

Scott Sherrill-Mix

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EDUCATION

Postdoctoral researcher

SEP 2015–PRESENT

Advisors: Beatrice Hahn & Frederic Bushman
University of Pennsylvania

Ph.D. Genomics & Computational Biology

SEP 2009–AUG 2015

Latency, expression and splicing during infection with HIV

Advisor: Frederic Bushman
University of Pennsylvania

M.Sc. Biology

JAN 2004–AUG 2007

An analysis of migratory cues and potential tagging effects in the leatherback sea turtle

Advisors: Ransom Myers & Michael James
Dalhousie University

B.Sc. Biology

AUG 1998–AUG 2002

OCT 2001–AUG 2002 (Study abroad)

Florida State University
Hiroshima University

PUBLICATIONS

- W Liu*, RM Russell*, F Bibollet-Ruche*, AN Skelly*, S Sherrill-Mix*, DA Freeman, R Stoltz, E Lindemuth, FH Lee, S Sterrett, KJ Bar, N Erdmann et al. 2021. **Predictors of nonseroconversion after SARS-CoV-2 infection.** *Emerg Infect Dis* 27
- S Sherrill-Mix, Y Hwang, AM Roche, A Glascock, SR Weiss, Y Li, L Haddad, P Deraska, C Monahan, A Kromer, J Graham-Wooten, LJ Taylor et al. 2021. **Detection of SARS-CoV-2 RNA using RT-LAMP and molecular beacons.** *Genome Biol* 22
- RM Russell, F Bibollet-Ruche, W Liu, S Sherrill-Mix, Y Li, J Connell, DE Loy, S Trimboli, AG Smith, AN Avitto, MVP Gondim, LJ Plenderleith et al. 2021. **CD4 receptor diversity represents an ancient protection mechanism against primate lentiviruses.** *Proc Natl Acad Sci* 118:e2025914118
- S Sherrill-Mix, GD Van Duyne & FD Bushman. 2021. **Molecular beacons allow specific RT-LAMP detection of B.1.1.7 variant SARS-CoV-2.** *medRxiv*
- J Everett, P Hokama, AM Roche, S Reddy, Y Hwang, L Kessler, A Glascock, Y Li, JN Whelan, SR Weiss, S Sherrill-Mix, K McCormick et al. 2021. **SARS-CoV-2 genomic variation in space and time in hospitalized patients in Philadelphia.** *mBio* 12:e03456–20
- MVP Gondim*, S Sherrill-Mix*, F Bibollet-Ruche, RM Russell, S Trimboli, AG Smith, Y Li, W Liu, AN Avitto, JC DeVoto, J Connell, AE Fenton-May et al. 2021. **Heightened resistance to host type 1 interferons characterizes HIV-1 at transmission and after antiretroviral therapy interruption.** *Sci Transl Med* 13:eabd8179
- S Sherrill-Mix. 2020. **Dynamics of RT-qPCR SARS-CoV-2 detection rates prior to and after symptom onset.** *medRxiv*
- S Sherrill-Mix, K Connors, GM Aldrovandi, J Brenchley, C Boucher, F Bushman, R Collman, S Dandekar, NR Klatt, LA Lagenaur, R Paredes, G Tachedjian et al. 2020. **A summary of the fifth annual Virology Education HIV Microbiome workshop.** *AIDS Res Hum Retroviruses* 36:886–895
- R Liu, YHJ Yeh, A Varabyou, JA Collora, S Sherrill-Mix, CC Talbot, S Mehta, K Albrecht, H Hao, H Zhang, RA Pollack, SA Beg et al. 2020. **Single-cell transcriptional landscapes reveal HIV-1-driven aberrant host gene transcription as a potential therapeutic target.** *Sci Transl Med* 12:eaaz0802
- K Matsumoto, S Sherrill-Mix, N Boucher & N Tanna. 2020. **A cone-beam computed tomographic evaluation of alveolar bone dimensional changes and the periodontal limits of mandibular incisor advancement in skeletal class II patients.** *Angle Orthod* 90:330–338

- D Kmiec*, R Nchioua*, S Sherrill-Mix, CM Stürzel, E Heusinger, E Braun, MVP Gondim, D Hotter, KMJ Sparrer, BH Hahn, D Sauter & F Kirchhoff. 2020. **CpG frequency in the 5' third of the env gene determines sensitivity of primary HIV-1 strains to the zinc-finger antiviral protein.** *mBio* 11: e02903–19
- G Liang, C Zhao, H Zhang, L Mattei, S Sherrill-Mix, K Bittinger, LR Kessler, GD Wu, RN Baldasano, P DeRusso & others. 2020. **The stepwise assembly of the neonatal virome is modulated by breastfeeding.** *Nature* 581:470–474
- CL Nobles, S Sherrill-Mix, JK Everett, S Reddy, JA Fraietta, DL Porter, N Frey, SI Gill, SA Grupp, SL Maude, DL Siegel, BL Levine et al. 2019. **CD19-targeting CAR T cell immunotherapy outcomes correlate with genomic modification by vector integration.** *J Clin Invest* 130:673–685
- F Bibollet-Ruche*, RM Russell*, W Liu, GBE Stewart-Jones, S Sherrill-Mix, Y Li, GH Learn, AG Smith, MVP Gondim, LJ Plenderleith, JM Decker, JL Easlick et al. 2019. **CD4 receptor diversity in chimpanzees protects against SIV infection.** *Proc Natl Acad Sci USA* 116:3229–3238
- FD Bushman, K McCormick & S Sherrill-Mix. 2019. **Virus structures constrain transmission modes.** *Nat Microbiol* 4:1778–1780
- JS Leiby, K McCormick, S Sherrill-Mix, EL Clarke, LR Kessler, LJ Taylor, CE Hofstaedter, AM Roche, LM Mattei, K Bittinger, MA Elovitz, R Leite, S Parry & FD Bushman. 2018. **Lack of detection of a human placenta microbiome in samples from preterm and term deliveries.** *Microbiome* 6:196
- S Sherrill-Mix, K McCormick, A Lauder, A Bailey, L Zimmerman, Y Li, JBN Django, P Bertolani, C Colin, JA Hart, TB Hart, AV Georgiev et al. 2018. **Allometry and ecology of the bilaterian gut microbiome.** *mBio* 9:e00319–18
- DB Salantes, Y Zheng, F Mampe, T Srivastava, S Beg, J Lai, JZ Li, RL Tressler, RA Koup, J Hoxie, M Abdel-Mohsen, S Sherrill-Mix et al. 2018. **HIV-1 latent reservoir size and diversity are stable following brief treatment interruption.** *J Clin Invest* 128:3102–3115
- C Chehoud, DJ Stieh, AG Bailey, AL Laughlin, SA Allen, KL McCotter, SA Sherrill-Mix, TJ Hope & FD Bushman. 2017. **Associations of the vaginal microbiota with HIV infection, bacterial vaginosis and demographic factors.** *AIDS* 31:895–904
- ME Hughes, KC Abruzzi, R Allada, R Anafi, AB Arpat, G Asher, P Baldi, C de Bekker, D Bell-Pedersen, J Blau, S Brown, MF Ceriani et al. 2017. **Guidelines for genome-scale analysis of biological rhythms.** *J Biol Rhythms* 32:380–393
- SS Iyer*, F Bibollet-Ruche*, S Sherrill-Mix*, GH Learn, LJ Plenderleith, AG Smith, HJ Barbian, RM Russell, MV Gondim, CY Bahari, CM Shaw, Y Li et al. 2017. **Resistance to type 1 interferons is a major determinant of HIV-1 transmission fitness.** *Proc Natl Acad Sci USA* 114:E590–599
- D Kim, CE Hofstaedter, C Zhao, L Mattei, C Tanes, E Clarke, A Lauder, S Sherrill-Mix, C Chehoud, J Kelsen, M Conrad, RG Collman, RB and Frederic Bushman & K Bittinger. 2017. **Optimizing methods and dodging pitfalls in microbiome research.** *Microbiome* 5:52
- W Liu*, S Sherrill-Mix*, GH Learn, EJ Scully, Y Li, AN Avitto, DE Loy, AP Lauder, SA Sundararaman, LJ Plenderleith, JBN Ndjango, AV Georgiev et al. 2017. **Wild bonobos host geographically restricted malaria parasites including a putative new *Laverania* species.** *Nat Commun* 8:1635
- K Gupta*, V Turkki*, S Sherrill-Mix, Y Hwang, G Eilers, L Taylor, C McDanal, P Wang, D Temelkoff, RT Nolte, E Velthuisen, J Jeffrey, GD Van Duyn & FD Bushman. 2016. **Structural basis for inhibitor-induced aggregation of HIV integrase.** *PLoS Biol* 14:e1002584
- AP Lauder*, AM Roche*, S Sherrill-Mix, A Bailey, AL Laughlin, K Bittinger, R Leite, MA Elovitz, S Parry & FD Bushman. 2016. **Comparison of placenta samples with contamination controls does not provide evidence for a distinct placenta microbiota.** *Microbiome* 4:29
- S Sherrill-Mix, KE Ocwieja & FD Bushman. 2015. **Gene activity in primary T cells infected with HIV_{89.6}: intron retention and induction of genomic repeats.** *Retrovirology* 12:79

- AL Bryson, Y Hwang, S Sherrill-Mix, GD Wu, JD Lewis, L Black, TA Clark & FD Bushman. 2015. **Covalent modification of bacteriophage T4 DNA inhibits CRISPR-Cas9.** *mBio* 6:e00648
- BJ Kelly, R Gross, K Bittinger, S Sherrill-Mix, JD Lewis, RG Collman, FD Bushman & H Li. 2015. **Power and sample-size estimation for microbiome studies using pairwise distances and PERMANOVA.** *Bioinformatics* 31:2461–2468
- KE Ocwieja, S Sherrill-Mix, C Liu, J Song, H Bau & FD Bushman. 2015. **A reverse transcription loop-mediated isothermal amplification assay optimized to detect multiple HIV subtypes.** *PLoS One* 10:e0117852
- KE Ocwieja, AN Fernando, S Sherrill-Mix, SA Sundararaman, RN Tennekoon, R Tippalagama, S Krishnananthasivam, G Premawansa, S Premawansa & AD De Silva. 2014. **Phylogeography and molecular epidemiology of an epidemic strain of dengue virus type 1 in Sri Lanka.** *Am J Trop Med Hyg* 91:225–234
- S Sherrill-Mix, MK Lewinski, M Famiglietti, A Bosque, N Malani, KE Ocwieja, CC Berry, D Looney, L Shan, LM Agosto, MJ Pace, RF Siliciano et al. 2013. **HIV latency and integration site placement in five cell-based models.** *Retrovirology* 10:90
- SA Sundararaman, W Liu, BF Keele, GH Learn, K Bittinger, F Mouacha, S Ahuka-Mundeke, M Manske, S Sherrill-Mix, Y Li, JA Malenke, E Delaporte et al. 2013. **Plasmodium falciparum-like parasites infecting wild apes in southern Cameroon do not represent a recurrent source of human malaria.** *Proc Natl Acad Sci USA* 110:7020–7025
- KE Ocwieja, S Sherrill-Mix, R Mukherjee, R Custers-Allen, P David, M Brown, S Wang, DR Link, J Olson, K Travers, E Schadt & FD Bushman. 2012. **Dynamic regulation of HIV-1 mRNA populations analyzed by single-molecule enrichment and long-read sequencing.** *Nucleic Acids Res* 40:10345–10355
- MG Berg, LN Singh, I Younis, Q Liu, AM Pinto, D Kaida, Z Zhang, S Cho, S Sherrill-Mix, L Wan & G Dreyfuss. 2012. **U1 snRNP determines mRNA length and regulates isoform expression.** *Cell* 150:53–64
- S Dollive, GL Peterfreund, S Sherrill-Mix, K Bittinger, R Sinha, C Hoffmann, CS Nabel, DA Hill, D Artis, MA Bachman, RA Custers-Allen, S Grunberg et al. 2012. **A tool kit for quantifying eukaryotic rRNA gene sequences from human microbiome samples.** *Genome Biol* 13:1
- CB Wilen, J Wang, JC Tilton, JC Miller, KA Kim, EJ Rebar, SA Sherrill-Mix, SC Patro, AJ Secreto, AP Jordan, G Lee, J Kahn et al. 2011. **Engineering HIV-resistant human CD4⁺ T cells with CXCR4-specific zinc-finger nucleases.** *PLoS Pathog* 7:e1002020
- R Mukherjee*, G Plesa*, S Sherrill-Mix, MW Richardson, JL Riley & FD Bushman. 2010. **HIV sequence variation associated with env antisense adoptive T-cell therapy in the hNSG mouse model.** *Mol Ther* 18:803–811
- GP Wang, SA Sherrill-Mix, KM Chang, C Quince & FD Bushman. 2010. **Hepatitis C virus transmission bottlenecks analyzed by deep sequencing.** *J Virol* 84:6218–6228
- MA Hildebrandt, C Hoffmann, SA Sherrill-Mix, SA Keilbaugh, M Hamady, YY Chen, R Knight, RS Ahima, F Bushman & GD Wu. 2009. **High-fat diet determines the composition of the murine gut microbiome independently of obesity.** *Gastroenterology* 137:1716–1724
- SA Sherrill-Mix & MC James. 2008. **Evaluating potential tagging effects on leatherback sea turtles.** *Endanger Species Res* 4:187–193
- SA Sherrill-Mix, MC James & RA Myers. 2008. **Migration cues and timing in leatherback sea turtles.** *Behav Ecol* 19:231–236
- MC James, SA Sherrill-Mix & RA Myers. 2007. **Population characteristics and seasonal migrations of leatherback sea turtles at high latitudes.** *Mar Ecol Prog Ser* 337:245–254

- X Zheng, SA Sherrill-Mix & Q Gao. 2007. **Perceptual shape-based natural image representation and retrieval.** *Proc IEEE Int Conf Semant Comput* 2007:622–629
- MC James, SA Sherrill-Mix, K Martin & RA Myers. 2006. **Canadian waters provide critical foraging habitat for leatherback sea turtles.** *Biol Conserv* 133:347–357
- RA Myers, SA Boudreau, RD Kenney, MJ Moore, AA Rosenberg, SA Sherrill-Mix & B Worm. 2006. **Saving endangered whales at no cost.** *Curr Biol* 17:R10–R11

PRESENTATIONS	<p>ASGCT COVID-19 Symposium 2020 Presentation: LAMP-BEAC: Detection of SARS-CoV-2 RNA using RT-LAMP and molecular beacons</p> <p>2nd University of Pennsylvania Coronavirus Symposium 2020 Presentation: Probabilities of detecting SARS-CoV-2 by RT-qPCR testing</p> <p>Keystone Symposia: HIV Pathogenesis and Cure (cancelled due to pandemic) 2020 Presentation: HIV-1 isolates from treatment interruption rebound plasma have higher p24 release and interferon resistance than those from latent viral outgrowth</p> <p>University of Pennsylvania Virology Seminar 2020 Presentation: Marked variation in the susceptibility of HIV-1 to type 1 interferon inhibition during early, late and rebound infection</p> <p>44th Cold Spring Harbor Meeting on Retroviruses 2019 Presentation: HIV-1 isolates from treatment interruption rebound plasma but not latent viral outgrowth are highly interferon resistant</p> <p>University of Pennsylvania Virology Seminar 2019 Presentation: HIV-1 isolates from treatment interruption rebound serum but not latent viral outgrowth are highly interferon resistant</p> <p>Keystone Symposia: Functional Cures and the Eradication of HIV 2019 Poster: HIV-1 isolates from viral rebound plasma are highly interferon resistant</p> <p>4th NIH Strategies for an HIV Cure 2018 Poster: HIV-1 isolates from viral rebound plasma are highly interferon resistant</p> <p>43rd Cold Spring Harbor Meeting on Retroviruses 2018 Presentation: Type 1 interferon mediated viral control in early and late stage HIV-1 infection</p> <p>Keystone Symposia: Progress and Pathways Toward an Effective HIV Vaccine 2018 Poster: Type 1 interferon mediated viral control in early and late stage HIV-1 infection</p> <p>University of Pennsylvania Prokaryotic Seminar 2017 Presentation: Metagenomic bioinformatics: the search for a placental microbiome and a survey of bilaterian gut communities</p> <p>University of Pennsylvania Virology Seminar 2017 Presentation: The fall and the rise: longitudinal dynamics of interferon resistance in HIV-1</p> <p>University of Pennsylvania Virology Seminar 2016 Presentation: Bayes and the hunt for a transmitted HIV phenotype</p> <p>University of Pennsylvania Virology Seminar 2014 Presentation: HIV, endogenous retroviruses and isothermal PCR</p> <p>Institute for Biomedical Informatics Annual Retreat 2014 Presentation: Splicing changes and chimeras during HIV infection revealed by RNA-Seq</p> <p>38th Cold Spring Harbor Meeting on Retroviruses 2014 Poster: HIV and host cell RNA abundance analyzed by RNA-Seq</p> <p>University of Pennsylvania Virology Seminar 2013 Presentation: High throughput analyses of lentiviral replication and latency</p> <p>9th International R User Conference 2013 Presentation: g_lmnet and latent HIV: twists in the hunt for a cure</p> <p>20th Conference on Retroviruses and Opportunistic Infections 2013 Presentation & Poster: HIV latency and integration site placement in five cell-based models</p> <p>37th Cold Spring Harbor Meeting on Retroviruses 2012 Poster: HIV and host mRNA analyzed by high throughput sequencing</p>
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	19th Conference on Retroviruses and Opportunistic Infections	2012
	Poster: Single molecule enrichment and sequencing of HIV: Exon utilization and novel ORFs	
	27th Annual Symposium on Sea Turtle Conservation and Biology	2007
	Presentation: High latitude leatherback turtles: when do they migrate south?	
	IUCN Shark Specialist Group Red List Workshop	2004
	Assessments: <i>Scyliorhinus retifer</i> , <i>Scyliorhinus meadi</i> , <i>Somniosus microcephalus</i> & <i>Isistius plutodus</i>	
	5th Mote International Symposium in Fisheries Ecology	2004
	Poster: When does catch-per-unit-effort reflect abundance?	
SUPPORT	K22 AI152615	2021–2023
	Identifying the source and biological properties of rebound virus from the latent HIV-1 reservoir	
AWARDS	Patent 2017/099801: Composition, kits and methods to detect HIV virus	2017
	PENN-PORT teaching and diversity course	2016
	National Research Service Award in HIV Pathogenesis	2015–2017
	CROI Young Investigator Award	2013
	CROI Young Investigator Award	2012
	National Research Service Award in Computational Genomics	2011–2013
	Certificate in Living Marine Resource Ecology	2002
	Florida State University Summa Cum Laude	2002
	Phi Beta Kappa	2002
	Japan Student Services Organization Exchange Scholarship	2001–2002
	National Merit Scholar	1998–2002
TEACHING	Lecturer	Probability and statistics for dental research
	University of Pennsylvania – Fall 2017, Fall 2018, Fall 2019	
	Lecturer	Programming for microbiologists workshop
	University of Pennsylvania – Spring 2016	
	Teaching assistant	Marine diversity
	Dalhousie University – Fall 2006	
	Teaching assistant	Introduction to biology I/II
	Dalhousie University – Fall 2004, Spring 2005, Fall 2005, Spring 2006	
EXPERIENCE	Consultant	Department of Fisheries and Oceans Canada
	Independent contractor	NOV 2015–NOV 2016
	Programmer analyst	University of Pennsylvania
	Philadelphia, Pennsylvania	JUN 2008–SEP 2009
	Consultant	Canadian Sea Turtle Network
	Independent contractor	JAN 2008–JUL 2010
	Consultant	Atlantic Loggerhead & Leatherback Stock Assessments
	Independent contractor	FEB 2006–MAY 2008
	Field biologist	International Pacific Halibut Commission
	Gulf of Alaska	MAY 2003–SEP 2003
	Fishery observer	Frank Orth and Associates & Data Contractors, Inc.
	California, Gulf of Alaska & Bering Sea	SEP 2002–MAY 2003