

Annie ELONG NGONO, Ph.D.
Discipline: Virology-Immunology

Status Research Instructor

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Research fields

Immunology, Virology, Infectious Diseases, Vaccinology, Global health

Education and Appointment

2020 La Jolla Institute for Immunology-USA, **Research Instructor**

Center for Infectious Disease and Vaccine Research

Discipline: Immunology & Virology

2015-2019 La Jolla Institute for Immunology-USA, **Postdoctoral Fellow**

Discipline: Immunology & Virology

2010-2014 Nantes University (UFR Medicine & Pharmacy-France), **Ph.D,**

Center of Research in Transplantation & Immunology, **INSERM U1064**

Discipline: Immunology & Autoimmunity

2008-2010 Nantes University (UFR Sciences & Technical-France), **Master Degree in Biology, Biotechnology and therapeutic Research, MS**

Discipline: Immunology & Biotechnology

2006-2008 Nantes University (UFR Sciences and Technical-France), **Bachelor Degree in Biology-Biochemistry, BS**

2004-2006 University Institutes of Technology (France), **Undergraduate Diploma of Technology**

Discipline: Biology and Nutrition

2003-2004 Saint-Joseph Private High-School (France), **Baccalaureate in Sciences**

Publications

Almost half of the world population is at risk for infection with **Dengue (DENV)** and **Zika (ZIKV)** viruses. However, the adaptive immunity to flavivirus is not clearly known and remains complex. Investigate the precise role of adaptive immunity in protection versus pathogenesis will contribute to the development of a safe and efficient vaccine.

1. **Elong Ngono A**, Syed T, Nguyen AV, Regla-Nava JA, Susantono M, Spasova D, Aguilar A, West M, Sparks J, Gonzalez A, Branche E, DeHart JL, Vega JB, Karmali PP, Chivukula P, Kamrud K, Aliahmad P, Wang N, Shresta S. CD8⁺ T cells mediate protection against Zika virus induced by an NS3-based vaccine. *Sci Adv.* **2020** Nov 4;6(45):eabb2154. doi: 10.1126/sciadv.abb2154.
2. Manandhar KD, McCauley M, Gupta BP, Kurmi R, Adhikari A, Nguyen AV, **Elong Ngono A**, Zompi S, Sessions O, Shresta S. Whole Genome Sequencing of Dengue Virus Serotype 2 from Two Clinical Isolates and Serological Profile of Dengue in the 2015-2016 Nepal Outbreak. *Am J Trop Med Hyg.* **2020** Oct 12. doi: 10.4269/ajtmh.20-0163.
3. EA. Henderson, CC. Tam, LW. Cheng, **A Elong Ngono**, Anh-Viet Nguyen, S Shresta, M McGee, Hal Padgett, L K. Grill, M Martchenko Shilman. Investigation of the immunogenicity of Zika glycan loop. *Virology Journal*, **2020** Mar 31;17(1):43. doi: 10.1186/s12985-020-01313-1.
4. Wen J, Wang YT, Valentine KM, Alves RPDS, Xu Z, Regla-Nava JA, **Elong Ngono A**, Young M, Ferreira LCS, Shresta S. CD4⁺ T cells cross-react with dengue and Zika viruses protect against Zika infection. *Cell Rep.* **2020** Apr 28; 31(4): 107566. doi: 10.1016/j.celrep.2020.107566
5. Branche E, Simon AY, Sheets N, Kim K, Barker D, Nguyen AT, Sahota H, Young MP, Salgado R, Mamidi A, Viramontes KM, Carnelley T, Qiu H, **Elong Ngono A**, Regla-Nava JA, Susantono MX, Valls Cuevas JM, Kennedy K, Kodihalli S, Shresta S. Human Polyclonal Antibodies Prevent Lethal Zika Virus Infection in Mice. *Scientific Rep.* (2019) Jul 8;9(1):9857. doi: 10.1038/s41598-019-46291-9.
6. **Elong Ngono A** and Shresta S. Cross-reactive T cell immunity to dengue and Zika viruses: New insights into vaccine development. *Front Immunol* (2019); 10:1316. doi: 10.3389/fimmu. Review.

7. **Elong Ngono A**, Young MP, Bunz M, Xu Z, Hattakam S, Vizcarra E, Regla-Nava JA, Tang WW, Yamabhai M, Wen J, Shresta S. CD4+ T cells promote humoral immunity and viral control during Zika virus infection. *PLoS Pathog* (2019);15(1):e1007474.doi:10.1371/journal.ppat.1007474.
8. Carlin AF, Wen J, Vizcarra EA, McCauley M, Chaillon A, Akrami K, Kim C, **Elong Ngono A** et al., A longitudinal systems immunologic investigation of acute Zika virus infection in an individual infected while traveling to Caracas, Venezuela. *PLoS Negl Trop Dis* (2018). 12(12):e0007053. doi: 10.1371/journal.pntd.0007053.
9. Regla-Nava JA*, **Elong Ngono A*** et al., Dengue Virus CD8+ T cells cross-protect against Zika Virus During Pregnancy. *Nature Communications*, (2018). 9(1):3042. doi: 10.1038/s41467-018-05458-0 * equal contributions.
10. **Elong Ngono A** and Sujana Shresta, Immune response to Dengue and Zika, *Annual Review of Immunology*, (2018) 10.1146/annurev-immunol-042617-053142.
11. Wen J, **Elong Ngono A** et al., Dengue virus-reactive CD8+ T cells mediate cross-protection against subsequent Zika virus challenge, *Nature Communications*, 8 p. 1459 (2017) 10.1038/s41467-017-01669-z.
12. Shiryaev SA, Farhy C, Pinto A, Huang CT, Simonetti N, **Elong Ngono A**, Dewing A, Shresta S, Pinkerton AB, Cieplak P, Strongin AY, Terskikh AV. Characterization of the Zika virus two-component NS2B-NS3 protease and structure-assisted identification of allosteric small-molecule antagonists. *Antiviral Res.* (2017)143:218-229. doi: 10.1016/j.antiviral.2017.04.015.
13. **Elong Ngono A** et al., Mapping and Role of the CD8+ T Cell Response During Primary Zika Virus Infection in Mice. *Cell Host & Microbe*, 21(1): p. 35-46 (2017) 10.1016/j.chom.2016.12.010.
14. **Elong Ngono A** et al., Protective Role of Cross-Reactive CD8+ T Cells Against Dengue Virus Infection. *EBioMedicine*. 13: p. 284-293 (2016) 10.1016/j.ebiom.2016.10.006.

Multiple Sclerosis (MS) is a chronic inflammatory demyelinating disease of the Central Nervous System characterized by leukocyte infiltration and white matter demyelination. Both T cells and antibody (Ab) specific to myelin are present during the course of the disease showing the autoimmune component of MS. Investigate T and B cells specific to myelin will contribute understanding the mechanisms by which autoreactive cells play a part in protection or pathogenesis.

1. Salou M, Nicol B, Garcia A, Baron D, Michel L, **Elong Ngono A** et al., Neuropathologic, phenotypic and functional analyses of Mucosal Associated Invariant T cells in Multiple Sclerosis. *Clinical Immunology*, (2016) 10.1016/j.clim.2016.03.014.
2. **Elong Ngono A**, Maud Lepetit, Alexandra Garcia et al., Decreased frequency of circulating anti MOG B cells in Patients with Relapsing-Remitting Multiple Sclerosis. *Journal of Immunology Research*, (2014) 10.1155/2015/673503.
3. Michel L, Chesneau M, Manceau P, Genty A, Garcia A, Salou M, **Elong Ngono A**, Pallier A, Jacq-Foucher M, Lefrère F, Wiertelowski S, Soullillou JP, Degauque N, Laplaud DA, Brouard S. *Clinical Immunology*. (2014).10.1016/j.clim.2014.09.011.
4. Nicolas Degauque*, **Elong Ngono A***, Ahmed Akl, Maud Lepetit et al., Characterization of antigen-specific B cells using nominal antigen-coated flow-beads. *PLoS One*, (2013) 10.1371/journal.pone.0084273. *Equal contributions.
5. Marion Salou, **Elong Ngono A**, Alexandra Garcia et al., Adaptative immunity and pathophysiology of Multiple Sclerosis. *Rev Med Intern*, (2013) 10.1016/j.revmed.2013.03.327.
6. **Elong Ngono A**, Pettré S, Bahbouhi B, Soullillou JP et al., Frequency of circulating autoreactive T cells committed to myelin determinants in relapsing-remitting multiple sclerosis patients, *Clinical Immunology* (2012) 10.1016/j.clim.2012.05.009.
7. Bahbouhi B, Pettré S, Berthelot L, Garcia A, **Elong Ngono A**, Degauque N, Michel L et al., T cell recognition of self-antigen presenting cells by protein transfer assay reveals a high frequency of antigen-myelin T cells in multiple sclerosis, *Brain* (2010) 10.1093/brain/awq074.

Awards and Honors

2020

Tullie and Rickey families SPARK awards for Innovation in Immunology, \$25K

2020	American Society of Tropical Medicine & Hygiene (ASTMH), Travel Award
2020	AAI-Thermo Fisher for Outstanding Trainee Achievement Award, <i>Honolulu, HI</i>
2019	Kyowa Kirin Award for Outstanding Innovative Research, <i>Lake Arrowhead, CA, USA</i>
2018	Best poster presentation Award, LJI-UCLA conference retreat
2018	NIF Winter School for advanced Immunology, <i>Awaji Island Japan</i>
2017	Trainee Awards from American Association of Immunology AAI <i>Washington DC USA</i>
2016	Kyowa Kirin Award for Outstanding Innovative Research – <i>Lake Arrowhead, CA, USA</i>
2016	American Society for Virology (ASV) Travel Awards - <i>Virginia USA</i>
2013	International Congress of Immunology (ICI) Travel Award- <i>Milan Italy</i>

Society Memberships

Since 2019	Member of the American Society of Tropical Medicine & Hygiene (ASTMH)
Since 2017	Member of the American Association of Immunology (AAI)
Since 2016	Member of the American Society for Virology (ASV)

Academic service

Since 2021	Pan-African Scientific Research Council Fellow
Since 2020	Human subject coordinator for Center for Research in Emerging Infectious Diseases Epidemiology, Surveillance, Pathogenesis (CREID-ESP; U01)
Since 2019	Guest associate/review editor: <i>Frontiers in Medical Technology, Pharmaceutical Innovation</i>
Since 2019	Academic research protocol writing (IRB, IBC protocols)
2019	PhD Thesis examining committee, Suranaree University of Technology. Thailand
2019	La Jolla Institute for Immunology retreat, Session Chair: CryoEM and BSL3 viruses
2018	La Jolla Institute for Immunology retreat, Session Chair: Microbes and Infections
Since 2017	Reviewing of scientific articles for peer-reviewed journals (<i>Frontiers in Medical Technology; Frontiers Cellular and Infection Microbiology, PLOS Neglected Tropical Diseases, Viral Immunology</i>)

Mentoring activities

2015-Present	La Jolla Institute for Immunology, San Diego, California USA Graduates: Andrew Gonzalez (UCSD-USA) Undergraduates: Mercylia Susantono, Thasneem Syed, (UCSD-USA) Master students: Maximilian Bünz (Germany), Zhigang Xu (China), Sabita Prajapati (Nepal), Julia Timis (Austria). Technicians: Edward Vizcarra, Matthew Young (UCSD-USA) PhD students: Sararat Hattakam (Thailand), Rubens Alves (Brazil)
2010-2014	Center of Research in Transplantation & Immunology, INSERM U1064 Technicians: Athenais Genty (France) Medical Doctor student: Maud Lepetit (France)