REFERENCES

Angelis, K., Albert, J., Mamais, I., Magiorkinis, G., Hatzakis, A., Hamouda, O., Struck, D., Vercauteren, J., Wensing, A. M., Alexiev, I., Åsjö, B., Balotta, C., Camacho, R. J., Coughlan, S., Griskevicius, A., Grossman, Z., Horban, A., Kostrikis, L. G., Lepej, S., … Paraskevis, D. (2014). Global dispersal pattern of HIV type 1 subtype CRF01_AE: A genetic trace of human mobility related to heterosexual sexual activities centralized in Southeast Asia. Journal of Infectious Diseases, 211(11), 1735–1744. https://doi.org/10.1093/infdis/jiu666

Bruchfeld, J., Correia-Neves, M., & Kallenius, G. (2015). Tuberculosis and HIV Coinfection. *Cold Spring Harb Perspect Med.* https://doi.org/10.1101/cshperspect.a017871

Bbosa, N., Kaleebu, P., & Ssemwanga, D. (2019). HIV subtype diversity worldwide. Current Opinion in HIV and AIDS, 14(3), 153–160. https://doi.org/10.1097/coh.0000000000000534

Chang, S., Zhuang, D., Guo, W., Li, L., Zhang, W., Liu, S., Li, H., Liu, Y., Bao, Z., Han, J., Song, H., & Li, J. (2016). The Antiviral Activity of Approved and Novel Drugs against HIV-1 Mutations Evaluated under the Consideration of Dose-Response Curve Slope. *PLOS ONE*, *11*(3), e0149467. https://doi.org/10.1371/journal.pone.0149467

Chaudhuri, D., Lu, T., Jacob, B., Abraham, S., Shankar, P., Poss, M. A., Neamati, N., & Camarero, J. A. (2023). Lipidation of a bioactive cyclotide-based CXCR4 antagonist greatly improves its pharmacokinetic profile in vivo. *Journal of Controlled Release*, *359*, 26–32. https://doi.org/10.1016/j.jconrel.2023.05.026

Chen, B. (2019). Molecular Mechanism of HIV-1 Entry. *Trends in Microbiology*, *27*(10), 878–891. https://doi.org/10.1016/j.tim.2019.06.002

Chen, F., Ke, Q., Wei, W., Cui, L., & Wang, Y. (2023). Apolipoprotein E and viral infection: Risks and Mechanisms. *Molecular Therapy - Nucleic Acids*, *33*, 529–542. https://doi.org/10.1016/j.omtn.2023.07.031

Cutrell, J., Jodlowski, T., Bedimo, R. (2020). The Management of Treatment-Experienced HIV Patients (Including Virologic Failure and Switches). *The Adv Infect Dis.* https://doi.org/10.1177/2049936120901395

Diwan, B., Saxena, R., & Tiwari, A. (2013). HIV-2 and its role in conglutinated approach towards acquired immunodeficiency syndrome (AIDS) vaccine development. SpringerPlus, 2(1). https://doi.org/10.1186/2193-1801-2-7

Dean, L.S., SahBandar, I.N., & Shikuma, C. M. (2022). Identification of Implications of HIV-1 CRFAE_01 Subtype in Hawai'i. *Hawai'i Journal of Health & Social Welfare.* 81(8), 215-217.

De Clercq, E. (2019). Mozobil® (Plerixafor, AMD3100), 10 years after its approval by

the US Food and Drug Administration. Antiviral Chemistry and Chemotherapy, 27, 204020661982938. https://doi.org/10.1177/2040206619829382

Dogra, N., Jakhmola-Mani, R., Potshangbam, A. M., Buch, S., & Pande Katare, D. (2023). CXCR4 as possible druggable target linking inflammatory bowel disease and Parkinson's disease. *Metabolic Brain Disease*, *38*(3), 1079–1096. https://doi.org/10.1007/s11011-022-01155-6

Galsky, M. D., Vogelzang, N. J., Conkling, P., Raddad, E., Polzer, J., Roberson, S., Stille, J. R., Saleh, M., & Thornton, D. (2014). A Phase I Trial of LY2510924, a CXCR4 Peptide Antagonist, in Patients with Advanced Cancer. *Clinical Cancer Research*, *20*(13), 3581–3588. https://doi.org/10.1158/1078-0432.CCR-13-2686

Gandhi, R. T., Bedimo, R., Hoy, J. F., Landovitz, R. J., Smith, D. M., Eaton, E. F., Lehmann, C., Springer, S. A., Sax, P. E., Thompson, M. A., Benson, C. A., Buchbinder, S. P., Del Rio, C., Eron, J. J., Günthard, H. F., Molina, J.-M., Jacobsen, D. M., & Saag, M. S. (2023). Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults: 2022 Recommendations of the International Antiviral Society–USA Panel. *JAMA*, *329*(1), 63. https://doi.org/10.1001/jama.2022.22246

Gingras, S. N., Tang, D., Tuff, J., & McLaren, P. J. (2020). Minding the gap in HIV host genetics: Opportunities and challenges. *Human Genetics*, *139*(6–7), 865–875. https://doi.org/10.1007/s00439-020-02177-9

Grande, F., Occhiuzzi, M., Rizzuti, B., Ioele, G., De Luca, M., Tucci, P., Svicher, V., Aquaro, S., & Garofalo, A. (2019). CCR5/CXCR4 Dual Antagonism for the Improvement of HIV Infection Therapy. *Molecules*, *24*(3), 550. https://doi.org/10.3390/molecules24030550

Guo, J. L., Yan, Y., Zhang, J. F., Ji, J. M., Ge, Z. J., Ge, R., Zhang, X. F., Wang, H. H., Chen, Z. W., & Luo, J. Y. (2019). Co-receptor tropism and genetic characteristics of the V3 regions in variants of antiretroviral-naive HIV-1 infected subjects. *Epidemiology and Infection*, *147*, e181. https://doi.org/10.1017/S0950268819000700

Henrich, T. J., Hanhauser, E., Harrison, L. J., Palmer, C. D., Romero-Tejeda, M., Jost, S., Bosch, R. J., & Kuritzkes, D. R. (2016). CCR5Δ32 Heterozygosity, HIV-1 Reservoir Size, and Lymphocyte Activation in Individuals Receiving Long-term Suppressive Antiretroviral Therapy. *Journal of Infectious Diseases*, *213*(5), 766–770. https://doi.org/10.1093/infdis/jiv504

Huang, L. S. M., Snyder, E. Y., & Schooley, R. T. (2021). Strategies and Progress in CXCR4-Targeted Anti-Human Immunodeficiency Virus (HIV) Therapeutic Development. *Clinical Infectious Diseases*, *73*(5), 919–924. https://doi.org/10.1093/cid/ciab160

Indriati, D. W., Witaningrum, A. M., Yunifiar, M. Q., Khairunisa, S. Q., Ueda, S., Kotaki, T., & Kameoka, M. (2020). The Dominance of CRF01_AE and the Emergence of Drug Resistance Mutations Among Antiretroviral Therapy-

Experienced, HIV-1-infected Individuals in Medan, Indonesia. *Acta Med Indones*, *52*(4).

Johnson, V. A., Cramer, Y. S., Rosenkranz, S. L., Becker, S., Klingman, K. L., Kallungal, B., Coakley, E., Acosta, E. P., Calandra, G., Saag, M. S. (2019). Antiretroviral Activity of AMD11070 (An Orally Administered CXCR4 Inhibitor): Results of NIH/NIAID AIDS Clinical Trials Group Protocol A5210. *AIDS Research and Human Retroviruses, 35*(8). https://doi.org/10.1089/aid.2018.0256

Kementerian Kesehatan Republik Indonesia. (2021). Laporan Eksekutif Perkembangan HIV AIDS dan Penyakit Infeksi Menular Seksual (PIMS) Triwulan IV Tahun 2021. Retrieved from https://p2p.kemkes.go.id/laporan-tahunan-hiv-aids/

Kementerian Kesehatan Republik Indonesia. (2022). Laporan Tahunan HIV AIDS 2022. Retrieved from https://p2p.kemkes.go.id/laporan-tahunan-hiv-aids/

Khairunisa, S. Q., Megasari, N. L. A., Ueda, S., Budiman, W., Kotaki, T., Nasronudin, & Kameoka, M. (2020). 2018–2019 Update on the Molecular Epidemiology of HIV-1 in Indonesia. *AIDS Research and Human Retroviruses*, *36*(11), 957–963. https://doi.org/10.1089/aid.2020.0151

Khairunisa, S. Q., Megasari, N. L. A., Ueda, S., Budiman, W., Kotaki, T., Nasronudin, & Kameoka, M. (2023). Subtype Distribution and Drug Resistance Patterns Among HIV-1 Strains Prevalent in Makassar, Indonesia. *AIDS Research and Human Retroviruses, 36(3).* https://doi.org/10.1089/aid.2022.0139

Kim, K., Dauphin, A., Komurlu, S., McCauley, S. M., Yurkovetskiy, L., Carbone, C., Diehl, W. E., Strambio-De-Castillia, C., Campbell, E. M., & Luban, J. (2019). Cyclophilin A protects HIV-1 from restriction by human TRIM5α. *Nature Microbiology*, *4*(12), 2044–2051. https://doi.org/10.1038/s41564-019-0592-5

Kwok, A. J., Mentzer, A., & Knight, J. C. (2021). Host genetics and infectious disease: New tools, insights and translational opportunities. *Nature Reviews Genetics*, *22*(3), 137–153. https://doi.org/10.1038/s41576-020-00297-6

Latinovic, O. S., Reitz, M., & Heredia, A. (2018). CCR5 Inhibitors and HIV-1 Infection. *Journal of AIDS and HIV Treatment*, *1*(1), 1–5. https://doi.org/10.33696/AIDS.1.001

Lunardi, L. W., Bragatte, M. A. D. S., & Vieira, G. F. (2021). The influence of HLA/HIV genetics on the occurrence of elite controllers and a need for therapeutics geotargeting view. *The Brazilian Journal of Infectious Diseases*, *25*(5), 101619. https://doi.org/10.1016/j.bjid.2021.101619

McLaren, P. J., & Carrington, M. (2015). The impact of host genetic variation on infection with HIV-1. *Nature Immunology*, *16*(6), 577–583. https://doi.org/10.1038/ni.3147

McLaren, P. J., & Fellay, J. (2021). HIV-1 and human genetic variation. *Nature Reviews Genetics*, *22*(10), 645–657. https://doi.org/10.1038/s41576-021-00378-0

Mohamed, H., Gurrola, T., Berman, R., Collins, M., Sariyer, I. K., Nonnemacher, M. R., & Wigdahl, B. (2022). Targeting CCR5 as a Component of an HIV-1 Therapeutic Strategy. *Frontiers in Immunology*, *12*, 816515. https://doi.org/10.3389/fimmu.2021.816515

Mullan, A. (2020). Visualization of attachment and pre-fusion steps of HIV-1. Oxford Instruments. Retrieved April 12, 2023, from https://andor.oxinst.com/learning/view/article/visualization-of-attachment-and-pre-fusion-steps-of-hiv-1-using-super-resolution-and-fluorescence-fluctuation-spectroscopy-imaging

Naranbhai, V., & Carrington, M. (2017). Host genetic variation and HIV disease: From mapping to mechanism. *Immunogenetics*, *69*(8–9), 489–498.

Raulin, A.-C., Doss, S. V., Trottier, Z. A., Ikezu, T. C., Bu, G., & Liu, C.-C. (2022). ApoE in Alzheimer's disease: Pathophysiology and therapeutic strategies. *Molecular Neurodegeneration*, *17*(1), 72. https://doi.org/10.1186/s13024-022-00574-4

Selyutina, A., Persaud, M., Simons, L. M., Bulnes-Ramos, A., Buffone, C., Martinez-Lopez, A., Scoca, V., Di Nunzio, F., Hiatt, J., Marson, A., Krogan, N. J., Hultquist, J. F., & Diaz-Griffero, F. (2020). Cyclophilin A Prevents HIV-1 Restriction in Lymphocytes by Blocking Human TRIM5α Binding to the Viral Core. *Cell Reports*, *30*(11), 3766-3777.e6. https://doi.org/10.1016/j.celrep.2020.02.100

Song, J.-S., Chang, C.-C., Wu, C.-H., Dinh, T. K., Jan, J.-J., Huang, K.-W., Chou, M.-C., Shiue, T.-Y., Yeh, K.-C., Ke, Y.-Y., Yeh, T.-K., Ta, Y.-N. N., Lee, C.-J., Huang, J.-K., Sung, Y.-C., Shia, K.-S., & Chen, Y. (2021). A highly selective and potent CXCR4 antagonist for hepatocellular carcinoma treatment. *Proceedings of the National Academy of Sciences*, *118*(13), e2015433118. https://doi.org/10.1073/pnas.2015433118

Terefe, E. M., Okalebo, F. A., Derese, S., Muriuki, J., & Batiha, G. E.-S. (2021). In Vitro Cytotoxicity and Anti-HIV Activity of Crude Extracts of Croton macrostachyus, Croton megalocarpus and Croton dichogamus. *Journal of Experimental Pharmacology*, *Volume 13*, 971–979. https://doi.org/10.2147/JEP.S335104

Tourret, A., M., Zhou, Z., Gasser, R., Staropoli, I., Cantaloube-Ferrieu, V., Benureau, Y., Garcia-Perez, J., Pérez-Olmeda, M., Lorin, V., Puissant-Lubrano, B., Assoumou, L., Delaugerre, C., Lelièvre, J.-D., Lévy, Y., Mouquet, H., Martin-Blondel, G., Alcami, J., Arenzana-Seisdedos, F., Izopet, J., … Lagane, B. (2021). Mechanisms of HIV-1 evasion to the antiviral activity of chemokine CXCL12 indicate potential links with pathogenesis. *PLOS Pathogens*, *17*(4), e1009526. https://doi.org/10.1371/journal.ppat.1009526

Uchida, D., Kuribayashi, N., Kinouchi, M., Sawatani, Y., Shimura, M., Mori, T., Hasegawa, T., Miyamoto, Y., & Kawamata, H. (2018). Effect of a novel orally bioavailable CXCR4 inhibitor, AMD070, on the metastasis of oral cancer cells. *Oncology Reports*. https://doi.org/10.3892/or.2018.6400

Vicenzi, E., Liò, P., & Poli, G. (2013). The Puzzling Role of CXCR4 in Human Immunodeficiency Virus Infection. *Theranostics*, *3*(1), 18–25. https://doi.org/10.7150/thno.5392

Wang, J., Tannous, B. A., Poznansky, M. C., & Chen, H. (2020). CXCR4 antagonist AMD3100 (plerixafor): From an impurity to a therapeutic agent. *Pharmacological Research*, *159*, 105010. https://doi.org/10.1016/j.phrs.2020.105010

World Health Organization. (2022). HIV. World Health Organization. Retrieved April 12, 2023, from https://www.who.int/news-room/fact-sheets/detail/hiv-aids

Zhang, C., Huang, L. S., Zhu, R., Meng, Q., Zhu, S., Xu, Y., Zhang, H., Fang, X., Zhang, X., Zhou, J., Schooley, R. T., Yang, X., Huang, Z., & An, J. (2019). High affinity CXCR4 inhibitors generated by linking low affinity peptides. *European Journal of Medicinal Chemistry*, *172*, 174–185. https://doi.org/10.1016/j.ejmech.2019.03.056

Zhang, C., Zhu, R., Cao, Q., Yang, X., Huang, Z., & An, J. (2020). Discoveries and developments of CXCR4-targeted HIV-1 entry inhibitors. *Experimental Biology and Medicine*, *245*(5), 477–485. https://doi.org/10.1177/1535370220901498

Zhao, R., Liu, J., Li, Z., Zhang, W., Wang, F., & Zhang, B. (2022). Recent Advances in CXCL12/CXCR4 Antagonists and Nano-Based Drug Delivery Systems for Cancer Therapy. *Pharmaceutics*, *14*(8), 1541. https://doi.org/10.3390/pharmaceutics14081541