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Durham Global Challenges
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“Farmers depend on subsistence agriculture to feed their families and to provide extra income”

The impact of climate change on smallholder farmers in Central America is poorly studied but is anticipated to cause major disruption and loss. My research seeks to offset this lack of information by studying the impact of changing weather patterns on the decision making of Belizean Maya farmers in the Toledo District over the long and short term. The Maya population in Belize practices rainfall dependent subsistence farming, making them vulnerable to climate extremes. Maize, the staple crop of Maya farmers, is already grown near its temperature and moisture threshold, making it highly vulnerable to warm and drought episodes. Farmers depend on subsistence agriculture to feed their families and to provide extra income. Most of this farming is weather based – they depend on annual cycles of rain and dry to know when to plant their crops. Once weather patterns change over time, they are greatly impacted by the failure of crops or low productivity of their farms.

My research involves investigating agriculturally important meteorological parameters over the long and short term; documenting the agricultural impacts of, and Maya farmer response to, climate extremes and variability; and conduct soil quality monitoring and assessment at participating farms. Fieldwork began in three Maya communities in southern Belize in June 2019. The first step was gaining permission from community leaders to recruit farmers for the study. The Maya communities are tight knit and adhere to a system of local governance that must be respected. Once permission was obtained and farmers were identified, the physical work of soil sampling and ethnographic interviewing began. One interesting aspect of my research is that although I am an indigenous Mopan Maya of Belize, I have had more of an urbanized upbringing. This research is proving to be a way of connecting to my heritage and learning more about the simple subsistence lifestyle of these communities. Thus far I am welcomed with open arms and a lot of curiosity due to the fact that I am a Mopan Maya female studying for a PhD in the field of agriculture and climate change which is foreign to them as well. This dynamic has made for some interesting conversations with farmers’ and their families.



“Balancing research and being a new mom is quite the juggling act”

There were two rounds of data collection in 2019. Between mid-June through mid-August, I set up a weather station in Deep River Forest Reserve to collect daily weather variables for the duration of the study as well as collect soil samples from farms under slash and burn agriculture and inga alley cropping systems. This first round also involved ethnographic interviews with approximately 10-12 farmers from each community to discuss their farming practices, farming schedules, the planting season and all other relevant information relating to farming and weather. The second round of data collection was from mid-September to mid-November in order to measure crop yields of participating farmers as well as interview farmers about the harvest season and their crop yield. This fieldwork involved trekking out to farms that varied in distance from each village. These field sampling visits provided the opportunity to interact more closely with farmers and learn more about their traditional farming practices.

One year of fieldwork is over and data analysis is currently underway. The second year of fieldwork was set to start in June 2020; however, due to the COVID19 pandemic these plans have been at a standstill. Additional challenges have come in the form of a bouncing baby boy. Balancing research and being a new mom is quite the juggling act but the work must be done.

Retreating to write together

“The doctoral journey can be a lonely one”

The doctoral journey can be a lonely one. The hours and days and weeks spent working through a problem, analysing data or trying to draft a chapter can be a hugely rewarding time but can also be very isolating. One of the great strengths of the GCRF Centre for Doctoral Training (CDT) is in reducing the traditional solitary experience of the PhD journey, by creating a *community* of like-minded scholars. This enables sustaining meaningful reasons to get together to share research, practice and challenges.

In the middle of UK lockdown and very much in the spirit of community, the CDT ran an online writing retreat for GCRF scholars. Writing is, at its heart, an individual act but research shows that writing *together* can have significant effects on writer motivation, setting goals, focus and on creating a structure for writing. The online retreat was hosted by Steve Kirk and Jess Sequera from Durham Centre for Academic Development (DCAD) and ran on Tuesday 11 May. The schedule was adapted to enable GCRF participants not physically in Durham to join at doable times in their own parts of the world.

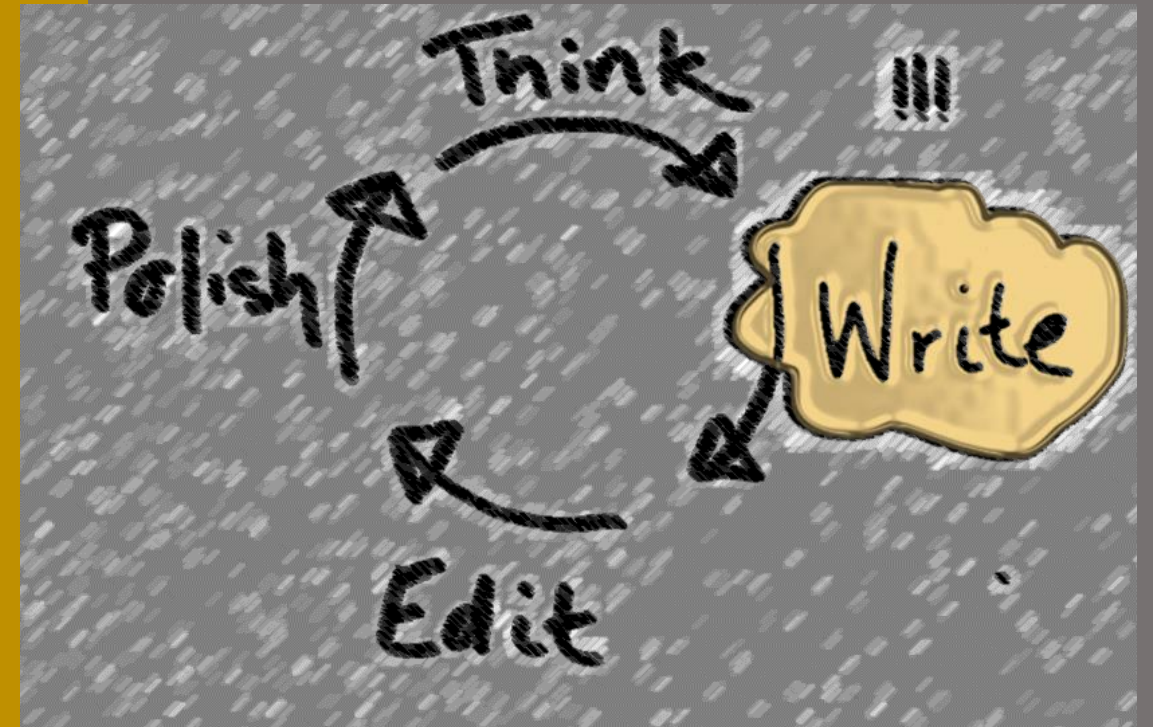
The idea of a writing retreat online might, on the face of it, seem counterintuitive. Participants remain alone at their computers and in their writing and are only virtually in the presence of colleagues. In order to establish scholar buy-in, therefore, and to ensure getting the most from the day, Steve and Jess posted welcome messages, explanations and writing tips into the GCRF Microsoft Teams space in the week before the retreat. Participants were posed ‘doctoral writing questions of the day’ to encourage critical reflection on their current approaches to writing and to possible challenges with productivity. They were also introduced to ‘writing hacks’, such as freewriting and ‘tiny texts’ (Thompson, 2019), to offer simple techniques that could be used before, during and after the retreat.

The day was structured broadly based on Murray & Newton’s (2009) model of writing retreat but adapted for the online environment. The day began with participants and hosts all together for introductions, before GCRF researchers divided into small breakout groups to discuss their plans and goals for the day. The explicit aim for the retreat was productive generation of writing without a focus on quality. Scholars were encouraged to practice freewriting, to silence their ‘inner editor’ and to write without trying too carefully to craft and perfect ideas and sentences as they wrote. Editing could be done at a later date.

Participants wrote for three sessions of around an hour. They wrote in breakout groups, online and individually but in the presence of colleagues. They decided whether to keep cameras and mics on or off during this time and most groups also used the chat facility for occasional messages and questions to each other. Some scholars chose to experiment with the 'pomodoro technique', splitting their hour into two 25-minute phases of intensive writing, with a short break in between. Groups also came together between writing sessions for breaks and informal catch-ups.

Feedback on the day was overwhelmingly positive. Participants all agreed it had been a highly productive experience. Many had used the time to work on their case study blog contributions to the UN Sustainable Development Goals website – and felt they had made substantial progress. Everyone agreed that writing together had also been a good experience, though some would have preferred to write in a single large group, rather than being split into smaller writing groups. Participants reported feeling achievement in getting “new words” onto the page, while also taking regular short breaks away from the screen; in having someone else to talk to about their writing; and, especially, in feeling liberated by the idea of freewriting and separating the generation of early writing from editing and polishing. Most encouragingly, GCRF scholars suggested they would continue using approaches introduced for the online retreat for subsequent writing.

This was the first time DCAD and the CDT had run an online retreat of this kind. Timezone differences, personal busyness and family logistics meant that not all GCRF researchers were able to join the day. However, there was a clear sense that participants would be keen to repeat the experience. We hope that circumstances will enable more CDT scholars to join us next time, to enable more opportunities for community building and, even if we remain separated by geography, to remain together in scholarship and writing.



References

Murray, R., & Newton, M. (2009). Writing retreat as structured intervention: margin or mainstream?. *Higher Education Research & Development*, 28(5), 541–553.

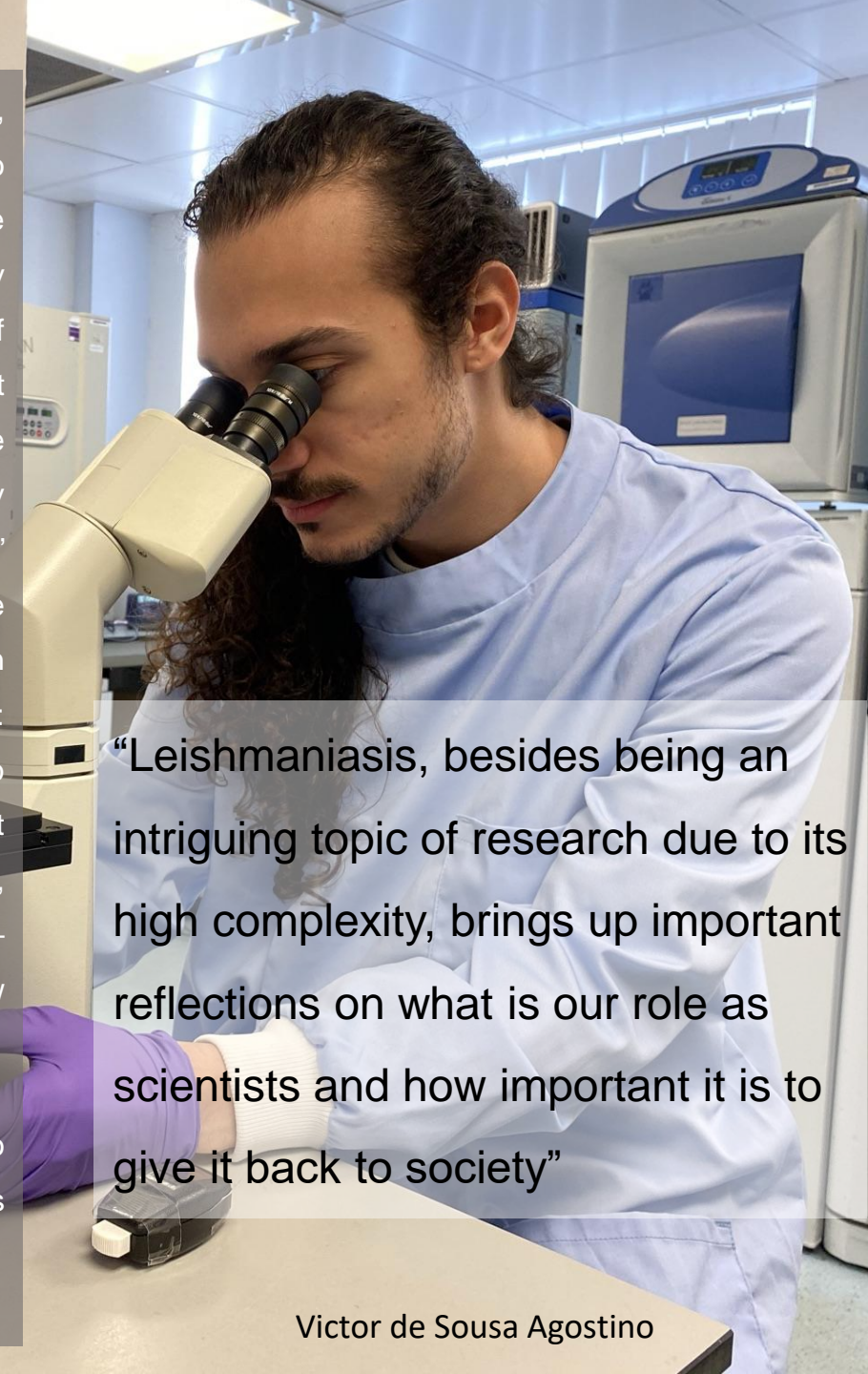
Thompson, P. (2019) Tiny texts – small is powerful. *Patter* blogsite. <https://patthomson.net/2019/02/11/tiny-texts-if-not-beautiful%E2%80%8B-small-is-pretty-darn%E2%80%8B-useful/>

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ack in 2015, when I was still a Biomedical Sciences undergrad student at the University of Sao Paulo, Brazil, I was looking for an internship in a research lab where I could spend the semester. I first tried to find a lab that would work with HIV/AIDS and immunology, because those were my favourite topics at the time. I had found the perfect lab, with the most brilliant research questions and that made me very excited to apply. However, all my attempts failed, and I never got a successful reply. I was running out of time and decided to risk applying for a totally different lab, on a different department and with a different disease. That was when I first met “Leishmaniasis” (which is very odd, considering Brazil is one of the most affect countries by this disease) and its researcher, Dr. Silvia Uliana, at the Parasitology Department. What was supposed to be a one semester internship ended up becoming a 3-years’ experience until the end of my undergrad. In those years, I was in deep touch with researching the current arsenal and new treatments for leishmaniasis, understanding how profoundly the disease can affect people’s lives. For example, the range of drugs available to treat leishmaniasis are far from ideal: they induce serious side effects, leading to several disorders ranging from nephro-hepatotoxicity to teratogenicity, according to the drug used. The route of administration is also a concern, considering that most drugs are parenterally administered, requiring special infrastructure in endemic regions. Moreover, some of the available drugs have been shown to have a decrease on responsiveness to treatment – which together with their expensive costs and undesired shortcomings, makes the discovery of new alternative treatments an urgent matter.

Most importantly, I have learned that leishmaniasis, besides being an intriguing topic of research due to its high complexity, brings up important reflections on what is our role as scientists and how important it is to give it back to society.

03



“Leishmaniasis, besides being an intriguing topic of research due to its high complexity, brings up important reflections on what is our role as scientists and how important it is to give it back to society”

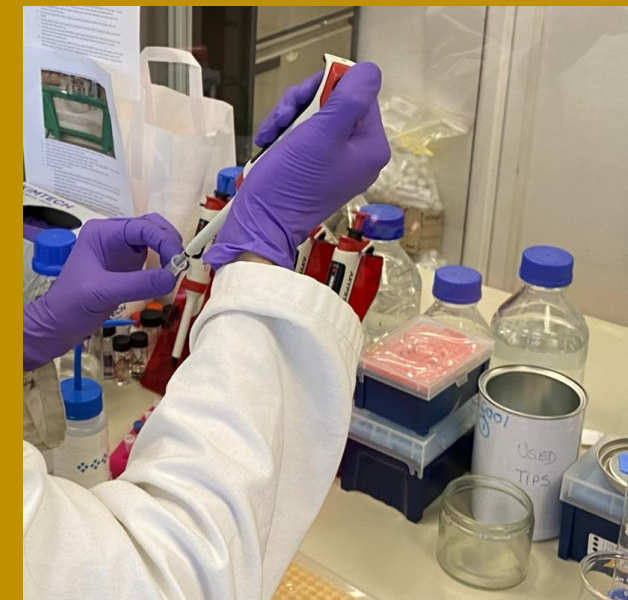
Victor de Sousa Agostino



By the end of 2018, when I was about to finish my undergrad, I first met Prof. Patrick Steel, from Durham University, on a Friday afternoon at Dr. Silvia's office. That was when he introduced me to his research line on chemical biology and medicinal chemistry, and to the current project that I am now executing as his PhD student.

My research project is based on two drugs, tamoxifen and clemastine, that are primarily used to treat breast cancer and allergies, respectively, and have been proposed on the past years to be active against leishmaniasis. Both drugs are proposed to have similar targets and their efficiency are theoretically related to similarities in their chemical structure. We have been designing and synthesizing hybrid molecules between tamoxifen and clemastine to better understand their activity making use of probes that could help elucidate their mechanism of action and, possibly, improve their activity against the parasites.

This research provides insights on promising drug targets in leishmaniasis treatment, which directly represents a contribution to **SDG 3: Good Health and Well-being**. As it is common to all neglected tropical diseases (NTD), leishmaniasis has predominant impact on communities living in poverty on less than \$1.25 a day (the costs of a treatment are many times this). If not fatal, the disease has long term impact with an estimated 40M suffering from mental health and other social stigma, leading to patient isolation from society, which brings an extra need on efficient treatments that stop the disease before it affects the whole life of a person and their surroundings. Thus, when researching about leishmaniasis and new potential treatments, it is impossible not to mention poverty and the need for better living settings – in some cases, for example, people die from the treatment rather than the disease or become more susceptible to other diseases. The disease has knock on effects of loss of income and consequent increase in malnourishment, loss of opportunity and education and an increase in social stratification. Even though this research does not directly address these other social impacts of the disease, it is important to mention that efficient safe affordable treatments might change entire communities in ways that were not primarily predicted by scientists, because the final goal must be to improve human lives that are undeniably complex.



Thinking about my PhD research after the Gorkha earthquake

Dr Hanna Ruszczyk
Durham University IHRR

COVID-19 Overshadows Efforts to Fight HIV/AIDS in Uganda

Robert Ssewanyana
Durham University

The Path to SDG 6: Building WASH capacity in Delhi's primary schools

Jack Charnley
Newcastle University

Trying to move forward in times of uncertainty: re-thinking fieldwork in Ecuador

Dr Inge Boudewijn
Northumbria University

Durham University has, as part of a new joint Network (North East Global Challenges Network), teamed up with Newcastle and Northumbria Universities to support the United Nations Sustainable Development Goals.

The committee currently comprises the lead academics, International Research Development Managers plus students or postgraduate candidates from each university, including two of our GRF-CDT candidates. The group are refreshing and revitalising the Network and the committee is looking at ways forward for the North East Global Challenges Network, which includes a format where people all over the world can get together, engage and share good practice in global challenge research..

The Durham GCRF-CDT in collaboration with the DU Institute of Hazard Risk and Resilience (IHRR), Newcastle University and Northumbria University organised the first event in this series - an Early Career Researcher Event: 'Thinking about our research in the shadow of Covid-19'.

Presenters were from Durham University, IHRR, Newcastle University and Northumbria University, titles of the presentations are displayed in the graphics. There was an open discussion (in breakout groups) about participants experiences, concerns, the impacts on the global challenges and thinking about how to restructure research due to Covid-19. Over 50 people registered for the event.

Participants came from various universities including: Durham, Newcastle, Northumbria, Lund, Kent, Bath, the Western Cape, Savitribai Phule Pune in India. Many participants were able to join from overseas fieldwork locations. Future events are being planned by the committee.

“Overall, I thought the webinar was excellent! Truly thought provoking and I would be happy to attend another session with a similar or different focus again”

Participant



Durham
University



If you have any research results, blogs or events related to the GCRF-CDT that would be of interest for the Durham Global Challenges- CDT please contact abir.van-hunen@durham.ac.uk



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International Partnerships

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GCRF - Links

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<https://re.ukri.org/research/global-challenges-research-fund/>

Sustainable Development Goals

<https://www.un.org/sustainabledevelopment/>