

**WINDWARD
ISLANDS
RESEARCH
& EDUCATION
FOUNDATION**



2020 Annual Report

Front cover: Members of the WINDREF and School of Veterinary Medicine teams involved in the molecular testing of SARS-CoV-2



Mission Statement

WINDREF seeks to advance health and sustainable environmental development through multi-disciplinary research and education programs. WINDREF strives for program excellence by promoting collaborative relationships between internationally recognized scholars and regional scientists, and by adhering to the highest ethical and academic standards in the design and conduct of research.

Goals

- To provide a scientific resource centre capable of coordinating international collaborative research of the highest caliber in the areas of medicine, medical and veterinary public health, environmental health, anthropology, sociology, ecology, marine and terrestrial biology, and ethics.
- To provide a first rate academic opportunity to scientists from the Caribbean and around the world through unique research opportunities that enhances the knowledge and welfare of local and international communities.
- To conduct applied scientific research for the benefit of community and health development at the local, national and international levels.
- To share relevant scientific information with local and international communities in the pursuit of evidence-based policies.

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Director's Report on WINDREF Activities in 2020

We celebrated our 25th Anniversary last year and the Annual Report highlighted the accomplishments made by WINDREF during its first quarter of a century of operation. 2020 marks the start of the next phase of our research and education activities, and we started the year with a WINDREF Board Meeting in Grenada (figure 1). The meeting was attended in person by the majority of the Board Members, and we had a number of Board Members online. Little did we realize at that time that within a few months the World Health Organization would declare the first global pandemic in 100 years on March 11th. With the closure of schools and the campus, and the general lockdown of the country following the introduction of the 1st SARS-CoV-2 cases which arrived in the country from the UK on March 16th, the operating world as we knew it was drastically changed, as everyone changed to an online operation working from home. This new reality continued throughout the year, but despite the restrictions, a number of existing research projects were able to continue and some new proposals were funded during 2020.



Figure 1: WINDREF Board Members attending the 2020 Board Meeting in Grenada on Friday, 31st January, 2020 from L to R: Trevor Noel, Karen Lawson, George McGuire, Margaret Lambert, Kirani James (via Skype), Ellen Ratner, Mary Jeanne Kreek, Esperance Schafer, Cal Macpherson.

WINDREF quickly appreciated the value of masks in reducing the R_0 of SARS-CoV-2 and we purchased a number of WINDREF branded cloth masks from Trinidad.



Maxine Macpherson and Naomi Whyte with their WINDREF masks, May 2020.

The existing projects which were able to continue in 2020 included:

- The Center for Research on Storytelling in Education
 - Engaging Young People as Agents of Change (Feco-orally Transmitted Protozoans and Arboviruses)
 - Baroness Howells Sports for Health/Diabetes Program
 - Saving Brains
 - Zika Follow-Up
 - SGU COVID-19 Testing Programme
 - Caribbean Cooperative Measurement, Reporting & Verification Hub
 - GCRF One Health/Climate Change Program
 - FAO Sponsored Fishermen Captain/Climate Change Program
 - CREEi
- Reports on progress with all these projects are detailed in this year's Annual Report.



FAO Sponsored Fisherman Captain/Climate Change Program Graduation Ceremony. This project, led by Dr. Trevor Noel, was funded by FAO in partnership with the Ministry of Fisheries.

In March 2020, in consultation with the faculty and staff of the molecular lab in the School of Veterinary Medicine, it became apparent that there was the ability to start helping the Ministry of Health with the SARS-CoV-2 RT Real Time qPCR diagnostic service for Grenada. This opportunity arose because of their research program on influenza ABC&D that was going to be implemented in bats. Thus, all the reagents, lab supplies, and trained personnel, were in place to offer a diagnostic service. This early service was welcomed by the MOH and is documented in a presentation to be made at the 2021 CARPHA annual conference. This diagnostic service continued until August when the WINDREF dengue grant came to the end of its funding form Janssens. The University covered the expenses of the lab technician, Elsa Chitan, and two of the project staff, Nikita Cudjoe, and Nandy Noel, to work full-time on this diagnostic service. Simultaneously, one of the labs in WINDREF was upgraded to be a state-of-the-art molecular lab and with the assistance of the University, the MOH, and PAHO, the lab was equipped, stocked with reagents, and provided with the relevant primers and probes from PAHO for the diagnosis of SARS-CoV-2. Towards the end of 2020, PAHO also supplied the primers and probes to test for the new

variants which had become an emerging issue. The WINDREF staff, along with their veterinary colleagues, facilitated a screening program for the True Blue Campus, and helped the MOH, who had developed their own molecular lab, with the diagnostic capacity.



Dr. Kathy Yearwood, Director of the University's Clinic, performing an NP swab on Dr. Macpherson prior to the start of the screening program. Dr. Yearwood and a number of colleagues volunteered their time for the rest of the year and performed over 5,000 NP swab tests.



Dr. Macpherson shares the screening protocol with a number of the volunteers who helped in the registration, taking of samples, barcoding, and testing of > 5,000 individuals during 2020.

WINDREF undertook a study to examine the method of collection (NP swab vs. saliva) and this study was presented to the COVID-19 Government of Grenada Committee where the advantages and disadvantages of each collection method were highlighted.

Reports and accounts to all the donors in 2020 were submitted on time and I take this opportunity to thank all those who contribute to these important reports.

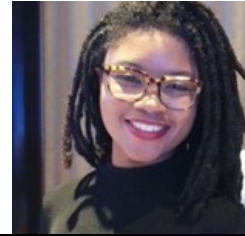
The 2020 Mike Fisher Memorial Award was presented to Dr. Robin Gasser, the Redmond Barry distinguished professor of Veterinary Biosciences at The University of Melbourne for his outstanding contributions to the field of One Health, particularly, his outstanding contributions to many molecular parasitic zoonoses fields of investigation. Interestingly, 2020 saw a further expansion of the uses of ivermectin – the drug discovered by Mike Fisher and his team, and it is now recognized as a useful treatment and prevention of SARS-CoV-2 along with many other viruses in addition to its treatment of infections for which its discovery led to the award of the Nobel Prize for Medicine and Physiology in 2015. The Keith B. Taylor Memorial Lecture for 2020 was scheduled to be given by Dr. Carissa Etienne, MD, MPH, the Director of PAHO, but this was postponed and will hopefully be presented in October 2021.



Dr. Robin Gasser – The 2020 Mike Fisher Memorial Award recipient

During the year, a number of new Research Scientists were appointed to the Research Institute and they are listed in this Annual Report, including Nandy Noel and Elsa Chitan, who assisted during the year with the PCR testing for SARS-CoV-2. Dr. Lindonne Glasgow was appointed as a Research Fellow in

recognition of her contribution to the Global Challenges Research Fund project which focuses on recycling of wastewater.



Ms. Nandy Noel—Research Scientist



Mrs. Elsa Chatan— Research Scientist



Dr. Lindonne Glasgow – Research Fellow

On behalf of the members of the Grenada, United Kingdom, and United States Boards of Trustees and Directors, I would like to thank our collaborators and donors for making 2020 a very successful year for WINDREF. We thank all of our donors for supporting the work of WINDREF over the past year, and look forward to another successful year in 2021 which we hope will be free of some of the COVID-19 pandemic restrictions.

**Calum N.L. Macpherson
Director, WINDREF**

WINDREF Organization

Board of Directors

- Baroness Howells of St. David's, OBE (Emeritus President)
- Calum N. L. Macpherson, PhD, DIC, FRSPH (Vice President & Director)
- Trevor P. Noel, MPH, PhD, FRSPH (Deputy Director)
- Margaret Lambert, MA, (Secretary Treasurer)
- Karen Lawson, PhD
- Ellen Ratner, MEd, LLD
- Joseph Feldman, MD
- Esperance Schaefer, MD, MPH
- Kirani James, BSc
- George McGuire, MSc

Board of Trustees (United Kingdom)

- Baroness Howells of St. David, OBE , Emeritus President
- Sir Kenneth Calman, KCB, FRCSE
- Lord Stevens of Kirkwhelpington, KStJ, QPM, DL, FRSA,
- Lord Trees of The Ross, DVM, PhD
- Neil Poulter, MD
- Patrick Orr
- Margaret Lambert, MA (Ex Officio)
- Calum Macpherson, PhD, DIC, FRSPH (Ex Officio)

Scientific Advisory Board

- John R. David, MD
- Malcolm A. Ferguson-Smith, MBChB, FRCP, FRCPATH
- Edmond Fischer, DSc
- Calum Macpherson, PhD, DIC
- Anselm Hennis, MBBS, PhD, FRCP, FACP
- Ian McConnell, BVMS, FRSE, F. Med. Sci.
- Hugh Montgomery, MD
- Baron Peter Piot, MD, PhD, CMG, FRCP
- Neil Poulter, MD, PhD
- Melinda S. Sothorn, PhD, CEP

- Richard Scribner, MD, MPH
- Lord Trees of The Ross, DVM, PhD
- Joy St. John, BSc, MBBS, MPH
- Thomas Meade, CBE, DM, FRCP, FRS
- Graham Serjeant, MD, FRCP, CMG
- M.S Swaminathan, MBBS
- John Ferguson, MBChB, FRCGP

Administration—Grenada

- Dr. Randall Waechter, Grants Coordinator
- Mr. Kareem Coomansingh, Assistant Grants Coordinator
- Ms. Isha English, Assistant Administrator
- Mrs. Naomi Whyte, Executive Secretary
- Mrs. Yvette Simon, Secretary
- Ms. Celia Clyne Edwards, Legal Support
- Mr. Hayden Redhead, Program Manager
- Mrs. Ramona Otway, Accountant
- Mr. Michael Cahill, Legal Support, USA
- Mrs. Nakita Francis, Grants and Finance Officer
- Ms. Nikita Cudjoe, Dengue Project Manager
- Ms. Roberta Evans, Zika and Neurodevelopment Project Manager
- Mrs. Stephanie Holmes, Saving Brains Project Manager
- Mrs. Elsa Chitan, Lab Technician
- Mrs. Sherice Phillip, Project Nurse
- Ms. Calisha Daniel, Life Seasons Project
- Ms. Nandy Noel, Data Manager

Administration—United States

WINDREF (USA) was established as a 501(c)3 non-profit organization to facilitate coordination of the USA activities and to administer charitable donations from the United States and worldwide. Its goal is to enhance the development of WINDREF's research and educational programs. The offices are located in Great River, New York. Ms. Stephanie Stafford provides administrative and logistical support, and Mr. Michael Cahill provides legal support

Administration—United Kingdom

WINDREF (UK) was set-up as a charitable trust in Winchester, England in 1999 to promote collaboration between WINDREF scientists and academic centers of research in the United Kingdom and the European community. A Board of Trustees was appointed in 1999 to oversee the activities of WINDREF (UK). The office is located in London. Mr. Patrick Orr serves as the WINDREF (UK) accountant, along with Mr. Stan Lee serves as the treasurer, provide oversight of the financial operation and chartable status of WINDREF (UK).

Senior Research Fellows

- Hugh W. Ferguson, BVM&S, PhD, Dipl. ACVP, MRCVS, FRCP
- Paul Fields, PhD
- Paul Garner, MBBS, MD
- Mary Glenn, PhD
- Duane Gubler, ScD
- Stephen Morse, PhD
- Leslie Ramsammy, PhD, DSc (Hon)
- Douglas Slater, MD, MPH
- Stanley Weiss, MD
- Melinda Southern, PhD
- Richard Schribner, MD, PhD
- Cheryl Cox-Macpherson, PhD
- Marios Loukas, MD, PhD
- A. Desiree LaBeaud, MD, MSc
- Hugh Sealy, PhD, P. Eng
- Timothy Endy, MD, MPH
- Roger Radix, MD, MPH, MIB, FRSPH
- Jonathan Ashcroft, MD, MSc
- Anselm Hennis, MBBS, PhD, FRCP, FACP
- Neil Poulter, MD, PhD

Research Fellows

- John Adamski, MD, MSc, MPH
- Muge Akpınar-Elci, MD, MPH
- Glennis Andall, PhD
- Charles Avgeris, MD, MSc
- Satesh Bidaisee, DVM, MSPH, MSB,

FRSPH, EdD

- Grant Burgess, PhD
- Reccia Charles, PhD
- Sonia Chehil, MD, FRCPC
- Andrea Easter-Pilcher, PhD
- Martin Forde, ScD
- Mark Gibson, MA
- Orazio Giliberti, MD
- Richard Kabuusu, DVM, MPH
- Victoria Kimotho, MPH
- Svetlana Kotelnikova, PhD
- Barbara Landon, PsyD
- Clare Morrall, PhD
- Shamdeo Persaud, MD, MPH
- Christine Richards, PhD, MPH
- Bonnie Rusk, MSc
- Karen Schioler, PhD
- Shanti Singh, MD, MPH
- Kamilah Thomas-Purcell, PhD, MPH
- Randall Waechter, BBA, PhD
- Trevor Noel, PhD, MPH
- Laura Colket, PhD
- Tracy Penny-Light, PhD
- Carlene Radix, MD, MPH
- Vishaka Vasuki, BVSc, MSc
- Dirk Burkhardt, MD, MSc, PhD
- Michelle Fernandes, MRCPCH, DPhil
- Samina Rutrecht, PhD
- Mathias Lorenz, PhD
- Craig McCarty, PhD
- Karen Blackmon, PhD
- Lindonne Glasgow, PhD, MPH

Research Scientists

Sadiq Al-Tamini, Sumita Asthana, Yitzhack Asulin, Bishara Baddour, Jean-Pierre Barakat, Matthew Beeson, Matthew Boles, William Brown, Ella Cameron, Nicholas Caputo, Rae Connolly, Abraham El-Sedfy, Daniel Firer, Kristy Fisher, Scott Forman, Brandon Francis, Vamsi Guntur, François Hallé, Anthony Junck, Megan Kaminskyj, Sebastian Kreitzschitz, Erik Lacy,

Ede Tyrell, Richard Lehman, Jason Lowther, Setshidi Makwinja, Paul Mancuso, Baher Maximos, John McCormack, David Melamed, Kirk Minkus, Jerry Mitchell, Jessica Morlok, Kevin Neill, Bayela Nfila, Yolanda Ng, Michael Nillas, Andre Panagos, Barry Politi, Sandeep Pulim, Sean Ramsammy, Justin Rebo, Laura Robinson, Corey Schwartz, Sarah Scott, Christopher Skaff, Nadia Solomon, David Steinberg, Derrick Tlhoiwe, Sarah Treter, Nghia Truong, James Tsai, Dan Twyan, Frank Van Natta, Ru-Amir Walker, Juliette Williams, David Winokur, Colleen Wunderlich, Elliot Yung, Regan Schwartz, Katherine Brigman, Mmakgomo Coangae, Felicity Lillingston, Keith Bensen, Sadik Uddin, Rakesh Patel, Mathew Browne, Jessica Clayton, John Hollerman, Alan Rhoades, Nikita Cudjoe, Karen Brennan, Stephanie Holmes, Roberta Evans, Victor Ashby, Jeffon Telesford, Karla Farmer, Molly Ziegler, Christopher Gibson, Shanice McKain, Steve Nimrod, Elsa Chitan, Nandy Noel.

Current Research Projects

Engaging Young People as Agents of Change (Grenada)...a primary school-based educational intervention to decrease feco-orally transmitted protozoan and arboviral disease risk in Grenadian children

In the small island nation of Grenada, where rates of mosquito-borne disease exposure are prevalent, school-based educational programs have shown to be effective for environmental health risks, such as arboviral and protozoal diseases. This randomized controlled trial seeks to collect baseline mosquito vector prevalence among primary schools in Grenada; and to describe, implement and evaluate a school-based educational intervention to de-

crease feco-orally transmitted protozoans and arboviral disease risk among grade 4 primary school students in Grenada.

In January through March, 2019, forty (40) primary schools were randomized to either receive a two-day educational intervention (n=17; 487 children) or to be a control (n=23; 578 children). Pre- and post- questionnaires were administered to evaluate participants’ knowledge attitude and behavioral changes of disease and prevention of feco-orally transmitted protozoan diseases and arboviral diseases, attitude levels and self-efficacy in disease prevention. Vector data was also collected on each visit and measured according to establish SOPs.

The intervention included an oral presentation, interactive demonstrations, and informational posters. Pre- and post-intervention questionnaires were administered before and after the intervention and evaluated participants’ knowledge of disease and prevention of feco-orally transmitted protozoan diseases and arboviral diseases and self-efficacy in disease prevention.

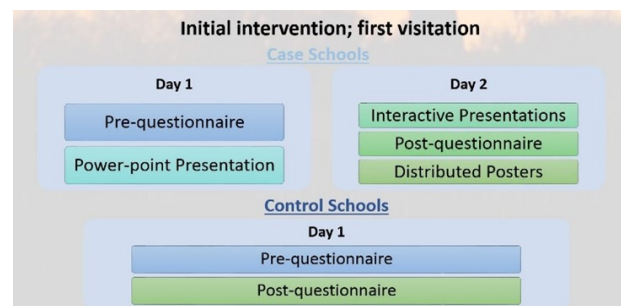


Figure 1 showing intervention practice in case versus control schools.

Educational intervention comprises of a presentation of arboviral diseases and feco-orally transmitted protozoans; and interactive teaching sessions included handwashing, wa-

ter filtration, mosquito life cycle and 'mosquito-tag' games.



Fig. 2 Interactive Handwashing Exercise



Fig. 5 Informational Hand Washing Poster



Fig. 3 Interactive Water Filtering Exercise



Fig. 6 Arboviral and Feco-oral presentation



Fig. 4 Classroom Pre/Post Questionnaire using Clickers



Fig. 7 Interactive Mosquito Tag game

It is important to note that funding is facilitated by a private donor through Stanford University.

Based on data collected, improvements in disease knowledge and attitudes were significant in the intervention groups compared to the control groups ($p < .0001$). Participants answered similar questions with a fair level of agreement (Kappa coefficient of 0.382). The intervention group reported significant improved arboviral knowledge ($p < .0001$), attitudes ($p < .0001$), and a 27% increase in answering: "Where do *Aedes aegypti* female mosquitoes lay their eggs?" correctly between tests. Intervention participants also reported improved feco-oral disease knowledge ($p < .0001$), attitudes ($p < .0001$), and a 6% increase in answering: "What is the best way to protect yourself from feco-orally transmitted germs?" correctly between tests. Intervention participants also improved self-efficacy ($p < .0001$), By comparison, the control group showed significant improvements in feco-oral disease knowledge ($p < .0001$) and attitudes ($p < .0001$), arboviral disease attitudes ($p < .0001$) and self-efficacy ($p < .0001$), but not arboviral disease knowledge ($p = .8643$) between tests.

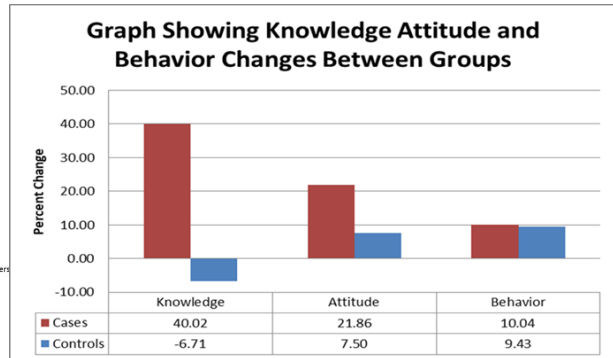


Figure 8 showing knowledge, attitudes and behavioural percent changes in feco-orally transmitted protozoan diseases questioning between case and control groups.

The March 2020 nation-wide lockdown, due to SARS-CoV-2 (COVID-19), forced the project to a halt. It was, therefore, a collective decision that all the data collected in Phase I, January 2020 would be used as the project's Pilot Data. The project's pilot data abstract was accepted and presented virtually at the American Society of Tropical Medicine and Hygiene (ASTMH) 69th annual meeting in November 2020.

Upon the project's recommencement, 53 primary schools (33 control schools; 20 case schools) will be visited in three phases:

1. Pre/post intervention and poster presentation
2. 3-month follow-up with questionnaire
3. 9-month follow-up with questionnaire

An "Our Voice" component will be added to the interactive sessions in 10 of the control schools. "Our Voice" is an innovative and scalable experiential citizen science teaching platform. The children of the designated control school, under the guidance of research team members and their teachers, will be given tablets to identify, take photos of environmental factors that may facilitate the mosqui-

to life cycle and post them to Discovery Tools. This exercise will further measure their understanding of the information shared with them during the educational interactive sessions.

Following is the tentative timeline for the Engaging Young People As Agents of Change project.

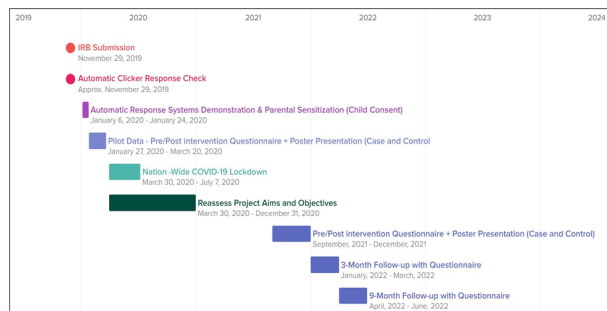


Figure 9 showing tentative project timeline.

Submitted by Nandy Noel

Caribbean Cooperative Measurement Reporting and Verification Hub Project (MRV Hub)

Introduction

The Caribbean Cooperative Measurement, Reporting, and Verification Hub (MRV Hub) is a 5-year project initially funded by the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation & Nuclear Safety (BMU) of Germany, with additional resources and technical support provided by the UNDP Global Support Programme (GSP).

12 English speaking CARICOM countries are being supported by the implementing partners: Greenhouse Gas Management Institute (GHGMI), Regional Collaboration Centre of the UNFCCC (RCC-STG), UNDP/UNEP Global Support Programme (GSP) with WINDREF tak-

ing on the pivotal role as institutional host. Participating countries include Antigua & Barbuda, Barbados, The Bahamas, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts & Nevis, St. Vincent & the Grenadines, and Trinidad & Tobago. As the reputation of the MRV Hub has grown, our funding and staff have grown under new contracts from our member countries who are engaging the MRV Hub directly for support, guidance, and training.

The MRV Hub Annual Meeting Barbados, March 11-12, 2020

The MRV Hub held its 2nd Annual Meeting on the 11th & 12th of March in Barbados. Representatives from 11 of the 12 member countries successfully joined the meeting in person and virtually. Participating countries included Antigua & Barbuda, The Bahamas, Barbados, Belize, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts & Nevis, St. Vincent & the Grenadines, and Trinidad & Tobago.

Regional organisations such as the Caribbean Community Climate Change Centre (CCCCC), Caribbean Community (CARICOM) Secretariat, Organisation of Eastern Caribbean States (OECS) Secretariat, as well as other key institutions working in the region including Maritime Technology Cooperation Centre (MTCC), UNFCCC, UNEP-DTU, UNDP, RCC-STG and GHGMI were all represented at the event.

The 2020 annual meeting focused on the work accomplished and delivered in 2019 as well as a stocktaking of member country experiences, obstacles and opportunities. During the meeting, UNFCCC and UNDP provided updates on international requirements, negotiations, guidance on NDC enhancements and the Enhanced Transparency Framework. The

MRV Hub Secretariat, represented by Mr. Hayden Redhead, highlighted their 2019 activities which included in-country training sessions and workshops in the region, country-specific workstreams and MRV System Status Assessments of all member countries.

MRV Hub Annual Meeting 2020, Barbados, March 11-12, 2020



Introduction to the MRV Hub Steering Committee

The MRV Hub Steering Committee consists of 8 members from each stakeholder groups (Member States, Implementing Partners and Regional Organisations). The current members are as follows:

Chair	Dr. Lennox Gladden	Representing Belize
Country Member	P.S. Roxie Hutchinson	Representing Grenada
Country Member	Ms. Samantha Justin	Representing Saint Lucia
Country Member	Ms. Rochelle Newbold	Representing The Bahamas
Partner Member	Mr. Carlos Fuller	Representing 5C's
Partner Member	Mr. Damiano Borgogno	Representing UNDP
Partner Member	Mr. Vintura Silva	Representing RCCSt. George's
Partner Member	Dr. Michael Gillenwater	Representing GHGMI

According to the terms of reference for the Steering Committee of the MRV Hub (2020), the functions of the Steering Committee include but are not limited to:

- a) Provide strategic and policy guidance to the maturation and operations of the MRV Hub;
- b) Promote transparency and accountability between the MRV Hub project staff, participating country governments, and other stakeholders;
- c) Promote deepening participation by the participating Caribbean countries in the MRV Hub and the establishment of the MRV Hub as a reliable and relied upon institution within the region;
- d) Consider and review policy documents, operational plans and budgets for the MRV Hub;
- e) Consider and review new regional and international partnership proposals for the MRV Hub;
- f) Consider the overall performance of the MRV Hub relative to the collective needs of participating countries, with support from the MRV Hub secretariat;
- g) Lead strategic decision making on the permanent institutional placement and adoption by participating countries of the MRV Hub, including the selection of potential regional host organisations for a permanent the MRV Hub;
- h) Mobilise resources and consider and review future plans and budgets for sustainable operation of the MRV Hub following the completion of the initial grant funding in 2023; and
- i) Lead decision making, resource mobilisation, and establishment of a permanent governance structure for the MRV Hub to take effect by the end of the initial grant funding period in 2023.

MRV Hub Work Crews

The MRV Hub has launched a number of work crews composed of technical experts and

country representatives to tackle MRV challenges that are common to most or all of the MRV Hub member countries. Some of these challenges include - Data Management Systems (DMS), Maritime Bunker Fuel emission estimates, On-Road Mobile Sources and emission estimates for the Agriculture, Forestry and Other Land Use (AFOLU) sector. A Call for Participation was issued through the MRV Hub Secretariat and an application period facilitated by Ms. Ahyana Bowen invited both regional and international experts to express their interest in joining one or more of the work crews. Each work crew is comprised of a Development Team (the technical core of the work crew doing the substantial work entailed in producing its outputs) and a Review Group (a broader group of country representatives and other sector/MRV experts who provide strategic direction and specific input on work crew outputs). Work crew members were given the option to join the work crews in one of these capacities and Ms. Ahyana Bowen continues to serve as the primary organizer of the working sessions.

It is expected that the developed work crew outputs including a "data collection tool" that is currently in the testing phase, will begin rollout to MRV Hub Member countries in 2021.

MRV Hub Summer Academy 2020

The MRV Hub hosted its Summer Academy from June 17th – August 5th, 2020. However, due to the COVID-19 pandemic, this year’s academy occurred for 8-weeks online. The MRV Hub Secretariat made the decision to space out the original programming schedule into separate delivery sections to allow for partial online delivery; and staggered the forthcoming scheduling. Invitations were extended to the 12 MRV Hub member countries

in addition to MRV Hub organisational partners to nominate recently hired or assigned individuals that would be involved in the preparation of their country’s next GHG inventory; individuals with little to no previous GHG inventory training or experience; persons interested in learning more about GHG inventory measurement and reporting; and persons willing to share knowledge gained with others upon training completion.

Two (2) full sponsorships were offered to each MRV Hub member country to attend the 2020 Summer Academy. Over the course of 8 weeks, 26 participants were trained for 2 hours on various topics such as GHG data and parameters, IPCC guidelines structure and navigation, institutional arrangements, data collection, key category assessment, methodological choices, the basics of using Excel for GHG MRV and uncertainty. These topics were guided by Dr. Olia Glade, Ryan Deosaran, Molly White and Wiley Barbour, GHGMI instructors and specialists in GHG accounting among other various areas of expertise. The academy culminated with all 26 participants successfully completing program requirements and earning Certificates of Participation. Successful participants included members of the WINDREF Team who work with the MRV Hub Project, Dr. Randall Waechter, Ms. Ahyana Bowen and Mr. Quincy Augustine.

Zoom Call Flags Display from the MRV Hub Summer Academy 2020



Partnerships & Networking

Maritime Technology Cooperation Centre – Caribbean (MTCC)

The MRV Hub has signed an MOU with the Maritime Technology Cooperation Centre – Caribbean (MTCC), which is a joint IMO-EU initiative housed in the University of Trinidad & Tobago, and MTCC experts will lead a work crew on maritime emissions and international bunker fuel use.

Caribbean NDC Virtual Exchange Series

Facilitated by the UNFCCC-RCC St. George's, the MRV Hub participated in the Caribbean NDC Virtual Exchange Series which was launched in May 2020. The webinars offered an exchange of best practices and knowledge on Nationally Determined Contributions (NDCs) and the processes under the Paris Agreement for the Caribbean Region (NDC Support Programme, 2020).

How to set up a cooling strategy in the Caribbean context

Proklima, a programme of the 'Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), in cooperation with the UNFCCC-RCC St. George's & the MRV Hub (CCMRVH) hosted a 2-day online training on how to set up a refrigeration and air conditioning (RAC) sector Inventory and a Cooling Strategy in the Caribbean context, as a basis for target-oriented implementation of emission reduction measures in the sector. These cooling systems are a source of potent greenhouse gases due to leaks and losses and need to be properly handled in every Country's MRV system and national policies.

This online training occurred on the 20th and 23rd of October, 2020 and accommodated 35 participants from various Caribbean countries

and groups such as Antigua & Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, St. Kitts & Nevis, St. Vincent & the Grenadines, Trinidad & Tobago, Suriname, Haiti, Cuba, the Dominican Republic, National Ozone Units, Departments involved in the development of NDCs (e.g. Climate Department), Energy Ministry/ Energy Efficiency Department), Ministry of Trade (Customs Authority), National Statistics Authorities, and Energy Efficiency Network members from CARICOM.

The 2-day training consisted of theoretical and practical modules that addressed methods for data collection, modelling and interpretation as well as strategies for emission reduction and ways to integrate the results into the NDCs. The participants also benefited from the experience gained in Grenada, as the work carried out there will facilitate the collection of data and the development of measures in other Caribbean countries.

Country Specific Work

In 2020 the MRV Hub made an important step in its transition to becoming a new sustainable service institution in the Caribbean, by leveraging new contracts and grants to further its mission and accelerate its growth. Our member countries have readily accepted our bids to support them in a variety of technical and policy tasks related to demonstrating compliance with the UN Paris Agreement. These tasks include stakeholder outreach and engagement, mentoring and training government staff, gathering data, calculating emissions, preparing reports, conducting mitigation analysis, supporting updates of national determined contributions (NDCs) and building certification systems for local experts.

This new facet of the MRV Hub's work and

regional support, has led to the contracting of new staff and consultants of regional experts.

The MRV Hub has now formally engaged the services of experts from Belize, Grenada, Saint Lucia and Trinidad and Tobago on a full-time basis with the potential for more new hires in the coming year.

MRV Hub Secretariat

The success of the project thus far has been aided by the coordination and logistical work of the MRV Hub Secretariat supported by the WINDREF administrative team, Ms. Isha English, Mrs. Naomi Alexander-Whyte and Mrs. Yvette Baptiste. This has aided in maintaining consistent production of the MRV Hub Newsletter, MRV Hub reporting, management of social media pages, administrative support, and processing of applications solicited by the MRV Hub.

Conclusion

The MRV Hub has now entered its 3rd year of operation and continues to operate ahead of schedule and within budget. Expenditure to date on the project is EURO 1.29 million of the overall grant of EURO 2.98 million.

As the team continues its mission of building capacity in the region, recruitment has been ongoing and this year we have seen the addition of 3 critical roles, one (1) Technical Support Associate (Grenada) and two (2) Program Associates (Saint Lucia & Belize). We have also engaged consultants from across the region to support our work. It is envisioned that further recruitment will be necessary to meet the growing demands of our members.

The Project Team has begun the process of developing the proposed organization funding model for a regionally established MRV

Hub “institution”.

Submitted by MRV Hub Secretariat (Mr. Wiley Barbour, Project Director and Mr. Hayden Redhead, Project Coordinator)

Saving Brains Grenada Intervention

The Saving Brain Grenada Transition to Scale (TTS) project continued in its second year after receiving approval from Grand Challenges Canada for additional funding in July 2018.

In January 2020 a three (3) day intensive Conscious Discipline Workshop led by Conscious Discipline Founder Dr Becky Bailey and master instructor Kim Jackson was held in Grenada.

The workshop covered the fundamentals of Conscious Discipline and reinforced the main skills and powers taught in the Saving Brains Grenada program. Participants were introduced to elements of Safety and Connection, necessary to foster a positive learning environment, where parents, teachers and children are able to approach upset from a calm, self-regulated perspective.

The workshop was very well received with approximately 150 attendees. The participants were made up of 25 teachers from schools in the Saving Brains Grenada program, 45 teachers and educators from other institutions, 30 roving caregivers and 50 community members including parents, research assistants and ministerial personnel.

All attendees received Conscious Discipline certificates after completing the 18 hour interactive workshop.

PRE-PRIMARY SCHOOL

Five trained Conscious Discipline coaches worked with a total of 53 teachers and principals in the first batch of pre-primary schools (n=12) from September 2019 to January 2020. The coaching was met with enthusiasm by the majority of teachers. The Conscious Discipline workshop marked the end of the coaching sessions for this first batch of 12 schools. Teacher fidelity measures were carried out in each of the schools with 14 teachers meeting the minimum criteria for fidelity. These schools continue to practice Conscious Discipline without external support from Saving Brains Grenada team.

Coaching began in the second batch of 12 schools in February 2020 immediately following the Conscious Discipline 3-day workshop. The coaches were able to carry out between zero (0) and five (5) coaching sessions, depending on the readiness of the school, before social distancing was enacted and the schools were shut down on March 13, 2020 due to the COVID-19 pandemic. This came very suddenly leaving teachers, parents and children, anxious, unsettled and stressed. Teachers were challenged with trying to deliver the curriculum virtually, with little or no training whilst managing their own households and the children's education. Parents were extremely stressed, some having lost their means of employment, living in very crowded households, trying to keep things together and have their children attend virtual school, often with only one device between three or four children. Children were frustrated and angry at not being allowed to see their friends or play outside. The coaching team were quick to identify that the core skills of Conscious Discipline - **Safety, Connection** and **Problem Solving** were key to offering support

to all concerned and so immediately began to work on adapting the curriculum for use online. The initial focus was on helping the teacher use the skills of Composure to ensure that they were able to self-regulate at times of stress. The teacher would then pass these same skills on to the parent who would then be calm and composed enough to help their child.

Connection with the teachers was made via Zoom, WhatsApp groups and social media (i.e., Facebook, YouTube) and despite some initial technology challenges, the coaches were able to remain in contact with almost all teachers through these modified techniques. In addition, they were able to have more of an impact with parents, connecting through social media, WhatsApp messages and in some cases being directly involved in parent's WhatsApp groups.

The Conscious Discipline skills and powers were often reinforced in many different ways including through 'Sophie Stories'. These stories are read by the parent to their child modelling and reinforcing the skills of Conscious Discipline for the parents. Videos were also made for the parents to practice the skills with their child. Videos would be forwarded to the teacher who could use them as a basis for discussion and then passed on to the parents. Short infographics would be sent regularly by WhatsApp to reinforce concepts.

Conscious Discipline also very quickly devised some children's story books for use by teachers and parents to explain the Coronavirus in simple terms for children to understand. Some titles were 'The Task of the Mask', 'Shubert and Sophie stay home', 'When people get coronavirus' etc. Once read, this would give the parent and teacher a basis for

discussion with regards their own and their child's social emotional well-being.

Feedback from the parents and the teachers was extremely positive. Many parents would relate how they initially found it very difficult to deal with their child being home all day, making noise, with nowhere to go but related that the skills they had learnt helped them to breathe, stay calm and not lash out. By practicing the various activities with their children they found that they had fun, developed a stronger connection and had more time for their children.

COMMUNITY

From January 2020 the Roving Caregivers continued to visit the homes and deliver weekly Conscious Discipline sessions to families, supported by the monthly mobile resource unit. On 13th March however the face-to-face program was also suspended due to the COVID-19 pandemic. Many of the parents had very restricted access to Wi-Fi or limited access to devices resulting in a reduced number of around 60% of families continuing to participate virtually via WhatsApp. As with other groups the parents were feeling stressed, scared and frustrated and so were very much appreciative of the regular contact with their caregivers who would listen with compassion and offer calming techniques and tips for navigating the lockdown. With many people confined to a small household, frustrations can often overrun, resulting in conflict. The emphasis in the virtual classes was to develop and maintain composure and to build strong connections between parent and child. The main skills taught were breathing techniques and stop and go activities for self-regulation, I Love you Rituals to build connection between parent and child, stories that taught essential

social skills for children, arts and craft activities that parents could do with their children related to Conscious Discipline skills.

Feedback from the parents and the teachers was extremely positive. Many parents would relate how they initially found it very difficult to deal with their child being home all day, making noise, with nowhere to go but related that the skills they had learnt helped them to breathe, stay calm and not lash out. By practicing the various activities with their children they found that they had fun, developed a stronger connection and had more time for their children.

Two Saving Brains select coaches held 'virtual' bus classes via Zoom and small WhatsApp groups for those that were able to connect. The bus classes were held fortnightly and followed a similar format to the face to face bus classes, with a few modifications made, for example group play was substituted by mommy & baby play and activities that required no equipment were selected eg. ring around a rosie. Despite some of the technical difficulties parents found these sessions rewarding. Being able to connect and share with others helped to boost parent's emotional wellbeing, remind them that they were not alone whilst giving them the opportunity to have some fun and reinforce their Conscious Discipline skills.

Teachers and parents were also offered a 10-week Conscious Discipline E-course, presented by Dr. Becky Bailey. The project manager, Stephanie Holmes, would host the course once a week via Zoom and participants would watch and be given the opportunity to discuss content and share ideas at each session. Twelve participants took part, with 6 completing the full 10-week course.

In September 2020, the face-to-face Roving Caregiver weekly home visits re-commenced. September is dedicated to supporting children as they transition into school. October and November are assigned to recruiting new families and building strong relationships within the homes. The re-opening of schools was conducted over the month of September 2020 with many students only being allowed to attend part time well into October 2020. Unfortunately, permission was not granted by the Ministry of Education for the Saving Brains coaches to be allowed into schools, so they continue to coach remotely.

ASSESSMENT

In order to determine the neurodevelopmental impact of the Conscious Discipline intervention on the children, our trained research assistants have been administering this test to children aged 3-5. Overall neurodevelopmental data collection has been significantly delayed however, due to the ongoing COVID-19 pandemic. From March - June 2020, Grenada went into full lockdown to mitigate the spread of the virus. This lockdown halted all in-person activities, including schools and research projects. Since data from this project is collected from infants at their schools, we were unable to administer these assessments due to the lockdown. In September, schools reopened in a limited capacity. Although schools have reopened, the Ministry of Education COVID-19 protocols do not permit any visitors (including researchers) to enter the school compound. To circumvent this issue, our team has been assessing infants in their homes (with our permission from the Ministry of Health) instead of their schools.

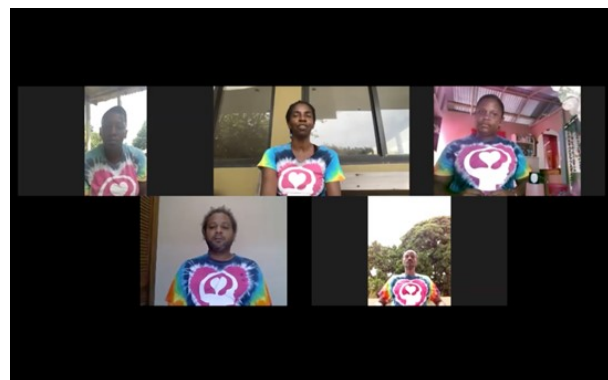
1. 3-day workshop with Dr. Becky Bailey



2. Virtual home project made with parent. Breathing tool pin wheel and sad face



3. Saving Brains coaches recording video message for teachers



4. Link to video of 3-day Conscious Discipline training

<https://www.youtube.com/watch?v=FEAzK21ujJE&feature=youtu.be>

5. Example of infogram sent to parents and teachers



Submitted by Stephanie Holmes & Roberta Evans

Baroness Howells Sports for Health Program

WINDREF's Baroness Howells Sports for Health Program for 2020 focused on the World Health Organization (WHO) priority for a decade of healthy aging. The program for the first quarter of 2020 engaged elderly participants in the ongoing Community Based Exercise Program. 23 persons with an average age of 67.6 years was evaluated to improve their physical functioning, energy, emotions, and general health with continued participation in the program.

In March 2020, in response to the covid-19 pandemic restrictions, the Baroness Howells Sports for Health, Community Based Exercise program was suspended. WINDREF then partnered with the Grenada Association for Retired Persons (GARP) to support elderly per-

sons at their homes to support their wellbeing during the social and economic restrictions. Monthly packages including food and medical items as well as sanitizers and face masks were delivered to elderly persons identified by GARP.

WINDREF also in partnership with GARP supported the distribution of face masks across Grenada serve as a public health measure to reduce the risk of contracting covid-19 as well as promote compliance for the elderly to abide with the legal requirements for mask wearing. The COVID-19 viral infection disproportionately impacts elderly persons with and increased risks for adverse effects.

Photo below: Carol Vasquez, Founding President of GARP (deceased) receiving one of the face mask donations from Satesh Bidaisee, WINDREF Baroness Howells Sports for Health program.



Diabetes Management for the Caribbean Project

WINDREF in partnership with the Organization of Eastern Caribbean States (OECS), Caribbean Public Health Agency (CARPHA), Re-

gional Ministries of Health and the World Diabetes Foundation (WDF) continued the regional Diabetes Management Program for 2020. The project's goal which is: To promote diabetes awareness and knowledge among the general population and to support the adoption of healthy eating habits and physically active lifestyles to reduce diabetes risk among the general population in Caribbean countries, for 2020, focused on Healthy Lifestyle and Counselling.

WINDREF led a training program for nutritionists, dieticians, physical fitness trainers and health educators on developed guidelines to be implemented for the region. Counselling competencies was also built on diet, physical activity, alcohol use, tobacco cessation and self-care.

For the first quarter of 2020, WINDREF facilitated trainer training followed by in country training. which collectively involved over 250 regional community health providers.

The onset of covid-19 pandemic restricted further field-based training and implementation. However, online training continued together with the establishment of an online training and counselling network of regional partners to work with persons living with diabetes towards managing diabetes during the covid-19 pandemic as well as advocating and advising on healthy lifestyle within the physical/social limitations in response to covid-19. Finally, for 2020, after stakeholder and technical consultations, the Regional Guidelines for Diabetes Management in Primary Health Care was finalized and published. The implemented guidelines have currently led to over 7500 regional persons living with diabetes undergoing monitoring for their diabetes and over wellbeing. The guidelines can be

sourced from: <https://ghc.fiu.edu/assets/docs/3.440-carpha-regional-guidelines-for-diabetes-management-in-phc-oecs-diabetes-prevention-care-project.pdf>

[Regional Guidelines for Diabetes Management in PHC](#)

Modular Approach Modular approach for adapting and including other components of DM management Modeled after WHO HEARTS Building block for implementation of an integrated NCD programme in PHC Discourages a vertical or silo approach in DM management Targeted at PHC providers, policy-makers, civil society groups , lay care providers & persons with diabetes
ghc.fiu.edu

Submitted by Satesh Bidaisee

Zika and Neurodevelopment Among Infants in Grenada

Background

The ongoing Zika Virus (ZIKV) study continues to investigate the existence of any subtle impacts of the virus on child neurodevelopment. The project spans the crucial first five years of development to determine any possible impacts associated with ZIKV exposure.

Sample

Approximately 70% of the 388 infants enrolled in the study are Zika exposed. This has been determined through nanoscale plasmonic gold (IgG) antigen array (pGOLD) testing of their mother's provided blood sample.

Assessment

Data is typically collected when mothers bring their infants to their respective health centers for their follow-up appointments.

Due to the ongoing COVID-19 pandemic however, this has shifted to the research team visiting the homes of these infants instead. While data continues to be collected on this cohort, testing at years one and two is complete.

Year 1 Outcomes

A total of 126 infant serum samples were collected at this timepoint. The samples were tested for both ZIKV and DENV at the LaBeaud Lab at Stanford University. All samples yielded negative results for both viruses. On a measure of neurodevelopment, the OXNDA, primary results for the one-year timepoint show that the Zika exposed infants in the cohort are progressing on par with their unexposed peers. No significant differences were found on a measure of Visual Acuity (CARDIFF Vision Tests) between the exposed and unexposed infants in the cohort. At the end of the first year, EEG results suggest an elevated epilepsy incidence rate in Zika exposed children, relative to the global incidence rate of 0.001% in the first year of life, and focal, rather than generalized abnormalities on EEG. Given the very small sample size, these results are considered preliminary.

Year 2 Outcomes

Of the 115 infant serum samples collected at two years of age, only one infant's sample returned a ZIKV positive result. All the samples tested negative for DENV. At year two, the trend continued – Zika exposed infants continued to develop at the same rate alongside their unexposed peers as measured by the INTERNDA. However, in contrast to findings at year one, Zika exposed infants showed Visual Acuity deficits compared to their unexposed peers. This finding will continue to be explored in years 3-5.

At the 2-year timepoint, families enrolled in the study were given an opportunity to participate in an intervention designed to improve neurodevelopment in the children of this cohort. The intervention, a clinical trial funded by the NIH, was designed to promote better emotional connections between parents and their children by providing knowledge and skills to parents/caregivers, based on the Conscious Discipline (CD) curriculum. Preliminary results of this data analysis indicate the intervention did improve language and positive behaviour outcomes in the Zika exposed group that received the CD intervention.

Years 3-5

Additional funding has been acquired from a private donor, made possible through the LaBeaud Lab at Stanford University, to continue following the cohort until year 5. Data collection at the three-year timepoint is well underway and should be completed by May 2021. Data collection has commenced for year 4 and is expected to commence in April 2021 for year 5. The team continues to pivot to collect data despite delays and complications associated with the COVID-19 pandemic.

Submitted by Roberta Evans, Nikita Cudjoe, Trevor Noël, Amy Krystosik, Randall Waechter, Barbara Landon, Michelle Fernandes, Karen Blackmon, Elysse Noel Grossi-Soyster, Eleonora Migliore, Jonathan Altamirano, Amrik Kang, Benjamin Pinsky, Veronica Mapp-Alexander, Elsa Chitan, George Mitchell, Shawn Charles, Calum Macpherson, A. Desiree LaBeaud

Dietary Supplement Studies

Since 2017 WINDREF researcher have conducted research on the efficacy of Glucose

Stabili-T, a dietary supplement the manufacturer markets with the claim that it “supports healthy blood glucose levels.” The study found scientific evidence mildly in support of the manufacturer’s claim. The research was funded by LifeSeasons, Inc., of Dallas, Texas. LifeSeasons provided the dietary supplements for the study.

During 2020 WINDREF researchers had planned to conduct six additional dietary supplement studies also funded by LifeSeasons. However, due to the closure of St. George’s University’s True Blue campus in the spring of 2020 and the limitations on social interaction mandated by the government of Grenada that precluded non-essential inter-personal interactions, it was not possible to perform the intended studies.

When the SGU students return to campus and when the government restrictions will permit, WINDREF researchers expect to conduct the following studies:

1. Effectiveness of a glucose-stabilizing dietary supplement in:
 - Diabetics
 - Prediabetics
 - Individuals with risk factor for diabetes
 - Healthy individuals over 65 years of age
2. Effectiveness of a stress-supporting dietary supplement in medical students
3. Effectiveness of a cognitive-enhancing dietary supplement in medical students



The studies will be randomized, placebo-controlled, double-blind, crossover designs lasting for six months with 100 to 150 participants in each trial.

Submitted by Paul J. Fields and Calisha Daniel

Caribbean Research Ethics Education Initiative (CREEi)

In February 2020, WINDREF became the new base for the Caribbean Research Ethics Education initiative (CREEi) under the leadership of Cheryl Macpherson who serves as Principle Investigator and Program Director. Funded by the NIH-Fogarty International Center Award # R25 TW007085 for four years CREEi aims to expand progress made during the previous funding period which produced over 75 alumni of the one-year certificate program who are using their training to develop courses, policies, and research involving research ethics in their own institutions and countries. This continues to advance infrastructure and capacity for research and research ethics in their respective institutions and countries.

Now based in WINDREF, CREEi is partnered with two other institutions: Universidad Autónoma de Querétaro (UAQ) in Mexico led by site PI Hilda Romero Zepeda and Clarkson University led by site PI Paul Cummins. Some of the goals and accomplishments during 2020, and plans for 2021, are described below.

To provide a culturally relevant knowledge base and skill set in research ethics that will allow trainees from low- and middle-income countries (LMICs) in the Caribbean to function as independent research ethicists in their home countries and institutions.

This goal is being met as we provide a culturally relevant knowledge base and skill set through a master's degree in bioethics (MScB) program we collaboratively designed for this purpose. The MScB is completed part time over 2-years through a sequential series of 12 courses delivered primarily asynchronously online. The entire curriculum is delivered simultaneously in Spanish and English, exposing students to diversity of cross-cultural experiences and opinions, enriching the quality of discussion, and creating opportunities for collaboration. Fellows are enrolled at Clarkson University (CU) which will grant the degree for the initial cohorts. In the final years, we aim to enroll fellows at SGU and UAQ which will deliver the program and grant the degree.

The structure and curriculum for the MScB were collaboratively designed, reviewed, and finalized, and are being administered through Clarkson University (CU). CREEi funding mandates that fellows be from countries of the Caribbean basin classified by the World Bank as low or middle income. A call for applications to this end was developed and circulated with nearly 100 applications received in Spanish or English. At the time of writing, 14 fellows have completed 3 courses and are enrolled in the 4th course. They are demographically diverse representing Grenada, Guyana, Mexico, and Honduras, and include 2 men and 12 women from medicine, public health, microbiology, engineering, and other professions. Faculty and staff are nationals of these countries and others including Jamaica and Turks and Caicos.

To deliver the courses, translation technology and a commercial interpreting service were identified to support asynchronous and synchronous planning and course activities. Faculty readiness was developed through live

meetings introducing the program, translation technology, and expectations for their respective course description, design, teaching, and evaluation. Due to the Covid pandemic, the introductory *onsite* course (BIE 500) was delivered *online* over roughly two weeks instead of an intensive one-week onsite course. Because of the reliance on online teaching, we are applying for *Quality Matters (QM)* accreditation for two specific courses ('Responsible Conduct of Research' and 'International Research Methods'). The process provides faculty development by QM certified experts who guide faculty in co-designing and delivering these courses. QM accreditation will enhance the impact, transferability, and sustainability of these courses and create research opportunities for fellows and faculty.

To prepare trainees (and local faculty) to act as research ethics educators in their home countries and institutions.

This goal is being met by our MScB program which trains *fellows* to act as research ethics educators in their home institutions. Additionally, as we enhance knowledge and skills of *faculty* for bilingual and collaborative course design and teaching, we simultaneously increase their individual research ethics capacity and that of their *institutions*.

To develop and maintain centers of excellence in bioethics and research ethics at St. George's University and the Universidad Autónoma de Querétaro.

This goal is being met by sustaining staff and projects in UAQ's center, the Unidad de Bioética (established during the previous funding period). It has competitively obtained Mexican federal support for curriculum development and to co-host three conferences and

workshops. This goal will be advanced by establishing and supporting SGU's Center for Global Bioethics (CGB) as proposed in 2019 but delayed due to circumstances that led to the transfer of CREEi to WINDREF. The proposal for SGU's CGB is being updated with a view to establishing it in 2021. CREEi alumnus Kareem Coomansingh is serving as CREEi's program coordinator and will be part of the CGB.

To further develop and sustain a research ethics network in the Caribbean.

This goal will be met by fostering relationships between fellows, increasing and engaging alumni, and establishing a bilingual website to disseminate information and resources. CREEi alumnus Andrea Kanneh is developing this website which will be released in phases during 2021.

Plans for 2021

In 2021 we will further develop, deliver, and expand our curriculum and courses. This will include the redesign and delivery of the introductory onsite course (BIE 500) for cohort 2. Feedback from faculty and fellows is regularly sought during and after each course. Additional activities are bulleted below.

- Establish the CGB at SGU
- Launch the CREEi website
- Continue the process of QM accreditation begun Oct 2020
- Identify research supervisors to support fellows through their master's research, thesis, and submission for publication
- Deliver faculty development with live translation to support teaching and disseminate expertise gained during the QM accreditation process
- Provide mentoring opportunities for fel-

lows

- Meet with CREEi's Advisory Board and faculty to review the program and advance it's rigor and impacts.

Submitted by Cheryl Cox Macpherson

The UNFCCC Regional Collaboration Centre (RCC)

The RCC St. George's continued its 7th year under the leadership of Dr. Vintura Silva. While Isha English, Nakita Francis and Randal Waechter from the WINDREF team continued to manage the RCC Finances, the RCC welcomed Ama Kissiwah Boateng and Judlyn Telesford-Checkley into the team as Research Officer and NDC Consultant, respectively. Additionally, 3 Interns in the person of Quincy Augustine, Hannah Coutain and Tania Khan joined the team. The new colleagues increased our capacity to support countries in their implementation of climate actions, capacity building, climate finance and revision of Nationally Determined Contributions.

The year 2020, which started as the end of another decade, has been quite a challenging one by all standards. Despite the difficulties presented by the challenges of Covid-19, the RCC St. George's continued to offer significant support to Parties, Non-Parties and other Stakeholders and has progressed their activities from previous years with many collaborating institutions and organizations in the fields of mitigation and sustainable development, adaptation, climate finance, facilitating NDC implementation, gender, and youth engagement etc. An overview of the different areas of work and highlights the deliverables.

Mitigation and sustainable development Clean Development Mechanism (CDM) and Standardized Baselines (SBL)

RCC St. George's was tasked with tapping the potential of CDM projects and programs in underrepresented countries in the region, by building their capacities. In 2020, the RCC provided direct technical support to 15 CDM project activities and programs in the region at different stages of the cycle. As a result, 4 CDM projects and Program of Activities (POAs) moved at least one step in the CDM project cycle. In addition, 11 CDM were connected CDM project developers with buyers of Certified Emission Reductions (CERs) shared information on listing CDM projects on the UN Carbon Offset Platform and disseminated potential funding and investors seeking opportunities for CDM project activities.

Consequently, 2 standardized baselines namely, Dominican Republic waste SB and Antigua and Barbuda Grid emission factor SB were submitted for approval, and Dominican Republic waste SB received approval from the CDM Executive Board. Further, potential SBLs (GEF SBs in The Bahamas, Cuba, Haiti, Suriname, Dominica, Grenada) had been initiated while work on GEF SBs in Belize, St. Kitts and Nevis, Trinidad and Tobago, and St. Vincent and the Grenadines.

Climate Change Adaptation

Parties to the UNFCCC and its Paris Agreement recognize that adaptation is a global challenge faced by all within the various local, subnational, national, regional and international dimensions. It is a key component of the long-term global response to climate change to protect people, livelihoods and

ecosystems. Parties acknowledge that adaptation actions should follow a country-driven, gender-responsive, participatory and fully transparent approach, considering vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions.

Presentation of Countries National Adaptation Plans (NAPs)

Additionally, organized as part of the [NAP Expos](#), the NAP Country Platform provided a space for developing countries to present their NAP to highlight their adaptation priorities and how they will design implementation. They also share the main lessons learned from their work, how they may promote collaboration with other countries, and how they would monitor progress and effectiveness of their adaptation efforts. The event featured presentation of the NAPs by the countries that have submitted their NAP since the last NAP Country Dialogue that was held in April 2019. As a result, six countries were invited to present their NAPs.





Photo 1&2 : Sample of flyer and countries that presented at their NAPs

Regional Dialogues on Carbon Pricing (RediCAP)

The Collaborative Instruments for Ambitious Climate Action (CiACA) workstream of the UNFCCC concluded the first series of Regional dialogues on carbon pricing (REdiCAP) in 5 regions and sub-regions: Latin America, Caribbean, West Africa, East and Southern Africa and South East Asia. The dialogues came at a crucial time with Parties committed to revising their national climate action plans, or Nationally Determined Contributions (NDCs) and willing to explore economic instruments to increase their ambition to tackle climate change.

The REdiCAP in the Caribbean was conducted in September and counted on the participation of seasoned negotiators to the COP who led on very engaging discussion for consideration of instruments and evaluated the possibilities to consider regional collaboration. Trinidad and Tobago submitted its formal request to join CiACA and the team in RCC has already identified expertise for conducting the first part of the assessment which will consist of identifying the key elements of the domestic context which may influence the choice of carbon pricing instruments. To effectively achieve the stated objectives, the

REdiCAP dialogues were conducted through an innovative format of discussion to ensure engagement and exchange. The consultations can be held over a two-day period, with Session 1 setting the stage and providing a platform for sharing experience and Session 2 compiling the experience into a potential road map and next steps document.



Photo 3: Participants at the Regional dialogues on Carbon Pricing

Support to Nationally Determined Contributions (NDCs)

In 2020, governments are supposed to communicate updated NDCs which will become the basis for the climate regime under the Paris Agreement, including the enhanced transparency framework (ETF) and the Global Stocktake (GST). In this regard, the RCC St. George's collaborated with the NDC Partnership (NDC-P) to provide technical support to countries (Grenada, Antigua and Barbuda, Belize, and Saint Lucia) on their NDC revision. The Center also supported St. Kitts and Nevis and Dominica to apply for membership under the NDC Partnership. In August-September 2020, the RCC conducted survey on the status of NDC revision and the challenges hindering countries in the revision process. Two options were made available to respondents: electronic, and telephone interview. Participants represented 15 of the 16 countries supported

by the RCC St. George's. Countries were contacted through their UNFCCC National Focal Points. At the time of creation of this report, Barbados had not yet responded. Unless otherwise indicated, there were 19 survey respondents with one individual from each of the 15 islands. So far, 5 Caribbean countries namely Suriname, Jamaica, Cuba, Grenada, and Dominican Republic have already submitted their updated NDCs to the UNFCCC Secretariat. With the economic impact of Covid-19 on countries, it is anticipated that implementation of mitigation and adaptation measures will be much more challenging.

The Caribbean NDC Support Virtual Exchange Series

As part of its capacity-building support to the Caribbean countries, the RCC St. George's, in collaboration with the Caribbean Cooperative Measurement, Reporting and Verification Hub (MRV-Hub), Regional Pacific NDC Hub, Alliance of Small Island States (AOSIS), Secretariat of the Pacific Regional Environment Program, United Nations Development Program (UNDP), Inter-American Development Bank (IaDB), the Organization of Eastern Caribbean (OECS) States and several other partners offered a series of virtual exchanges from the Pacific and Caribbean regions as part of the Caribbean NDC support Virtual Exchange Platform. The Caribbean Virtual Exchange Series, which was launched in May 2020, came to an end on October, having spanned a period of 6 months. The series was focused on processes under the Paris Agreement for the preparation and submission of new and updated national climate plans, or Nationally Determined Contributions (NDCs).



Photo 4: List of Collaborating Partners RCC St. George's worked with in organizing the Caribbean NDC Virtual Exchange Series

Gender and Youth engagement

Virtual workshop to explore best practices from countries in LAC in integrating Gender into their National Climate Actions

The RCC has worked consistently in coordination with the Gender Team at the secretariat to ensure that special attention was given to ensure equal participation in capacity training activities, workshops and seminars organized by the RCCs in collaboration with partners. The focus of gender work at RCCs level was developed in line with the Enhanced Lima Work Plan Gender (LWPG) and its Gender Action Plan (GAP) agreed at COP 25 (Decision 3/CP.25)

Over 300 participants from 35 countries registered for the third regional workshop on integrating gender into national climate actions, held online on 16 September 2020 ([read more](#) about the 5-event series). The event provided the opportunity to hear from leading countries and enable peer-to-peer exchange on the best practices and challenges that governments face in integrating gender into national climate policies, plans, strategies, and actions. The workshop was co-organized by the secretariat's gender team, the Regional Collaboration Centers in Panama

and St. George, and UNDP. Members from Panama’s Youth Climate Change organization provided valuable assistance. Through this collaboration, we were able to leverage regional expertise and relationships to secure key speakers and promote the event through regional networks. Participants heard from Party representatives and observers about the effectiveness of gender mainstreaming to enhance climate action; gender data and analysis; institutional arrangements; as well as policy alignment and coherence measures. Speakers included country representatives from Mexico, Uruguay, Jamaica, Chile, Canada, Saint Lucia, St. Vincent, and the Grenadines, and representatives from organizations such as Empodera-Clima, FLASCO, and UNDP.

Change Education, Training, Public Awareness, Public Access to Information, Public Participation, and International Cooperation on these issues. Implementation of all six elements has increasingly been recognized as crucial in solving the complex challenges presented by climate change. This is also reflected in the Sustainable Development Goals (for example SDG targets 4.7 and 13.3) to which the ACE agenda is closely related

Communication of RCC Activities

The RCC St. George’s has increased its communication efforts by regularly disseminating newsletters and publishing them on the website. The newsletters provide technical advice, inform readers on relevant events, facilitate cooperation, and promote opportunities for project funding. Additionally, the RCC St. George’s Website has been revamped, it is accessible to the public at <https://unfccc.int/about-us/regional-collaboration-centres/rccstgeorges>.

The website offers a wide range of information from brochures, newsletters, past and upcoming events. A total of 5 newsletters and 14 news articles were published on the website in the year.



Photo 5: Participants from the gender workshop

8th ACE dialogues for Action for Climate Empowerment

Other regional events supported by the Regional Collaboration Centres (RCCs) - in St. George’s for the Caribbean and in Panama for Latin America - include the Empowerment, Action for Climate Empowerment (ACE) denotes work under Article 6 of the Convention and Article 12 of the Paris Agreement (2015) and their six elements: Climate





Photo 6: Samples of RCC St. George’s newsletters

Submitted by Vintura Silva and Ama Kisiwah Boateng

Combatting Violence Against Women and Girls: Development of Gender-Based Violence (GBV) Victims’ Rights Policy for Grenada

The project titled *Combatting Violence against Women and Girls: Development of Gender-Based Violence (GBV) Victims’ Rights Policy for Grenada* is part of Pillar one - Legislation and Policy Frameworks – under Grenada’s Spotlight Initiative (SI) Country Programme. The Spotlight Initiative launched in September 2017, is a joint European Union and United Nations Spotlight Initiative to End Violence against Women and Girls globally, and contributes to achieving the Sustainable Development Goals (SDGs). Grenada is one of

six (6) Caribbean States to benefit from the SI, along with countries in Asia, Africa, Latin America and the Pacific.

The current project aims to ensure that the Government of Grenada develops a National GBV Victims’ Rights Policy to guarantee support to survivors for their healing and recovery, and is delivered in accordance with international minimum standards and best practice. The project will draw on the recently completed Situational Analysis of GBV Services in Grenada and National Standard Operating Procedures for GBV for Grenada under the SI.

The Government of Grenada, Carriacou and Petite Martinique and Civil Society have made a number of systematic advances in legislation and policy frameworks and national action plans, as well as programmatic efforts to address gender inequality, and women and girls’ human rights. Despite these advances, however, violence against women and girls continues to be a pervasive problem throughout the country.

Family violence (FV) is identified as one of the most prevalent forms of violence in Grenada, primarily occurring as violence against women and girls (VAWG). Between 2012 and 2016, domestic violence data from the Royal Grenada Police Force reported 117 children victims, 85 women, and 32 men. Additionally, during 2011–2015 the number of child abuse cases reported totaled 1,910 children, averaging 382 cases on an annual basis. VAWG undermines the mental and physical health of women and girls, violates their human rights and can have a negative impact on long-term peace and stability.

The current project commenced in December 2020 and culminates in March 2021, and includes:

- A desk review and analysis of relevant existing gap assessments, policies, legislation and studies related to the right of victims of GBV in Grenada as it pertains to the essential services sectors that respond to GBV – Health, Police, Justice and Social Services (Ongoing)
- Consultations with victims of GBV and other key stakeholders (Jan – Mar)
- Development of the draft and finalized National GBV Victims’ Rights Policy for Grenada (Feb – Mar)

This project is significant and timely as the situation of VAWG is exacerbated due to the COVID-19 pandemic. Funding for this project was awarded through the United Nations Children’s Fund (UNICEF).

Submitted by Tonia Frame and Jacqueline Sealy-Burke

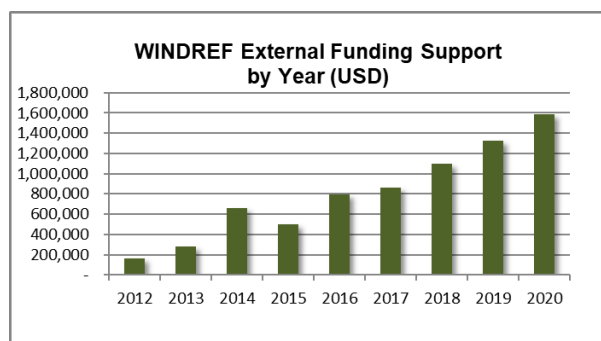
External Grants and Funding

We thank all of the donors who have made WINDREF’s work possible in 2020:

- German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, International Climate Initiative (via the Greenhouse Gas Management Institute) – For the WINDREF-based Measurement, Reporting & Verification Hub (CCMRVH)
- Global Water Partnership (GWP) – For the GWP Caribbean Regional Office
- Grand Challenges Canada – For the Saving Brains Grenada Scale-up project
- National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development – For the Rescuing

Neurodevelopment in ZIKV-exposed Children project

- National Institutes of Health, Fogarty International Center – For the Caribbean Research Ethics Initiative (CREEi)
- Private Donor – For the SGU School of Veterinary Medicine Dean's Academic Excellence Award
- Private Donor – For the South Sudan Student Support Program
- St. George’s University – For the One Health Research Initiative
- St. George’s University – For the SARS-COV-2 Testing Program
- Stanford University – For the Engaging Young Persons As Agent of Change project and Zika follow up study
- The Spencer Foundation – For the Center for Research on Storytelling in Education
- UK Research and Innovation Global Challenges Research Fund (GCRF) via the British Institute in East Africa – For the Global Health and Clean Water project
- UNICEF – For the Saving Brains Grenada Scale-up project and Combatting Violence Against Women and Girls: Development of GBV Victims’ Rights Policy for Grenada
- United Nations Food and Agriculture Organization (FAO) – For the Caribbean CC4 Fish project
- United Nations Framework Convention on Climate Change Secretariat (UNFCCC) Secretariat – For the Caribbean Regional Collaborating Center St. George’s
- US Fish and Wildlife Service – For the Consumer Behavior Change Campaign and Intelligence-led Conservation Capacity Assessment to Address the Illegal Wildlife Trade in Trinidad and Tobago



2020 Grant Applications

Twelve grant applications were submitted to external funding agencies in 2020. The total potential value of these grant applications was \$13.53 million USD. Six of these applications were successful and six were not successful. The grant applications are listed below (green = funded, red = not funded):

- Yanik, Lee, LaBeaud, Pinsky, Noël, Macpherson, & Waechter. Rapid, Multiplexed, and PCR-Free Detection of Arboviral Fever Syndromes in Resource Limited Settings. National Institutes of Health (via University of California Santa Cruz)
- Radix, Macpherson, & Bidaisee. Diabetes Management during Disasters in the Caribbean. World Diabetes Foundation.
- Noël, Grenada Ministry of Climate Resilience, The Environment, Forestry, Fisheries, & Disaster Management. Services towards regional implementation of the Climate Change Adaptation of the fisheries sector in the Eastern Caribbean project (CC4FISH). UN Food and Agricultural Organization (FAO).
- Global Water Partnership Caribbean Office. Nationally Determined Contribution Climate Action Enhancement Project (CAEP) for Dominican Republic, Somalia, Sudan. World Resources Institute.
- Frame. Combating Violence against Women and Girls: Development of Gender-based Violence Victims Rights Policy for Grenada – UNICEF.
- Macpherson, Noël, Waechter, Koomansingh, Redhead, Constantine, & Frederick. Innovative Nature-based Solutions to Enhance Community Resilience in Grenada (Project: EbA2 #039). Caribbean Biodiversity Fund.
- Leonardi, Danos, Yu, Ferguson, Hsieh, Maluccio, & Scribner. Social Determinants of Disparities in Hepatocellular Carcinoma. National Institutes of Health.
- Leonardi, Danos, Yu, Ferguson, Hsieh, Maluccio, & Scribner. Social Determinants of Disparities in Hepatocellular Carcinoma. American Cancer Society.
- Naef, Howorth, Blanco Jimenez, Scott, & Waechter. Tourist Compliance with COVID-19 Measures in Grenada: An RCT Evaluating different Message Presentation. UK Research and Innovation, Global Challenges Research Fund.
- Waechter, Fernandes, LaBeaud, Madhivanan, Krupp, Srinivas, Ribeiro De Oliveira, Landon, Macpherson, & Noël. Children of the Pandemic: A Multi-country Study to Examine the Impact of SARS-CoV-2 on Early Child Development. National Institutes of Child Health and Human Development.
- Macpherson, Waechter, Redhead, & Silva. Establishment of a UN Environment Program Caribbean Regional Office for Climate Change. NDC Support.
- Madhivanan, Waechter, Ehiri, Krupp, Fernandes, Macpherson, Noel, Hayat, Dodaiah, Madhunapantula, Chandrashekarappa, Kanakapura, Doreswamy, & Srinivas). Maternal COVID-19 and Infant Neurodevelopmental Milestones in India (CARE) Study - NIH Fogarty International Center.

Past Research Projects

Non-communicable Diseases

- The Elimination of the Soil Transmitted Helminths from Grenada and Beyond
- Perspectives on the Uptake of Breast and Cervical Cancer Screening in the English Speaking Windward Islands: A Collaborative Approach
- Woman to Woman: A Cervical Cancer Education Program for Grenadian Women
- Genetic Correlates of the Addictive Diseases: Cocaine, Alcohol and Marijuana Addiction -Grenada, WI, Dr. Mary-Jeanne Kreek, Kreek Laboratory, Rockefeller University. \$60,000.
- The Effectiveness of Life Seasons' Diabet-X in reducing HbA1c among Grenadians with Metabolic Syndrome. LifeSeasons. \$100,000.
- Neglected Tropical Diseases (NTDs) and Rheumatic Fever in Grenada: a project to prevent/eliminate helminthic and rheumatic fever infections among children (5-15 years of age). Bartholomew J. Lawson Foundation. \$41,903.
- Angiotensin converting enzyme and angiotensinogen gene polymorphisms in the Grenadian population: relation to hypertension
- Development of a decision rule for screening Obstructive Sleep Apnea and its epidemiologic relevance to the people of Grenada
- Prevalence and associated risk factors of hypertension in a sample population of native Caribbean's in Grenada, West Indies
- Assessing the prevalence of diabetic complications by examining type I and type II adult diabetics for signs of retinopathy, neuropathy, nephropathy and dermatological changes associated with poor glucose control within the native Caribbean population of Grenada
- Hypertension management and control in two Caribbean countries
- Assessment of the effectiveness of broad-spectrum treatment to children with protozoan and nemathelminthic parasitic infections on diarrhea and school attendance
- The effects of iron-deficiency anemia on cognition and behavior in infants
- Diurnal variation of urinary endothelin-I and blood pressure: related hypertension
- Alcohol consumption in Grenada
- The incidence and mortality of cancer in Grenada over the ten year period: 1990-1999
- The prevalence of abnormal haemoglobin traits in Grenadian secondary school adolescents
- Knowledge, attitudes, beliefs and practices of sickle cell anemia in Grenadian primary and secondary school children
- Decompression sickness among the indigenous fishing population in Grenada: Assessing the burden of disease
- WINDREF / SGU Hurricane Relief
- Spice Research Program
- Sulfate-reducing bacteria in oxidized freshwater of tropical mangroves
- Novel antibiotics from tropical marine environments: drug development in Grenada
- Study of the mutacin C-7A
- Gram-negative bacteria isolated from aquatic environments of Grenada (61.4° W, 12.0°N), West Indies
- Identification of bacteria producing antibiotics isolated from deep marine biofilms of Grenada
- SGU Environmental Testing Unit (ETU)
- Post-hurricane water surveillance in problematic areas of Grenada

- Evaluation of the relocation potential for villagers residing in Queen Elizabeth National Park, Uganda
 - Study of the calls of the spotted hyena at feeding
 - Survey on the attitude of villagers in Queen Elizabeth National Park, Uganda towards the threat of lions, leopards and hyenas
 - Epidemiology of human injuries resulting from wildlife in ten villages within Queen Elizabeth National Park, Uganda
 - Rural Ugandan village perspective on lion, leopard and hyena conservation
 - Epidemiology of human injuries by wildlife in six villages within Queen Elizabeth National Park, Uganda
 - Prevalence of *Campylobacter fetus* subspecies *venerealis* and other microorganisms in the reproductive tracts of cattle from the southern region of Santo Domingo, Dominican Republic
 - Antimicrobial properties of skin secretions from *Eleutherodactylus johnstonei* on bacteriological isolates
 - Examination and analysis of prostate cancer in Grenada
 - A Church-based intervention to improve hypertension prevention and control among women in Grenada
 - Occupational Health Problems among Nutmeg Factories Workers, SGU Small Research Grant Initiative
 - Sport for Health Programme
 - Grenada School Nutrition Study: Evidence to Inform Policy
 - Genetic Correlates of the Addictive Diseases: Cocaine, Alcohol and Marijuana Addiction -Grenada
 - Promoting Resilience Among Medical Students: A Comparison of Mindfulness, Yoga, and Exercise
- Infectious Diseases**
- LaBeaud, Waechter, Blackmon, Noël, Landon, & Macpherson. Zika and Neurodevelopment among Infants in Grenada: 36-month Assessment. Stanford University
 - LaBeaud, Noël, & Macpherson. Engaging Young People as Agents of Change. Stanford University.
 - Neurodevelopment and Vector-borne Diseases: Building Research Capacity in the Tropics. National Institutes of Health - Fogarty International Center. \$298,938.
 - Assessment of Neurocognitive Functioning in 2-year-old ZIKV-exposed Children. USAID via jhpiego. \$63,867.
 - The Spectrum of Zika Disease in Grenada. Stanford University. \$13,601.
 - The Spectrum of Zika Disease in Grenada. Stanford University. \$34,992.
 - Zika Surveillance in the Southern Caribbean and Reference Lab Support. Naval Medical Research Center. \$80,000.
 - Investigation of the prevalence of SIV in the mona monkey (*Cercopithecus mona*) in Grenada
 - Seroprevalence of HIV-I and HIV-II in pregnant women in Grenada, W.I. –their knowledge of AIDS and their exposure hazards to the virus
 - A cross sectional study of the current status of *Schistosoma mansoni* in St. Lucia by field surveys and supplementary data collection
 - Identification and characterization of hantaviruses among the mammal population of Grenada
 - HIV/AIDS health education and evaluation program in Grenada
 - The seroprevalence of *Toxoplasma gondii* in a population of pregnant women and cats in Grenada, West Indies
 - The efficiency of diagnosing women of *Toxoplasma gondii* using PCR techniques

- in comparison with ELISA
- Dengue virus in Grenada: seroprevalence and associated risk factors
- A current appraisal of dengue virus in Grenada –serotype analysis and vector assessment
- A site receptivity study determining the threat of reintroduction of malaria into Grenada through the study of *Anopheles* spp. mosquito vectors
- Chlamydial infection among STD clinic attenders in Grenada
- Fever in Grenada
- Mosquitoes and tourism in Grenada
- Effectiveness of a formula feeding/weaning intervention program in preventing transmission of HTLV-1 from seropositive mothers to newborns in Grenada
- A multi-center longitudinal research study of the behavioral significance of the prevalence of HIV-1 infection in pregnant women and their babies on the islands of Grenada and St. Vincent
- A multi-center longitudinal research study of the ethical analysis of informed consent of the prevalence of HIV-1 infection in pregnant women and their babies on the islands of Grenada and St. Vincent
- Determining the role of IL-15 in mediating function of viral-specific CD8+ T cells in the myelopathogenesis of HTLV-1: symptomatic versus asymptomatic patients
- Intestinal protozoan infections in 6-12 year old children in Grenada
- Intestinal helminth infections in 6-12 year old children in Grenada
- The prevalence of intestinal parasites in school children in rural Guyana
- The prevalence of filariasis and its effects on children aged 8-14 in the central corentyne region of rural Guyana
- The prevalence of streptococcal infection in school children aged 5 –15 years in Grenada, Carriacou and Petit Martinique
- Studies examining the elimination of lymphatic filariasis as a public health problem in Guyana
- Seroprevalence of heartworm infection in dogs in Grenada
- Dengue in Grenada
- Assessing the potential risk factors of dengue and dengue hemorrhagic fever in the tri-island state of Grenada, Carriacou and Petit Martinique
- A comparative study to find out if there is an association between sexual practices and knowledge in adult populations of Botswana and Grenada with the prevalence of HIV/AIDS
- HIV/AIDS in rural Botswana differentiating between informing and educating
- Evaluating the level of perceived fear and desensitization towards HIV/AIDS in Botswana
- Rheumatic Fever in Grenada
- Streptococcal program in St. Vincent
- Isolating T cells from Rheumatic Fever positive blood: immunofluorescent assay of T lymphocytes via fluorescently labeled monoclonal antibodies
- Possible genetic predisposition to Rheumatic Fever: demonstrating the inheritance fashion of non-HLA B lymphocyte alloantigen D8/17, a marker for Rheumatic Fever
- ELISA antibody titres against group A streptococcal M protein moiety and cell wall N-Acetyl-D-Glucosamine in Grenadian Rheumatic Fever patients
- Evaluating the effectiveness of educational methods in the prevention of Rheumatic Fever and knowledge, awareness and practices

- Prevalence of intestinal helminth infections in rural Grenadian school children \$10,007.
- Cystic echinococcosis in Morocco and Uganda
- Elimination of Lymphatic Filariasis in Guyana Program
- Neglected Tropical Diseases and Rheumatic Fever in Grenada: A project to prevent/eliminate helminthic and rheumatic fever infections among children (5-15 years of age)
- Ferguson, H. (2011-2014). Investigation of Disease in Pre-growout Fish in a Commercial Aquaculture Operation in Ecuador. Produmar, S. A.
- Heath, C., LaBeaud, D., Macpherson, C., & Noël, T. (2016). Characterization of Immune Factors of Chronic Chikungunya Disease. American Society for Tropical Medicine & Hygiene Robert E. Shope International Fellowship.
- Building Climate Resilient Health Systems in the Caribbean: A One Health Approach. Pan-American Health Organization (PAHO). \$20,380.
- Janicke, H., & Stone, D. (2018). Microgrant Award - Council on International Veterinary Medical Education. \$9,500.
- In-country Project Coordinator for the Eastern Caribbean Marine Managed Areas Network (ECMMAN) Project. The Nature Conservancy. \$68,109.
- Caribbean Research Ethics Education Initiative (CREEi). Fogarty International Center –National Institutes of Health. \$1,100,000
- Conservation Leadership in the Caribbean (CLiC). U.S. Fish and Wildlife Service, Division of International Affairs, via the International Fund for Animal Welfare (IFAW).\$325,205.
- Characterization of five amphibians inhabiting Grenada and subsequent isolation and antimicrobial assay of potential antibiotics derived from their skin
- Mona monkey studies in West Africa
- Investigation of medicinal plants in Grenada
- Use of medicinal plants in Grenada
- Medicinal drugs from the sea: what do Grenada’s waters have to offer?
- Beekeeping in Grenada: effects of the mite *Varroa jacobsoni* and its control
- Effects of Grenadian medicinal plants on endemic microbial causes of diarrhoeal diseases
- The neurobiological basis of hypoglycemia-associated autonomic failure
- Stimulation of angiotensin 4 in cardiac fibroblasts activates matrix metalloproteinases through MAP kinases pathways: A model for astrocytes
- REM sleep and memory

Unique Projects

- Cox Macpherson, Waechter & Macpherson. Caribbean Research Ethics Education Initiative. NIH-Fogarty International Center.
- McGlade, Gibb, Temmerman, OkelloOriale, Michieka, Forrester, & Macpherson. Health, Polluted Water and Soils: Pathways to Impact. UK Research and Innovation, Global Challenges Research Fund, Global Engagement Networks.
- Penny Light & Colket. The Center for Research on Storytelling in Education - Spring 2021 Research Conference. Spencer Foundation
- Caribbean Research Ethics Education Initiative (CREEi)
- Knowledge, Attitudes, and Practices Regarding Rabies in Grenada: A Cross Sectional Study. Pan-American Health Organization/Government of Grenada.

- End of life care in Grenada
- Novel antibiotics from tropical marine environments
- Genetic correlates of the addictive diseases: cocaine, alcohol, and marijuana addiction—Grenada
- An investigation of pediatric botanical medicine for acute respiratory infections
- Efficacy of phage therapy using an in vitro biofilm wound model system
- Degradation of 7 keto cholesterol by Xenohydrolases
- Ecological survival properties of pelagic and benthic indicator microorganisms from the St. John’s river outflow in Grenada
- The public health importance of dogs, Grand Anse, Grenada
- Greater occipital nerve zones for treatment of occipital neuralgia
- Photovoltaic power generation program
- Review of current biomedical waste management practices in the Organization of Eastern Caribbean States (OECS) Countries
- Microbial diversity in the iron-oxidizing biofilms of soda springs in Grenada
- Circadian cycle of iron-oxidation in warm soda springs in St. Andrew’s, Grenada, West Indies
- Do the microorganisms in the soda spring water derive energy from the oxidation of manganese?
- Novel marine bacteria and their antagonistic properties against medically relevant biofilms
- Physiological characterization of novel marine bacterial species isolated off Grenada
- Characterization of marine sponge-associated bacteria and cytotoxic activity of sponge extracts towards human cancer cells
- Examining HIV/AIDS provider stigma: assessing regional concerns in the islands of the Eastern Caribbean
- Knowledge, attitudes and practice survey for women (baseline survey)
- Caribbean EcoHealth Programme: public and environmental health interactions in food and water-borne illnesses (CEHP)
- Persistent Organic Pollutants
- Implementing Renewable Energy and Preventing Land Degradation: An Intervention in the Nutmeg Industry in Grenada
- Effects of prenatal ethanol exposure on the role of matrix-metalloproteinase mediated neural crest cells in an avian model
- Assessing Medical Students’ Behavior, Perception, and Knowledge of UV Exposure and Sunscreen Application in the Caribbean (Grenada)
- Basic Life Support Knowledge and Skill Retention in Pre-Clinical Undergraduate Medical Students
- Student Satisfaction, Comfort and Self-confidence in a Simulation Lab Practice Session
- Reducing marine Litter in the Wider Caribbean: Developing and Implementing Best Waste Management Practices
- Ethical Issues and Challenges in Global Population Health Research Partnerships
- Disaster Management in Grenada: Northumbria University Student Research
- Baseline Coral Reef Monitoring Program for Sandy Island Oyster Bed Marine Protected Area Mooring Buoy Installation Project
- Genome annotation in microorganisms and metagenomic libraries as a part of an undergraduate curriculum
- Molecular identification of marine *Vibrio* isolated in Grenada
- Occurrence of Antibiotic-resistant Fecal

- Indicators in Coastal waters of Southern Grenada
- Investigation of disease in pre-growout fish in a commercial aquaculture operation in Ecuador
 - Revitalizing the Nutmeg Industry in Grenada.
 - Drug Demand Reduction: A Caribbean University Interdisciplinary and Integrated Proposal.
 - The Bioethics of Health and Climate Change in the Caribbean
 - Reach Institute for Children at SGU
 - Outreach Activities in South Sudan
 - UNFCCC Clean Development Mechanism (CDM) Caribbean Regional Collaborating Centre (RCC) at St. George's University.
- Student Fellow Stipend Agreement -American Humane Association (A. Werners) \$4,000
- Forde, M., Tomsons, S., Gomez, A. & Morrison, K. (2014). Ethical Issues and Challenges in Global Population Health Research Partnerships. International Development Research Centre. \$15,000.
 - Sealy, H., Solis-Garcia, K. & Waechter, R. (2014). Capacity Building on Carbon Accounting and Clean Technologies Internship for Renewable Energy Post Graduate Students. GIZ Renewable Energies and Energy Efficiency in the Caribbean (REETA). \$5,500.
 - Thomas-Purcell, K. & Richards, C. (2014-2015). Grenadian Women's Perspectives on Screening for Breast and Cervical Cancer. Nova Southeastern University – Ken-yon Award
 - Ferguson, H. (2011-2014). Investigation of Disease in Pre-growout Fish in a Commercial Aquaculture Operation in Ecuador. Produmar, S. A.
 - Gibson, K. (2015). Student Chapter Student Associate AVMA Faculty Advisor Program. American Veterinary Medical Association.
 - Kotelnikova, S., Morrall, C., Sealy, H., & Waechter, R. (2015-16). Woburn Clarke's Court Bay Water Quality Improvement Demonstration Site Concept. The Nature Conservancy.
 - Morrall, C., Waechter, R., Campbell, E., & Nimrod, S. (2014-). In-country Project Coordinator for the Eastern Caribbean marine Managed Areas Network (ECMMAN) Project. The Nature Conservancy.
 - Noël, T. (2016). Inter-American Institute for Cooperation on Agriculture.
 - Radix, R. (2012-2015). Grenada School Nutrition Study. International Development Research Centre.
 - Waechter, R. & Landon, B. (2014-2016). A Community-based Conscious Discipline Program to Reduce Corporal Punishment in the Caribbean. Grand Challenges Canada –Saving Brains Program.
 - Waechter, R., Mitchell, D. & Aire, T. (2014-2015). Restoration and Community Co-Management of Mangroves (RECCOMM) in the Northern Telescope Coastal Area. GIZ Integrated Climate Change Adaptation Strategies (ICCAS) Grenadapts.
 - Zap, A. & Rush, M. (2015). Thyroid Hormone Concentrations in Galapagos Giant Tortoises. Morris Animal Foundation -Veterinary Students Scholar Program.

Publications

Journal Articles (42)

Blackmon, K., Waechter, R., Landon, B., Noël, T., Macpherson, C., Donald, T., Cudjoe, N.,

- Evans, R., Burgen, K. S., Jayatilake, P., Oyegunle, V., Pedraza, O., Abdel Baki, S., Thesen, T., Dlugos, D., Chari, G., Patel, A. A., Grossi-Soyster, E. N., Krystosik, A. R., & LaBeaud, A. D. (2020). Epilepsy surveillance in normocephalic children with and without prenatal Zika virus exposure. *PLoS Neglected Tropical Diseases*, 14(11), e0008874. <https://doi.org/10.1371/journal.pntd.0008874>
- Blihar, D., Delgado, E., Buryak, M., Gonzalez, M., & Waechter, R. (2020). A systematic review of the neuroanatomy of Dissociative Identity Disorders. *European Journal of Trauma & Dissociation*, (4)3. doi: 10.1016/j.ejtd.2020.100148.
- Bordes S, Werner C, Mathkour M, McCormack E, Iwanaga J, Loukas M, Lammie M, Dumont AS, Tubbs RS. (2020). Arterial Supply of the Thalamus: A Comprehensive Review. *World Neurosurgery*, 137, 310-318.
- Bordes SJ, Zarrintan S, Iwanaga J, Loukas M, Tubbs RS (2020). The Premasseteric Branch of the Facial Artery: A Review and Translation of Adachi's Work. *Cureus*. 2020 Sep 18;12(9):e10538. doi: 10.7759/cureus.10538.
- Boscolo-Berto, R., Emmi, A., Macchi, V., Stecco, C., Loukas, M., Tubbs, R. S., Porzionato, A., & De Caro, R. (2020). Brunetti's chisels in anterior and posterior rachiotomy. *Clinical Anatomy (New York, N.Y.)*, 33(3), 355–364. <https://doi.org/10.1002/ca.23480>
- Brunetti, E., Macpherson, C.N.L (2020). The role of the WHO in the Global Management of Hydatid Disease. *Lessons learnt in the field*. Springer. https://doi.org/10.1007/978-3-030-47948-0_16
- Chabot, A. B., Alimi, Y., Iwanaga, J., Kikuta, S., Loukas, M., Dumont, A. S., & Tubbs, R. S. (2020). Blood supply to the chorda tympani: A review and clinical applications. *Annals of Anatomy = Anatomischer Anzeiger: Official Organ of the Anatomische Gesellschaft*, 232, 151561. <https://doi.org/10.1016/j.aanat.2020.151561>
- De Almeida, M. C., Sánchez-Quintana, D., Davis, N., Charles, F. R., Chikweto, A., Sylvester, W., Loukas, M., & Anderson, R. H. (2020). The ox atrioventricular conduction axis compared to human in relation to the original investigation of sunao tawara. *Clinical Anatomy (New York, N.Y.)*, 33(3), 383–393. <https://doi.org/10.1002/ca.23524>
- De Almeida, M. C., Stephenson, R. S., Anderson, R. H., Benvenuti, L. A., Loukas, M., & Aiello, V. D. (2020). Human subpulmonary infundibulum has an endocardial network of specialized conducting cardiomyocytes. *Heart Rhythm*, 17(1), 123–130. <https://doi.org/10.1016/j.hrthm.2019.07.033>
- Decater, T., Iwanaga, J., Loukas, M., Dumont, A. S., & Tubbs, R. S. (2020). Postfixed lumbosacral plexus with split L5 ventral ramus and furcal nerve arising from L5. *Morphologie: Bulletin De l'Association Des Anatomistes*. <https://doi.org/10.1016/j.morpho.2020.11.005>
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- ël, T., Gérardin, P., Cudjoe, N., Mapp-Alexander, V., Mitchell, G., Macpherson, C., Waechter, R. & LeBeaud, A. (2020). Chikungunya Infection in pregnancy - reassuring maternal and perinatal outcomes: A retrospective observational study. *BJOG: An International Journal of Obstetrics and Gynaecology*. doi: 10.1111/1471-0528.16562
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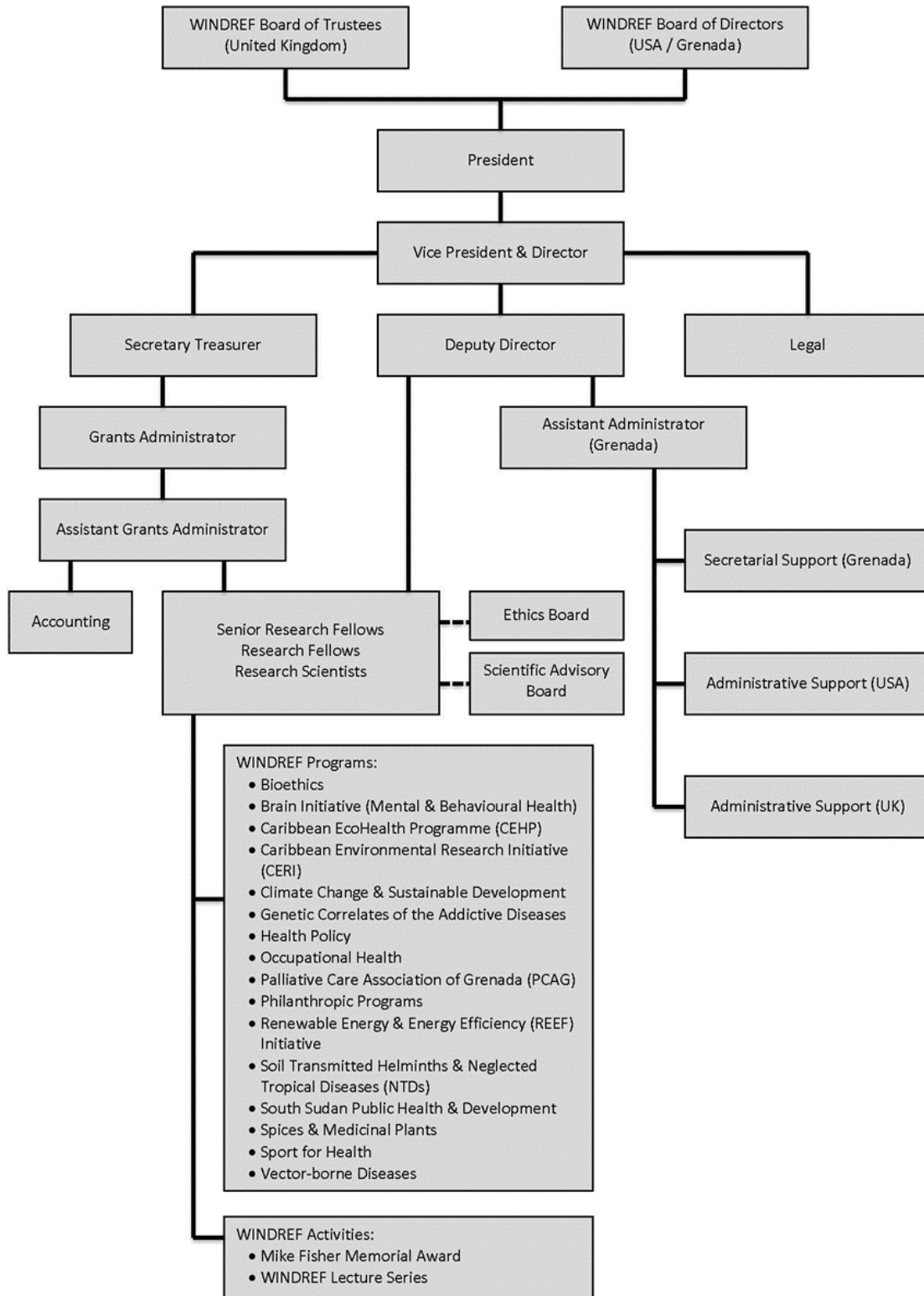
Abstracts/Presentations at International Conferences (0)

Graduate Seminars (18)

- Vintura Silva: “Climate Change, a different perspective” 22nd January, 2020
- Martin Forde: “Who we are, Where we're going...Lets go together” 29th January, 2020
- Conor Gallagher: “Model of Respiratory Gas Exchange in the Squamate Green iguana (Iguana iguana)”

- " 5th February, 2020
- Bill Chislett "An overview of work relating to the Blue Economy in the Caribbean and globally" 19th February, 2020
- Glenna Raycroft: "The Effects of BP-3 in vitro on Reproductive Genes of Gonadal Tissue from Mozambique Tilapia" 18th March, 2020
- Katherine Brigman: "Dengue in Grenada 2018-2019: Incidence and Personal Protective Behavior" 1st April, 2020
- Kazzara Reaburn: "Cross-Sectional Sonographic Assessment of the Posterior Interosseous Nerve" 8th May, 2020
- Alfred Chikweto: "Isolation and genotyping of *Toxoplasma gondii* in small ruminants, pigs and free-range chickens from Grenada, West Indies" 10th June, 2020
- Sonia Cheetham: "Animal Coronaviruses; Why was COVID-19 meant to happen" 2nd September, 2020
- Satesh Bidaisee: "Zoonoses: The blind spot of one health" 9th September, 2020
- Laura Colket "Teaching with technology during COVID-19 and beyond" 23rd September, 2020
- Jill Paterson: "Language and Education in the Caribbean: Navigating Grenadian Creole and English" 7th October, 2020
- Bhumika Sharma "Development of a PCR based direct DNA hybridization oligonucleotide bead assay for detection of *Ehrlichia* and *Anaplasma* species in animals and ticks from Grenada, West Indies" 13th October, 2020
- Amanda James: "Prevalence of chelonid alphaherpesvirus-5 and associated disease in sea turtles in Grenada, West Indies" 8th November, 2020
- Kathleen Bubb: "A comprehensive cadaveric study of the internal anatomy of the infra-renal segment of the inferior vena cava with specific emphasis on its lumbar tributaries" 13th November, 2020
- Calum Macpherson: "Pandemics, Human Behavior and Vaccines; Lessons for our response to COVID-19" 18th November, 2020
- Viktoria Czarán: "Occurrence of Histamine Toxicity and Common Metal and Mineral Contaminants in Invasive Lionfish in Grenada, West Indies" 24th November, 2020
- Greg Hosten: "TeleNik (Telemedicine Clinic)" 2nd December, 2020

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