BIOGRAPHICAL SKETCH

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NAME: LaBeaud, Angelle Desiree

eRA COMMONS USER NAME (credential, e.g., agency login): DLABEAUD

POSITION TITLE: Professor, Pediatric Infectious Diseases

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)*	Completion Date MM/YYYY	FIELD OF STUDY
University of California, San Diego La Jolla, CA	BS	06/96	General Biology
Medical College of Wisconsin Milwaukee, WI	MD	05/00	Medicine
Rainbow Babies and Children's Hospital (CWRU); Cleveland, OH	Residency	06/2003	Pediatrics
Rainbow Babies and Children's Hospital (CWRU); Cleveland, OH	Fellowship	06/2006	Infectious Diseases
Case Western Reserve University Cleveland (CWRU), OH	MS	05/2009	Clinical Investigation/ Epidemiology

A. Personal Statement

I have conducted human field epidemiologic research in infectious diseases for twenty years and have developed the experience, expertise, and collaborative networks needed to manage and coordinate complex field epidemiology projects. I have a broad background in pediatric infectious disease, with specific training in key research areas such as climate change, child health, tropical medicine, epidemiology, virology, team science, and advanced immunology. I have successfully supervised international projects, collaborated with foreign researchers, organized the resulting collaborative publications in peer-reviewed journals, and partnered with community and policy decision makers on the ground for forging research findings into actionable change. I am currently PI on a NIAID R01 award to determine the transmission dynamics of and human disease attributable to DENV and CHIKV in Kenya, incorporating climate as a key factor for virus transmission. I am also co-PI on an NIAID R01 award to redefine the clinical manifestations, epidemiology, immunology and virology of yellow fever virus infection in Brazil. I am co-I on an R01 climate supplement to integrate climate and health impacts in HIV and TB research in Eswatini. I am co-I on a R01 award to create and field test a new platform for diagnosis of febrile illness in Grenada. Finally, I am PI of two philanthropy-funded awards in Grenada to monitor the neurodevelopmental impacts of ZIKV infection up to five years of age and to conduct a school-based health promotion intervention. Regarding fundamental skills in climate and health, I was co-director of the Sean N. Parker Center Stanford Climate Health and Equity Task Force and serve on the leadership teams of both the Stanford Human Planetary Health Group and the Center for Innovations in Global Health. I have worked with multiple interdisciplinary research and community outreach activities for climate change, including a focus on impacts in underserved communities to increase awareness and education about health implications. I continue to work together with my diverse partners in Kenya to implement and develop research projects to support time-critical climate health research and community programs through our climate-health nonprofit (Health and Environment Research Institute-Kenya; www.heri-kenya.org).

All of the following projects collect climate information and integrate/investigate climate as a factor for disease

transmission:

10/2022-3/2025 Fogarty D43 TW011547; Siyakhula: Growing HIV/TB Research Knowledge for Growing Healthy Kids in Eswatini; Climate Change Administrative Supplement; PI: Mandalakas, Role: Co-I, Climate Change Lead

7/2021 – 6/2022 Fogarty Global Health Equity Scholarship; Impact of warming temperatures on dengue transmission risk in Kenya; Awardee: J. Rosser, Role: Mentor

7/2013 – 4/2025 NIH, R01AI102918; Disentangling the human vector relationship to disrupt dengue and chikungunya virus outbreaks in Kenya; Goal: To estimate the burden of infection and disease from dengue and chikungunya viruses in Kenya and to define key drivers (including climate change) of transmission. Role: PI

6/2019 – 1/2022 BOVA Network pump priming award, Trash to Treasure: Collecting trash for profit to reduce vector breeding sites in Kwale County, Kenya; Goal: To repurpose plastic waste (mosquito breeding habitat) for profit in order to decrease vector-borne disease risk and alleviate poverty. Role: U.S. PI

7/2018 – 12/2020 Stanford Woods Institute for the Environment: Award 2018 Innovation and Integration of Ecosystem-Human Health Science and Tools on the Natural Capital Project Platform; Goal: Innovation and Integration of Ecosystem-Human Health Science and Tools on Nat Cap Platform. Role: Co-Investigator; PI: Daily

7/2016 – 7/2019 Stanford Woods Institute Environmental Venture Project grant; Predicting Dengue Transmission in a Changing Climate to Improve Mosquito Control; Goal: To use mathematical models, field data, and remote sensing to predict dengue transmission and improve vector control in Kenya and Ecuador. Role: Co-PI with Erin Mordecai

B. Positions, Scientific Appointments, and Honors

Positions

2023 – present Professor, Department of Environmental Social Science (by courtesy), Stanford Doerr School of Sustainability, Palo Alto, CA
2019 – present Professor, Department of Pediatrics, Division of Infectious Diseases, Stanford University School of Medicine, Palo Alto, CA
2019 – present Professor, Department of Epidemiology & Population Health (by courtesy), Stanford University, Palo Alto, CA
2014 – 2019 Associate Professor, Pediatric Infectious Diseases, Stanford University, Palo Alto, CA
2013 – 2014 Associate Scientist, CHORI; Oakland, CA
2013 – 2014 Fellowship Director, Division of Infectious Disease Medical Group at CHRCO; Oakland, CA
2009 – 2014 Associate Physician, Division of Infectious Disease Medical Group at the Children's Hospital & Research Center Oakland (CHRCO); Oakland, CA
2009 – present Adjunct Assistant Professor, Center for Global Health and Diseases; Case Western Reserve University (CWRU); Cleveland, OH
2009 – 2014 Assistant Scientist, Children's Hospital of Oakland Research Institute (CHORI); Oakland, CA
2007 – 2009 Assistant Professor, Division of Pediatric Infectious Diseases; Rainbow Babies and Children's Hospital; Cleveland, OH
2006 – 2007 Instructor, Division of Pediatric Infectious Diseases; Rainbow Babies and Children's Hospital; Cleveland, OH
2003 – 2006 Fellow, Division of Pediatric Infectious Diseases; Rainbow Babies and Children's Hospital; Cleveland, OH
2000 – 2003 Pediatric Resident, International Health Track; Rainbow Babies and Children's Hospital; Cleveland, OH

Scientific Appointments

2021 – 2023 Co-chair, Sean N. Parker Center Climate, Health and Equity Task Force
2021 – present Co-founder and Executive Director, Health and Environmental Research Institute-Kenya
2020 – present Chair, American Society of Tropical Medicine Green (Environmental Sustainability) Task Force

Honors

2019 – 2023 Election to the Board of Directors of the American Society of Tropical Medicine and Hygiene
2019 Graduation from the Stanford Leadership Development Program FY19
2018 Stanford Department of Pediatrics Postdoc Mentor of Excellence Award
2018 Women in Science Award, International Society for Antiviral Research (ISAR)
2018 Stanford Department of Pediatrics Postdoc Mentor Award of Excellence
2017 – 2018 Chair, American Committee on Arthropod-Borne Viruses
2017 – present Member, WHO ZIKV IPD Consortium**,** Geneva, Switzerland
2015 – 2019 Councilor, American Committee on Arthropod-Borne Viruses
2015 – 2020 Bechtel Faculty Scholar Award, Stanford Child Health Research Institute
2010 New Investigator in Global Health Scholarship, Global Health Council
2008 Robert E. Shope International Fellowship in Infectious Diseases Award
2008 Case Western Reserve University Women School of Medicine Faculty Junior Faculty Award
2004 – 2012 NIH Clinical Research, Loan Repayment Awards (LRP)
2000 American Medical Woman's Association Award
2000 Merck Award in recognition of outstanding academic achievement
1999 Alpha Omega Alpha Honor Society

C. Contributions to Science

My recent work has examined climate as a key factor in the transmission of vector borne diseases. We have determined the impact on malaria (1), future vector borne disease burden (2), and used climate to predict disease dynamics successfully across continents (3). In addition, we have worked to integrate climate change teaching into medical school curricula (4). Several other papers are under review on the impact that climate has on vector abundance and geographic and temporal variation in mosquito-borne disease dynamics.

1. Shah M, Krystosik AR, Ndenga BA, Mutuku FM, Caldwell JM, Otuka V, Chebii PK, Maina PW, Jembe Z, Ronga C, Bisanzio D, Anyamba A, Damoah R, Ripp K, Jagannathan P, Mordecai E, **LaBeaud AD**. (2019). Malaria smear positivity among Kenyan children peaks at intermediate temperatures as predicted by ecological models. Parasites and Vectors. Jun 6;12(1):288. doi:10.1186/s13071-019-3547-z
2. Mordecai EA, Ryan SJ, Caldwell J, Shah MM, **LaBeaud AD**. (2020). Climate change could shift disease burden from malaria to arboviruses in Africa. *Lancet Planetary Health, 4*(9), e416-e423. doi: 10.1016/S2542-5196(20)30178-9
3. Caldwell, J. M., **LaBeaud, A. D.**, Lambin, E. F., Stewart-Ibarra, A. M., Ndenga, B., Mutuku, F., Krystosik, A., Ayala, E. B., Anyamba, A., Borbor-Cordova, M. J., Damoah, R., Grossi-Soyster, E. N., Heras, F, H., Mejin, R., Ngugi, H. N., Ryan, S. J., Shah, M. M., Sippy, R., Suner, G., & Mordecai, E. A. (2021). Climate explains geographic and temporal variation in mosquito-borne disease dynamics on two continents. *Nature Communications*, *12*(1), 1233.
4. Goshua, A., Gomez, J., Erny, B., Burke, M., Luby, S., Sokolow, S., **LaBeaud, A.**, Auerbach, P., Gisondi, M. A., & Nadeau, K. (2021). Addressing climate change and the impact on human health: A call to action for medical schools. *Academic Medicine, 96*(3), 324-28. doi: 10.1097/ACM.0000000000003861

One major research area in which I've contributed is arboviral epidemiology. My early publications directly addressed the fact that transmission of Rift Valley fever virus (RVFV) is often overlooked in endemic communities. We demonstrated a great burden of exposure both during and in between recognized outbreaks in both human (many papers represented by reference 1) and animal populations. This body of work changed the areas thought to be at risk for RVFV transmission and provided evidence for unrecognized transmission in both adults and children. It is likely that immune (2), demographic (3) and genetic (4) factors are all important to determine clinical manifestations of disease.

1. **LaBeaud AD**, Muiruri S, Sutherland LJ, Dahir S, Gildengorin G, Morrill J, Muchiri EM, Peters CJ, King

CH. (2011). Postepidemic Analysis of Rift Valley Fever Virus Transmission in Northeastern Kenya: A Village Cohort Study. PLoS Neglected Tropical Diseases Journal, Aug; 5(8):e1265. PMCID: PMC3156691.
2. Newman-Gerhardt S, Muiruri S, Muchiri EM, Peters CJ, Morrill, Lucas AH, King CH, Kazura J, **LaBeaud AD**. (2013). Potential for Autoimmune Pathogenesis of Rift Valley Fever Virus Retinitis, Accepted for publication, American Journal of Tropical Medicine & Hygiene, Sep;89(3):495-7
3. **LaBeaud AD**, Pfeil S, Muiruri S, Dahir S, Sutherland LJ, Traylor Z, Gildengorin G, Muchiri EM, Morrill J, Peters CJ, Hise AG, Kazura JW, King CH. (2015). Factors Associated with Severe Human Rift Valley Fever in Sangailu, Garissa County, Kenya. PLoS Negl Trop Dis 9(3): e0003548. doi:10.1371/journal.pntd.0003548.
4. Hise AG, Traylor Z, Hall NB, Sutherland LJ, Dahir S, Ermler ME, Muiruri S, Muchiri EM, Kazura JW, **LaBeaud AD,** King CH, Stein CM. (2015). Association of Symptoms and Severity of Rift Valley Fever with Genetic Polymorphisms in Human Innate Immune Pathways. PLoS Negl Trop Dis 9(3): e0003584. doi:10.1371/journal.pntd.0003584.

In addition to work on RVFV above, I expanded my work to include other arboviruses of human importance. Again, we have demonstrated a great burden of exposure to many pathogens and a large proportion of infected vectors in our study sites. More recently, we have uncovered intense transmission of viruses previously unrecognized (1,2). This work continues to uncover unrecognized transmission of these pathogens and provide evidence for resultant human infection and disease. The disease burden is due not only to the acute febrile illness, but also to the long-term health consequences that result from arboviral infection (3). In our current intervention studies, we are identifying new strategies for disease prevention (4).

1. **LaBeaud AD,** Banda T, Brichard J, Borland E, Mungai PL, Mutuku FM, Gildengorin V, Pfeil S, Teng CY, Long K, Heise M, Muchiri EM, Powers AM, Kitron U, King CH. (2015). High rates of o'nyong nyong and chikungunya virus transmission in coastal Kenya. PLoS Negl Trop Dis, 9(2): e0003436. doi:10.1371/journal.pntd.0003436
2. Vu DM, Mutai N, Heath C, Vulule JM, Mutuku FM, Ndenga BA, **LaBeaud AD**. (2017). Unrecognized dengue virus infections in children, western Kenya, 2014-2015. Emerg Infect Dis. Nov;23(11):1915-1917. doi: 10.3201/eid2311.170807.
3. **LaBeaud AD**, Bashir F, King CH. (2011). Measuring the Burden of Arboviral Diseases: The Spectrum of Morbidity and Mortality from Four Prevalent Infections. Population Health Metrics, Jan 10;9(1):1.
4. Forsyth JE, Mutuku FM, Kibe L, Mwashee L, Bongo J, Egemba C, Ardoin NM, **LaBeaud AD**. (2020). Source reduction with a purpose: Mosquito ecology and community perspectives offer insights for improving household mosquito management in coastal Kenya. PLOS Neglected Tropical Diseases, 14(5). May 2020. doi.org/10.1371/journal.pntd.0008239

Investigation of the impact of infectious disease on neurodevelopmental outcome is a growing thread within my research platform. To date we have described the spectrum of disease and the increase in perinatal mortality due to congenital Zika virus (ZIKV)(1). We have also described the spectrum of chikungunya virus (CHIKV) disease (2), performed a systematic meta-analysis on the impact of CHIKV in pregnancy (3) and described the neurodevelopmental outcomes (4). Manuscripts on the pregnancy and birth complications and the neurodevelopmental impact of congenital ZIKV in Grenada have also been published. We have also published other manuscripts detailing the clinical spectrum and outcomes of disease of congenital ZIKV syndrome in Grenada.

1. Mendes Neto NN, da Silva Maia JT, Zacarkim MR, Queiroz I, **LaBeaud AD**, Aronoff DM. (2017). Perinatal Case Fatality Rate Related to Congenital Zika Syndrome in Brazil: a Cross-Sectional Study, Pediatric Neurology. Dec 12. pii: S0887-8994(17)31131-1. doi:
2. Gérardin P, **LaBeaud AD**, Ritz N, Fritel X. (2016). Chikungunya Fever During Pregnancy and In Children: An Overview on Clinical and Research Perspectives. In: Rodriguez-Morales AJ. Current Topics in Chikungunya. Vol 1. Rijeka, Croatia: In Tech Press.19-41.
3. Contopoulos-Ioannidis D, Newman-Lindsay Chow C, **AD LaBeaud**. (2018). Mother-to-child transmission of Chikungunya Virus: A Systematic Review and Meta-Analysis. PLoS Negl Trop Dis. Jun 13;12(6):e0006510.
4. Waechter R, Ingraham E, Evans R, Cudjoe N, Krystosik A, Isaac R, Watts A, Noël TP, Landon B, Fernandes M, Mapp-Alexander V, Suresh P, Mitchell G, Macpherson C, Gérardin P, **LaBeaud AD**.

(2020). Pre- and post-natal exposure to chikungunya virus does not affect child neurodevelopmental outcomes at two years of age. PLoS Negl Trop Dis. 14(10) doi.org/10.1371/journal.pntd.0008546.

As a pediatrician, I have always been interested in the clinical manifestations and health outcomes of infectious diseases. Children are often excluded from studies, so little is known about the specific risk factors (1), health consequences (2,3), or optimal prevention strategies for (4) children.

1. **LaBeaud AD**, Kile JR, Kippes C, King CH, Mandalakas AM. (2007). Exposure to West Nile virus during the 2002 epidemic in Cuyahoga County, Ohio: a comparison of pediatric and adult behaviors. Public Health Rep. May-Jun;122(3):356-61.
2. Kao JE, Mutuku F, Martin S, Lee J, Muinde J, Mukoko D, Malhotra I, King C**, LaBeaud AD**. (2019). Early childhood anemia in a birth cohort in coastal Kenya: Links to infection and nutrition. AJTMH May 19; 1-11. doi:10.4269/ajtmh.17-0688.
3. Martin SA, Mutuku F, Sessions J, Lee J, Mukoko D, Malhotra I, King CH, **LaBeaud AD**. (2020). Factors associated with early childhood stunted growth in a 2012-2015 birth cohort monitored in the rural Msambweni area of coastal Kenya: A cross-sectional study. BMC Pediatrics, 20(1):208. doi: 10.1186/s12887-020-02110-z
4. **LaBeaud AD**, Glinka A, Kippes C, King CH. (2009). School-based health promotion for mosquito-borne disease prevention in children. J Pediatr. Oct;155(4):590-2.

A complete list of my published work is available at:
http://www.ncbi.nlm.nih.gov/sites/myncbi/1PyVByw-a_Wkt/bibliography/40449230/public/?sort=date&direction=ascending