CAMB 708 Syllabus – Spring 2022 (rev 12/1/2021
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, and a data-based presentation and analysis of the paper under review. Enrolled students will responsible approximately 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.

Spring 2022 will be a hybrid in-person and virtual course, subject to change depending on circumstances.

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:

Date	Topic / Paper	# Students	Presenter
	Coexistence of potent HIV-1 broadly neutralizing antibodies and antibody-sensitive viruses in a viremic controller. Freund NT, Wang H, Scharf L, Nogueira L, Horwitz JA, Bar-On Y, Golijanin J, Sievers SA, Sok D, Cai H, Cesar Lorenzi JC, Halper-	17	Ryan Roark

	Stromberg A, Toth I, Piechocka-Trocha A, Gristick HB, van Gils MJ, Sanders RW, Wang LX, Seaman MS, Burton DR, Gazumyan A, Walker BD, West AP Jr, Bjorkman PJ, Nussenzweig MC. Sci Transl Med. 2017 Jan 18;9(373). pii: eaal2144. doi: 10.1126/scitranslmed.aal2144. PMID: 28100831		
	A single injection of anti-HIV-1 antibodies protects against repeated SHIV challenges. Gautam R, Nishimura Y, Pegu A, Nason MC, Klein F, Gazumyan A, Golijanin J, Buckler-White A, Sadjadpour R, Wang K, Mankoff Z, Schmidt SD, Lifson JD, Mascola JR, Nussenzweig MC, Martin MA. Nature. 2016 May 5;533(7601):105-9. doi: 10.1038/nature17677. Epub 2016 Apr 27. PubMed PMID: 27120156; PubMed Central PMCID: PMC5127204.	8	Anya Bauer
	Holes in the Glycan Shield of the Native HIV Envelope Are a Target of Trimer-Elicited Neutralizing Antibodies. McCoy LE, van Gils MJ, Ozorowski G, Messmer T, Briney B, Voss JE, Kulp DW, Macauley MS, Sok D, Pauthner M, Menis S, Cottrell CA, Torres JL, Hsueh J, Schief WR, Wilson IA, Ward AB, Sanders RW, Burton DR. Cell Rep. 2016 Aug 30;16(9):2327-38. doi: 10.1016/j.celrep.2016.07.074. Epub 2016 Aug 18. PubMed PMID: 27545891; PubMed Central PMCID: PMC5007210.	13	Ryan Roark
	Nonprogressing HIV-infected children share fundamental immunological features of nonpathogenic SIV infection. Muenchhoff M, Adland E, Karimanzira O, Crowther C, Pace M, Csala A, Leitman E, Moonsamy A, McGregor C, Hurst J, Groll A, Mori M, Sinmyee S, Thobakgale C, Tudor-Williams G, Prendergast AJ, Kloverpris H, Roider J, Leslie A, Shingadia D, Brits T, Daniels S, Frater J, Willberg CB, Walker BD, Ndung'u T, Jooste P, Moore PL, Morris L, Goulder P. Sci Transl Med. 2016 Sep 8;8(358):358ra125. doi: 10.1126/scitranslmed.aag1048. PubMed PMID: 27683550.	14	Katie Wetzel
	Social status alters immune regulation and response to infection in macaques. Snyder-Mackler N, Sanz J, Kohn JN, Brinkworth JF, Morrow S, Shaver AO, Grenier JC, Pique-Regi R, Johnson ZP, Wilson ME, Barreiro LB, Tung J. Science. 2016 Nov 25;354(6315):1041-1045. PubMed PMID: 27885030.	13	Brenda Salantes
	A**utophagy facilitates macrophage depots of sustained-release nanoformulated antiretroviral drugs.** Gnanadhas DP, Dash PK, Sillman B, Bade AN, Lin Z, Palandri DL, Gautam N, Alnouti Y, Gelbard HA, McMillan J, Mosley RL, Edagwa B, Gendelman HE, Gorantla S. J Clin Invest. 2017 Mar 1;127(3):857-873. doi: 10.1172/JCI90025. Epub 2017 Jan 30. PubMed PMID: 28134625	15	Krystal Colon Rivera
	CD32a is a marker of a CD4 T-cell HIV reservoir harbouring replication-competent proviruses. Descours B, Petitjean G, López-Zaragoza JL, Bruel T, Raffel R, Psomas C, Reynes J, Lacabaratz C, Levy Y, Schwartz O, Lelievre JD, Benkirane M. Nature. 2017 Mar 23;543(7646):564-567. doi: 10.1038/nature21710. Epub 2017 Mar 15. PubMed PMID: 28297712	11	Anya Bauer
	Virion incorporation of integrin α4β7 facilitates HIV-1 infection and intestinal homing Christina Guzzo1,*, David Ichikawa1,*, Chung Park2, Damilola Phillips1, Qingbo Liu1, Peng Zhang1, Alice Kwon1, Huiyi Miao1, Jacky Lu1, Catherine Rehm3, James Arthos4, Claudia Cicala4, Myron S. Cohen5, Anthony S. Fauci4, John H. Kehrl2 and Paolo Lusso1,† Science Immunology 12 May 2017: Vol. 2, Issue 11, eaam7341 DOI: 10.1126/sciimmunol.aam7341	11	Ryan Roark
	A supramolecular assembly mediates lentiviral DNA integration. Ballandras-Colas A, Maskell DP, Serrao E, Locke J, Swuec P, Jónsson SR, Kotecha A, Cook NJ, Pye VE, Taylor IA, Andrésdóttir V, Engelman AN, Costa A, Cherepanov P. Science. 2017 Jan 6;355(6320):93-95. doi: 10.1126/science.aah7002. PubMed PMID: 28059770	10	Grant Eiler
	Targeting type I interferon-mediated activation restores immune function in chronic HIV infection. Zhen A, Rezek V, Youn C, Lam B, Chang N, Rick J, Carrillo M, Martin H, Kasparian S, Syed P, Rice N, Brooks DG, Kitchen SG. J Clin Invest. 2017 Jan 3;127(1):260-268. doi: 10.1172/JCI89488. Epub 2016 Dec 12. PubMed PMID: 27941243; PubMed Central PMCID: PMC5199686.	13	Natania Field
	C**D4+ T-cell-independent mechanisms suppress reactivation of latent tuberculosis in a macaque model of HIV coinfection.** Foreman TW, Mehra S, LoBato DN, Malek A, Alvarez X, Golden NA, Bucşan AN, Didier PJ, Doyle-Meyers LA, Russell-Lodrigue KE, Roy CJ, Blanchard J, Kuroda MJ, Lackner AA, Chan J, Khader SA, Jacobs WR Jr, Kaushal D. Proc Natl Acad Sci U S A. 2016 Sep 20;113(38):E5636-44. doi:	7	Yanhui Cai

	10.1073/pnas.1611987113. Epub 2016 Sep 6. PubMed PMID: 27601645; PubMed Central PMCID: PMC5035858.		
	V**px overcomes a SAMHD1-independent block to HIV reverse transcription that is specific to resting CD4 T cells.** Baldauf HM, Stegmann L, Schwarz SM, Ambiel I, Trotard M, Martin M, Burggraf M, Lenzi GM, Lejk H, Pan X, Fregoso OI, Lim ES, Abraham L, Nguyen LA, Rutsch F, König R, Kim B, Emerman M, Fackler OT, Keppler OT. Proc Natl Acad Sci U S A. 2017 Mar 7;114(10):2729-2734. doi: 10.1073/pnas.1613635114. Epub 2017 Feb 22. PubMed PMID: 28228523; PubMed Central PMCID: PMC5347584.	13	Michael Hogan
	Astrocytes Resist HIV-1 Fusion but Engulf Infected Macrophage Material. Russell RA, Chojnacki J, Jones DM, Johnson E, Do T, Eggeling C, Padilla-Parra S, Sattentau QJ. Cell Rep. 2017 Feb 7;18(6):1473-1483. doi: 10.1016/j.celrep.2017.01.027. PubMed PMID: 28178524; PubMed Central PMCID: PMC5316642.	11	Analise Gruenewald
	Vaginal bacteria modify HIV tenofovir microbicide efficacy in African women. Klatt NR, Cheu R, Birse K, Zevin AS, Perner M, Noël-Romas L, Grobler A, Westmacott G, Xie IY, Butler J, Mansoor L, McKinnon LR, Passmore JS, Abdool Karim Q, Abdool Karim SS, Burgener AD. Science. 2017 Jun 2;356(6341):938-945. doi: 10.1126/science.aai9383. PubMed PMID: 28572388.	12	Brenda Salantes
	Receptor usage dictates HIV-1 restriction by human TRIM5α in dendritic cell subsets. Ribeiro CM, Sarrami-Forooshani R, Setiawan LC, Zijlstra-Willems EM, van Hamme JL, Tigchelaar W, van der Wel NN, Kootstra NA, Gringhuis SI, Geijtenbeek TB. Nature. 2016 Dec 15;540(7633):448-452. doi: 10.1038/nature20567. Epub2016 Dec 7. PubMed PMID: 27919079.	16	Mary Addison
	Functional Segregation of Overlapping Genes in HIV. Fernandes JD, Faust TB, Strauli NB, Smith C, Crosby DC, Nakamura RL, Hernandez RD, Frankel AD. Cell. 2016 Dec 15;167(7):1762-1773.e12. doi: 10.1016/j.cell.2016.11.031. PubMed PMID: 7984726; PubMed Central PMCID: PMC5287106.	10	Grant Eilers
	Non-neutralizing Antibodies Alter the Course of HIV-1 Infection In Vivo. Horwitz JA, Bar-On Y, Lu CL, Fera D, Lockhart AAK, Lorenzi JCC, Nogueira L, Golijanin J, Scheid JF, Seaman MS, Gazumyan A, Zolla-Pazner S, Nussenzweig MC. Cell. 2017 Aug 10;170(4):637-648.e10. doi: 10.1016/j.cell.2017.06.048. Epub 2017 Jul 27. PubMed PMID: 28757252; PubMed Central PMCID: PMC5554461.	10	Ryan Roark
	Rapid elicitation of broadly neutralizing antibodies to HIV by immunization in cows. Sok D, Le KM, Vadnais M, Saye-Francisco KL, Jardine JG, Torres JL, Berndsen ZT, Kong L, Stanfield R, Ruiz J, Ramos A, Liang CH, Chen PL, Criscitiello MF, Mwangi W, Wilson IA, Ward AB, Smider VV, Burton DR. Nature. 2017 Aug 3;548(7665):108-111. doi: 10.1038/nature23301. Epub 2017 Jul 20. PubMed PMID: 28726771.	13	Ziyang Xu
	Defining total-body AIDS-virus burden with implications for curative strategies. Estes JD, Kityo C, Ssali F, Swainson L, Makamdop KN, Del Prete GQ, Deeks SG, Luciw PA, Chipman JG, Beilman GJ, Hoskuldsson T, Khoruts A, Anderson J, Deleage C, Jasurda J, Schmidt TE, Hafertepe M, Callisto SP, Pearson H, Reimann T, Schuster J, Schoephoerster J, Southern P, Perkey K, Shang L, Wietgrefe SW, Fletcher CV, Lifson JD, Douek DC, McCune JM, Haase AT, Schacker TW. Nat Med. 2017 Nov;23(11):1271-1276. doi: 10.1038/nm.4411. Epub 2017 Oct 2. PMID:28967921	14	Anya Bauer
	Host MicroRNAs-221 and -222 Inhibit HIV-1 Entry in Macrophages by Targeting the CD4 Viral Receptor. Lodge R, Ferreira Barbosa JA, Lombard-Vadnais F, Gilmore JC, Deshiere A, Gosselin A, Wiche Salinas TR, Bego MG, Power C, Routy JP, Ancuta P, Tremblay MJ, Cohen ÉA. Cell Rep. 2017 Oct 3;21(1):141-153. doi: 10.1016/j.celrep.2017.09.030. PMID:28978468.	13	Mary Margaret Addison
	Single-cell analysis of HIV-1 transcriptional activity reveals expression of proviruses in expanded clones during ART. Wiegand A, Spindler J, Hong FF, Shao W, Cyktor JC, Cillo AR, Halvas EK, Coffin JM, Mellors JW, Kearney MF. Proc Natl Acad Sci U S A. 2017 May 2;114(18):E3659-E3668. doi: 10.1073/pnas.1617961114. Epub 2017 Apr 17. PMID:28416661	11	Anya Bauer
	Antibody 10-1074 suppresses viremia in HIV-1-infected individuals. Caskey M, Schoofs T, Gruell H, Settler A, Karagounis T, Kreider EF, Murrell B, Pfeifer N, Nogueira L, Oliveira TY, Learn GH, Cohen YZ, Lehmann C, Gillor D, Shimeliovich I, Unson-O'Brien C, Weiland D, Robles A, Kümmerle T, Wyen C, Levin R, Witmer-Pack	6	Ziyang Xu

	M, Eren K, Ignacio C, Kiss S, West AP Jr, Mouquet H, Zingman BS, Gulick RM, Keler T, Bjorkman PJ, Seaman MS, Hahn BH, Fätkenheuer G, Schlesinger SJ, Nussenzweig MC, Klein F. Nat Med. 2017 Feb;23(2):185-191. doi: 10.1038/nm.4268. Epub 2017 Jan 16. PMID:28092665		
	Natural killer cells migrate into and control simian immunodeficiency virus replication in lymph node follicles in African green monkeys. Huot N, Jacquelin B, Garcia-Tellez T, Rascle P, Ploquin MJ, Madec Y, Reeves RK, Derreudre-Bosquet N, Müller-Trutwin M. Nat Med. 2017 Nov;23(11):1277-1286. doi: 10.1038/nm.4421. PMID: 29035370	21	Analise Gruenewald
	Trispecific broadly neutralizing HIV antibodies mediate potent SHIV protection in macaques. Xu L, Pegu A, Rao E, Doria-Rose N, Beninga J, McKee K, Lord DM, Wei RR, Deng G, Louder M, Schmidt SD, Mankoff Z, Wu L, Asokan M, Beil C, Lange C, Leuschner WD, Kruip J, Sendak R, Kwon YD, Zhou T, Chen X, Bailer RT, Wang K, Choe M, Tartaglia LJ, Barouch DH, O'Dell S, Todd JP, Burton DR, Roederer M, Connors M, Koup RA, Kwong PD, Yang ZY, Mascola JR, Nabel GJ. Science. 2017 Oct 6;358(6359):85-90. doi: 10.1126/science.aan8630. Epub 2017 Sep 20. PMID:28931639	19	Ziyang Xu