

## The Gallay Laboratory Publications

1. Bobardt, M. D., Saphire, A. C., Hung, H. C., Yu, X., Van der Schueren, B., Zhang, Z., David, G., & **Gallay**, P. A. (2003). Syndecan captures, protects, and transmits HIV to T lymphocytes. *Immunity*, 18(1), 27-39.
2. Bobardt, M. D., Armand-Ugon, M., Clotet, I., Zhang, Z., David, G., Este, J. A., & **Gallay**, P. A. (2004). Effect of polyanion-resistance on HIV-1 infection. *Virology*, 325(2), 389-398. doi:10.1016/j.virol.2004.05.011.PMCID.
3. Bobardt, M. D., Salmon, P., Wang, L., Esko, J. D., Gabuzda, D., Fiala, M., Trono, D., Van der Schueren, B., David, G., & **Gallay**, P. A. (2004). Contribution of proteoglycans to human immunodeficiency virus type 1 brain invasion. *J Virol*, 78(12), 6567-6584. doi:10.1128/jvi.78.12.6567-6584.2004.PMCID: PMC416544.
4. Galigniana, M. D., Morishima, Y., **Gallay**, P. A., & Pratt, W. B. (2004). Cyclophilin-A is bound through its peptidylprolyl isomerase domain to the cytoplasmic dynein motor protein complex. *J Biol Chem*, 279(53), 55754-55759. doi:10.1074/jbc.M406259200.PMCID.
5. **Gallay**, P. (2004). Syndecans and HIV-1 pathogenesis. *Microbes Infect*, 6(6), 617-622. doi:10.1016/j.micinf.2004.02.004.PMCID.
6. Barry, S. M., Melar, M., **Gallay**, P., & Hope, T. J. (2005). Review of the twelfth West Coast Retrovirus Meeting. *Retrovirology*, 2, 72. doi:10.1186/1742-4690-2-72.PMCID: PMC1315336.
7. Chatterji, U., Bobardt, M. D., Stanfield, R., Ptak, R. G., Pallansch, L. A., Ward, P. A., Jones, M. J., Stoddart, C. A., Scalfaro, P., Dumont, J. M., Besseghir, K., Rosenwirth, B., & **Gallay**, P. A. (2005). Naturally occurring capsid substitutions render HIV-1 cyclophilin A independent in human cells and TRIM-cyclophilin-resistant in Owl monkey cells. *J Biol Chem*, 280(48), 40293-40300. doi:10.1074/jbc.M506314200.PMCID.
8. de Parseval, A., Bobardt, M. D., Chatterji, A., Chatterji, U., Elder, J. H., David, G., Zolla-Pazner, S., Farzan, M., Lee, T. H., & **Gallay**, P. A. (2005). A highly conserved arginine in gp120 governs HIV-1 binding to both syndecans and CCR5 via sulfated motifs. *J Biol Chem*, 280(47), 39493-39504. doi:10.1074/jbc.M504233200.PMCID.
9. Binley, J. M., Ngo-Abdalla, S., Moore, P., Bobardt, M., Chatterji, U., **Gallay**, P., Burton, D. R., Wilson, I. A., Elder, J. H., & de Parseval, A. (2006). Inhibition of HIV Env binding to cellular receptors by monoclonal antibody 2G12 as probed by Fc-tagged gp120. *Retrovirology*, 3, 39. doi:10.1186/1742-4690-3-39.PMCID: PMC1543650.
10. Chatterji, U., Bobardt, M. D., Gaskill, P., Sheeter, D., Fox, H., & **Gallay**, P. A. (2006). Trim5alpha accelerates degradation of cytosolic capsid associated with productive HIV-1 entry. *J Biol Chem*, 281(48), 37025-37033. doi:10.1074/jbc.M606066200.PMCID.
11. Saphire, A. C., **Gallay**, P. A., & Bark, S. J. (2006). Proteomic analysis of human immunodeficiency virus using liquid chromatography/tandem mass spectrometry effectively distinguishes specific incorporated host proteins. *J Proteome Res*, 5(3), 530-538. doi:10.1021/pr050276b.PMCID.
12. Bobardt, M. D., Chatterji, U., Selvarajah, S., Van der Schueren, B., David, G., Kahn, B., & **Gallay**, P. A. (2007). Cell-free human immunodeficiency virus type 1 transcytosis through

- primary genital epithelial cells. *J Virol*, 81(1), 395-405. doi:10.1128/jvi.01303-06.PMCID: PMC1797244.
- 13. de Witte, L., Bobardt, M., Chatterji, U., Degeest, G., David, G., Geijtenbeek, T. B., & **Gallay**, P. (2007). Syndecan-3 is a dendritic cell-specific attachment receptor for HIV-1. *Proc Natl Acad Sci U S A*, 104(49), 19464-19469. doi:10.1073/pnas.0703747104.PMCID: PMC2148312.
  - 14. Ptak, R. G., **Gallay**, P. A., Jochmans, D., Halestrap, A. P., Ruegg, U. T., Pallansch, L. A., Bobardt, M. D., de Bethune, M. P., Neyts, J., De Clercq, E., Dumont, J. M., Scalfaro, P., Bessegħir, K., Wenger, R. M., & Rosenwirth, B. (2008). Inhibition of human immunodeficiency virus type 1 replication in human cells by Debio-025, a novel cyclophilin binding agent. *Antimicrob Agents Chemother*, 52(4), 1302-1317. doi:10.1128/aac.01324-07.PMCID: PMC2292519.
  - 15. Flisiak, R., Horban, A., **Gallay**, P., Bobardt, M., Selvarajah, S., Wiercinska-Drapalo, A., Siwak, E., Cielniak, I., Higersberger, J., Kierkus, J., Aeschlimann, C., Grosghurin, P., Nicolas-Metral, V., Dumont, J. M., Porchet, H., Crabbe, R., & Scalfaro, P. (2008). The cyclophilin inhibitor Debio-025 shows potent anti-hepatitis C effect in patients coinfected with hepatitis C and human immunodeficiency virus. *Hepatology*, 47(3), 817-826. doi:10.1002/hep.22131.PMCID.
  - 16. de Jong, M. A., de Witte, L., Oudhoff, M. J., Gringhuis, S. I., **Gallay**, P., & Geijtenbeek, T. B. (2008). TNF-alpha and TLR agonists increase susceptibility to HIV-1 transmission by human Langerhans cells ex vivo. *J Clin Invest*, 118(10), 3440-3452. doi:10.1172/jci34721.PMCID: PMC2528910.
  - 17. Cheng, G., Montero, A., Gastaminza, P., Whitten-Bauer, C., Wieland, S. F., Isogawa, M., Fredericksen, B., Selvarajah, S., **Gallay**, P. A., Ghadiri, M. R., & Chisari, F. V. (2008). A virocidal amphipathic {alpha}-helical peptide that inhibits hepatitis C virus infection in vitro. *Proc Natl Acad Sci U S A*, 105(8), 3088-3093. doi:10.1073/pnas.0712380105.PMCID: PMC2268589.
  - 18. Bobardt, M. D., Cheng, G., de Witte, L., Selvarajah, S., Chatterji, U., Sanders-Bear, B. E., Geijtenbeek, T. B., Chisari, F. V., & **Gallay**, P. A. (2008). Hepatitis C virus NS5A anchor peptide disrupts human immunodeficiency virus. *Proc Natl Acad Sci U S A*, 105(14), 5525-5530. doi:10.1073/pnas.0801388105.PMCID: PMC2291127.
  - 19. Chatterji, U., Bobardt, M., Selvarajah, S., Yang, F., Tang, H., Sakamoto, N., Vuagniaux, G., Parkinson, T., & **Gallay**, P. (2009). The isomerase active site of cyclophilin A is critical for hepatitis C virus replication. *J Biol Chem*, 284(25), 16998-17005. doi:10.1074/jbc.M109.007625.PMCID: PMC2719337.
  - 20. **Gallay**, P. A. (2009). Cyclophilin inhibitors. *Clin Liver Dis*, 13(3), 403-417. doi:10.1016/j.cld.2009.05.002.PMCID.
  - 21. Bobardt, M. D., Chatterji, U., Schaffer, L., de Witte, L., & **Gallay**, P. A. (2010). Syndecan-Fc hybrid molecule as a potent in vitro microbicidal anti-HIV-1 agent. *Antimicrob Agents Chemother*, 54(7), 2753-2766. doi:10.1128/aac.01606-09.PMCID: PMC2897270.
  - 22. Chatterji, U., Bobardt, M. D., Lim, P., & **Gallay**, P. A. (2010). Cyclophilin A-independent recruitment of NS5A and NS5B into hepatitis C virus replication complexes. *J Gen Virol*, 91(Pt 5), 1189-1193. doi:10.1099/vir.0.018531-0.PMCID: PMC2888154.

23. Chatterji, U., Lim, P., Bobardt, M. D., Wieland, S., Cordek, D. G., Vuagniaux, G., Chisari, F., Cameron, C. E., Targett-Adams, P., Parkinson, T., & **Gallay**, P. A. (2010). HCV resistance to cyclosporin A does not correlate with a resistance of the NS5A-cyclophilin A interaction to cyclophilin inhibitors. *J Hepatol*, 53(1), 50-56. doi:10.1016/j.jhep.2010.01.041.PMCID: PMC2884070.
24. Coelmont, L., Hanoulle, X., Chatterji, U., Berger, C., Snoeck, J., Bobardt, M., Lim, P., Vliegen, I., Paeshuyse, J., Vuagniaux, G., Vandamme, A. M., Bartenschlager, R., **Gallay**, P., Lippens, G., & Neyts, J. (2010). DEB025 (Alisporivir) inhibits hepatitis C virus replication by preventing a cyclophilin A induced cis-trans isomerisation in domain II of NS5A. *PLoS One*, 5(10), e13687. doi:10.1371/journal.pone.0013687.PMCID: PMC2965138.
25. Fischer, G., **Gallay**, P., & Hopkins, S. (2010). Cyclophilin inhibitors for the treatment of HCV infection. *Curr Opin Investig Drugs*, 11(8), 911-918.
26. Waller, H., Chatterji, U., **Gallay**, P., Parkinson, T., & Targett-Adams, P. (2010). The use of AlphaLISA technology to detect interaction between hepatitis C virus-encoded NS5A and cyclophilin A. *J Virol Methods*, 165(2), 202-210. doi:10.1016/j.jviromet.2010.01.020.PMCID.
27. de Witte, L., Bobardt, M. D., Chatterji, U., van Loenen, F. B., Verjans, G. M., Geijtenbeek, T. B., & **Gallay**, P. A. (2011). HSV neutralization by the microbicidal candidate C5A. *PLoS One*, 6(5), e18917. doi:10.1371/journal.pone.0018917.PMCID: PMC3089603.
28. Denton, P. W., Othieno, F., Martinez-Torres, F., Zou, W., Krisko, J. F., Fleming, E., Zein, S., Powell, D. A., Wahl, A., Kwak, Y. T., Welch, B. D., Kay, M. S., Payne, D. A., **Gallay**, P., Appella, E., Estes, J. D., Lu, M., & Garcia, J. V. (2011). One percent tenofovir applied topically to humanized BLT mice and used according to the CAPRISA 004 experimental design demonstrates partial protection from vaginal HIV infection, validating the BLT model for evaluation of new microbicide candidates. *J Virol*, 85(15), 7582-7593. doi:10.1128/jvi.00537-11.PMCID: PMC3147928.
29. Foster, T. L., **Gallay**, P., Stonehouse, N. J., & Harris, M. (2011). Cyclophilin A interacts with domain II of hepatitis C virus NS5A and stimulates RNA binding in an isomerase-dependent manner. *J Virol*, 85(14), 7460-7464. doi:10.1128/jvi.00393-11.PMCID: PMC3126559.
30. Gregory, M. A., Bobardt, M., Obeid, S., Chatterji, U., Coates, N. J., Foster, T., **Gallay**, P., Leysen, P., Moss, S. J., Neyts, J., Nur-e-Alam, M., Paeshuyse, J., Pirae, M., Suthar, D., Warneck, T., Zhang, M. Q., & Wilkinson, B. (2011). Preclinical characterization of naturally occurring polyketide cyclophilin inhibitors from the sanglifehrin family. *Antimicrob Agents Chemother*, 55(5), 1975-1981. doi:10.1128/aac.01627-10.PMCID: PMC3088210.
31. Baugh, J., & **Gallay**, P. (2012). Cyclophilin involvement in the replication of hepatitis C virus and other viruses. *Biol Chem*, 393(7), 579-587. doi:10.1515/hsz-2012-0151.PMCID.
32. Chamoun, A. M., Chockalingam, K., Bobardt, M., Simeon, R., Chang, J., **Gallay**, P., & Chen, Z. (2012). PD 404,182 is a virocidal small molecule that disrupts hepatitis C virus and human immunodeficiency virus. *Antimicrob Agents Chemother*, 56(2), 672-681. doi:10.1128/aac.05722-11.PMCID: PMC3264232.

33. Fraison, J. B., Calvet, P., Domnisoru, I., Altamiranda, S., Vernhet-Kovacsik, H., Saad, A., **Gallay**, P., Reny, J. L., & Berdague, P. (2012). [Distal coronary thrombosis during L-asparaginase treatment for an acute lymphoblastic leukaemia]. *Ann Cardiol Angeiol (Paris)*, 61(4), 303-305. doi:10.1016/j.ancard.2011.04.005.PMCID.
34. **Gallay**, P. A. (2012). Cyclophilin inhibitors: a novel class of promising host-targeting anti-HCV agents. *Immunol Res*, 52(3), 200-210. doi:10.1007/s12026-011-8263-5.PMCID.
35. Garcia-Rivera, J. A., Bobardt, M., Chatterji, U., Hopkins, S., Gregory, M. A., Wilkinson, B., Lin, K., & **Gallay**, P. A. (2012). Multiple mutations in hepatitis C virus NS5A domain II are required to confer a significant level of resistance to alisporivir. *Antimicrob Agents Chemother*, 56(10), 5113-5121. doi:10.1128/aac.00919-12.PMCID: PMC3457393.
36. Garcia-Rivera, J. A., Lin, K., Hopkins, S., Gregory, M. A., Wilkinson, B., & **Gallay**, P. A. (2012). Development of a flow cytometry live cell assay for the screening of inhibitors of hepatitis C virus (HCV) replication. *Open Virol J*, 6, 97-102. doi:10.2174/1874357901206010097.PMCID: PMC3514710.
37. Gunaseelan, S., **Gallay**, P. A., Bobardt, M. D., Dezzutti, C. S., Esch, T., & Maskiewicz, R. (2012). Sustained local delivery of structurally diverse HIV-1 microbicides released from sublimation enthalpy controlled matrices. *Pharm Res*, 29(11), 3156-3168. doi:10.1007/s11095-012-0811-8.PMCID: PMC3473190.
38. Hopkins, S., Bobardt, M., Chatterji, U., Garcia-Rivera, J. A., Lim, P., & **Gallay**, P. A. (2012). The cyclophilin inhibitor SCY-635 disrupts hepatitis C virus NS5A-cyclophilin A complexes. *Antimicrob Agents Chemother*, 56(7), 3888-3897. doi:10.1128/aac.00693-12.PMCID: PMC3393457.
39. Hopkins, S., DiMassimo, B., Rusnak, P., Heuman, D., Lalezari, J., Sluder, A., Scorneaux, B., Mosier, S., Kowalczyk, P., Ribeill, Y., Baugh, J., & **Gallay**, P. (2012). The cyclophilin inhibitor SCY-635 suppresses viral replication and induces endogenous interferons in patients with chronic HCV genotype 1 infection. *J Hepatol*, 57(1), 47-54. doi:10.1016/j.jhep.2012.02.024.PMCID.
40. Hopkins, S., & **Gallay**, P. (2012). Cyclophilin inhibitors: an emerging class of therapeutics for the treatment of chronic hepatitis C infection. *Viruses*, 4(11), 2558-2577. doi:10.3390/v4112558.PMCID: PMC3509662.
41. Lim, P. J., Chatterji, U., Cordek, D., Sharma, S. D., Garcia-Rivera, J. A., Cameron, C. E., Lin, K., Targett-Adams, P., & **Gallay**, P. A. (2012). Correlation between NS5A dimerization and hepatitis C virus replication. *J Biol Chem*, 287(36), 30861-30873. doi:10.1074/jbc.M112.376822.PMCID: PMC3436329.
42. Maskiewicz, R., Bobardt, M., Chatterji, U., Gunaseelan, S., Dezzutti, C. S., Penin, F., & **Gallay**, P. A. (2012). Sublimable C5A delivery provides sustained and prolonged anti-HIV microbicidal activities. *Antimicrob Agents Chemother*, 56(6), 3336-3343. doi:10.1128/aac.00186-12.PMCID: PMC3370808.
43. Moss SJ, B. M., Leyssen P, Coates N, Chatterji U, Dejian X, Foster T, Liu J, Nur-e-Alam M, Suthar D, Yongsheng C, Warneck T, Neyts J, **Gallay** P, Wilkinson B, Gregory MA. . (2012). Sangamides, a new class of cyclophilin inhibiting host targeted antivirals for treatment of HCV infection. *Med. Chem. Commun.*, 3, 944-949. doi:10.1039/C1MD00227A.PMCID.
44. Selvarajah, S., Chatterji, U., Kuhn, R., Kinney, R., Vasudevan, S. G., & **Gallay**, P. (2012). Development and evaluation of an enzyme-linked immunosorbent assay for dengue

- capsid. *Open Virol J*, 6, 29-37. doi:10.2174/1874357901206010029.PMCID: PMC3322434.
45. Lin, K., & **Gallay**, P. (2013). Curing a viral infection by targeting the host: the example of cyclophilin inhibitors. *Antiviral Res*, 99(1), 68-77. doi:10.1016/j.antiviral.2013.03.020.PMCID: PMC4332838.
46. **Gallay**, P. A., Ptak, R. G., Bobardt, M. D., Dumont, J. M., Vuagniaux, G., & Rosenwirth, B. (2013). Correlation of naturally occurring HIV-1 resistance to DEB025 with capsid amino acid polymorphisms. *Viruses*, 5(3), 981-997. doi:10.3390/v5030981.PMCID: PMC3705307.
47. **Gallay**, P. A., & Lin, K. (2013). Profile of alisporivir and its potential in the treatment of hepatitis C. *Drug Des Devel Ther*, 7, 105-115. doi:10.2147/dddt.s30946.PMCID: PMC3578503.
48. Bobardt, M., Hopkins, S., Baugh, J., Chatterji, U., Hernandez, F., Hiscott, J., Sluder, A., Lin, K., & **Gallay**, P. A. (2013). HCV NS5A and IRF9 compete for CypA binding. *J Hepatol*, 58(1), 16-23. doi:10.1016/j.jhep.2012.08.007.PMCID: PMC3527675.
49. Baugh, J. M., Garcia-Rivera, J. A., & **Gallay**, P. A. (2013). Host-targeting agents in the treatment of hepatitis C: a beginning and an end? *Antiviral Res*, 100(2), 555-561. doi:10.1016/j.antiviral.2013.09.020.PMCID: PMC3971122.
50. Bobardt, M., Chatterji, U., Lim, P., Gawlik, K., & **Gallay**, P. (2014). Both Cyclophilin Inhibitors and Direct-Acting Antivirals Prevent PKR Activation in HCV-Infected Cells. *Open Virol J*, 8, 1-8. doi:10.2174/1874357901408010001.PMCID: PMC4009744.
51. Chamoun-Emanuelli, A. M., Bobardt, M., Moncla, B., Mankowski, M. K., Ptak, R. G., **Gallay**, P., & Chen, Z. (2014). Evaluation of PD 404,182 as an anti-HIV and anti-herpes simplex virus microbicide. *Antimicrob Agents Chemother*, 58(2), 687-697. doi:10.1128/aac.02000-13.PMCID: PMC3910842.
52. Chatterji, U., Garcia-Rivera, J. A., Baugh, J., Gawlik, K., Wong, K. A., Zhong, W., Brass, C. A., Naoumov, N. V., & **Gallay**, P. A. (2014). The combination of alisporivir plus an NS5A inhibitor provides additive to synergistic anti-hepatitis C virus activity without detectable cross-resistance. *Antimicrob Agents Chemother*, 58(6), 3327-3334. doi:10.1128/aac.00016-14.PMCID: PMC4068438.
53. **Gallay**, P. (2014). Resistance to Cyclophilin Inhibitors. In M. Gotte, A. Berghuis, G. Matlashewski, M. Wainberg, & D. Sheppard (Eds.), *Handbook of Antimicrobial Resistance* (pp. 1-24). New York, NY: Springer New York.
54. Gawlik, K., Baugh, J., Chatterji, U., Lim, P. J., Bobardt, M. D., & **Gallay**, P. A. (2014). HCV core residues critical for infectivity are also involved in core-NS5A complex formation. *PLoS One*, 9(2), e88866. doi:10.1371/journal.pone.0088866.PMCID: PMC3923060.
55. Gawlik, K., & **Gallay**, P. A. (2014). HCV core protein and virus assembly: what we know without structures. *Immunol Res*, 60(1), 1-10. doi:10.1007/s12026-014-8494-3.PMCID:
56. Lim, P. J., & **Gallay**, P. A. (2014). Hepatitis C NS5A protein: two drug targets within the same protein with different mechanisms of resistance. *Curr Opin Virol*, 8, 30-37. doi:10.1016/j.coviro.2014.04.012.PMCID: PMC4195798.
57. Chatterji, U., Bobardt, M., Tai, A., Wood, M., & **Gallay**, P. A. (2015). Cyclophilin and NS5A inhibitors, but not other anti-hepatitis C virus (HCV) agents, preclude HCV-mediated

- formation of double-membrane-vesicle viral factories. *Antimicrob Agents Chemother*, 59(5), 2496-2507. doi:10.1128/aac.04958-14.PMCID: PMC4394764.
58. **Gallay**, P. A., Bobardt, M. D., Chatterji, U., Trepanier, D. J., Ure, D., Ordonez, C., & Foster, R. (2015). The Novel Cyclophilin Inhibitor CPI-431-32 Concurrently Blocks HCV and HIV-1 Infections via a Similar Mechanism of Action. *PLoS One*, 10(8), e0134707. doi:10.1371/journal.pone.0134707.PMCID: PMC4532424.
59. Hansson, M. J., Moss, S. J., Bobardt, M., Chatterji, U., Coates, N., Garcia-Rivera, J. A., Elmer, E., Kendrew, S., Leyssen, P., Neyts, J., Nur, E. A. M., Warneck, T., Wilkinson, B., **Gallay**, P., & Gregory, M. A. (2015). Bioengineering and semisynthesis of an optimized cyclophilin inhibitor for treatment of chronic viral infection. *Chem Biol*, 22(2), 285-292. doi:10.1016/j.chembiol.2014.10.023.PMCID: PMC4336584.
60. Hopkins, S., & **Gallay**, P. A. (2015). The role of immunophilins in viral infection. *Biochim Biophys Acta*, 1850(10), 2103-2110. doi:10.1016/j.bbagen.2014.11.011.PMCID: PMC4491039.
61. Phillips, S., Chokshi, S., Chatterji, U., Riva, A., Bobardt, M., Williams, R., **Gallay**, P., & Naoumov, N. V. (2015). Alisporivir inhibition of hepatocyte cyclophilins reduces HBV replication and hepatitis B surface antigen production. *Gastroenterology*, 148(2), 403-414.e407. doi:10.1053/j.gastro.2014.10.004.PMCID:
62. Veazey, R. S., Chatterji, U., Bobardt, M., Russell-Lodrigue, K. E., Li, J., Wang, X., & **Gallay**, P. A. (2015). C5A Protects Macaques from Vaginal Simian-Human Immunodeficiency Virus Challenge. *Antimicrob Agents Chemother*, 60(1), 693-698. doi:10.1128/aac.01925-15.PMCID: PMC4704173.
63. Gallay, P. A., Chatterji, U., Bobardt, M. D., Long, Z., Zhang, S., & Su, Z. (2016). Characterization of the Anti-HCV Activities of the New Cyclophilin Inhibitor STG-175. *PLoS One*, 11(4), e0152036. doi:10.1371/journal.pone.0152036.PMCID: In progress.