacrifices in terms of job retraining, discrimination, long absences from family/friends, as well as deferring a permanent return to the country.
  - Community groups and charities in places where Jamaicans settle provide an important means of contributing to Jamaica socially and economically.
- The researcher concludes that the findings challenge stereotypical views about Jamaican migrants and provide more diverse representations of the migration process for Jamaicans.

The research data is useful:

- as a teaching tool
- for social history archives
- as a migrant community resource
- as informational resource for policy makers and NGOs aiming to develop more culturally sensitive migration policies and greater outreach/interaction with Diaspora population.



The Jamaican Diaspora spanning three generations and many family connections in Southern Florida.



Places like this Jamaican eatery serve as a social hub, dispelling notions of migrant disconnectedness.

**Dr. Susans Mains a Lecturer in the Department of Geography & Geology, Faculty of Pure & Applied Sciences.**

# Prof. Affette McCaw-Binns

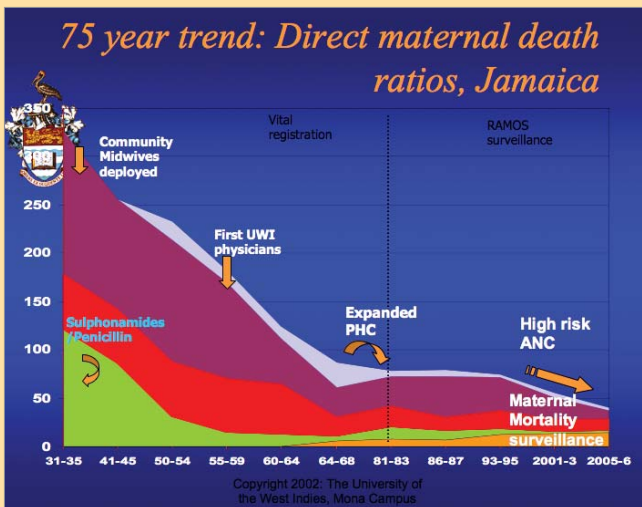


In collaboration with: Dr. Karen Lewis-Bell, Sonia Alexander & Jascinth Lindo

## Improving Maternal Health and Reducing Mortality

The Ministry of Health has collaborated with The University of the West Indies to conduct operations research to provide an evidence base for public health policy aimed at improving maternal health and reducing maternal mortality. This approach is seen as a potential model to accelerate Jamaica's progress toward achieving the Millennium Development Goals (MDGs).

Since 1985, researchers at the UWI and the Ministry of Health have engaged in an iterative research process aimed at measuring the disease burden due to maternal morbidity and mortality. This has led to the development of interventions to better manage the leading problems, field test them prior to national implementation, and monitor and evaluate these strategies. Some of these strategies have included the development of clinical guidelines to manage the hypertensive disorders of pregnancy and other high risk conditions as part of a process of establishing high risk antenatal clinics; informing the expansion and upgrading of referral facilities; deploying skilled personnel; establishing maternal mortality surveillance; and undertaking audits to identify barriers to delivering quality health care.



As we have succeeded, access to research funds has become more difficult. These funds often supported post graduate students, a pool of reliable, cost effective resources capable of undertaking the research needed to provide the evidence base to influence public policy more widely. As they are challenged to finance their education, this extends unnecessarily the time required to complete their theses and enter the work force.

The research team proposes the development of a locally financed resource pool to support fellowships for graduate students to accelerate the pace of their training, completion of their work and their availability to contribute to the process of national development. The model from Thailand is put forward as one for consideration.

The operations research model of collaboration between the Ministry of Health and The University of the West Indies for maternal health development can easily be transferred to any other MDG objective. As Jamaica pursues its goal of developed nation status, access to international grant financing will continue to shrink and local civil society will need to fill the vacancy created, by investing in our most abundant natural resource, our young people.

***Professor Affette McCaw-Binns, MPH, PhD, is a Reproductive Health Epidemiologist in the Department of Community Health & Psychiatry, UWI, Mona.***

***Dr. Karen Lewis-Bell is the Director of Family Health Services, Ministry of Health.***

***Sonia Alexander and Jascinth Lindo are postgraduate students in the Department of Community Health & Psychiatry.***

# Prof. Norma McFarlane-Anderson



## Identifying the HPV Genotypes Associated with Cervical Cancer among Jamaican women

**T**his research project is aimed primarily at identifying the Human Papilloma virus (HPV) genotypes associated with cervical cancer in Jamaican women.

It follows on previous studies which reveal that over 90% of cervical cancers are linked to the Human Papilloma Virus (HPV). The virus can be of two types – low risk (which causes genital warts) or high risk (which trigger abnormal precancerous growth of the cervical cells and make them much more susceptible to cancerous changes).

There are many types of the virus and most sexually-active women become infected with one type or another during their lifetime. However, the immune system enables most women to overcome ('throw off') the infections. However, the virus persists in a small percentage of women and may progress to cervical cancer.

DNA testing have show that 90% of all cervical cancers test positive for HPV strains #16 and # 18 (high risk types), while #6 and #11 (low risk) causes genital warts. Ever since the link between HPV and cervical cancer was established, drug manufacturers and pharmaceutical companies have been working to develop a vaccine to provide protection against common strains of HPV.

Recently, vaccines were developed (and released to the market) which target viral types most commonly found in North American and European women. But researchers at the University of the West Indies have identified HPV strains #45 and #52 as most frequently found in cancer-free women in Jamaica. These types are also found in other Caribbean women as well as African, Asian, and Latin American women. The question therefore arises as to whether these are the types that persist in Jamaican women who develop cervical cancer. Current research is aimed at answering this question.

These findings would prove useful to Jamaican policy-makers and medical practitioners as they make decisions about vaccine use. It should also benefit drug manufacturers and pharmaceutical companies in developing a vaccine(s) to target the viral strains found in Jamaican and other non-European populations.

***Dr. Norma McFarlane Anderson is a Professor in the Department of Basic Medical Sciences (Biochemistry Section), Faculty of Medical Sciences.***

# Dr. Wayne McLaughlin



## Helping to Fight the Virus that Attacks Scotch Bonnet Peppers

**T**his research was initiated by the difficulties faced by farmers across Jamaica (and the Caribbean) arising from a virus which attacks Scotch Bonnet peppers. Symptoms of the disease include:

- Leaf curling and mosaic
- Dwarfing of the plant
- Unusually small/deformed fruits (peppers)
- Low yield and productivity

Jamaican Scotch Bonnet peppers command a high price in both domestic and export markets, so the diseases, if not contained, can adversely affect the income-earning capacity of farmers and, by extension, the country.

The Biochemistry Section of the Department of Basic Medical Services Sciences (Medical Sciences Faculty) conducted investigations into the strain of virus affecting Jamaican farmers. Through the use of molecular biology testing, the tobacco etch virus was identified as the one plaguing Jamaican farmers and it was shown to be highly transmissible from plant to plant.

Research findings show that the virus is highly aphid transmissible. The aphid is a common insect found in agricultural communities through Jamaica and the Caribbean.

This information has proven extremely important, as previously farmers would unknowingly spread the infection in their fields as they tended to diseased and healthy plants at the same time.

Therefore, in terms of managing the disease, farmers have to be careful when tending to crops, and should include a structured pest management programme to reduce the spread of viral infection.

The findings have been communicated to the Ministry of Agriculture, and advice is being disseminated to farmers through extension officers.

From this research, farmers are now using better farming practices to reduce the spread of disease in Scotch Bonnet pepper, thereby boosting their production and income-generation capacities.





# Dr. Wayne McLaughlin



In collaboration with: Mr. Compton Beecher

## CARIGEN - Answering Parentage Questions

**C**aribbean Genetics (CARIGEN) is the first and only private facility in the English-speaking Caribbean which can assist in establishing biological relationships through DNA testing, and the unit makes its services available to individuals, courts and immigration authorities.

Before 2005, human DNA (deoxyribonucleic acid) testing services were unavailable in Jamaica and the Caribbean, and was done in independent laboratories in the USA or UK.

In June 2005, CARIGEN commenced operations at UWI, Mona - the brainchild of Dr. Wayne McLaughlin, head of the Department of Basic Medical Sciences (Faculty of Medical Sciences). Heading the unit's operations is Mr. Compton Beecher, with more than 10 years experience in human DNA identity, specializing in forensic DNA science. DNA testing involves the examination of cells of involved parties and comparison of genetic patterns. If they are similar, scientists/analysts can conclude that there is a biological relationship.

Boasting state-of-the-art equipment, CARIGEN provides a range of relationship testing services including:

- Paternity testing
- Sibling/Half sibling testing
- Grandparentage testing
- Unusual sample testing
- Genetic ancestry testing

As the unit is committed to providing accurate testing with timely results, its services are in great demand by local and regional family courts and embassies.

The family courts use CARIGEN to determine parentage of individuals in child custody, child support, inheritance and adoption cases.

Embassies now require DNA samples for citizenship application and other immigration situations.

However, individuals can purchase a Personal Paternity Test kit to answer parentage questions. This allows for the collection of samples in the comfort of his/her home, which can be returned to CARIGEN for testing - either directly to the unit or through the MicroLabs network islandwide, which send in samples.

CARIGEN provides parentage testing services to eight local medical laboratories, with a total of 32 collection sites across Jamaica, thus allowing for easy access by clients in every parish.

Services are also provided to nine regional facilities in eight Caribbean countries, making the unit a truly regional one.

The turnaround time for results is 3-5 working days, and optimum quality control measures are in place to ensure accuracy and integrity. In fact, relationship tests are repeated at least three times and an analyst's conclusions are usually reviewed by a second specialist.

To ensure confidentiality, there is no direct contact between clients and CARIGEN and the unit employs a number system for identification of specific cases. Storage of DNA profiles is usually provided up to 20 years in a highly secured database. In addition to human DNA, CARIGEN extends its services to commercial animals, and provides identification of breeding stock and the offspring of cats, dogs, horses and cattle. This helps to ensure that high-quality offspring can be registered and issued with pedigree certificates.

While relationship testing form the bulk of services, CARIGEN also offers forensic DNA analysis in doth defense and prosecution casework locally, as well as police laboratories in other Caribbean territories. The unit is collaborating with regional and international forensic institutions to assist in forensic casework standardization in the region, provide assistance in training, analysis, proficiency testing and the development of the legal infrastructure necessary for implementation of forensic DNA testing and databases.

The research component of CARIGEN's operations involves assistance to researchers in plant molecular biology and virology through tests in genome sequencing, sequence analysis and genotyping. Plans are afoot to develop GMO testing and molecular diagnostics.

CARIGEN's presence highlights the technological strengths of the University of the West Indies and the Caribbean region in a globalized world. The unit is well on its way to becoming ISO170025 certified and as an internationally recognized DNA analytical centre, delivering fast, accurate and affordable testing.

***Dr. Wayne McLaughlin is Senior Lecturer and Head of the Department of Basic Medical Sciences. Mr. Compton Beecher is Head of CARIGEN.***

# Dr. Lawrence Nicholson



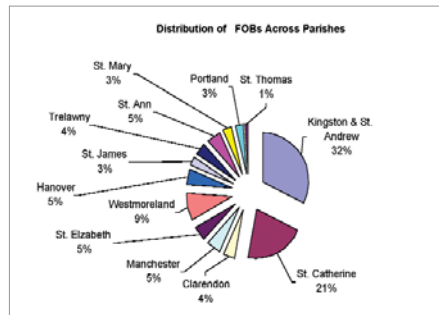
## Family- and Women-Owned Businesses

### *The Bedrock of Many Economies*

**F**amily- and women-owned businesses have been the bedrock of many economies and in many countries account for a significant proportion of their GDP. It is said that family-owned businesses represent approximately 80 percent of all businesses worldwide: 80 percent to 90 percent of all businesses in the United States, 75 percent businesses in the United Kingdom and 67 percent of all businesses in Australia. In the case of Jamaica, there are over 3000 family-owned businesses and approximately 1800 women-owned businesses, with 2 or more employees.

### *Contribution Undervalued*

Even against the documented evidence of the contribution of family and women-owned businesses; business and economic historians have often taken a skeptical view of the merits of these businesses. However, there is evidence that this has been changing. Research activities in the area of family- and women-owned businesses in general and family-owned businesses in particular indicate that governments and interest groups are paying more attention to the role of these businesses in economic development.



### *Business Schools Pay Attention*

In addition, a number Business Schools have recognised the importance of family- and women-owned businesses by including courses in both their undergraduate and graduate programmes that address important issues related to these businesses. The Mona School of Business will join the global trend, as it is in the process of designing a course that will cover important issues in family businesses. Among these issues are (i) governance, (ii) generational differences and (iii) succession planning. For example, did you know that there are differences in the approach to succession planning among the main ethnic groups in Jamaica?

**For more information on the research in family- and women-owned businesses, conducted by the Mona School of Business, contact the lead researcher at [lawrence.nicholson@uwimona.edu.jm](mailto:lawrence.nicholson@uwimona.edu.jm)**

# Dr. Marvin Reid



## Identifying Poor Kidney Function in Patients with Sickle Cell Disease

**S**ickle cell disease (SCD) is an inherited blood disorder and is the most common genetic disease in the Caribbean and Africa. In many forms of the disease, the red blood cells, which are normally round, become crescent-shaped, making it difficult for them to pass through small blood vessels. This limits the flow of blood through the body, causing various complications.

The Sickle Cell Unit located on the Ring Road of The University of the West Indies, Mona Campus, houses the only comprehensive clinic dedicated to the care of patients with all types of Sickle cell disease (SCD). The Sickle Cell clinic is a referral centre for all of Jamaica and other Caribbean territories.

In addition medical care is provided to a special subgroup of patients enrolled in the Jamaica Sickle Cell Cohort Study. This is an ongoing longitudinal study of subjects with sickle cell diseases detected using standard criteria during screening of 100,000 consecutive non-operative deliveries at a large maternity hospital (the Victoria Jubilee Hospital) between 1973 and 1981 and a matched control group consisting of persons with normal genotype. These persons are seen for routine health maintenance checks and for all significant sick events in an attempt to document the natural history of the disease. Lessons learnt from this study have resulted in improved care for persons with sickle cell disease and over 300 publications in international peer reviewed journals.

One recent publication has dealt with how the kidney functions in sickle cell disease. This is important because kidney failure is a common complication of sickle cell disease and is a common cause of death especially in adults. It is therefore important for doctors to be able to diagnose poor kidney function early so that treatment can be initiated and kidney failure prevented.

The Sickle Cell Unit has been performing research in this area since the 1970's. In its latest paper published in *Archives of Internal Medicine* in 2007, the Researchers at the Unit proposed a new definition for the identification of subjects with sickle cell disease and poor kidney function. Kidney function is normally determined by measuring how much of a certain product known as creatinine exists in an individual's blood. If this value is less than 132  $\mu\text{mol/L}$  then the individual is thought to have adequate kidney function. Researchers at the Sickle Cell Unit have pro-

posed that lower values be used in patients with sickle cell disease that is, creatinine value of 80  $\mu\text{mol/L}$  for males and 68  $\mu\text{mol/L}$  for females. This proposal is based on experiments in which meticulous measurements of kidney function were performed in young adults with homozygous S sickle cell disease. It is hoped that by utilizing these values, subjects with sickle cell disease and renal impairment will be identified and started on treatment earlier resulting in decreased death rates.

***Dr. Marvin Reid is a Senior Lecturer at the Tropical Medicine Research Institute & Director of the Sickle Cell Unit.***

# Dr. Tannecia Stephenson



## Towards the Development of Prediction Models for the Primary Caribbean Dry Season

**T**he Caribbean has experienced very unpredictable weather patterns over the past few years. Against this background, climatologists in the Department of Physics have been examining the dynamics of the primary Caribbean dry season with a view to developing statistical models for predicting dry season rainfall extremes in the region.

The regional weather pattern has been for a wet season from May through October, a primary dry season from November

through April and a short-lived dry period in late July/early August. The researchers are mainly interested in the primary dry season (November – April) because very little is known about the reasons for rainfall anomalies during this period, in particular the role of tropical sea surface anomalies.

The research has practical applications since the prevailing dry, cool conditions at that time of year are important for both the tourism and sugar industries which are major contributors to Caribbean island economies. Development of the models will help persons in these industries who need to understand the kind of weather that is likely to prevail if certain conditions exist.

The initial research focused on exploring the dynamics of the Caribbean dry season as a precursor to developing statistical models for the period. Earlier research suggested that when the equatorial Pacific is warm, the north Caribbean is wet and the southern Caribbean is dry, and vice versa. They also identified a 'transition zone' from wet to dry in the vicinity of Jamaica.

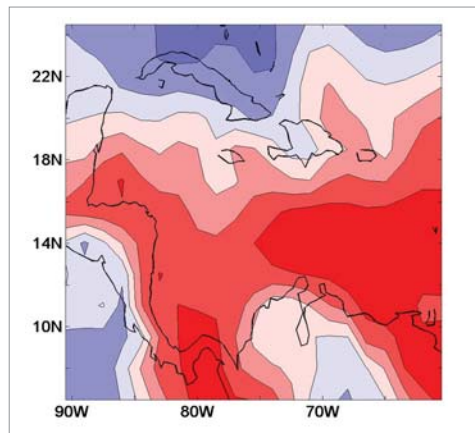


Figure A: The rainfall pattern associated with a cool Pacific. The pattern illustrates a dry north Caribbean and wet southern Caribbean.

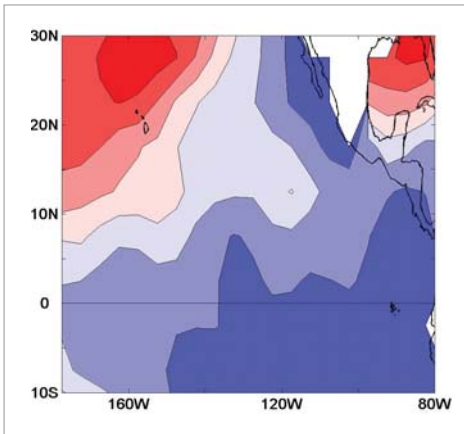


Figure B: The sea surface temperature pattern over the Pacific.

The research confirmed that rainfall patterns in the Caribbean were affected by the El Nino phenomenon. Whenever it was warm in the equatorial Pacific there was rainfall over the southern Caribbean and dry conditions prevailed in the north, particularly over Cuba and southern Florida. The transition zone encompassed Jamaica, Hispaniola and Puerto Rico.

Based on these findings, the researchers have been able to create two statistical models for the Caribbean during the dry season.

Since it has been established that the south-eastern Caribbean becomes dry in response to a warm event, the first statistical model uses a rainfall index based on the average rainfall over the south-eastern Caribbean to predict whether or not there will be a dry season.

The second model uses a Jamaican rainfall index as the predictor of rainfall extremes since Jamaica falls in the transition zone.

***Dr. Tannecia Stephenson is Lecturer in the Department of Physics, Faculty of Pure & Applied Sciences. Other researchers were Professor Anthony Chen & Dr. Michael Taylor.***

# Dr. Paula Tennant



## UWI Developing Transgenic Papayas

**T**he Biotechnology Centre at the University of the West Indies, Mona, in collaboration with Cornell University (USA) and the Jamaica Agricultural Development Foundation, has developed varieties of papaya resistant to the disease caused by the Papaya ringspot virus.

The disease plagues the production of the plant in Jamaica and other regions across the world, reducing vigor of trees and fruit yields. This has grave economic consequences as it adversely affects income generation of farmers and the nation, as a whole. Water-soaked ringspot blemishes on the fruit are the key symptoms of the disease, which spreads from plant to plant.

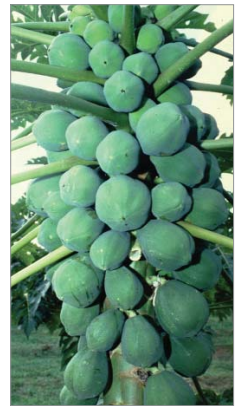
The research project uses molecular technology to produce genetically modified plant species with resistance to ringspot disease. The process involves the introduction of a gene from the virus into the papaya to breed new and stronger varieties, known as transgenic papayas. The gene used is the coat protein gene and, so far, 36 transgenic varieties have been developed using this method. The trees have been planted in fields .

Over four years of field testing have shown that some of the transgenic papayas are either completely immune to ringspot virus or are tolerant to infections. As the research continues, other characteristics of transgenic papayas are being examined, including physical appearance of the fruit, its shelf life, nutritional composition and safety for consumption.

The nutritional and anti-nutritional composition of transgenic papaya were compared with unmodified control samples. The results showed that except for small differences in select nutrients, the transformation and expression of the viral cp gene does not produce any major unintended alterations in either the nutritional or the anti-nutritional constituents.

Regarding safety of the transgenic papaya, animal studies conducted thus far have not revealed any adverse effects following consumption of the transgenic papaya every day for three months. The findings will be important to guarantee sustained production and expansion in the papaya industry, and the potential for foreign exchange earnings for Jamaica.

***Dr. Paula Tennant is Lecturer in the Department of Basic Medical Sciences with a research laboratory in the Biotechnology Centre.***





# Dr. Minerva Thame



## Adolescent pregnancy: Body composition and its impact on infant birth weight

It has long been established that pre-pregnancy weight and weight gain in pregnancy influence the growth of the foetus. This, in turn, influences the birth size of the baby at birth, which further influences infant mortality and morbidity (i.e. death and diseases).

The current study seeks to:

- To investigate the difference in maternal body composition of pregnant adolescents and mature women, and
- To investigate the effect of maternal body composition on fetal and birth measurements in the two groups of women.

The study was a prospective study conducted at the antenatal clinic of the University Hospital of the West Indies. Two groups were recruited and analyzed - 200 females who were 19 years and younger and referred to as the adolescent girls, and 225 females older than 20 years, referred to as the mature women.

Recruitment was restricted to: Women less than 15 weeks pregnant, had a single pregnancy and had no systemic illnesses such as hypertension, diabetes mellitus or genetic abnormality, for example sickle cell disease. A questionnaire was administered to the woman, to obtain the demographics, socio-economic status and menstrual details. Measurements studied included maternal weight, height, skin thicknesses and blood pressure at early pregnancy, mid pregnancy and the later pregnancy.

Analysis showed that adolescent girls weighed significantly less and had lower body mass, skin thicknesses, fat mass, percentage fat and lean mass compared to the mature women at the start of the pregnancy, as well as through out the pregnancy.

However, the gain in these components after hospital booking to the last trimester was greater among adolescent girls compared to mature women. And it was the gain in Lean Body Mass that played the most important role in birth measurements and fetal size. This gain seen in the adolescent appears to be a compensation mechanism to ensure similar size babies to the mature woman.

From this study it was clear that body composition differ in pregnancy between adolescents and mature women, but if adequate weight and lean body mass gains are attained, these impact positively on birth size, irrespective of age.

This outcome was only seen in the adolescents who attended the antenatal clinic early and had adequate antenatal care as there were sixty-seven adolescents who delivered at this institution who had their first antenatal care later than 15 weeks and had irregular visits. This group of adolescents delivered infants with a birth weight less than the adolescents in the group who had similar size infants to the mature women and had better antenatal follow up.

This suggests that once the adolescent mother receives early and adequate antenatal care, the mother appears to have better pregnancy performance with a decrease incidence in preterm delivery and a decrease in the incidence of low birth weight infants.

This finding suggests that adequate ante-natal care might be a simple cost-effective strategy by policymakers and health practitioners in developing countries to decrease the mortality and morbidity associated with adolescent pregnancies.

Another important finding related to weight retention in the post-pregnancy period between adolescent girls and older women. The adolescents retained more weight and fat mass than the older woman post-natally. This is significant as, with each pregnancy, there is an increased incidence of weight retention. If teenagers are having their babies earlier, there is a greater likelihood for younger women to have more pregnancies in their reproductive life. Weight retention, therefore, increases the risk for substantial weight gain in later life, and this, in turn, contributes to incidences of obesity in the population.

This study, therefore, points to the need for strategies to address this serious public health issue arising with higher incidences of adolescent pregnancies in Jamaica. The research is on-going, and was supported by a grant from the Caribbean Health Research Council (CHRC).

***Dr. Minerva Thame is a Senior Lecturer in the Department of Obstetrics, Gynaecology & Child Health, Faculty of Medical Sciences.***

# Prof. Waibinte Wariboko



## Ruined by “Race”: Afro-Caribbean Missionaries and the Evangelization of Southern Nigeria, 1895-1925

**T**here is an assumption among certain scholars, publicists and activists that race is an essential foundation for constructing black solidarity organizations in the world, particularly in the New World diaspora and Africa. Among these persons race is also perceived as essential to the construction of individual and group identity. However, research conducted by Professor Waibinte Wariboko interrogates this essentialist notion of race.

His research into the evangelization of Southern Nigeria in the late 19th and early 20th century revealed that the transition from the episcopates of Bishop S. A. Crowther to that of Bishop Herbert Tugwell in the Niger Mission was marked by sociopolitical and economic problems around the end of the nineteenth century. In addition to the problems posed by the separation of the Niger Delta Pastorate Church under Archdeacon D.C. Crowther, the Niger Mission was also faced with an acute shortfall in its workforce due in large part to the loss of its traditional Sierra Leone supply market for African missionaries.

As a result, Tugwell turned to the West Indies for the recruitment of black West Indians for service in Southern Nigeria. Informed by the notion of racial affinity between black West Indians and West Africans, Tugwell and his allies in the Caribbean and in London required the former to make Africa their home so that they could be perceived and rewarded like African agents. However, because the idea involved a substantial devaluation in the material benefits to be derived from missionary service, the black West Indians vigorously objected to the proposal.

They wanted instead to be perceived and rewarded as foreigners on the same footing as Europeans. Unresolved tensions over status and identity, including the redistribution of symbolic and scarce material resources, ultimately led to the premature collapse of the scheme. Professor Wariboko’s book, among other things, explores the connection between the socioeconomic interests of the West Indians and their construction and representation of race in the Niger Mission.

By refusing to make Africa their home, for example, they were rejecting the popular notion that race-belonging was a precondition for the sociopolitical and cultural transformation of Africa—an idea popular among those who believed in the essen-

tialist notion of race in the late nineteenth and early twentieth centuries: Tugwell and his allies in London and the Caribbean, including those black activists, scholars and publicists who advocated for the back-to-Africa movement in the New World such as Wilmot Edward Blyden, Albert Thorne, Henry Turner, Alexander Crummell, and Marcus Garvey.

The overall conclusion is that the factors influencing how we construct identity and represent race are largely dependent on our desires—for example, the desire for recognition or status, association or affiliation, and economic empowerment.

***Professor Waibinte Wariboko lectures in the Department of History, Faculty of Humanities and Education***

# Dr. Densil Williams



## Making Small and Micro Businesses Competitive

**T**his ongoing research was prompted by the need to identify and evaluate factors which enable small and medium sized enterprises (SMEs) in Jamaica to become competitive. Over a three-year period, through a mix of surveys and in-depth case studies, the researcher gathered information on selected enterprises in the manufacturing and agricultural sectors in Jamaica and observed emerging patterns and trends in their competitive behaviour. The research has now been broadened to include small and micro businesses in other Caribbean territories in order to derive a general model that can explain small firm's competitiveness in small developing countries.

Some of the major findings, so far, have shown that in addition to physical resources (e.g. land, financing and markets etc.), human capital (personal factors) resources are crucial to building a unique competitive advantage in small and micro firms. The skills, knowledge, experience and attitudes brought by owners to the management of small and micro enterprises can determine their success or failure in the globalized economy.

### ***Among some of the personal characteristics identified are:***

- **International orientation** Small business owners need to look beyond their domestic markets to find business opportunities and exploit them. borders of his country to find opportunities and exploit them
- **Networking skills** Owners need to be members of organizations (business club, alumni, etc) that can provide access to resources such as information, financing, intellectual capital, etc. that they would not otherwise have.
- **Adaptability to new ideas** The owner must be willing to accept new ways of doing business more efficiently in an increasingly competitive environment.
- **Adroit leadership** The owner must have a vision of where he wants the business to go and motivate employees around that vision.

The findings from this unique research should provide useful information for policymakers, business practitioners and institutions to refocus training strategies to include greater concentration on international business operations for small and micro firms.

In a world where approximately nine out of 10 SMEs will fail, this research encourages owners to cultivate competitive business qualities and think globally, not just locally.

***Dr. Densil Williams is Lecturer in the Department of Management Studies, Faculty of Social Sciences.***

\*Small and Micro Businesses for the purpose of this research are defined as firms employing at most 100 employees.