

CAMB 708 Syllabus – Spring 2023 (rev 12/19/2022)

Instructors: Katie Bar, MD and Ron Collman, MD

This will be one semester half-credit class, held every other week, that is research paper-based utilizing the current literature in HIV virology, pathogenesis and cure research. The class will have a journal club format with attendance and participation open to the full Penn student & postdoc community (“teach-your-peers”). Presentations will consist of background literature summary with key prior work in the field; a data-based presentation and analysis of the paper under review; and a summary with suggestions for future directions. Enrolled students will be responsible for approximately 2-3 presentations over the duration of the half-year course, will participate in discussion of each paper presented by others, and will manage the coordination of presentations by other participants as well as bi-weekly paper selection in conjunction with the instructors.

Enrolled Student Responsibilities

1. Present a paper approximately once every 6-8 weeks (exact schedule will depend on number of enrolled students).
2. For the classes when another student is presenting the paper, participate via presentation and discussion of at least one figure per paper - and being ready to present/discuss additional figures if needed, if too few other students are able to discuss the figure.
3. Manage the email list and be sure students are notified a week in advance of the paper and presenter (and provide the information to CFAR Program Manager Mandi Bell for distribution on the email list)
4. Ensure that papers covered are entered into the online listing of articles presented.
5. Work with the other enrolled students to:
 - a. ensure that every session is covered on the schedule by an enrolled or other participating student (schedule at least 6 weeks in advance)
 - b. manage the list of possible papers that the instructors will provide, or for papers that you or other students identify, ensure the papers selected are appropriate and broadly distributed among topics via discussion with instructors, and not duplicative of previously presented papers
 - c. working with the instructors, identify and invite 1-2 guest faculty members to participate in each class – which requires at least 1 week advance notice for scheduling
 - d. ensure that papers are selected and distributed to the email list at least one week in advance
 - e. one of the enrolled students should meet with any non-enrolled student scheduled to present to review the structure of the presentations (eg, background, introduction, figures, conclusions, critique, etc.)
 - f. Maintain current the online listing of papers that have been presented

Syllabus: Papers are selected as the course progresses. What follows is a listing of prior semesters’ class schedule to serve as examples:

Maehigashi T, Ahn S, Kim UI, Lindenberger J, Oo A, Koneru PC, Mahboubi B, Engelman AN, Kvaratskhelia M, Kim K, Kim B. **A highly potent and safe pyrrolopyridine-based allosteric HIV-1 integrase inhibitor targeting host LEDGF/p75-integrase interaction site.** PLoS Pathog. 2021 Jul 22;17(7):e1009671. doi: 10.1371/journal.ppat.1009671. PMID: 34293041; PMCID: PMC8297771.

Huang D, Tran JT, Olson A, Vollbrecht T, Tenuta M, Guryleva MV, Fuller RP, Schiffner T, Abadejos JR, Couvrette L, Blane TR, Saye K, Li W, Landais E, Gonzalez-Martin A, Schief W, Murrell B, Burton DR, Nemazee D, Voss JE. **Vaccine elicitation of HIV broadly neutralizing antibodies from engineered B cells.** Nat Commun. 2020 Nov 17;11(1):5850. doi: 10.1038/s41467-020-19650-8. Erratum in: Nat Commun. 2020 Dec 7;11(1):6360. PMID: 33203876; PMCID: PMC7673113.

Zhang P, Narayanan E, Liu Q, Tsybovsky Y, Boswell K, Ding S, Hu Z, Follmann D, Lin Y, Miao H, Schmeisser H, Rogers D, Falcone S, Elbashir SM, Presnyak V, Bahl K, Prabhakaran M, Chen X, Sarfo EK, Ambrozak DR, Gautam R, Martin MA, Swerczek J, Herbert R, Weiss D, Misamore J, Ciaramella G, Himansu S, Stewart-Jones G, McDermott A, Koup RA, Mascola JR, Finzi A, Carfi A, Fauci AS, Lusso P. **A multiclade env-gag VLP mRNA vaccine elicits tier-2 HIV-1-neutralizing antibodies and reduces the risk of heterologous SHIV infection in macaques.** Nat Med. 2021 Dec;27(12):2234-2245. doi: 10.1038/s41591-021-01574-5. Epub 2021 Dec 9. PMID: 34887575.

Rajashekar JK, Richard J, Beloor J, Prévost J, Anand SP, Beaudoin-Bussièrès G, Shan L, Herndler-Brandstetter D, Gendron-Lepage G, Medjahed H, Bourassa C, Gaudette F, Ullah I, Symmes K, Peric A, Lindemuth E, Bibollet-Ruche F, Park J, Chen HC, Kaufmann DE, Hahn BH, Sodroski J, Pazgier M, Flavell RA, Smith AB 3rd, Finzi A, Kumar P. **Modulating HIV-1 envelope glycoprotein conformation to decrease the HIV-1 reservoir.** Cell Host Microbe. 2021 Jun 9;29(6):904-916.e6. doi: 10.1016/j.chom.2021.04.014. Epub 2021 May 20. PMID: 34019804; PMCID: PMC8214472.

Adeniji OS, Kuri-Cervantes L, Yu C, Xu Z, Ho M, Chew GM, Shikuma C, Tomescu C, George AF, Roan NR, Ndhlovu LC, Liu Q, Muthumani K, Weiner DB, Betts MR, Xiao H, Abdel-Mohsen M. **Siglec-9 defines and restrains a natural killer subpopulation highly cytotoxic to HIV-infected cells.** PLoS Pathog. 2021 Nov 11;17(11):e1010034. doi: 10.1371/journal.ppat.1010034. PMID: 34762717; PMCID: PMC8584986.

Lian X, Gao C, Sun X, Jiang C, Einkauf KB, Seiger KW, Chevalier JM, Yuki Y, Martin M, Hoh R, Peluso MJ, Carrington M, Ruiz-Mateos E, Deeks SG, Rosenberg ES, Walker BD, Lichterfeld M, Yu XG. **Signatures of immune selection in intact and defective proviruses distinguish HIV-1 elite controllers.** Sci Transl Med. 2021 Dec 15;13(624):eabl4097. doi: 10.1126/scitranslmed.abl4097. Epub 2021 Dec 15. PMID: 34910552.

Lim RM, Rong L, Zhen A, Xie J. **A Universal CAR-NK Cell Targeting Various Epitopes of HIV-1 gp160.** ACS Chem Biol. 2020 Aug 21;15(8):2299-2310. doi: 10.1021/acscchembio.0c00537. Epub 2020 Jul 28. PMID: 32667183; PMCID: PMC8152219.

Nganou-Makamdop K, Talla A, Sharma AA, Darko S, Ransier A, Laboune F, Chipman JG, Beilman GJ, Hoskuldsson T, Fourati S, Schmidt TE, Arumugam S, Lima NS, Moon D, Callisto S, Schoepfoerster J, Tomalka J, Mugenyi P, Ssali F, Muloma P, Ssengendo P, Leda AR, Cheu RK, Flynn JK, Morou A, Brunet-Ratnasingham E, Rodriguez B, Lederman MM, Kaufmann DE, Klatt NR, Kityo C, Brenchley JM, Schacker TW, Sekaly RP, Douek DC. **Translocated microbiome composition determines immunological outcome in treated HIV infection.** Cell. 2021 Jul 22;184(15):3899-3914.e16. doi: 10.1016/j.cell.2021.05.023. Epub 2021 Jul 7. PMID: 34237254; PMCID: PMC8316372.

Gaebler C, Nogueira L, Stoffel E, Oliveira TY, Breton G, Millard KG, Turroja M, Butler A, Ramos V, Seaman MS, Reeves JD, Petropoulos CJ, Shimeliovich I, Gazumyan A, Jiang CS, Jilg N, Scheid JF, Gandhi R, Walker BD, Sneller MC, Fauci A, Chun TW, Caskey M, Nussenzweig MC. **Prolonged viral suppression with anti-HIV-1 antibody therapy.** Nature. 2022 Apr 13. doi: 10.1038/s41586-022-04597-1. Epub ahead of print.

Blazkova J, Gao F, Marichannegowda MH, Justement JS, Shi V, Whitehead EJ, Schneck RF, Huiting ED, Gittens K, Cottrell M, Benko E, Kovacs C, Lack J, Sneller MC, Moir S, Fauci AS, Chun TW. **Distinct**

mechanisms of long-term virologic control in two HIV-infected individuals after treatment interruption of anti-retroviral therapy. Nat Med. 2021 Nov;27(11):1893-1898.

Perdomo-Celis, F., Passaes, C., Monceaux, V., Volant, S., Boufassa, F., de Truchis, P., Marcou, M., Bourdic, K., Weiss, L., Jung, C., Bourgeois, C., Goujard, C., Meyer, L., Müller-Trutwin, M., Lambotte, O., & Sáez-Cirión, A. (2022). **Reprogramming dysfunctional CD8+ T cells to promote properties associated with natural HIV control.** The Journal of Clinical Investigation, 132(11). <https://doi.org/10.1172/JCI157549>