

# Daniel B Reeves

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## Education

2015 PhD, Department of Physics and Astronomy, Dartmouth College, Hanover, NH  
2009 Semester abroad, University of Otago, Dunedin, NZ  
2010 BA, Department of Physics, Colby College, Waterville, ME

## Positions held

### CURRENT

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2022- **Staff Scientist**, Vaccine and Infectious Diseases Division, Fred Hutchinson Cancer Center, Seattle, WA.  
2023- **Affiliate Assistant Professor**, Department of Global Health, University of Washington, Seattle, WA.  
2018- **Hutch United External Mentors Chair**, Office of Diversity Equity and Inclusivity, Fred Hutchinson Cancer Center, Seattle, WA.  
2023- **Secretary / Treasurer**, Immunobiology & Infection Subgroup, Society of Mathematical Biology.

### PAST

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2019- **Associate in VID**, Vaccine and Infectious Diseases Division, Fred Hutchinson Cancer Research Center, Seattle, WA.  
2018-2019 **Research Associate**, Vaccine and Infectious Diseases Division, Fred Hutchinson Cancer Research Center, Seattle, WA.  
2015-2017 **Postdoctoral Fellow**, Vaccine and Infectious Diseases Division, Fred Hutchinson Cancer Research Center, Seattle, WA. *Advisor:* Joshua Schiffer MD  
2012-2015 **Graduate Research Assistant**, Physics and Astronomy Department, Dartmouth College, Hanover, NH. *Advisor:* John Weaver PhD  
2010 **Research Assistant**, Department of Physics, Colby College, Waterville, ME. *Advisor:* Jonathan McCoy PhD  
2008-2009 **NNIN Research Assistant**, Department of Physics, Harvard University, Cambridge, MA. *Advisor:* Charles Marcus PhD

## Honors and awards

2020 NIH K25 Mentored Quantitative Research Development Award  
2019 KL2 Scholar's Club, Institute for Translational Health Science (ITHS)  
2019 New Investigator Award, Center for AIDS Research (CFAR)  
2018 WRF Postdoctoral Fellowship, Washington Research Foundation  
2018 STEP Fellow (Science Teaching Experience for Postdocs)  
2017 Landahl-Busenbergl award, Society of Mathematical Biology  
2015 First prize for Graduate Research, Neukom Institute for Computational Science  
2014 Neukom Fellowship, Neukom Institute for Computational Science

2013 Visionaries in Technology Award, Thayer School of Engineering, Hanover, NH

2010 Graduate Assistance in Areas of National Need (GAANN) Fellowship

## Publications

### Preprints/Articles under review

1. **Reeves DB** et al. Impact of misclassification of HIV proviruses during reservoir quantification. Under review *Nature Communications*.
2. **Reeves DB** et al. High monoclonal neutralization titers reduced breakthrough HIV-1 viral loads in the Antibody Mediated Prevention trials. Under review *Nature Communications*.
3. **Reeves DB** et al. Estimating the contribution of CD4 T cell proliferation and differentiation to HIV persistence. Under review *Nature Communications*.

### Journal articles (44 total, 15 first authorship, 2 last authorship, \*=shared)

1. Gilbert PB, . . . **Reeves DB** et al. Neutralization titer biomarker for antibody-mediated prevention of HIV-1 acquisition. *Nature Medicine*. **28** (9),1924-32 (2022).
2. Jyoti D, Gordon-Wylie SW, **Reeves DB**, Paulsen KD, Weaver JB. Distinguishing Nanoparticle Aggregation from Viscosity Changes in MPS/MSB Detection of Biomarkers. *Sensors* **22** (17):6690 (2022).
3. Boshier F, **Reeves DB**, Duke ER, Swan DA, Cardozo-Ojeda EF, Schiffer JT. Substantial uneven proliferation of CD4+ T cells during recovery from acute HIV infection is sufficient to explain the observed expanded clones in the HIV reservoir. *Journal of Virus Eradication* **8** (4), 100091 (2022).
4. Mdluli T, Li Y, Pinyakorn S, **Reeves DB**, Cardozo-Ojeda EF, Yates A, Intasan J, Tipsuk S, Phanuphak N, Saccalan C, Colby DJ, Kroon E, Crowell TA, Thomas R, Robb ML, Ananworanich J, deSouza M, Phanuphak P, Stieh DJ, Tomaka FL, Trautmann L, Ake JA, Hsu DC, Francisco LV, Vasana S, Rolland M. Acute HIV-1 infection viremia associate with rebound upon treatment interruption [*Cell Med*] (2022).
5. Mayer BT, deCamp A, Huang Y, Schiffer JT, Gottardo R, Gilbert PB, **Reeves DB**. Optimizing clinical dosing of combination broadly neutralizing antibodies for HIV prevention. *PLoS computational biology* **18** (4), e1010003 (2022). [Cover article]
6. **Reeves DB\***, Goyal A\*, Schiffer JT. Early super-spreader events are a likely determinant of novel SARS-CoV-2 variant predominance. *Journal of the Royal Society Interface* **19** (189), 20210811 (2022).
7. Swan DA, Rolland M, Herbeck J, Schiffer JT, **Reeves DB**. Evolution during primary HIV infection does not require adaptive immune selection *Proceedings of the National Academy of Sciences* **119** (7) (2022).
8. Cassidy NA, Fish CS, Levy CN, Roychoudhury P, **Reeves DB**, Hughes SM, Schiffer JT, Benki-Nugent S, John-Stewart G, Wamalwa D, Jerome KR. HIV reservoir quantification using cross-subtype multiplex ddPCR. *iScience* **11**: 103615 (2021) .
9. Swan DA, Bracis C, Janes H, Moore M, Matrajt L, **Reeves DB**, Burns E, Donnell D, Cohen MS, Schiffer JT, Dimitrov D. COVID-19 vaccines that reduce symptoms but do not block infection need higher coverage and faster rollout to achieve population impact. *Scientific Reports* **11**(1):1-9 (2021).
10. Swan DA, Goyal A, Bracis C, Moore M, Krantz E, Brown E, Cardozo-Ojeda F, **Reeves DB**, Gao F, Gilbert PB, Corey L. Mathematical modeling of vaccines that prevent SARS-CoV-2 transmission. *Viruses* **13**(10):1921 (2021).
11. **Reeves DB**, Rolland M, Dearlove B, Li Y, Robb M, Gilbert P, Schiffer JB, Cardozo-Ojeda F, Mayer B. Timing HIV infection with nonlinear viral dynamics. *Journal of the Royal Society Interface* **18** (179): 20210314 (2021).
12. Goyal A, **Reeves DB**, Cardozo-Ojeda EF, Mayer BT, Schiffer JT. Slight reduction in SARS-CoV-2 exposure viral load due to masking results in a significant reduction in transmission with widespread

- implementation. *Scientific reports* **11** (1): 1-12 (2021).
13. **Reeves DB\***, Bracis C\*, Swan DA, Moore M, Dimitrov D, Schiffer JT. Rapid vaccination and partial lockdowns minimize 4th waves from emerging highly contagious SARS-CoV-2 variants. *Med* **2** (5): 573-574 (2021).
  14. Levy CN, Hughes SM, Roychoudhury P, **Reeves DB**, Amstuz C, Zhu H, Huang M-L, Wei Y, Bull ME, Cassidy NAJ, McClure J, Frenkel LM, Stone M, Bakkour S, Busch MP, Deeks S, Schiffer JT, Coombs RW, Lehman DA, Jerome KR, Hladik F. A highly multiplexed droplet digital PCR assay to measure the intact HIV-1 proviral reservoir. *Cell Reports Medicine* **6**:100243 (2021).
  15. Goyal A, **Reeves DB**, Cardozo-Ojeda EF, Schiffer JT, Mayer BT. Viral load and contact heterogeneity predict SARS-CoV-2 transmission and super-spreading events. *eLife* **21** (2021).
  16. Bacchus-Souffan C, Fitch M, Symons J, Abdel-Mohsen M, **Reeves DB**, Hoh R, Stone M, Hiatt J, Kim P, Chopra A, Ahn H, York VA, Cameron DL, Hecht F, Martin J, Yukl S, Mallal S, Cameron P, Deeks S, Schiffer JT, Lewin SR, Hellerstein MK, McCune JM, Hunt PW. Relationship between CD4 T cell turnover, cellular differentiation and HIV persistence during ART. *PLoS Pathogens* **17**(1):e1009214 (2021) <https://doi.org/10.1371/journal.ppat.1009214>.
  17. Cardozo EF, Duke ER, Peterson CW, **Reeves DB**, Mayer BT, Kiem H-P, Schiffer JT. Thresholds for post-rebound viral control after CCR5 gene-edited autologous hematopoietic cell transplantation. *eLife*, **10**:2791-25 (2021).
  18. Bracis C, Burns E, Moore M, Swan D, **Reeves DB**, Schiffer JT, Dimitrov DT. Widespread testing, case isolation and contact tracing may allow safe school reopening with continued moderate physical distancing: a modeling analysis of King County, WA data. *Infectious Disease Modelling*, **6**: 24-35 (2021).
  19. Dearlove BL, Lewitus E, Bai H, Li Y, **Reeves DB**, Joyce MG, Scott P, Amare M, Vasan S, Michael NL, Modjarrad K. A SARS-CoV-2 vaccine candidate would likely match all currently circulating strains. *Proceedings of the National Academy of Sciences*, **117**(38): 23652 (2020).
  20. Shelton E, **Reeves DB**, and Bender-Ignacio RB. Initiation of Antiretroviral Therapy during Primary HIV Infection: Effects on the Latent HIV Reservoir, Including on Analytic Treatment Interruptions. *AIDS Reviews*, **23**(3) (2020) DOI:10.24875/aidsrev.20000001.
  21. Waghmare A, Krantz E, Baral S, Vasquez E, Loeffelholz T, Chung EL, Pandey U, Kuypers J, Duke E, Jerome K, Greninger A, **Reeves DB**, Hladik F, Cardozo-Ojeda EF, Boeckh M, Schiffer J. Reliability of self-sampling for accurate assessment of respiratory virus viral and immunologic kinetics. *The Journal of Infectious Diseases*, jiaa451 (2020) <https://doi.org/10.1093/infdis/jiaa451>.
  22. Antar AAR, Jenike KM, Jang S, Rigau DN, **Reeves DB**, Hoh R, Krone MR, Keruly JC, Moore RD, Schiffer JT, Nonyane BAS, Hecht FM, Deeks SG, Siliciano JD, Ho Y, Siliciano RF. Longitudinal sequencing and IPDA reveal dynamics of HIV-1 proviruses during long-term antiretroviral therapy. *Journal of Clinical Investigation*. **2**:4629 (2020).
  23. **Reeves DB**, Huang Y, Duke ER, Mayer BT, Cardozo-Ojeda EF, Boshier F, Swan D, Rolland M, Robb M, Mascola JR, Cohen MS, Corey L, Gilbert PB, Schiffer JT. Simulations of the Antibody Mediated Prevention (AMP) trials identify possible mechanistic causes of breakthrough infections. *PLOS Computational Biology* **16**:e1007626 (2020).
  24. Pankau M, **Reeves DB**, Harkins E, Ronen K, Jaoko W, Mandaliya K, Graham S, McClelland RS, Matsen FA, Schiffer JT, Overbaugh J, Lehman D. Dynamics of HIV DNA reservoir seeding in a cohort of superinfected Kenyan women. *PLOS Pathogens* **16**:e1008286–20 (2020).
  25. Rolland M, Tovanabuttra S, Dearlove B, Li Y, Owen C, Lewitus E, Sanders-Buell E, Bose M, O'Connell A, Sullivan A, Rossen Khan R, Labuschagne JP, Edlefsen PT, **Reeves DB**, Kijak G, Miller S, Poltavee K, Lee J, Bonar L, Harbolick E, Ahani B, Pham P, Kibuuka H, Maganga L, Nitayaphan S, Sawe FK, Eller

- LA, Gramzinski R, Kim JH, Michael NL, Robb ML, and the RV217 Study Team. Molecular dating and viral load growth rates suggested that the eclipse phase lasted about a week in HIV-1 infected adults in East Africa and Thailand. *PLOS Pathogens* **16**:e1008179 (2020)
26. **Reeves DB**, Duke ER, Wagner TA, Palmer S, Spivak A, and Schiffer JT. A majority of HIV persistence during antiretroviral therapy is due to infected cell proliferation. *Nature Communications*, **9**(1): 49 (2018). [Editor's Highlight]
  27. Huang Y, Karuna S, Carpp L, **Reeves DB**, Pegu A, Seaton K, Mayer K, Schiffer JT, Mascola J, Gilbert PB. Modeling cumulative overall prevention efficacy for the VRC01 phase 2b efficacy trials. *Human Vaccines & Immunotherapeutics* **14**(9): 2116 (2018).
  28. Roychoudhury P, De Silva Feelixge H, **Reeves DB**, Mayer BT, Stone D, Schiffer JT, Jerome KR. Viral diversity is an obligate consideration in CRISPR/Cas9 designs for HIV cure. *BMC Biology* **16**: 75 (2018).
  29. **Reeves DB**, Margaret A, Greninger A, Johnston CM, Schiffer JT. Model-based estimation of superinfection prevalence from limited data sets. *Journal of the Royal Society: Interface* **15**(139): 20170968 (2018).
  30. Johnston C, Margaret A, Roychoudhury P, Greninger AL, **Reeves DB**, Schiffer J, Jerome KR, Sather C, Diem K, Lingappa JR, Celum C, Koelle DM, Wald A. Dual-strain genital herpes simplex virus type 2 (HSV-2) infection in the US, Peru, and 8 countries in sub-Saharan Africa: A nested cross-sectional viral genotyping study. *PLoS Medicine* **14**(12): e1002475 (2017).
  31. **Reeves DB\***, Duke ER\*, Prlic M, Hughes SM, Hladik F, and Schiffer JT. Anti-proliferative cure for HIV: A compound interest approach. *Scientific Reports* **7**:4011 (2017).
  32. **Reeves DB**, Peterson C, Kiem HP, and Schiffer JT. Autologous stem-cell transplantation disrupts adaptive immune responses during rebound SHIV viremia. *Journal of Virology* **91**(13): e00095 (2017).
  33. **Reeves DB**, Shi Y, and Weaver JB. Generalized Scaling and the Master Variable for Brownian Magnetic Nanoparticle Dynamics. *PLoS One* **11**(3): e0150856 (2016).
  34. **Reeves DB** and Weaver JB. Combined Brown and Néel rotational Langevin equations in magnetic particle imaging, sensing, and therapy *Applied Physics Letters* **107**: 223106 (2015).
  35. Shah SA, **Reeves DB**, Ferguson RM, Weaver JB and Krishnan KM. Mixed Brownian alignment and Néel rotations in superparamagnetic iron oxide nanoparticle suspensions driven by an ac field. *Physical Review B: Condensed Matter and Materials Physics* **92**(9): 094438 (2015).
  36. **Reeves DB** and Weaver X. Comparisons of characteristic timescales and approximate models for Brownian magnetic nanoparticle rotations. *Journal of Applied Physics* **117**: 233905 (2015).
  37. Zhang X, **Reeves DB**, et al. Toward localized in vivo biomarker concentration measurements. *Magnetics, IEEE Transactions on*, **51**(2): 1 (2015).
  38. **Reeves DB** and Weaver JB. Approaches for modeling magnetic nanoparticle dynamics, *Critical Reviews of Biomedical Engineering* **42**(1) (2014). [Invited]
  39. Perreard IM, **Reeves DB**, et al. Temperature of the magnetic nanoparticle microenvironment: estimation from relaxation times, *Physics in Medicine and Biology* **59**(5): 1109 (2014). [Featured article]
  40. **Reeves DB** and Weaver JB. Magnetic nanoparticle sensing: decoupling the magnetization from the excitation field, *Journal of Physics D: Applied Physics* **47**(4): 045002 (2014).
  41. **Reeves DB** and Weaver JB. Nonlinear simulations to optimize magnetic nanoparticle hyperthermia, *Applied Physics Letters* **104**(10): 102403 (2014).
  42. Weaver JB, Zhang X, Kuehlert E, Toraya-Brown S, **Reeves DB**, Perreard IM, and Fiering S. Quantification of magnetic nanoparticles with low frequency magnetic fields: compensating for relaxation effects, *Nanotechnology* **24**(32): 32550 (2013).
  43. Zhang X, **Reeves DB**, et al.. Molecular sensing with magnetic nanoparticles using magnetic spec-

troscopy of nanoparticle Brownian motion, *Biosensors and Bioelectronics*. **50**: 441 (2013).

44. **Reeves DB** and Weaver JB. Simulations of magnetic nanoparticle Brownian motion, *Journal of Applied Physics* **112**(12): 124311 (2012).

### Refereed conference proceedings

- **Reeves DB**, Weaver JB. Measuring the microenvironmental temperature around magnetic nanoparticles, *Proceedings of the Materials Research Society*, 1625 mrsf13-1625-i06-15, Cambridge University Press (2014).
- **Reeves DB**, Weizenecker J, and Weaver JB. Langevin equation simulation of Brownian magnetic nanoparticles with experimental and model comparisons. *Proceedings of International Society for Optics and Photonics (SPIE)*, SPIE Medical Imaging 86721C-86721C-7 (2013).

### Book chapters

- **Reeves DB** “Nonlinear non equilibrium simulations of magnetic nanoparticles”, in *Magnetic Characterization Techniques for Nanomaterials* (C Kumar ed.), Springer-Verlag Berlin Heidelberg, 2017.

### Research presentations

#### Invited oral presentations

- “Impact of misclassification on HIV reservoir quantification”. Bill and Melinda Gates Foundation HIV Cure Consortium. Seattle WA, December 2022.
- “Multi-scale modeling reveals that early super-spreader events are a likely contributor to novel variant predominance”. IMAG/MSM Working Group (Multiscale Modeling and Viral Pandemics). Virtual, April 2022.
- “Unified Phylodynamic Modeling of Within-Host HIV – Red queen, red herring?”. Society of Mathematical Biology, Immunology Minisymposium. Virtual, May 2021.
- “Unified Phylodynamic Modeling of Within-Host HIV? When Is the Reservoir Created?”. SIAM Dynamical Systems, Immunology Minisymposium. Virtual, May 2021.
- “Vaccination, not vaccines, saves lives. Modeling SARS-CoV-2 in King County WA”. WHO SAGE Strategic Analysis Group of Experts – Modeling. Virtual, March 2021.
- “Vaccination, not vaccines, saves lives. Modeling SARS-CoV-2 in King County WA”. Virginia Tech MathBio Seminar. Virtual, February 2021.
- “The pathway to a unified phylodynamic model of the HIV reservoir”. University of Montreal Computational and Quantitative Biology Seminar. Virtual, December 2020.
- “The pathway to a unified phylodynamic model of the HIV reservoir”. VIDD Seminar. Virtual, August 2020.
- “HIV Reservoir Clones, How They Got There, Why They Stay”. CFAR New Faces. Virtual, May 2020.
- “The impact (or not) of HIV evolution on cure”. WRF Postdoctoral Fellows Symposium, Seattle, WA, January 2020.
- “The impact (or not) of HIV evolution on cure”. Fred Hutchinson Cancer Research Center/UW Virology Symposium, Seattle, WA, January 2020.
- “Just a passenger: How natural T cell dynamics contribute to HIV persistence”. Walter Reed Army Research Institute, Silver Spring, MD, October 2019.
- “Modeling the HIV reservoir”. CFAR Cure Technology Workshop, Seattle, WA January 2019.
- “Mathematical modeling to identify mechanistic correlates and timing of breakthrough HIV infection in the AMP trial”. HVTN Investigators Meeting, Seattle, WA November 2018.

- “Just a passenger: Clues into HIV persistence through infected cell clonality”. UCSF Dept. of Experimental Medicine Inter-lab Meeting (ILM), San Francisco, CA September 2018.
- “Mathematical models of HIV: From vaccines to cure”. Fred Hutchinson Cancer Research Center Infectious Diseases Sciences Faculty meeting, Seattle, WA April 2018.
- “HIV dynamics: Barriers and opportunities for cure”. Fred Hutchinson Cancer Research Center VIDC Seminar, Seattle, WA March 2017.
- “Within-host modeling of HIV cure”. Institute for Disease Modeling Spotlight Talk. Seattle, WA August 2016.
- “Modeling HIV cure”. Fred Hutchinson Cancer Research Center Mathematical Modeling Affinity Group. Seattle, WA March 2016.
- “Dynamics and diversity of within-host viral modeling”. University of Georgia Computational Ecology & Epidemiology Study Group, Athens, GA January 2016.
- “Dynamical systems and HIV cure”. University of Washington Postdoc Association Research Symposium, Seattle, WA November 2015.
- “How studying nanoparticles can save lives”. Colby College Physics Colloquium, Waterville, ME April 2013.

### Conference abstracts (*presenting author underlined*)

- Reeves D . . . Antar A. Simultaneous clonality modeling of CD4+ T cell receptors and HIV proviruses. Keystone Next Generation HIV Vaccines & Therapies (C2). Banff AB, Mar 2022 [talk]
- Poindexter . . . Reeves D. Differential clearance of intact and defective HIV DNA in the pediatric reservoir. CROI. Virtual Feb 2022 [poster]
- Reeves D . . . Antar A. HIV proviruses mimic the clonality of highly expanded CD4+ T cell clones in people on ART. Virtual Feb 2022 [poster]
- Reeves D et al. Merging viral dynamics and phylodynamics for HIV primary infection. 4th Workshop on Viral Dynamics. Virtual Oct 2021 [talk]
- Reeves D et al. The passenger hypothesis: HIV exploits CD4 T cell homeostasis to promote long-term persistence of its reservoirs. International AIDS Society. Virtual, July 2021. [talk]
- Reeves D et al. Factors which determine COVID-19 vaccination impact under moderate physical distancing. Council of State and Territorial Epidemiologists Annual Meeting. Virtual, June 2021. [pre-recorded talk]
- Reeves D, Bracis C, Swan D, Moore M, Dimitrov D, Schiffer J. The preeminence of rapid vaccination for COVID-19 seen through the lens of Morris sensitivity analysis. Evolution and Dynamics of HIV and other viruses. Virtual, May 2021. [talk]
- Reeves D. Unified phylodynamics. Evolution and Dynamics of HIV and other viruses. Virtual, May 2020.
- Antar AAR, Jenike KM, Jang S, Rigau DN, Reeves DB, Hoh R, Krone MR, Keruly JC, Moore RD, Schiffer JT, Nonyane BAS, Hecht FM, Deeks SG, Siliciano JD, Ho Y, Siliciano RF. HIV provirus persistence & proliferation on ART is independent of defect and epitope. CROI, Boston MA, March 2020.
- Levy CN, Hughes SM, Roychoudhury P, Reeves DB, Spragg C, Zhu H, Huang M, Wei Y, Bull ME, Cassidy NA, Lehman DA, McClure J, Coombs RW, Jerome KR, Hladik F. A Novel ddPCR protocol to estimate copy numbers of potentially intact HIV-1 provirus. CROI, Boston MA, March 2020.
- Reeves D. Just A Passenger: How natural T cell dynamics contribute to HIV persistence. The 4th Workshop on Virus Dynamics, Paris FR, October 2019. [talk]
- Swan D, Schiffer J, Reeves D. Mechanistic within-host phylodynamics of HIV primary infection. The

- 4th Workshop on Virus Dynamics, Paris FR, October 2019. [poster]
- Swan D, Schiffer J, Reeves D. A unified phylodynamic model of HIV primary infection. 4th Conference on Cell and Gene Therapy, Seattle WA, August 2019. [poster]
  - Reeves D, Huang Y, Duke E, Mayer B, Gilbert P, Schiffer J. Mathematical modeling of the HIV antibody mediated prevention trials (AMP). ITHS Translational Science Expo. Seattle WA, May 2019. [poster]
  - Reeves D, Huang Y, Duke E, Mayer B, Gilbert P, Schiffer J. A mathematical model reveals a framework to infer whether breakthrough infections in the AMP trials are due to insufficient VRC01 potency and/or breadth. Keystone Symposia on HIV Vaccines (X7). Whistler BC, March 2019. [poster]
  - Boshier F, Reeves D, Duke E, Cardozo-Ojeda F, Swan D, Schiffer J. Effects of cellular proliferation on the formation HIV latent reservoir. Keystone Symposia on Functional Cures and the Eradication of HIV (X8). Whistler BC, March 2019. [poster]
  - Reeves D, Boshier F, Ashton C, Smith J, Schiffer JT. Clues into HIV persistence from clonality of infected cells. NIH Strategies for an HIV Cure. Bethesda, MA, October 2018. [poster]
  - Reeves D, Schiffer JT. HIV reservoir ecology, from clonal abundance to mechanistic understanding. HIV Dynamics and Evolution, Leavenworth, WA, March 2018. [talk]
  - Reeves D, Duke ER, Huang Y, Gilbert P, Schiffer J. Mechanistic interpretations of various possible outcomes in the AMP trials based on in silico simulations. HIV Dynamics and Evolution, Leavenworth, WA, March 2018. [talk]
  - Reeves D, Duke ER, Huang Y, Gilbert P, Schiffer J. Viral dynamics model illustrates diverse outcomes in simulated AMP trials. Keystone Symposia J6: Progress and Pathways Toward an Effective HIV Vaccine, Banff, AB, January 2018. [poster]
  - Roychoudhury P, De Silva Felixge H, Reeves D, Schiffer J, Jerome K. Rational design and evaluation of CRISPR/Cas9 strategies for HIV cure. Conference on Cell and Gene Therapy, Seattle, WA August 2017 [poster (awarded best)].
  - Reeves D, Duke E, Spivak A, Schiffer J. Stochastic simulations of HIV ecology, Society of Mathematical Biology, Salt Lake City, UT July 2017. [poster]
  - Reeves D, Duke E, Spivak A, Schiffer J. Stochastic simulations show that long-term antiretroviral therapy shifts the mechanism of HIV persistence toward proliferating latently infected cells. Keystone Symposia on Modeling Viral Infections and Immunity (E1), Estes Park, CO May 2017. [talk]
  - Reeves D, Duke E, Prlic M, Hladik F, Schiffer J. Estimates of achieving HIV cure with Anti-proliferative therapy. Cold Spring Harbor Laboratory meeting on HIV/AIDS Research: its History & Future, Cold Spring Harbor, NY September 2016. [poster]
  - Reeves D, Duke E, Prlic M, Hladik F, Schiffer J. A compound interest approach to HIV cure, Conference on Cell and Gene Therapy, Seattle, WA August 2016 [poster (awarded best)].
  - Reeves D, Duke E, Prlic M, Hladik F, Schiffer J. A compound interest approach to HIV cure, Keystone HIV conference: Persistence and Pathogenesis, Lake Tahoe, CA March 2016. [poster]
  - Reeves D, Weaver J, Stochastic magnetization dynamics for biochemically bound magnetic nanoparticles, Bulletin of the American Physical Society, American Physical Society March Meeting, San Antonio, TX, March 2015. [poster]
  - Reeves D, Weaver J, Modeling magnetic nanoparticle biosensors, Bulletin of the American-Physical Society, New England Regional Meeting of American Physical Society, Boston, MA, February 2014. [talk]
  - Reeves D, Weaver J, Characteristic times of magnetic nanoparticles, International Workshop on Magnetic Particle Imaging (IWMPPI) Berlin, GE, March 2014. [talk]
  - Reeves D, Weaver J, Temperature measurements using static field magnetic particle spectroscopy,

- International Workshop on Magnetic Particle Imaging (IWMPI), Berkeley, CA, March 2013. [poster]
- Reeves D, Brown S, Fiering S, Weaver J, SUÅŒEÅŒŒIÅŒ81: Toward in Vivo Magnetic Spectroscopy of Brownian Motion, Medical Physics 39:6 p3643-3643 American Association of Physicists in Medicine, Charlotte, SC July 2012. [poster]
  - Weaver J, Zhang X, TorayaÅŒBrown S, Reeves D, Perreard I, Fiering S. TUÅŒGÅŒ217AÅŒ07: Magnetic Nanoparticle Quantitation: Compensating for Relaxation Effects, Medical Physics 39:6 3927-3927, American Association of Physicists in Medicine, Charlotte, SC July 2012. [poster]
  - Reeves D, Vo C, Cassidy M, Marcus C. A study of silicon nanoparticles for magnetic resonance imaging, National Nanotechnology Infrastructure Network Undergraduate Research Symposium, Ithaca, NY, August 2008. [poster]

## Teaching

### Guest lecturer, University of Washington, Seattle WA

–PABIO 591B: History of Pandemics, Spring 2021

*Responsibilities:* Attended lectures, developed and presented a lecture on 1918 Flu. Reviewed student presentations.

*Learning goals:* This course will examine the history of pandemics from the perspective of bench scientists. Students will learn to read the literature, and examine history in terms of primary sources that illustrate how scientific approaches are advancing our understanding of history or how history has advanced our understanding of the science.

### Co-instructor, University of Washington, Seattle WA

–BIOL 485B: Clickbait health claims, Summer 2018

*Responsibilities:* Co-developed a course with 2 other STEP fellows. Met 3x weekly with 15 upper-level undergraduate student biology majors. Co-instructors rotated through weekly lectures, writing and grading homework, and managing Canvas.

*Learning goals:* Students will learn to read and critically engage with mass media by finding reputable primary sources, reading scientific literature, evaluating charts and statistical analysis.

### Teaching Assistant, Dartmouth College, Hanover NH

–P43: Statistical Physics and Thermodynamics, Fall 2014

–P43: Statistical Physics and Thermodynamics, Fall 2015

–P33: Biophysics, Winter 2013.

*Responsibilities:* Personal office hours 2x weekly for 10-20 upper-level undergraduates student physics majors. Graded homework and exams. Managed coursework and course website.

### Teaching & Laboratory Assistant, Dartmouth College, Hanover NH

–P13: Introductory Physics for majors I (Mechanics), Fall 2010

–P14: Introductory Physics for majors II (Electricity and Magnetism), Winter 2010

*Responsibilities:* Guided 3hr laboratory experiments (10-20 students) and recitations to review class work for first year physics students. Graded weekly problem sets, midterms, and final exams for 60 students. Independently organized and ran 2hr weekly homework help sessions.

## Service and Outreach

- Fred Hutch Virtual Town Hall | COVID-19, May 2021
- SARS-CoV-2 Science, learning from HIV, Fred Hutch Philanthropy Department May 2021
- Fred Hutch planner meeting, Honors College Seminar March 2021



- Shoreline Community College, Honors College Seminar March 2021
- Session Chair, COVID-19 Dynamics & Evolution Conference II, October 2020
- Give Event: COVID-19 vaccines and treatment – Microsoft Cloud Computing, October 2020.
- Fred Hutch Donor Event, Innovators Network Happy Hour, April 2020.
- Ask a scientist panel for Bremerton Middle School, November 2019.
- Inclusivity workshop organizer: 'International scientists', May 2019.
- Inclusivity workshop organizer: 'Plugging the leaky STEM pipeline', May 2018.
- Northwest Association for Biomedical Research Science Competition Judge, December 2017.
- "Using mathematics for HIV cure". Infectious Disease Science Department Outreach to Administration Talk, March 2016.

## Students mentored

### Fred Hutchinson Cancer Research Center, Seattle WA

2021- **Makayla Pointdexter**. SURP intern. NC State biomedical engineering major, analysis and modeling of pediatric HIV reservoirs.

2019-2020 **Arielle Aiken**. UW Senior Biology major, Analysis of deep-mutational scanning data.

2018-19 **Annie Li**. Forest Ridge HS Senior honors project, Impact of blood transfusions on HIV epidemiology in China.

2018 **Cameron Ashton**. Seattle Pacific University Summer student. HIV phylogenetic reservoir studies and data compilation from online databases using R.

2018 **Ajay Arora**. STEMM Prep Student (Preparing Minority Students for Careers in Science Technology Engineering Math and Medicine). Modeling MMF therapy and data fitting using Python.

2017 **Rebecca Drachman**. Lakeside HS Student. Modeling AMP study using simple HIV within host model.

### Dartmouth College, Hanover NH

2013 **Michael Kane, Felicia Hammer, Anna Haron**. Managed and oversaw design and building of novel magnetic spectrometry apparatus. Carried out joint experiments.

2012 **Ethan Forauer, Ben Fiering**. Cooperatively designed new apparatuses and performed experiments. Ethan contributed authorship to a paper in *Physics in Medicine and Biology*.

2011 & 2012 **Esra Kuehlert**. Cornell University undergraduate. Helped manage and conduct experiments. Work resulted in a first author publication for Esra in *Medical Physics*.

## Additional education and courses

- Native American Cultural Competency Training, WA State Governor's Office of Indian Affairs, Fred Hutchinson Cancer Research Center, Seattle, WA
- 9th Summer Institute in Statistical Genetics, University of Washington, Seattle, WA
- Future Faculty Fellows Workshop, University of Washington, Seattle, WA
- 8th Summer Institute in Statistical Genetics, University of Washington, Seattle, WA
- 7th Summer Institute in Statistics and Modeling in Infectious Diseases, University of Washington, Seattle, WA
- Nonlinear dynamics: mathematical and computational approaches. MOOC, Sante Fe Institute, Sante Fe, NM
- Introduction to nanotechnology. Summer lecture series, Harvard University, Cambridge, MA

## Press and Media

- TV interview on SARS-CoV-2 superspreading, KOMO News Seattle, April 2021
- Opinion: Washington, Oregon contained Covid outbreaks better than most, but here's the flipside. *Puget Sound Business Journal*, March 2021
- Seattle researchers find clues for treatments that could eliminate HIV in infected patients. *Geekwire*, January 2021
- TV interview on SARS-CoV-2 masks, KIRO7 News Seattle, September 2020
- TV interview on COVID-19 superspreading, KOMO News Seattle, September 2020.
- Computer model offers insights on COVID-19 super-spreading. *Hutch News*, August 2020.
- Persistent HIV infection works a lot like cancer, study shows. *Hutch News*, November 2018.

## Conference and travel scholarships

- Keystone Symposia Scholarship, Progress and Pathways to an Effective HIV Vaccine (J6)
- Travel Award, Hutch United
- Keystone Symposia Scholarship, Modeling Viral Infections and Immunity (E1)
- SISMID Summer School Scholarship, UW Department of Biostatistics
- Graduate Student Travel Award, American Physical Society
- Graduate Travel Award, Neukom Institute at Dartmouth College
- Student Travel Award, Dartmouth College Graduate Studies

## Ad hoc referee

**Biomedical:** Nature Medicine, eLife, Proceedings of the National Academy of Sciences, PLoS Pathogens, PLOS Computational Biology, Frontiers in Immunology, Nature Scientific Reports, Journal: HIV/AIDS - Research and Palliative Care, Mathematical Biosciences and Engineering

**Physics:** Applied Physics Letters, SIAM Journal on Applied Mathematics, Journal of Applied Mathematics and Computing, Journal of Applied Physics, Medical Physics, IEEE Transactions on Magnetics, International Journal of Thermal Science, Acta Physica Polonica, International Journal of Magnetic Particle Imaging, Sensors

## Professional membership

2020- AMS American Society for Microbiology  
2016- SMB Society of Mathematical Biology  
2014- SIAM Society for Industrial and Applied Mathematics  
2016-2019 NPA National Postdoctoral Association  
2013-2015 MRS Materials Research Society  
2009-2015 APS American Physical Society

## Computational fluency

**Expert:** Python, Matlab, LaTeX, SVG editing, Monolix

**Experienced:** C/C++, Unix, Mathematica/Maxima, R, html, Bayesian phylogenetics

## Professional references

Available upon request

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Last updated: March 8, 2023