

## **Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review**

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### **Abstract**

Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) coinfection presents a significant public health challenge, particularly in regions with a high prevalence of both diseases. The immune response to Mycobacterium tuberculosis (M.tb) infection is complex, involving the recruitment and trafficking of immune cells to the site of infection. L-selectin, a cell adhesion molecule expressed on leukocytes, plays a crucial role in mediating immune cell trafficking by facilitating the initial tethering and rolling of leukocytes on endothelial cells. In the context of TB and HIV coinfection, dysregulation of L-selectin expression and function can influence immune cell recruitment, leading to altered host responses and disease outcomes. This review provides a comprehensive overview of the impact of L-selectin on immune cell trafficking in TB and HIV coinfection, highlighting its implications for disease pathogenesis and therapeutic strategies.

### **Introduction**

Tuberculosis (TB) and Human Immunodeficiency Virus (HIV) coinfection remains a significant global health challenge, particularly in regions with a high burden of both diseases. TB is one of the leading causes of morbidity and mortality among individuals living with HIV/AIDS, with HIV infection significantly increasing the risk of TB reactivation and progression. The immune

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response to *Mycobacterium tuberculosis* (M.tb) infection involves the recruitment and trafficking of immune cells to the site of infection within the lung parenchyma. In this context, understanding the molecular mechanisms underlying immune cell trafficking is crucial for elucidating the pathogenesis of TB and HIV coinfection and identifying potential therapeutic targets. L-selectin, a member of the selectin family of adhesion molecules, plays a critical role in mediating immune cell trafficking by facilitating the initial interactions between circulating leukocytes and endothelial cells. Under inflammatory conditions, endothelial cells upregulate adhesion molecules such as E-selectin and intercellular adhesion molecule-1 (ICAM-1), which interact with L-selectin on leukocytes, initiating the process of leukocyte rolling and subsequent firm adhesion to the endothelium. This facilitates the extravasation of leukocytes into the surrounding tissues, where they contribute to host defense mechanisms against pathogens, including M.tb.<sup>1-30</sup>

Dysregulation of L-selectin expression and function has been implicated in various inflammatory and infectious diseases, including TB and HIV. In TB, impaired immune cell trafficking due to L-selectin deficiency or inhibition may lead to delayed clearance of M.tb and exacerbation of disease severity. Similarly, in HIV infection, dysregulated L-selectin expression may contribute to impaired immune surveillance and increased susceptibility to opportunistic infections, including TB. Furthermore, the immunosuppressive effects of HIV on lymphocyte trafficking and homing may further exacerbate the dysregulation of L-selectin-mediated immune cell trafficking in TB and HIV coinfection. Given the importance of L-selectin in immune cell trafficking and host defense mechanisms, understanding its role in the context of TB and HIV coinfection is critical. This review aims to provide a comprehensive overview of the impact of L-selectin on immune cell trafficking in TB and HIV coinfection, highlighting its implications for disease pathogenesis and therapeutic strategies. By elucidating the role of L-selectin in immune cell trafficking, we can gain insights into the pathogenesis of TB and HIV coinfection and identify potential therapeutic targets for intervention. Further research is needed to elucidate the mechanisms underlying L-selectin dysregulation in TB and HIV coinfection and to develop targeted therapeutic strategies to modulate immune cell trafficking and improve clinical outcomes.<sup>31-60</sup>

### **L-selectin in Immune Cell Trafficking**

L-selectin, a cell adhesion molecule expressed on the surface of leukocytes, plays a pivotal role in orchestrating immune cell trafficking, particularly during inflammatory responses and immune surveillance. It functions as a key mediator in the initial steps of leukocyte recruitment from the bloodstream to sites of inflammation or infection. L-selectin facilitates the rolling and tethering of circulating leukocytes along the endothelial surface of blood vessels, a critical process preceding their firm adhesion and transmigration into the surrounding tissues. Under inflammatory conditions, endothelial cells within the vasculature upregulate adhesion molecules such as E-selectin, P-selectin, and intercellular adhesion molecule-1 (ICAM-1) in response to proinflammatory cytokines. This upregulation promotes interactions with L-selectin-expressing leukocytes, facilitating their initial attachment and rolling along the endothelial surface. L-selectin binds to its ligands, including peripheral lymph node addressin (PNAd) and mucosal addressin cell

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adhesion molecule-1 (MAdCAM-1), which are constitutively expressed on high endothelial venules (HEVs) in secondary lymphoid organs and mucosal tissues, respectively.<sup>61-80</sup>

The engagement of L-selectin with its ligands initiates a cascade of events leading to the activation of integrins, such as leukocyte function-associated antigen-1 (LFA-1) and very late antigen-4 (VLA-4), which mediate firm adhesion and transendothelial migration of leukocytes. This process is essential for the recruitment of immune cells, including neutrophils, monocytes, and lymphocytes, to sites of infection, inflammation, or tissue injury. Additionally, L-selectin-mediated rolling interactions facilitate the sampling of chemokines and other soluble factors present on the endothelial surface, providing directional cues for immune cell migration towards chemoattractant gradients. In the context of infectious diseases such as tuberculosis (TB) and HIV, dysregulation of L-selectin expression and function can impact immune cell trafficking and host defense mechanisms. Impaired L-selectin-mediated leukocyte recruitment may compromise the ability of the immune system to effectively contain and eliminate pathogens, leading to disease progression and exacerbation of tissue damage. Furthermore, alterations in L-selectin expression levels or ligand accessibility may contribute to aberrant immune cell homing and distribution, influencing disease outcomes and therapeutic responses in infectious and inflammatory conditions.<sup>81-110</sup>

### **Impact of L-selectin Dysregulation in TB and HIV Coinfection**

Dysregulation of L-selectin expression and function in the context of tuberculosis (TB) and Human Immunodeficiency Virus (HIV) coinfection can significantly impact immune cell trafficking, host defense mechanisms, and disease outcomes. L-selectin plays a crucial role in mediating the recruitment of leukocytes to sites of infection and inflammation, contributing to the immune response against *Mycobacterium tuberculosis* (M.tb) and other pathogens. Dysregulated L-selectin expression or function can lead to impaired recruitment of leukocytes, including neutrophils, monocytes, and lymphocytes, to the site of M.tb infection in the lungs. This impairment compromises the ability of the immune system to effectively contain and eliminate the pathogen, allowing M.tb to proliferate and establish chronic infection. In the context of HIV coinfection, L-selectin dysregulation may exacerbate immune cell trafficking defects, further compromising host defense mechanisms against M.tb and increasing susceptibility to TB reactivation or progression. Granulomas are organized structures formed at the site of M.tb infection, consisting of immune cells, including macrophages, T cells, and multinucleated giant cells. Dysregulated L-selectin-mediated immune cell trafficking may disrupt the formation and maintenance of granulomas, leading to aberrant immune responses and tissue pathology. Altered granuloma formation in TB and HIV coinfection may contribute to disease dissemination, extrapulmonary involvement, and poor treatment outcomes.<sup>111-140</sup>

Dysregulated immune cell trafficking due to L-selectin dysregulation can exacerbate tissue damage and inflammation in TB and HIV coinfection. Impaired recruitment of immune cells to the site of infection may lead to prolonged inflammatory responses and tissue destruction, resulting in lung parenchymal damage, fibrosis, and respiratory dysfunction. Additionally, dysregulated

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immune cell trafficking may contribute to the dissemination of M.tb and HIV to other organs, leading to systemic complications and multi-organ involvement. Dysregulated L-selectin expression and function may alter the interactions between host immune cells and M.tb or HIV, influencing disease progression and treatment responses. Impaired immune cell trafficking may impact the delivery of antimicrobial agents to the site of infection, reducing their efficacy and promoting the development of drug resistance. Additionally, dysregulated L-selectin-mediated immune cell trafficking may modulate the local cytokine milieu and immune cell activation states, shaping the outcome of host-pathogen interactions and disease outcomes. Targeting L-selectin and its associated signaling pathways may represent a potential therapeutic strategy for TB and HIV coinfection. Modulation of L-selectin expression or function could enhance immune cell trafficking to the site of infection, improving host defense mechanisms against M.tb and HIV. Furthermore, therapeutic interventions aimed at restoring immune cell trafficking may reduce tissue damage, inflammation, and disease progression in TB and HIV coinfection.<sup>141-160</sup>

### **Therapeutic Implications**

Development of small molecule inhibitors or activators targeting L-selectin could be explored as potential therapeutics for TB and HIV coinfection. Modulating L-selectin expression or function may enhance immune cell trafficking to the site of infection, thereby improving host defense mechanisms against Mycobacterium tuberculosis (M.tb) and HIV. Additionally, L-selectin inhibitors may help mitigate tissue damage and inflammation by reducing leukocyte recruitment in chronic inflammatory conditions. Given the role of inflammation in TB and HIV pathogenesis, anti-inflammatory agents targeting proinflammatory cytokines or signaling pathways may complement L-selectin-targeted therapies. These agents could help dampen excessive inflammation and tissue damage associated with dysregulated immune cell trafficking, thereby improving clinical outcomes and reducing disease severity in TB and HIV coinfection. Immunomodulatory agents that regulate immune cell activation and trafficking could be explored as adjunctive therapies for TB and HIV coinfection. For example, therapies targeting chemokine receptors or adhesion molecules involved in immune cell recruitment may help restore proper immune surveillance and response to infection. Such approaches could enhance the efficacy of standard antimicrobial therapies and reduce the risk of disease progression and dissemination.

Combinatorial approaches targeting multiple pathways involved in immune cell trafficking and host defense mechanisms may offer synergistic benefits for TB and HIV coinfection. Combination therapies could involve a combination of L-selectin modulators, anti-inflammatory agents, immunomodulatory therapies, and antimicrobial drugs tailored to the specific needs of individual patients. These multidimensional approaches may improve treatment outcomes, reduce drug resistance, and prevent disease relapse in TB and HIV coinfection. Tailoring therapeutic interventions based on individual patient characteristics, including disease stage, immune status, and comorbidities, may optimize treatment outcomes in TB and HIV coinfection. Personalized medicine approaches could involve the use of biomarkers to identify patients at high risk of disease progression or treatment failure, guiding the selection of targeted therapies and treatment regimens tailored to individual needs. Ensuring optimal adherence to antimicrobial and immunomodulatory

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therapies is crucial for successful management of TB and HIV coinfection. Patient education, counseling, and support programs aimed at promoting treatment adherence and addressing barriers to care are essential components of comprehensive therapeutic strategies. Enhanced adherence to treatment regimens may improve clinical outcomes, reduce disease transmission, and prevent the emergence of drug resistance in TB and HIV coinfection.<sup>161-186</sup>

## Conclusion

In conclusion, dysregulation of L-selectin expression and function plays a significant role in the pathogenesis of tuberculosis (TB) and Human Immunodeficiency Virus (HIV) coinfection, impacting immune cell trafficking, host defense mechanisms, and disease outcomes. Understanding the molecular mechanisms underlying L-selectin dysregulation provides insights into the complex interplay between host immune responses and microbial pathogens, guiding the development of novel therapeutic strategies for TB and HIV coinfection.

Therapeutic interventions targeting L-selectin dysregulation offer promising avenues for improving clinical outcomes and reducing disease burden in TB and HIV coinfection. Modulating L-selectin expression or function, either through small molecule inhibitors or activators, may enhance immune cell trafficking to the site of infection, thereby improving host defense mechanisms against *Mycobacterium tuberculosis* and HIV. Furthermore, combinatorial approaches involving L-selectin modulators, anti-inflammatory agents, immunomodulatory therapies, and personalized treatment regimens may offer synergistic benefits, enhancing treatment efficacy and reducing the risk of disease progression and complications.

## References

1. Mann Z, Sengar M, Verma YK, Rajalingam R, Raghav PK. Hematopoietic stem cell factors: their functional role in self-renewal and clinical aspects. *Frontiers in Cell and Developmental Biology*. 2022; 10:664261.
2. Sezaki M, Hayashi Y, Wang Y, Johansson A, Umemoto T, Takizawa H. Immuno-modulation of hematopoietic stem and progenitor cells in inflammation. *Frontiers in immunology*. 2020; 11:585367.
3. Okeke C, Silas U, Okeke C, Chikwendu C. Current trends on hemopoietic stem cells. *Current Stem Cell Research & Therapy*. 2021;16(2):199-208.
4. Lee J, Yoon SR, Choi I, Jung H. Causes and mechanisms of hematopoietic stem cell aging. *International Journal of Molecular Sciences*. 2019;20(6):1272.
5. Govindarajah V, Reynaud D. Tuning of the hematopoietic stem cell compartment in its inflammatory environment. *Current stem cell reports*. 2018; 4:189-200.
6. Abunimye DA, Okafor IM, Okorowo H, Obeagu EI. The role of GATA family transcriptional factors in haematological malignancies: A review. *Medicine*. 2024;103(12):e37487.
7. Obeagu EI, Okoroiwu IL, Azuonwu O. An update on hypoxic regulation of iron homeostasis and bone marrow environment. *Int. J. Curr. Res. Med. Sci*. 2018;4(10):42-8.

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8. Obeagu EI, Okoroiwu IL, Obeagu G. Molecular mechanism and systemic response of erythropoietin: A Review. *Int. J. Adv. Res. Biol. Sci.* 2015;2(7):58-62.
9. Ifeanyi OE. Acute Leukaemia: A Sudden Killer to Human Beings. *EC Emergency Medicine and Critical Care.* 2020;4(6):154-67.
10. Obeagu EI, Okwuanaso CB, Edoho SH, Obeagu GU. Under-nutrition among HIV-exposed Uninfected Children: A Review of African Perspective. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):120-127.
11. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences.* 2023 ;3(1):7-12.  
<https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/91>.
12. Obeagu EI, Obeagu GU. An update on premalignant cervical lesions and cervical cancer screening services among HIV positive women. *J Pub Health Nutri.* 2023; 6 (2). 2023; 141:1-2. [links/63e538ed64252375639dd0df/An-update-on-premalignant-cervical-lesions-and-cervical-cancer-screening-services-among-HIV-positive-women.pdf](https://doi.org/10.22192/ijcrms.2017.03.01.004).
13. Ezeoru VC, Enweani IB, Ochiabuto O, Nwachukwu AC, Ogbonna US, Obeagu EI. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(4):10-19.
14. Omo-Emmanuel UK, Chinedum OK, Obeagu EI. Evaluation of laboratory logistics management information system in HIV/AIDS comprehensive health facilities in Bayelsa State, Nigeria. *Int J Curr Res Med Sci.* 2017;3(1): 21-38.DOI: [10.22192/ijcrms.2017.03.01.004](https://doi.org/10.22192/ijcrms.2017.03.01.004)
15. Obeagu EI, Obeagu GU, Musiimenta E, Bot YS, Hassan AO. Factors contributing to low utilization of HIV counseling and testing services. *Int. J. Curr. Res. Med. Sci.* 2023;9(2): 1-5.DOI: [10.22192/ijcrms.2023.09.02.001](https://doi.org/10.22192/ijcrms.2023.09.02.001)
16. Obeagu EI, Obeagu GU. An update on survival of people living with HIV in Nigeria. *J Pub Health Nutri.* 2022; 5 (6). 2022;129. [links/645b4bfcf3512f1cc5885784/An-update-on-survival-of-people-living-with-HIV-in-Nigeria.pdf](https://doi.org/10.22192/ijcrms.2023.09.02.001).
17. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(52B):10-19.
18. Obeagu EI, Ogbonna US, Nwachukwu AC, Ochiabuto O, Enweani IB, Ezeoru VC. Prevalence of Malaria with Anaemia and HIV status in women of reproductive age in Onitsha, Nigeria. *Journal of Pharmaceutical Research International.* 2021;33(4):10-19.
19. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng UE, Ikpeme M, Bassey JO, Paul AO. TB Infection Control in TB/HIV Settings in Cross River State, Nigeria: Policy Vs Practice. *Journal of Pharmaceutical Research International.* 2020;32(22):101-119.
20. Obeagu EI, Eze VU, Alaebob EA, Ochei KC. Determination of haematocrit level and iron profile study among persons living with HIV in Umuahia, Abia State, Nigeria. *J BioInnovation.* 2016; 5:464-471. [links/592bb4990f7e9b9979a975cf/DETERMINATION-OF-HAEMATOCRIT-LEVEL-AND-IRON-PROFILE-STUDY-AMONG-PERSONS-LIVING-WITH-HIV-IN-UMUAHIA-ABIA-STATE-NIGERIA.pdf](https://doi.org/10.22192/ijcrms.2023.09.02.001).

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21. Ifeanyi OE, Obeagu GU. The values of prothrombin time among HIV positive patients in FMC owerri. International Journal of Current Microbiology and Applied Sciences. 2015;4(4):911-916.  
[https://www.academia.edu/download/38320140/Obeagu\\_Emmanuel\\_Ifeanyi\\_and\\_Obeagu\\_Getrude\\_Uzoma2.EMMA1.pdf](https://www.academia.edu/download/38320140/Obeagu_Emmanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma2.EMMA1.pdf).
22. Izuchukwu IF, Ozims SJ, Agu GC, Obeagu EI, Onu I, Amah H, Nwosu DC, Nwanjo HU, Edward A, Arunsi MO. Knowledge of preventive measures and management of HIV/AIDS victims among parents in Umuna Orlu community of Imo state Nigeria. Int. J. Adv. Res. Biol. Sci. 2016;3(10): 55-65.DOI; [10.22192/ijarbs.2016.03.10.009](https://doi.org/10.22192/ijarbs.2016.03.10.009)
23. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. IOSR J Pharm Biol Sci. 2017;12(4):70-75.  
[links/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf](https://www.iosrjournals.org/IOSRjournal/2017/04/5988ab6d0f7e9b6c8539f73d/HIV-and-TB-co-infection-among-patients-who-used-Directly-Observed-Treatment-Short-course-centres-in-Yenagoa-Nigeria.pdf)
24. Oloro OH, Oke TO, Obeagu EI. Evaluation of Coagulation Profile Patients with Pulmonary Tuberculosis and Human Immunodeficiency Virus in Owo, Ondo State, Nigeria. Madonna University journal of Medicine and Health Sciences. 2022;2(3):110-119.
25. Nwosu DC, Obeagu EI, Nkwocha BC, Nwanna CA, Nwanjo HU, Amadike JN, Elendu HN, Ofoedeme CN, Ozims SJ, Nwankpa P. Change in Lipid Peroxidation Marker (MDA) and Non enzymatic Antioxidants (VIT C & E) in HIV Seropositive Children in an Urban Community of Abia State. Nigeria. J. Bio. Innov. 2016;5(1):24-30.  
[links/5ae735e9a6fdcc5b33eb8d6a/CHANGE-IN-LIPID-PEROXIDATION-MARKER-MDAAND-NON-ENZYMATIC-ANTIOXIDANTS-VIT-C-E-IN-HIV-SEROPOSITIVE-CHILDREN-IN-AN-URBAN-COMMUNITY-OF-ABIA-STATE-NIGERIA.pdf](https://www.researchgate.net/publication/311111111/links/5ae735e9a6fdcc5b33eb8d6a/CHANGE-IN-LIPID-PEROXIDATION-MARKER-MDAAND-NON-ENZYMATIC-ANTIOXIDANTS-VIT-C-E-IN-HIV-SEROPOSITIVE-CHILDREN-IN-AN-URBAN-COMMUNITY-OF-ABIA-STATE-NIGERIA.pdf).
26. Igwe CM, Obeagu IE, Ogbuabor OA. Clinical characteristics of people living with HIV/AIDS on ART in 2014 at tertiary health institutions in Enugu, Nigeria. J Pub Health Nutri. 2022; 5 (6). 2022;130. [links/645a166f5762c95ac3817d32/Clinical-characteristics-of-people-living-with-HIV-AIDS-on-ART-in-2014-at-tertiary-health-institutions-in-Enugu.pdf](https://www.researchgate.net/publication/358111111/links/645a166f5762c95ac3817d32/Clinical-characteristics-of-people-living-with-HIV-AIDS-on-ART-in-2014-at-tertiary-health-institutions-in-Enugu.pdf).
27. Ifeanyi OE, Obeagu GU, Ijeoma FO, Chioma UI. The values of activated partial thromboplastin time (APTT) among HIV positive patients in FMC Owerri. Int J Curr Res Aca Rev. 2015; 3:139-144.  
[https://www.academia.edu/download/38320159/Obeagu\\_Emmanuel\\_Ifeanyi3\\_et\\_al.IJCRRAR.pdf](https://www.academia.edu/download/38320159/Obeagu_Emmanuel_Ifeanyi3_et_al.IJCRRAR.pdf).
28. Obiomah CF, Obeagu EI, Ochei KC, Swem CA, Amachukwu BO. Hematological indices o HIV seropositive subjects in Nnamdi Azikiwe University teaching hospital (NAUTH), Nnewi. Ann Clin Lab Res. 2018;6(1):1-4.  
[links/5aa2bb17a6fdccd544b7526e/Haematological-Indices-of-HIV-Seropositive-Subjects-at-Nnamdi-Azikiwe.pdf](https://www.researchgate.net/publication/328111111/links/5aa2bb17a6fdccd544b7526e/Haematological-Indices-of-HIV-Seropositive-Subjects-at-Nnamdi-Azikiwe.pdf)
29. Omo-Emmanuel UK, Ochei KC, Osuala EO, Obeagu EI, Onwuasoanya UF. Impact of prevention of mother to child transmission (PMTCT) of HIV on positivity rate in

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. Elite Journal of Immunology, 2024; 2(4): 54-72

- Kafanchan, Nigeria. *Int. J. Curr. Res. Med. Sci.* 2017;3(2): 28-34.DOI: [10.22192/ijcrms.2017.03.02.005](https://doi.org/10.22192/ijcrms.2017.03.02.005)
30. Aizaz M, Abbas FA, Abbas A, Tabassum S, Obeagu EI. Alarming rise in HIV cases in Pakistan: Challenges and future recommendations at hand. *Health Science Reports.* 2023;6(8):e1450.
  31. Obeagu EI, Amekpor F, Scott GY. An update of human immunodeficiency virus infection: Bleeding disorders. *J Pub Health Nutri.* 2023; 6 (1). 2023;139. [links/645b4a6c2edb8e5f094d9bd9/An-update-of-human-immunodeficiency-virus-infection-Bleeding.pdf](https://doi.org/10.22192/ijcrms.2017.03.02.005).
  32. Obeagu EI, Scott GY, Amekpor F, Ofodile AC, Edoho SH, Ahamefula C. Prevention of New Cases of Human Immunodeficiency Virus: Pragmatic Approaches of Saving Life in Developing Countries. *Madonna University journal of Medicine and Health Sciences.* 2022;2(3):128-134. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/86>.
  33. Walter O, Anaebo QB, Obeagu EI, Okoroiwu IL. Evaluation of Activated Partial Thromboplastin Time and Prothrombin Time in HIV and TB Patients in Owerri Metropolis. *Journal of Pharmaceutical Research International.* 2022;29-34.
  34. Odo M, Ochei KC, Obeagu EI, Barinaadaa A, Eteng EU, Ikpeme M, Bassey JO, Paul AO. Cascade variabilities in TB case finding among people living with HIV and the use of IPT: assessment in three levels of care in cross River State, Nigeria. *Journal of Pharmaceutical Research International.* 2020;32(24):9-18.
  35. Jakheng SP, Obeagu EI. Seroprevalence of human immunodeficiency virus based on demographic and risk factors among pregnant women attending clinics in Zaria Metropolis, Nigeria. *J Pub Health Nutri.* 2022; 5 (8). 2022;137. [links/6317a6b1acd814437f0ad268/Seroprevalence-of-human-immunodeficiency-virus-based-on-demographic-and-risk-factors-among-pregnant-women-attending-clinics-in-Zaria-Metropolis-Nigeria.pdf](https://doi.org/10.22192/ijcrms.2017.03.02.005).
  36. Obeagu EI, Obeagu GU. A Review of knowledge, attitudes and socio-demographic factors associated with non-adherence to antiretroviral therapy among people living with HIV/AIDS. *Int. J. Adv. Res. Biol. Sci.* 2023;10(9):135-142.DOI: [10.22192/ijarbs.2023.10.09.015](https://doi.org/10.22192/ijarbs.2023.10.09.015) [links/6516faa61e2386049de5e828/A-Review-of-knowledge-attitudes-and-socio-demographic-factors-associated-with-non-adherence-to-antiretroviral-therapy-among-people-living-with-HIV-AIDS.pdf](https://doi.org/10.22192/ijarbs.2023.10.09.015)
  37. Obeagu EI, Onuoha EC. Tuberculosis among HIV Patients: A review of Prevalence and Associated Factors. *Int. J. Adv. Res. Biol. Sci.* 2023;10(9):128-134.DOI: [10.22192/ijarbs.2023.10.09.014](https://doi.org/10.22192/ijarbs.2023.10.09.014) [links/6516f938b0df2f20a2f8b0e0/Tuberculosis-among-HIV-Patients-A-review-of-Prevalence-and-Associated-Factors.pdf](https://doi.org/10.22192/ijarbs.2023.10.09.014).
  38. Obeagu EI, Ibeh NC, Nwobodo HA, Ochei KC, Iwegbulam CP. Haematological indices of malaria patients coinfectd with HIV in Umuahia. *Int. J. Curr. Res. Med. Sci.* 2017;3(5):100-104.DOI: [10.22192/ijcrms.2017.03.05.014](https://doi.org/10.22192/ijcrms.2017.03.05.014) [https://www.academia.edu/download/54317126/Haematological\\_indices\\_of\\_malaria\\_patients\\_coinfectd\\_with\\_HIV.pdf](https://www.academia.edu/download/54317126/Haematological_indices_of_malaria_patients_coinfectd_with_HIV.pdf)

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72



39. Jakheng SP, Obeagu EI, Abdullahi IO, Jakheng EW, Chukwueze CM, Eze GC, Essien UC, Madekwe CC, Madekwe CC, Vidya S, Kumar S. Distribution Rate of Chlamydial Infection According to Demographic Factors among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. *South Asian Journal of Research in Microbiology*. 2022;13(2):26-31.
40. Okorie HM, Obeagu Emmanuel I, Okpoli Henry CH, Chukwu Stella N. Comparative study of enzyme linked immunosorbent assay (Elisa) and rapid test screening methods on HIV, Hbsag, Hcv and Syphilis among voluntary donors in. Owerri, Nigeria. *J Clin Commun Med*. 2020;2(3):180-183.DOI: **DOI:** [10.32474/JCCM.2020.02.000137links/5f344530458515b7291bd95f/Comparative-Study-of-Enzyme-Linked-Immunosorbent-Assay-ElISA-and-Rapid-Test-Screening-Methods-on-HIV-HBsAg-HCV-and-Syphilis-among-Voluntary-Donors-in-Owerri-Nigeria.pdf](https://doi.org/10.32474/JCCM.2020.02.000137links/5f344530458515b7291bd95f/Comparative-Study-of-Enzyme-Linked-Immunosorbent-Assay-ElISA-and-Rapid-Test-Screening-Methods-on-HIV-HBsAg-HCV-and-Syphilis-among-Voluntary-Donors-in-Owerri-Nigeria.pdf).
41. Ezugwu UM, Onyenekwe CC, Ukibe NR, Ahaneku JE, Onah CE, Obeagu EI, Emeje PI, Awalu JC, Igbokwe GE. Use of ATP, GTP, ADP and AMP as an Index of Energy Utilization and Storage in HIV Infected Individuals at NAUTH, Nigeria: A Longitudinal, Prospective, Case-Controlled Study. *Journal of Pharmaceutical Research International*. 2021;33(47A):78-84.
42. Emmanuel G, Martin O, Peter OS, Obeagu EI, Daniel K. Factors Influencing Early Neonatal Adverse Outcomes among Women with HIV with Post Dated Pregnancies Delivering at Kampala International University Teaching Hospital, Uganda. *Asian Journal of Pregnancy and Childbirth*. 2023 Jul 29;6(1):203-211. <http://research.sdpublishers.net/id/eprint/2819/>.
43. Igwe MC, Obeagu EI, Ogbuabor AO, Eze GC, Ikpenwa JN, Eze-Stephen PE. Socio-Demographic Variables of People Living with HIV/AIDS Initiated on ART in 2014 at Tertiary Health Institution in Enugu State. *Asian Journal of Research in Infectious Diseases*. 2022;10(4):1-7.
44. Vincent CC, Obeagu EI, Agu IS, Ukeagu NC, Onyekachi-Chigbu AC. Adherence to Antiretroviral Therapy among HIV/AIDS in Federal Medical Centre, Owerri. *Journal of Pharmaceutical Research International*. 2021;33(57A):360-368.
45. Igwe MC, Obeagu EI, Ogbuabor AO. Analysis of the Factors and Predictors of Adherence to Healthcare of People Living With Hiv/Aids In Tertiary Health Institutions In Enugu State. *Madonna University Journal of Medicine and Health Sciences*. 2022;2(3):42-57. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/75>.
46. Madekwe CC, Madekwe CC, Obeagu EI. Inequality of monitoring in Human Immunodeficiency Virus, Tuberculosis and Malaria: A Review. *Madonna University journal of Medicine and Health Sciences*. 2022;2(3):6-15. <https://madonnauniversity.edu.ng/journals/index.php/medicine/article/view/69>
47. Echendu GE, Vincent CC, Ibebuikwe J, Asodike M, Naze N, Chinedu EP, Ohale B, Obeagu EI. WEIGHTS OF INFANTS BORN TO HIV INFECTED MOTHERS: A PROSPECTIVE COHORT STUDY IN FEDERAL MEDICAL CENTRE, OWERRI, IMO STATE. *European Journal of Pharmaceutical and Medical Research*, 2023; 10(8): 564-568
48. Nwosu DC, Nwanjo HU, Okolie NJ, Ikeh K, Ajero CM, Dike J, Ojiegbe GC, Oze GO, Obeagu EI, Nnatunanya I, Azuonwu O. BIOCHEMICAL ALTERATIONS IN ADULT

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

- HIV PATIENTS ON ANTIRETROVIRAL THERAPY. World Journal of Pharmacy and Pharmaceutical Sciences, 2015; 4(3): 153-160.  
[links/5a4fd0500f7e9bbc10526b38/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY.pdf](https://www.wjpps.com/links/5a4fd0500f7e9bbc10526b38/BIOCHEMICAL-ALTERATIONS-IN-ADULT-HIV-PATIENTS-ON-ANTIRETROVIRAL-THERAPY.pdf).
49. Obeagu EI, Obeagu GU. Effect of CD4 Counts on Coagulation Parameters among HIV Positive Patients in Federal Medical Centre, Owerri, Nigeria. Int. J. Curr. Res. Biosci. Plant Biol. 2015;2(4):45-49.
  50. Lionberger JM, Stirewalt DL. Gene expression changes in normal haematopoietic cells. Best Practice & Research Clinical Haematology. 2009;22(2):249-269.
  51. Obeagu EI, Nwosu DC. Adverse drug reactions in HIV/AIDS patients on highly active antiretro viral therapy: a review of prevalence. Int. J. Curr. Res. Chem. Pharm. Sci. 2019;6(12):45-8.DOI: [10.22192/ijcrps.2019.06.12.004](https://doi.org/10.22192/ijcrps.2019.06.12.004)  
[links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf](https://www.ijcrps.com/links/650aba1582f01628f0335795/Adverse-drug-reactions-in-HIV-AIDS-patients-on-highly-active-antiretro-viral-therapy-a-review-of-prevalence.pdf).
  52. Obeagu EI, Scott GY, Amekpor F, Obeagu GU. Implications of CD4/CD8 ratios in Human Immunodeficiency Virus infections. Int. J. Curr. Res. Med. Sci. 2023;9(2):6-13.DOI: [10.22192/ijcrms.2023.09.02.002](https://doi.org/10.22192/ijcrms.2023.09.02.002) [links/645a4a462edb8e5f094ad37c/Implications-of-CD4-CD8-ratios-in-Human-Immunodeficiency-Virus-infections.pdf](https://www.ijcrms.com/links/645a4a462edb8e5f094ad37c/Implications-of-CD4-CD8-ratios-in-Human-Immunodeficiency-Virus-infections.pdf).
  53. Obeagu EI, Ochei KC, Okeke EI, Anode AC. Assessment of the level of haemoglobin and erythropoietin in persons living with HIV in Umuahia. Int. J. Curr. Res. Med. Sci. 2016;2(4):29-33. [links/5711c47508aeebe07c02496b/Assessment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf](https://www.ijcrms.com/links/5711c47508aeebe07c02496b/Assessment-of-the-level-of-haemoglobin-and-erythropoietin-in-persons-living-with-HIV-in-Umuahia.pdf).
  54. Ifeanyi OE, Obeagu GU. The Values of CD4 Count, among HIV Positive Patients in FMC Owerri. Int. J. Curr. Microbiol. App. Sci. 2015;4(4):906-910.  
[https://www.academia.edu/download/38320134/Obeagu\\_Emanuel\\_Ifeanyi\\_and\\_Obeagu\\_Getrude\\_Uzoma.EMMA2.pdf](https://www.academia.edu/download/38320134/Obeagu_Emanuel_Ifeanyi_and_Obeagu_Getrude_Uzoma.EMMA2.pdf).
  55. Obeagu EI, Okeke EI, Anonde Andrew C. Evaluation of haemoglobin and iron profile study among persons living with HIV in Umuahia, Abia state, Nigeria. Int. J. Curr. Res. Biol. Med. 2016;1(2):1-5.
  56. Ibebuike JE, Nwokike GI, Nwosu DC, Obeagu EI. A Retrospective Study on Human Immune Deficiency Virus among Pregnant Women Attending Antenatal Clinic in Imo State University Teaching Hospital. *International Journal of Medical Science and Dental Research*, 2018; 1 (2):08-14.  
<https://www.ijmsdr.org/published%20paper/li1i2/A%20Retrospective%20Study%20on%20Human%20Immune%20Deficiency%20Virus%20among%20Pregnant%20Women%20Attending%20Antenatal%20Clinic%20in%20Imo%20State%20University%20Teaching%20Hospital.pdf>.
  57. Obeagu EI, Obarezi TN, Omeh YN, Okoro NK, Eze OB. Assessment of some haematological and biochemical parametrs in HIV patients before receiving treatment in Aba, Abia State, Nigeria. Res J Pharma Biol Chem Sci. 2014; 5:825-830.
  58. Obeagu EI, Obarezi TN, Ogbuabor BN, Anaebio QB, Eze GC. Pattern of total white blood cell and differential count values in HIV positive patients receiving treatment in Federal

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. Elite Journal of Immunology, 2024; 2(4): 54-72

- Teaching Hospital Abakaliki, Ebonyi State, Nigeria. *International Journal of Life Science, Biotechnology and Pharama Research*. 2014; 391:186-189.
59. Obeagu EI. A Review of Challenges and Coping Strategies Faced by HIV/AIDS Discordant Couples. *Madonna University journal of Medicine and Health Sciences*. 2023; 3 (1): 7-12.
  60. Oloro OH, Obeagu EI. A Systematic Review on Some Coagulation Profile in HIV Infection. *International Journal of Innovative and Applied Research*. 2022;10(5):1-11.
  61. Alvarez F, Fritz JH, Piccirillo CA. Pleiotropic effects of IL-33 on CD4+ T cell differentiation and effector functions. *Frontiers in immunology*. 2019; 10:438556.
  62. Chirumbolo S, Bjørklund G, Sboarina A, Vella A. The role of basophils as innate immune regulatory cells in allergy and immunotherapy. *Human vaccines & immunotherapeutics*. 2018;14(4):815-831.
  63. Nwosu DC, Obeagu EI, Nkwuocha BC, Nwanna CA, Nwanjo HU, Amadike JN, Ezemma MC, Okpomeshine EA, Ozims SJ, Agu GC. Alterations in superoxide dismutase, vitamins C and E in HIV infected children in Umuahia, Abia state. *International Journal of Advanced Research in Biological Sciences*. 2015;2(11):268-271.
  64. Ifeanyi OE, Uzoma OG, Stella EI, Chinedum OK, Abum SC. Vitamin D and insulin resistance in HIV sero positive individuals in Umudike. *Int. J. Curr. Res. Med. Sci*. 2018;4(2):104-108.
  65. Ifeanyi OE, Leticia OI, Nwosu D, Chinedum OK. A Review on blood borne viral infections: universal precautions. *Int. J. Adv. Res. Biol. Sci*. 2018;5(6):60-66.
  66. Nwovu AI, Ifeanyi OE, Uzoma OG, Nwebonyi NS. Occurrence of Some Blood Borne Viral Infection and Adherence to Universal Precautions among Laboratory Staff in Federal Teaching Hospital Abakaliki Ebonyi State. *Arch Blood Transfus Disord*. 2018;1(2).
  67. Chinedu K, Takim AE, Obeagu EI, Chinazor UD, Eloghosa O, Ojong OE, Odunze U. HIV and TB co-infection among patients who used Directly Observed Treatment Short-course centres in Yenagoa, Nigeria. *IOSR J Pharm Biol Sci*. 2017;12(4):70-75.
  68. Offie DC, Obeagu EI, Akueshi C, Njab JE, Ekanem EE, Dike PN, Oguh DN. Facilitators and barriers to retention in HIV care among HIV infected MSM attending Community Health Center Yaba, Lagos Nigeria. *Journal of Pharmaceutical Research International*. 2021;33(52B):10-19.
  69. Obeagu EI, Obeagu GU, Ede MO, Odo EO, Buhari HA. Translation of HIV/AIDS knowledge into behavior change among secondary school adolescents in Uganda: A review. *Medicine (Baltimore)*. 2023;102(49): e36599. doi: 10.1097/MD.00000000000036599. PMID: 38065920; PMCID: PMC10713174.
  70. Anyiam AF, Arinze-Anyiam OC, Ironi EA, Obeagu EI. Distribution of ABO and rhesus blood grouping with HIV infection among blood donors in Ekiti State Nigeria. *Medicine (Baltimore)*. 2023;102(47): e36342. doi: 10.1097/MD.00000000000036342. PMID: 38013335; PMCID: PMC10681551.
  71. Echefu SN, Udosen JE, Akwiwu EC, Akpotuzor JO, Obeagu EI. Effect of Dolutegravir regimen against other regimens on some hematological parameters, CD4 count and viral load of people living with HIV infection in South Eastern Nigeria. *Medicine (Baltimore)*.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

- 2023;102(47): e35910. doi: 10.1097/MD.00000000000035910. PMID: 38013350; PMCID: PMC10681510.
72. Opeyemi AA, Obeagu EI. Regulations of malaria in children with human immunodeficiency virus infection: A review. *Medicine (Baltimore)*. 2023;102(46): e36166. doi: 10.1097/MD.00000000000036166. PMID: 37986340; PMCID: PMC10659731.
  73. Obeagu EI, Obeagu GU, Obiezu J, Ezeonwumelu C, Ogunnaya FU, Ngwoke AO, Emeka-Obi OR,
  74. Obeagu EI, Ubosi NI, Uzoma G. Storms and Struggles: Managing HIV Amid Natural Disasters. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2023;10(11):14-25.
  75. Obeagu EI, Obeagu GU. Human Immunodeficiency Virus and tuberculosis infection: A review of prevalence of associated factors. *Int. J. Adv. Multidiscip. Res.* 2023;10(10):56-62.
  76. Obeagu EI, Obeagu GU. Unmasking the Truth: Addressing Stigma in the Fight Against HIV. *Elite Journal of Public Health*. 2024;2(1):8-22.
  77. Obeagu EI, Obeagu GU, Okwuanaso CB. Optimizing Immune Health in HIV Patients through Nutrition: A Review. *Elite Journal of Immunology*. 2024;2(1):14-33.
  78. Obeagu EI, Obeagu GU. Utilization of immunological ratios in HIV: Implications for monitoring and therapeutic strategies. *Medicine*. 2024;103(9): e37354.
  79. Obeagu EI, Obeagu GU. CD8 Dynamics in HIV Infection: A Synoptic Review. *Elite Journal of Immunology*. 2024;2(1):1-3.
  80. Obeagu EI, Obeagu GU. Implications of B Lymphocyte Dysfunction in HIV/AIDS. *Elite Journal of Immunology*. 2024;2(1):34-46.
  81. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):46-58.
  82. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. *Elite Journal of Medicine*. 2024;2(1):35-46.
  83. Obeagu EI, Obeagu GU. Platelet-Driven Modulation of HIV: Unraveling Interactions and Implications. *Journal home page: <http://www.journalijar.com>;*12(01).
  84. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. *Elite Journal of HIV*. 2024;2(1):65-78.
  85. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. *Journal home page: <http://www.journalijar.com>;*12(01).
  86. ObeaguEI AA, Obeagu GU. Synergistic Effects of Blood Transfusion and HIV in Children Under 5 Years with Severe Malaria: A Review. *Elite Journal of HIV*. 2024;2(1):31-50.
  87. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. *Elite Journal of HIV*. 2024;2(1):1-5.
  88. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci.* 2024;10(1):25-36.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

89. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. *Sciences*. 2024;4(1):32-7.
90. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. *Sciences*. 2024;4(1):38-44.
91. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. *Elite Journal of Health Science*. 2024;2(1):33-42.
92. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. *Elite Journal of Haematology*. 2024;2(1):26-41.
93. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. *Elite Journal of Medicine*. 2024;2(2):104-15.
94. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. *Elite Journal of Immunology*. 2024;2(1):47-64.
95. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. *Elite Journal of HIV*. 2024;2(2):1-7.
96. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. *Elite Journal of Public Health*. 2024;2(1):52-61.
97. Obeagu EI, Obeagu GU. Understanding Hematocrit Fluctuations in HIV-Malaria Coinfection for Improved Management. *Elite Journal of Public Health*. 2024;2(1):22-34.
98. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(1):21-31.
99. Obeagu EI, Obeagu GU. Platelet Distribution Width (PDW) as a Prognostic Marker for Anemia Severity in HIV Patients: A Comprehensive Review. *Journal home page*: [http://www.journalijiar.com](http://www.journalijiar.com;).;12(01).
100. Obeagu EI, Obeagu GU. Neonatal Outcomes in Children Born to Mothers with Severe Malaria, HIV, and Transfusion History: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(3):38-58.
101. Obeagu EI, Obeagu GU. Assessing Platelet Functionality in HIV Patients Receiving Antiretroviral Therapy: Implications for Risk Assessment. *Elite Journal of HIV*. 2024;2(3):14-26.
102. Obeagu EI, Obeagu GU. Advancements in HIV Prevention: Africa's Trailblazing Initiatives and Breakthroughs. *Elite Journal of Public Health*. 2024;2(1):52-63.
103. Obeagu EI, Obeagu GU. Maternal Influence on Infant Immunological Responses to HIV: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):46-58.
104. Obeagu EI, Obeagu GU. Counting Cells, Shaping Fates: CD4/CD8 Ratios in HIV. *Elite Journal of Scientific Research and Review*. 2024;2(1):37-50.
105. Obeagu EI, Anyiam AF, Obeagu GU. Managing Hematological Complications in HIV: Erythropoietin Considerations. *Elite Journal of HIV*. 2024;2(1):65-78.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72



106. Obeagu EI, Obeagu GU. Immune Modulation in HIV-Positive Neonates: Insights and Implications for Clinical Management. *Elite Journal of Nursing and Health Science*. 2024;2(3):59-72.
107. Obeagu EI, Ayogu EE, Obeagu GU. Impact on Viral Load Dynamics: Understanding the Interplay between Blood Transfusion and Antiretroviral Therapy in HIV Management. *Elite Journal of Nursing and Health Science*. 2024;2(2):5-15.
108. Obeagu EI, Obeagu GU. Understanding B Lymphocyte Functions in HIV Infection: Implications for Immune Dysfunction and Therapeutic Strategies. *Elite Journal of Medicine*. 2024;2(1):35-46.
109. Obeagu EI, Anyanwu CN, Obeagu GU. Challenges and Considerations in Managing Blood Transfusion for Individuals with HIV. *Elite Journal of HIV*. 2024;2(2):1-7.
110. Obeagu EI, Obeagu GU. Understanding ART and Platelet Functionality: Implications for HIV Patients. *Elite Journal of HIV*. 2024;2(2):60-73.
111. Obeagu EI, Obeagu GU. The Role of Blood Transfusion Strategies in HIV Management: Current Insights and Future Directions. *Elite Journal of Medicine*. 2024;2(1):10-22.
112. Obeagu EI, AmaezeAA O, Obeagu GU. B Cell Deficiency and Implications in HIV Pathogenesis: Unraveling the Complex Interplay. *Elite Journal of Nursing and Health Science*. 2024;2(2):33-46.
113. Obeagu EI, Obeagu GU. Eosinophil Dynamics in Pregnancy among Women Living with HIV: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci*. 2024;10(1):11-24.
114. Obeagu EI, Obeagu GU. Hematocrit Fluctuations in HIV Patients Co-infected with Malaria Parasites: A Comprehensive Review. *Int. J. Curr. Res. Med. Sci*. 2024;10(1):25-36.
115. Obeagu EI, Obeagu GU. Unveiling the Role of Innate Immune Activation in Pediatric HIV: A Review. *Elite Journal of Immunology*. 2024;2(3):33-44.
116. Obeagu EI, Obeagu GU. Harnessing B Cell Responses for Personalized Approaches in HIV Management. *Elite Journal of Immunology*. 2024;2(2):15-28.
117. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Neutrophil Dynamics: Unveiling Their Role in HIV Progression within Malaria Patients. *Journal home page: <http://www.journalijar.com>;12(01)*.
118. Obeagu EI, Obeagu GU, Hauwa BA, Umar AI. Hematocrit Variations in HIV Patients Co-infected with Malaria: A Comprehensive Review. *Journal home page: <http://www.journalijar.com>;12(01)*.
119. Obeagu EI, Igwe MC, Obeagu GU. The Power of Unity: Collective Efforts in Confronting HIV Stigma. *Elite Journal of Public Health*. 2024;2(3):22-36.
120. Obeagu EI, Anyiam AF, Obeagu GU. Managing Anemia in HIV through Blood Transfusions: Clinical Considerations and Innovations. *Elite Journal of HIV*. 2024;2(1):16-30.
121. Obeagu EI, Obeagu GU. Maternal Eosinophilic Responses in HIV-Positive Pregnant Women: Unraveling Immunological Dynamics for Improved Maternal-Fetal Health. *Elite Journal of Immunology*. 2024;2(1):47-64.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

122. Obeagu EI, Obeagu GU. Platelet Aberrations in HIV Patients: Assessing Impacts of ART. *Elite Journal of Haematology*, 2024; 2 (3):10-24.
123. Obeagu EI, Obeagu GU. Hematological Changes Following Blood Transfusion in Young Children with Severe Malaria and HIV: A Critical Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):33-45.
124. Obeagu EI, Anyiam AF, Obeagu GU. Erythropoietin Therapy in HIV-Infected Individuals: A Critical Review. *Elite Journal of HIV*. 2024;2(1):51-64.
125. Obeagu EI, Ubosi NI, Obeagu GU, Obeagu AA. Nutritional Strategies for Enhancing Immune Resilience in HIV: A Review. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024;11(2):41-51.
126. Obeagu EI, Obeagu GU. The Crucial Role of Erythropoietin in Managing Anemia in HIV: A Review. *Elite Journal of Scientific Research and Review*. 2024;2(1):24-36.
127. Obeagu EI, Obeagu GU. Impact of Maternal Eosinophils on Neonatal Immunity in HIV-Exposed Infants: A Review. *Elite Journal of Immunology*. 2024;2(3):1-8.
128. Obeagu EI, Anyiam AF, Obeagu GU. Unveiling B Cell Mediated Immunity in HIV Infection: Insights, Challenges, and Potential Therapeutic Avenues. *Elite Journal of HIV*. 2024;2(1):1-5.
129. Obeagu EI, Obeagu GU. Anemia and Erythropoietin: Key Players in HIV Disease Progression. *Elite Journal of Haematology*, 2024; 2 (3):42-57.
130. Obeagu EI, Obeagu GU. Platelet Dysfunction in HIV Patients: Assessing ART Risks. *Elite Journal of Scientific Research and Review*. 2024;2(1):1-6.
131. Obeagu EI, Ubosi NI, Obeagu GU, Akram M. Early Infant Diagnosis: Key to Breaking the Chain of HIV Transmission. *Elite Journal of Public Health*. 2024;2(1):52-61.
132. Obeagu EI, Obeagu GU. Transfusion Therapy in HIV: Risk Mitigation and Benefits for Improved Patient Outcomes. *Sciences*. 2024;4(1):32-7.
133. Obeagu EI, Obeagu GU. P-Selectin and Immune Activation in HIV: Clinical Implications. *Elite Journal of Health Science*. 2024;2(2):16-29.
134. Obeagu EI, Obeagu GU. Mental Health and Psychosocial Effects of natural disaster on HIV Patients. *Sciences*. 2024;4(1):38-44.
135. Obeagu EI, Obeagu GU. Optimizing Blood Transfusion Protocols for Breast Cancer Patients Living with HIV: A Comprehensive Review. *Elite Journal of Nursing and Health Science*. 2024;2(2):1-7.
136. Obeagu EI, Obeagu GU. Advances in Understanding the Impact of Blood Transfusion on Anemia Resolution in HIV-Positive Children with Severe Malaria: A Comprehensive Review. *Elite Journal of Haematology*. 2024;2(1):26-41.
137. Obeagu EI, Obeagu GU. Transfusion-Related Complications in Children Under 5 with Coexisting HIV and Severe Malaria: A Review. *Int. J. Curr. Res. Chem. Pharm. Sci.* 2024;11(2):9-19.
138. Obeagu EI, Obeagu GU. Impact of Blood Transfusion on Viral Load Dynamics in HIV-Positive Neonates with Severe Malaria: A Review. *Elite Journal of Scientific Research and Review*. 2024;2(1):42-60.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

139. Obeagu EI, Ayogu EE, Obeagu GU. Interactions between Blood Transfusion and Antiretroviral Medications: Implications for Patient Care. *Elite Journal of Medicine*. 2024;2(2):104-5.
140. Obeagu EI, Obeagu GU, Odo EO, Igwe MC, Ugwu OP, Alum EU, Racheal P. Combatting Stigma: Essential Steps in Halting HIV Spread. *IAA Journal of Applied Sciences*. 2024;11(1):22-9.
141. Obeagu EI, Obeagu GU. P-Selectin Expression in HIV-Associated Coagulopathy: Implications for Treatment. *Elite Journal of Haematology*, 2024; 2 (3):25-41.
142. Obeagu EI, Obeagu GU. Eosinophil-Associated Changes in Neonatal Thymic T Regulatory Cell Populations in HIV-Infected Pregnancies. *Elite Journal of Health Science*. 2024;2(1):33-42.
143. Obeagu EI, Obeagu GU. Exploring the Role of L-selectin in HIV-related Immune Exhaustion: Insights and Therapeutic Implications. *Elite Journal of HIV*. 2024;2(2):43-59.
144. Obeagu EI. Erythropoietin and the Immune System: Relevance in HIV Management. *Elite Journal of Health Science*. 2024;2(3):23-35.
145. Obeagu EI, Obeagu GU. The Impact of Erythropoietin on Preeclampsia in HIV-Positive Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(1):21-31.
146. Obeagu EI, Obeagu GU. Unraveling the Role of Eosinophil Extracellular Traps (EETs) in HIV-Infected Pregnant Women: A Review. *Elite Journal of Nursing and Health Science*. 2024;2(3):84-99.
147. Obeagu EI, Obeagu GU. Hematologic Considerations in Breast Cancer Patients with HIV: Insights into Blood Transfusion Strategies. *Elite Journal of Health Science*. 2024;2(2):20-35.
148. Obeagu EI, Obeagu GU. L-selectin and HIV-Induced Immune Cell Trafficking: Implications for Pathogenesis and Therapeutic Strategies. *Elite Journal of Laboratory Medicine*. 2024;2(2):30-46.
149. Obeagu EI, Obeagu GU. The Intricate Relationship Between Erythropoietin and HIV-Induced Anemia: Unraveling Pathways for Therapeutic Insights. *Int. J. Curr. Res. Chem. Pharm. Sci*. 2024;11(2):30-40.
150. Obeagu EI, Obeagu GU. The Role of L-selectin in Tuberculosis and HIV Coinfection: Implications for Disease Diagnosis and Management. *Elite Journal of Public Health*. 2024;2(1):35-51.
151. Kalu OA, Ukibe NR, Onyenekwe CC, Okoyeagu RC, Nnaemeka WS, Onyenekwe AJ, Ukibe EG, Ukibe BC, Ukibe VE, Obeagu EI. Assessment of Serum Cystatin C, Microalbumin Levels and Egfr in HIV Seropositive Individuals based on Age and Gender in NAUTH, Nnewi, Nigeria. *Elite Journal of Medicine*. 2024;2(3):48-59.
152. Obeagu EI, Obeagu GU. Understanding Immune Cell Trafficking in Tuberculosis-HIV Coinfection: The Role of L-selectin Pathways. *Elite Journal of Immunology*. 2024;2(2):43-59.
153. Obeagu EI, Obeagu GU. Eosinophilic Changes in Placental Tissues of HIV-Positive Pregnant Women: A Review. *Elite Journal of Laboratory Medicine*. 2024;2(1):14-32.

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

154. Obeagu EI, Obeagu GU. P-Selectin and Platelet Activation in HIV: Implications for Antiviral Therapy. *Elite Journal of Scientific Research and Review*. 2024;2(1):17-41.
155. Obeagu EI, Obeagu GU. Strength in Unity: Building Support Networks for HIV Patients in Uganda. *Elite Journal of Medicine*. 2024;2(1):1-6.
156. Obeagu EI, GU EE. Understanding the Intersection of Highly Active Antiretroviral Therapy and Platelets in HIV Patients: A Review. *Elite Journal of Haematology*, 2024; 2(3):111-7.
157. Obeagu EI, Obeagu GU. Anemia in HIV: The Role of Erythropoietin in Disease Progression. *Elite Journal of Haematology*, 2024; 2(4): 51-67
158. Obeagu EI, Obeagu GU. **ART and Platelet Dynamics: Assessing Implications for HIV Patient Care.** *Elite Journal of Haematology*, 2024; 2(4): 68-85
159. Obeagu EI, Obeagu GU. Impact of Breastfeeding on Infant Immune Responses in the Context of HIV. *Elite Journal of Nursing and Health Science*, 2024; 2(4):23-39
160. Obeagu EI, Obeagu GU. HIV-Induced Immune Exhaustion in Neonates: A Review of Mechanisms and Implications. *Elite Journal of Immunology*, 2024; 2(3): 45-61
161. Obeagu EI, Obeagu GU. Immunodeficiency and Immune Reconstitution in Pediatric HIV: Mechanisms, Challenges, and Therapeutic Strategies. *Elite Journal of Immunology*, 2024; 2(3): 62-79
162. Obeagu EI, Obeagu GU. Hematological Consequences of Erythropoietin in HIV: Clinical Implications. *Elite Journal of Haematology*, 2024; 2(4): 86-104
163. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Dysfunction in HIV-Related Hematological Malignancies: A Review. *Elite Journal of Haematology*, 2024; 2(4): 105-122
164. Obeagu EI, Obeagu GU. Exploration of Intricate Relationship between GATA-1 and Anemia in HIV. *Elite Journal of Haematology*, 2024; 2(4): 123-140
165. Obeagu EI, Obeagu GU. GATA-1 and Immune Dysregulation in HIV/AIDS: Implications for Therapy. *Elite Journal of HIV*, 2024; 2(3): 69-85
166. Obeagu EI, Obeagu GU. The Role of GATA-1 in Erythropoietin Response and Resistance in HIV/AIDS. *Elite Journal of HIV*, 2024; 2(4): 1-17
167. Obeagu EI, Obeagu GU. Understanding the Role of GATA-1 in T-Cell Development in the Context of HIV Infection. *Elite Journal of HIV*, 2024; 2(4): 18-34
168. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) Pathway Modulation in HIV/AIDS: From Bench to Bedside. *Elite Journal of HIV*, 2024; 2(4): 35-53
169. Obeagu EI, Obeagu GU. Programmed Cell Death Protein 1 (PD-1) and Immune Checkpoint Inhibitors in HIV-Related Lymphomas: Current Insights and Future Directions. *Elite Journal of Immunology*, 2024; 2(4): 1-17
170. Obeagu EI, Obeagu, GU. Programmed Cell Death Protein 1 (PD-1) Signaling in HIV-Associated Cardiovascular Disease: Mechanisms and Therapeutic Implications. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 61-77
171. Obeagu EI, Obeagu, GU. Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Blockade and HIV-Associated Kaposi Sarcoma: A Promising Therapeutic Strategy. *Elite Journal of Scientific Research and Review*, 2024; 2(1): 78-94

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72

172. Obeagu EI, Obeagu GU. The Impact of Cytotoxic T-Lymphocyte-Associated Protein 4 (CTLA-4) Genetic Variations on HIV Susceptibility and Progression. *Elite Journal of Immunology*, 2024; 2(4): 18-35
173. Obeagu EI, Obeagu, GU. Antacid Use in HIV Patients: Implications for Drug Absorption, Metabolism, and Adverse Effects. *Elite Journal of Scientific Research and Review*, 2024; 2(3): 1-19
174. Obeagu EI, Obeagu GU. Erythropoietin Signaling and its Implications in HIV-Related Anemia: A Comprehensive Review. *Elite Journal of HIV*, 2024; 2(4): 54-71
175. Obeagu EI, Obeagu, GU. The Role of GATA-1 in Megakaryocyte Function and Platelet Production During HIV Infection: A Review. *Elite Journal of Scientific Research and Review*, 2024; 2(3): 20-36
176. Obeagu EI, Obeagu GU. GATA-1 and Bone Marrow Failure Syndromes in the Context of HIV Infection: A Review of Molecular Mechanisms and Therapeutic Implications. *Elite Journal of Laboratory Medicine*, 2024; 2(3): 39-56
177. Obeagu EI, Obeagu GU. GATA-1 Mutations and Their Association with HIV-Associated Hematological Disorders: A Review. *Elite Journal of Health Science*, 2024; 2(4): 7-23
178. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Maintenance in HIV: Mechanisms and Implications. *Elite Journal of Health Science*, 2024; 2(4): 24-40
179. Obeagu EI, Obeagu GU. GATA-1 Regulation of Erythroid Progenitor Cell Differentiation in HIV/AIDS: Molecular Insights and Therapeutic Implications. *Elite Journal of Haematology*, 2024; 2(4): 141-159
180. Obeagu EI, Obeagu GU. Role of GATA-1 in Megakaryopoiesis and Thrombopoiesis During HIV Infection: Molecular Insights and Therapeutic Implications. *Elite Journal of Nursing and Health Science*, 2024; 2(4):40-59
181. Obeagu EI, Obeagu GU. GATA-1 as a Modulator of Immune Responses in HIV-Infected Individuals: Implications for Disease Pathogenesis and Therapeutic Interventions. *Elite Journal of Laboratory Medicine*, 2024; 2(3): 57-74
182. Obeagu EI, Obeagu GU. GATA-1 and Inflammatory Signaling Pathways in HIV-Related Hematological Disorders: Mechanisms and Therapeutic Implications. *Elite Journal of Health Science*, 2024; 2(3):27-44
183. Obeagu EI, Obeagu GU. GATA-1 and Coagulation Cascade Regulation in HIV-Associated Hematological Complications: Mechanisms and Therapeutic Implications. *Elite Journal of Health Science*, 2024; 2(3):45-63
184. Obeagu EI, Obeagu GU. GATA-1 and HIV-Associated Myelodysplastic Syndromes: Pathogenesis and Treatment Strategies. *Elite Journal of Medicine*, 2024; 2(4): 1-18
185. Obeagu EI, Obeagu GU. GATA-1 and Hematopoietic Stem Cell Quiescence in HIV: Implications for Therapy. *Elite Journal of Medicine*, 2024; 2(4): 19-36
186. Obeagu EI, Onuoha EC, Hallie EF. GATA-1 Regulation of Coagulation Pathways in HIV-Associated Deep Venous Thrombosis: Molecular Insights and Therapeutic Implications. *Elite Journal of Haematology*, 2024; 2(4): 160-179

**Citation:** Obeagu EI, Onuoha EC, Hallie EF. Impact of L-selectin on Immune Cell Trafficking in Tuberculosis and HIV Coinfection: A Review. *Elite Journal of Immunology*, 2024; 2(4): 54-72



