OMB No. 0925-0001 and 0925-0002 (Rev. 12/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

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| --- |
| NAME: Monica Maria Diaz |
| eRA COMMONS USER NAME (credential, e.g., agency login): MMDIAZ2 |
| POSITION TITLE: Assistant Professor of Neurology |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

|  |  |  |  |
| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE (if applicable) | END DATE MM/YYYY | FIELD OF STUDY |
| University of Miami, Miami, FL | B.S., B.A. | 06/2008 | Neuroscience, French |
|  |  |  |  |
| State University of New York-Downstate School of Medicine, Brooklyn, NY | M.D. | 06/2014 | Medicine |
|  |  |  |  |
| Louisiana State University Health, New Orleans, LA | Internship | 06/2015 | Internal Medicine |
|  |  |  |  |
| Yale University School of Medicine, New Haven, CT | Residency | 06/2018 | Neurology |
|  |  |  |  |
| University of California, San Diego, San Diego, CA | Fellowship | 06/2019 | Neuro-HIV/ Neuroimmunology |
| Medical University of South Carolina, Charleston, SC | M.S. | 05/2021 | Clinical Research |

### A. Personal Statement

My long-term goal is to become **an** independent investigator with expertise in improving diagnostics and treatments for neurological conditions in low-and-middle income countries and improving brain health among underserved people with HIV. I have dedicated my training and early faculty position to understanding and ameliorating neurological conditions in people in low-and-middle income countries through patient-oriented clinical research and clinical care. At the heart of my clinical work and research activities has been a dedicated focus on improving neurologic outcomes of underserved people with HIV. In 2018, I was awarded an R25 from NIMH to study chronic neurological sequelae of HIV at UC San Diego. Later in 2019, pursuing my interests in global health, I was awarded an NIH Fogarty Global Health Fellowship to work at the Universidad Peruana Cayetano Heredia and its affiliate clinics to investigate the frequency and risk factors for HIV-associated neurocognitive disorder (HAND) among older people with HIV in Lima, Peru. During the 1.5 years I spent living full-time in Peru and the now 6 months per year I reside in Peru, I have developed an interest in improving screening and diagnosis of common neurological comorbidities in people with HIV living in low-and-middle-income countries, including in Peru. Motivated by these interests, I have developed strong research collaborations with several HIV clinics and investigators in HIV, COVID-19 infection and in dementia in Peru and have led the development of several NIH grant proposals and an Alzheimer’s Association grant that are currently under review or will be re-submitted, to fund work in these areas in Peru. I have recently been awarded two mentored developmental awards to fund research on neurodegeneration and neuroinflammation in older people with HIV attending the UNC Infectious Diseases clinics, including the competitive American Academy of Neurology Clinical Research Training Scholarship (funding to begin in July 2022 without salary support). My career goal is to become an expert in optimizing diagnostics and treatments of neurological conditions internationally, particularly among people with HIV.

Ongoing and recently completed projects that I would like to highlight include:

2P30AI050410, UNC Center for AIDS Research Developmental Pilot Grant

Swanstrom (PI); Role: Project PI

8/1/2021-7/31/2022

Neurofilament light as a possible marker of persistent CNS viral replication and immune activation

5R01AI136722

Gilman (PI); Role: co-I

6/18/2018-5/31/2023

Novel nanoparticular diagnostics for cerebral toxoplasmosis and Chagas in HIV patients living in Latin America

D43TW009343; University of California Global Health Institute Program for Fellows & Scholars

Cohen (PI); Role: project PI

7/1/19-6/30/21

Characterization of HIV-associated neurocognitive impairment in older adults living with HIV in Lima, Peru

5R25MH081482; Interdisciplinary Research Fellowship in NeuroAIDS

Cherner (PI); Role: project PI

7/1/2018-6/30/20

Neurocognitive Impairment, CSF Biomarkers and Tau Burden in Hispanic People Living with HIV and Possible Early Alzheimer’s Disease

Citations that I would like to highlight are: \*denotes co-first authors

1. **Diaz MM**, Zacarías MG, Sotolongo P, Sanes MF, Franklin DJ, Marquine MJ, Cherner M, Cárcamo C, Ellis RJ, Lanata S, García PJ. Characterization of HIV-Associated Neurocognitive Impairment in Middle-Aged and Older Persons With HIV in Lima, Peru. Front Neurol. 2021 Jun 17;12:629257. PMID: 34220665; PMCID: PMC8248346.
2. **Diaz MM\***, Cabrera DM\*, Gil-Zacarias M, Ramirez V, Saavedra M, Cárcamo C, Hsieh E, Garcia PJ. Knowledge and Impact of COVID-19 on Middle-Aged and Older People Living with HIV in Lima, Peru. J Int Assoc Provid AIDS Care. 2021 Jan-Dec;20:23259582211056760. PMID: 34870508; PMCID: PMC8655474.
3. **Diaz MM**, Custodio N, Montesinos R, Lira D, Herrera-Perez E, Pintado-Caipa M, Cuenca-Alfaro J, Gamboa C, Lanata S. Thyroid Dysfunction, Vitamin B12, and Folic Acid Deficiencies Are Not Associated With Cognitive Impairment in Older Adults in Lima, Peru. Front Public Health. 2021 Sep 6;9:676518. PMID: 34552900; PMCID: PMC8450418.
4. Cabrera DM\*, **Diaz MM\***, Grimshaw A, Salvatierra J, Garcia PJ, Hsieh E. Aging with HIV in Latin America and the Caribbean: a Systematic Review. Curr HIV/AIDS Rep. 2021 Feb;18(1):1-47. PMID: 33400168; PMCID: PMC8059362.

### B. Positions, Scientific Appointments and Honors

Positions and Scientific Appointments

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| --- | --- |
| 2021 - | Assistant Professor of Neurology, Department of Neurology, University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, North Carolina |
| 2020 - | Medical Licensure, Medical Board of North Carolina |
| 2020 - | Appointed Member, American Academy of Neurology (AAN) Advancing Women in Academics Work Group |
| 2019 - | Appointed Member, AIDS Clinical Trials Group, Neurology Collaborative Science Group |
| 2019 - 2020 | Fogarty Global Health Fellow, University of California Global Health Institute |
| 2019 - 2019 | Board certification, American Board of Psychiatry & Neurology |
| 2018 - 2020 | Medical Licensure, Medical Board of California |
| 2018 - 2019 | Fellow (Neuro-HIV/Neuroimmunology), University of California, San Diego, CA |
| 2017 - 2017 | Visiting Resident, Pitie-Salpetriere Hospital, Sorbonne University, Paris |
| 2016 - 2016 | Visiting Resident, Mulago Hospital, Makerere University School of Medicine, Kampala |
| 2015 - 2018 | Residency (Neurology), Yale-New Haven Hospital, New Haven, CT |
| 2014 - 2015 | Internship (Internal Medicine), Louisiana State University Hospital, New Orleans, LA |
| 2011 - 2011 | Visiting Medical Student, Joslin Diabetes Center, Harvard School of Medicine, Boston, MA |
| 2008 - 2010 | Research Assistant, Division of Cardiology, Weill Cornell Medical College, New York, NY |

Honors

|  |  |
| --- | --- |
| 2022 expected | Clinical Research Training Scholarship, American Academy of Neurology |
| 2021 – 2026 | Simmons Scholar Award, University of North Carolina at Chapel Hill |
| 2021 | Health Disparities Research Institute Scholar, National Institute of Health NIMHD |
| 2019 – 2021 | TRANSCENDS (Training in Research for Academic Neurologists to Sustain Careers and Enhance the Numbers of Diverse Scholars) Scholars Program, American Academy of Neurology |
| 2019 – 2020 | Next Generation Supplemental Award, UC San Diego Center for AIDS Research |
| 2019 – 2020 | Developmental Award, HIV Neurobehavioral Research Center, UC San Diego |
| 2018 – 2021 | Developmental Award, Alzheimer’s Disease Resource Center for Advancing Minority Aging Research, UC San Diego |
| 2018 – 2020 | Interdisciplinary Research Fellowship in NeuroAIDS, UC San Diego |
| 2016 | Johnson & Johnson Global Health Scholars Award, Yale/Stanford |
| 2012 | Medical Student Diversity Scholarship, American Academy of Neurology |
| 2012 | SUNY Downstate Alumni Engel Fund Scholarship, State University of New York Downstate Medical Center |
| 2011 | Summer Research Scholars Program in Diabetes, National Institute of Health NIDDK |

### C. Contribution to Science \*denotes co-first authors

1. **Neurological disorders in resource-limited settings, including in people living with HIV.** My focus is on investigating the prevalence of neurologic illnesses in resource-limited settings, including those associated with HIV. With mentorship during residency, I completed a study in western Kenya that found that epilepsy prevalence in a community in western Kenya was high, but unrelated to neurocysticercosis, one of the most common causes of epilepsy worldwide (first authored manuscript currently in press in the *American Journal of Tropical Medicine & Hygiene*). Seeking to determine the burden of neurological illness in sub-Saharan Africa, we also implemented an observational prospective study in Uganda that analyzed the prevalence of neurologic disease in a Ugandan neurology ward and found that mortality was nearly 30% with stroke being the most common cause of mortality. Moreover, I led a mentored pilot study in Lima, Peru as part of an NIH Fogarty Global Health fellowship assessing the prevalence and risk factors for cognitive impairment among older people with HIV in Peru.
   1. **Diaz MM**, Zacarías MG, Sotolongo P, Sanes MF, Franklin DJ, Marquine MJ, Cherner M, Cárcamo C, Ellis RJ, Lanata S, García PJ. Characterization of HIV-Associated Neurocognitive Impairment in Middle-Aged and Older Persons With HIV in Lima, Peru. Front Neurol. 2021 Jun 17;12:629257. PMCID: PMC8248346.
   2. Steinberg HE, Bowman NM, Diestra A, Ferradas C, Russo P, Clark DE, Zhu D, Magni R, Malaga E, **Diaz M**, Pinedo-Cancino V, Ramal Asayag C, Calderón M, Carruthers VB, Liotta LA, Gilman RH, Luchini A; Toxoplasmosis working group in Peru and Bolivia. Detection of toxoplasmic encephalitis in HIV positive patients in urine with hydrogel nanoparticles. PLoS Negl Trop Dis. 2021 Mar 2;15(3):e0009199. PMCID: PMC7954332.
   3. Cabrera DM\*, **Diaz MM\*,** Grimshaw A, Salavaterri J, Garcia PJ, Hsieh E. Aging with HIV in Latin America and the Caribbean: A systematic review. Curr HIV/AIDS Rep. 2021 Feb;18(1):1-47. PMCID: PMC8059362.
   4. **Diaz MM**, Hu X, Fenton BT, Kimuli I, Lee A, Lindsey H, Bigelow JK, Maiser S, Altalib HH, Sico JJ. Prevalence of and characteristics associated with in-hospital mortality in a Ugandan neurology ward. BMC Neurol. 2020 Jan 31;20(1):42. PubMed Central PMCID: PMC6995141.
2. **Frequency and risk factors for HIV-associated neurocognitive disorders**. With collaboration and mentorship from leading investigators in the field, I have studied the frequency and risk factors of HIV-associated neurocognitive disorders in Peru and in Latinos living in the United States. I continue to collaborate and learn from leaders in the field to establish projects assessing the immune mechanisms that lead to continued neuroinflammation and persistence of HIV within the brain and have recently been awarded an American Academy of Neurology Clinical Research Training Scholarship with funding set to begin in July 2022 that will fund this research at UNC. My goal is to become an independent investigator to improve diagnostics of cognitive impairment and other chronic neurological comorbidities of HIV, particularly in low-and-middle-income countries.
   1. **Diaz MM**, Zacarías MG, Sotolongo P, Sanes MF, Franklin DJ, Marquine MJ, Cherner M, Cárcamo C, Ellis RJ, Lanata S, García PJ. Characterization of HIV-Associated Neurocognitive Impairment in Middle-Aged and Older Persons With HIV in Lima, Peru. Front Neurol. 2021 Jun 17; 12: 629257.PMCID: PMC8248346.
   2. Kamalyan L, Hussain MA, **Diaz MM**, Umlauf A, Franklin DR, Cherner M, Rivera Mindt M, Artiola I Fortuny L, Grant I, Heaton RK, Marquine MJ. Neurocognitive impairment in Spanish-speaking Latinos living with HIV in the US: Application of the neuropsychological norms for the US-Mexico border region in Spanish (NP-NUMBRS). Clin Neuropsychol. 2021 Feb; 35 (2):433-452. PMCID: PMC7453430.
   3. Hassanzadeh-Behbahani S, Shattuck KF, Bronshteyn M, Dawson M, **Diaz MM**, Kumar P, Moore DJ, Ellis RJ, Jiang X. Low CD4 nadir linked to widespread cortical thinning in adults living with HIV. Neuroimage Clin. 2020; 25: 102155. PMCID: PMC6948363.
   4. **Diaz M**, Ellis R, Iudicello J, Heaton R, Letendre S, Grant I, Marquine M. Association of Inflammation and Neurocognitive Impairment in Older Hispanics Living with HIV (S29.004). *Neurology* (2019) 92:S29.004 *(Abstract, presented as platform presentation at AAN 2019 Conference).*
3. **Risk factors for dementia and adaptation of cognitive screening tools for Peru.** The mentorship I have received from Dr. Nilton Custodio and his collaborative team of experts on dementia and neuropsychology in Peru have allowed me to continue to grow my interest in assessing dementias and dementia capacity in Latin America. We have published on culturally-appropriate cognitive screening tools for the detection of Alzheimer’s disease, mild cognitive impairment, and frontotemporal dementia in patients with low educational levels or illiteracy in Peru. We have also found that there are discrepancies in cognitive screening tool adaptations in rural vs urban locations throughout Peru, which has prompted continued interest in continuing to improve diagnostics for detection of dementia and mild cognitive impairment in populations with low educational levels and in rural areas.
   1. **Diaz MM**, Custodio N, Montesinos R, Lira D, Herrera-Perez E, Pintado-Caipa M, Cuenca-Alfaro J, Gamboa C, Lanata S. Thyroid Dysfunction, Vitamin B12, and Folic Acid Deficiencies Are Not Associated With Cognitive Impairment in Older Adults in Lima, Peru. Front Public Health. 2021; 9: 676518. PMCID: PMC8450418.
   2. Custodio N, Montesinos R, Cruzado L, Herrera-Perez E, Failoc-Rojas VE, Pintado-Caipa M, Seminario G W, Cuenca J, Gamboa C, **Diaz MM**. Social Cognition and Behavioral Assessments Improve the Diagnosis of Behavioral Variant of Frontotemporal Dementia in Older Peruvians With Low Educational Levels. Front Neurol. 2021; 12: 704109. PMCID: PMC8450322.
   3. Custodio N, Montesinos R, **Diaz MM**, Herrera-Perez E, Chavez K, Alva-Diaz C, Reynoso-Guzman W, Pintado-Caipa M, Cuenca J, Gamboa C, Lanata S. Performance of the Rowland Universal Dementia Assessment Scale for the Detection of Mild Cognitive Impairment and Dementia in a Diverse Cohort of Illiterate Persons From Rural Communities in Peru. Front Neurol. 2021; 12: 629325. PMCID: PMC8292605.
4. **Predictors of HIV-associated neuropathy.** My primary interest clinical and research interest is in neurologic infections and effects of HIV on the nervous system. I have developed and completed several studies on HIV-associated neurocognitive disorders and neuropathy among people with HIV under the guidance of my post-doctoral fellowship mentor, Dr. Ronald Ellis, and others in the field. My work below demonstrates my interest in ameliorating chronic neurological comorbidities of people aging with HIV, particularly neuropathy. This work has demonstrated that paresthesias early on in the course of HIV disease can predict neuropathic pain 12 years after symptom onset (first-authored manuscript). Moreover, several predictors have been identified as risk factors for HIV-associated neuropathy (second-author manuscript).
   1. **Diaz MM,** Keltner JR, Simmons AN, Franklin D, Moore RC, Clifford D, Collier AC, Gelman BB, Marra PDC, McCutchan JA, Morgello S, Sacktor N, Best B, Notestine CF, Weibel SG, Grant I, Marcotte TD, Vaida F, Letendre S, Heaton R, Ellis RJ. Paresthesia Predicts Increased Risk of Distal Neuropathic Pain in Older People with HIV-Associated Sensory Polyneuropathy. Pain Med. 2021 Aug 6;22(8):1850-1856. PMCID: PMC8502467.
   2. Roda RH, Bargiela D, Chen W, Perry K, Ellis RJ, Clifford DB, Bharti A, Kallianpur AR, Oliveira MF, **Diaz MM**, Rubin LH, Gavegnano C, McArthur JC, Hoke A, Polydefkis M. Large Mitochondrial DNA Deletions in HIV Sensory Neuropathy. Neurology. 2021 Jul 13;97(2):e156-e165. PMCID: PMC8279564.
   3. Ellis RJ, **Diaz MM**, Sacktor N, Marra C, Collier AC, Clifford DB, Calcutt N, Fields JA, Heaton RK, Letendre SL. Predictors of worsening neuropathy and neuropathic pain after 12 years in people with HIV. Ann Clin Transl Neurol. 2020 Jul;7(7):1166-1173. PMCID: PMC7359117.
5. **The effect of COVID-19 on older people living with HIV and neurological manifestations of COVID-19 in Peru.** Since the beginning of the COVID-19 pandemic, I have collaborated with investigators in Peru and Latin America to determine the socioeconomic, mental health and neurological effects of COVID-19 on people living with HIV and on Peruvians in the general population. Our group found that of 156 people with HIV from Lima, Peru over age 40, more than half of people with HIV employed prior to the pandemic became unemployed during the pandemic, and elevated levels of anxiety, depression and stress were reported in this population. This study enrolled participants who received regular HIV care in the two HIV clinic study sites where the current study proposes to enroll participants, demonstrating feasibility of the current proposed study. Moreover, I have led a team of young Peruvian physicians to complete a study on neurological manifestations among Peruvians with mild-to-moderate COVID-19 infection and found that more than 80% of people with acute COVID-19 infection in Peru reported headaches at symptom onset.
   1. **Diaz MM\***, Cabrera DM\*, Gil-Zacarias M, Ramirez V, Saavedra M, Cárcamo C, Hsieh E, Garcia PJ. Knowledge and Impact of COVID-19 on Middle-Aged and Older People Living with HIV in Lima, Peru. J Int Assoc Provid AIDS Care. 2021 Jan-Dec; 20: 23259582211056760. PMCID: PMC8655474.
   2. Carcamo Garcia MH, Garcia Choza DD, Salazar Linares BJ, **Diaz MM**. Neurological manifestations of patients with mild-to-moderate COVID-19 attending a public hospital in Lima, Peru. eNeurologicalSci. 2021 Jun; 23: 100338. PMCID: PMC8046428
   3. Babulal GM, Torres VL, Acosta D, Agüero C, Aguilar-Navarro S, Amariglio R, Ussui JA, Baena A, Bocanegra Y, Brucki SMD, Bustin J, Cabrera DM, Custodio N, **Diaz MM**, Peñailillo LD, Franco I, Gatchel JR, Garza-Naveda AP, González Lara M, Gutiérrez-Gutiérrez L, Guzmán-Vélez E, Hanseeuw BJ, Jimenez-Velazquez IZ, Rodríguez TL, Llibre-Guerra J, Marquine MJ, Martinez J, Medina LD, Miranda-Castillo C, Morlett Paredes A, Munera D, Nuñez-Herrera A, de Oliveira MO, Palmer-Cancel SJ, Pardilla-Delgado E, Perales-Puchalt J, Pluim C, Ramirez-Gomez L, Rentz DM, Rivera-Fernández C, Rosselli M, Serrano CM, Suing-Ortega MJ, Slachevsky A, Soto-Añari M, Sperling RA, Torrente F, Thumala D, Vannini P, Vila-Castelar C, Yañez-Escalante T, Quiroz YT. The impact of COVID-19 on the well-being and cognition of older adults living in the United States and Latin America. EClinicalMedicine. 2021 May; 35: 100848. PMCID: PMC8100067.
   4. Paredes JL, Navarro R, Cabrera DM, **Diaz MM**, Mejia F, Caceres CF. [Challenges to the continuity of care of people living with HIV throughout the COVID-19 crisis in Peru]. Rev Peru Med Exp Salud Publica. 2021 Jan-Mar;38(1): 166-170. PMID: 34190910.

**For a complete list of my bibliography please refer to:**

<https://www.ncbi.nlm.nih.gov/myncbi/1tentiiB7YModh/bibliography/public/>