

J. STEPHEN LODMELL

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RESEARCH INTERESTS: Structure and function of viral RNA; biochemistry of RNA and RNA-protein interactions; virus-cell interactions; cellular antiviral response.

PROFESSIONAL PREPARATION:

2006-2007: Sabbatical fellow, laboratory of Richard Elliott, University of St. Andrews, St. Andrews, Scotland. Rift Valley fever virus molecular virology.

1996-1999: Postdoctoral fellow, laboratory of Bernard and Chantal Ehresmann, Institut de Biologie Moléculaire et Cellulaire, Strasbourg, France. HIV RNA biochemistry.

1996: Ph.D. Brown University. Biology. Dissertation with Professor Albert Dahlberg: "Mutational Analysis of the 912 Region of *Escherichia coli* 16S Ribosomal RNA "

1991: M.S. University of Montana. Chemistry (Biochemistry emphasis). Thesis with Professor Walter Hill: "Probing the Exit Site of the *Escherichia coli* Ribosome Using Complementary Oligodeoxyribonucleotides."

1985: B.S. University of Montana 1985. Chemistry. Senior (Watkins) Thesis with Professor Vicki Watson: "Point-Source Nutrient Loading on the Clark Fork River, Western Montana."

EMPLOYMENT EXPERIENCE:

2010-present: Professor, Division of Biological Sciences, The University of Montana. Activities include teaching graduate and undergraduate students in the classroom and in the laboratory; conducting research on viral RNA structure and function, investigating molecular interactions between Rift Valley fever virus N-protein with viral RNA, and exploring mammalian cellular antiviral responses to infection.

2003-2010: Associate Professor, Division of Biological Sciences and affiliate faculty of the Department of Chemistry, The University of Montana.

1998-2003: Assistant Professor, University of Montana.

1984-1988: Physical Sciences Technician, U.S. Forest Service Fire Sciences Laboratory, Missoula, MT.

TEACHING AND MENTORING ACTIVITIES:

1999-present: Assistant/Associate/ Professor, University of Montana. Classroom and laboratory instructor for graduate and undergraduate students (4-5 credit hours per semester). Courses taught include Nucleic Acids Biochemistry (graduate), RNA Structure and Function (graduate), the year-long and one-semester Biochemistry courses for undergraduates and graduate students.

1995: Completed teaching certification program at Center for Advancement of College Teaching, Brown University. Received Sheridan Teaching Certificate upon completion of the year-long workshop series.

1989-1995: Training and supervision of undergraduate students in the laboratories of Dr. Walter Hill and Dr. Albert Dahlberg.

1988-1990: Teaching Assistant for chemistry laboratory and lecture classes, University of Montana.

SELECTED ACADEMIC COMMITTEE SERVICE:

Biochemistry Program Director (2019-present)

Cellular, Molecular, and Microbial Biology Program Director (2013-2019)

State of Montana Prior Learning Assessment Council Chair (2015-2017)

UM Faculty Senate Chair (2014-2015)

UM Faculty Senate Chair-elect (2013- 2014)

ECOS (member 2013-2015, chair 2014-2015)

UM Budget Committee (2014-2015)

UM Planning Committee (2014-2015)

UM Graduation Appeals Committee, (Chair 2009-2010; member 2010-2011)

Faculty Senate member (2009-2016)

University Radiation Safety Committee (2002-present)

University Appeals Committee (2011)

Native American Research Laboratory Director search committee (2011-2012)

Initiative to Maximize Student Development (IMSD) steering committee (2011-2012)

Presenter for CAS College Experience Family Weekend "Undergraduate Research" session October 14, 2011

Reviewer for UM International Programs Short-term International Activity Grant applications (2012 and 2013)

University Accreditation and Assessment Committee (Aug. 2013-2014)

University Council (2013-2015)

UM Unit Standards Committee (member 2011-2013, chair June 2013-May 2014)

UM Internationalization Laboratory Committee (Faculty Methods Subcommittee) Spring '15

UM Academic Standards and Curriculum Review Committee: Chair 2009-2010; member 2007-2009.

UM Graduation Appeals Committee: Chair 2009-2010.

UM Science and Math Subcommittee, ASCRC: member 2007-2009 & 2015-2021, Chair 2008-2009.

UM Radiation Safety Committee, member 2000-present.

UM Unit Standards Committee, member 2005-2006.

Graduate Education Committee, Program in Biomolecular Structure and Dynamics, Chair 2009-present.
Virology Faculty member search, Division of Biological Sciences, Chair 2007-2009.
Graduate Admissions Committee, Division of Biological Sciences, 2003-2006, 2007-2009, Chair 2004-2006.
DBS Unit Standards Committee, member 2002-2003, Chair 2003-2004.
DBS Advisory Committee, member 2007-present.
DBS Murdock DNA Sequencing Center advisory committee, 2007-present.
Ph.D. and M.S. student advisory committees in CMMB, Biochemistry and Biophysics, Health and Human Performance, Biomedical and Pharmaceutical Sciences, Toxicology, Computer Science: member or chair of 67 individual graduate student committees (2000-2019).

PUBLICATIONS (in reverse chronological order):

- T.C. Bisom, H. Smelser, J.-M. Lanchy, J.S. Lodmell (2023). Alternative splicing of RIOK3 engages the noncanonical NFκB pathway during Rift Valley fever virus infection. *Viruses* 2023, 15, (7), 1566.
- M. Diaz, M. Diaz, J. Kreitingner, T.C. Bisom, J.S. Lodmell, P. Diaz (2023). Targeting right open reading frame protein kinase 3 (RIOK3) for the modulation of type III IFN in skin. *Journal of Investigative Dermatology* 2023, 143, (5), S187.
- T.C. Bisom, L.A. White, J.-M. Lanchy, J.S. Lodmell (2022). RIOK3 and Its Alternatively Spliced Isoform Have Disparate Roles in the Innate Immune Response to Rift Valley Fever Virus (MP12) Infection. *Viruses* 14,2064. <https://doi.org/10.3390/v14092064>. ([PubMed link](#))
- L.A. White, T.C. Bisom, H.L. Grimes, M. Hayashi, J.-M. Lanchy, J.S. Lodmell (2022). Tra2beta-dependent regulation of RIO Kinase 3 splicing during Rift Valley Fever Virus infection underscores the links between alternative splicing and innate antiviral immunity. *Front Cell Infec Microb* 11:799024. ([PubMed link](#))
- M. Hayashi, E.P. Schultz, J.-M. Lanchy, J.S. Lodmell (2021). Time-Resolved Analysis of N-RNA Interactions during RVFV Infection Shows Qualitative and Quantitative Shifts in RNA Encapsidation and Packaging. *Viruses* 13:2417. ([PubMed link](#))
- KE Havranek, LA White, TC Bisom, JM Lanchy, JS Lodmell (2021) The Atypical Kinase RIOK3 Limits RVFV Propagation and Is Regulated by Alternative Splicing. *Viruses*:13(3). Epub 2021/03/04. ([PubMed link](#))
- S. Stamm, J.S. Lodmell (2019) C/D box snoRNAs in viral infections: RNA viruses use old dogs for new tricks. *Non-coding RNA Research* 4: 46-53. ([PubMed link](#))

- KE Havranek, LA White, JM Lanchy, JS Lodmell (2019) Transcriptome profiling in Rift Valley fever virus infected cells reveals modified transcriptional and alternative splicing programs. *PLoS One* 14: e0217497. ([PubMed link](#))
- Hornak, KE, Lanchy JM, Lodmell JS, (2016) RNA Encapsidation and Packaging in the Phleboviruses, *Viruses*, 8: 194-208. ([PubMed link](#))
- Ellenbecker M, St Goddard J, Sundet A, Lanchy JM, Raiford D, Lodmell JS (2015) Computational prediction and biochemical characterization of novel RNA aptamers to Rift Valley fever virus nucleocapsid protein. *Comput Biol Chem* 58: 120-125 ([PubMed link](#))
- Ellenbecker M, Lanchy JM, Lodmell JS (2014) Inhibition of Rift Valley Fever Virus Replication and Perturbation of Nucleocapsid-RNA Interactions by Suramin. *Antimicrob Agents Chemother* 58: 7405-7415 ([PubMed link](#))
- Ellenbecker M, Lanchy JM, Lodmell JS (2012) Identification of Rift Valley fever virus nucleocapsid protein-RNA binding inhibitors using a high-throughput screening assay. *Journal of Biomolecular Screening* 17: 1062-1070 ([PubMed link](#))
- Ellenbecker M, Sears L, Li P, Lanchy JM, Lodmell JS (2012) Characterization of RNA aptamers directed against the nucleocapsid protein of Rift Valley fever virus. *Antiviral Res* 93: 330-339 ([PubMed link](#))
- Wright BE, Schmidt KH, Hunt AT, Lodmell JS, Minnick MF, Reschke DK (2011) The roles of transcription and genotoxins underlying p53 mutagenesis in vivo. *Carcinogenesis* 32: 1559-1567 ([PubMed link](#))
- Strong CL, Lanchy JM, Lodmell JS (2011) Viral SELEX reveals individual and cooperative roles of the C- and G-boxes in HIV-2 replication. *RNA* 17(7): 1307-1320. ([PubMed link](#))
- Strong, C. L., Lanchy, J. M., Dieng-Sarr, A., Kanki, P. J. & Lodmell, J. S. (2009). A 5'UTR-Spliced mRNA Isoform Is Specialized for Enhanced HIV-2 gag Translation. *J Mol Biol* **391**, 426-437. ([PubMed link](#))
- Baig, T. T., Lanchy, J. M. & Lodmell, J. S. (2009). Randomization and in vivo selection reveal a GGRG motif essential for packaging human immunodeficiency virus type 2 RNA. *J Virol* **83**, 802-810. ([PubMed link](#))
- Baig, T. T., Strong, C. L., Lodmell, J. S., and Lanchy, J.-M. (2008) Regulation of primate lentiviral RNA dimerization by structural entrapment. *Retrovirology* **5**, 65. ([PubMed link](#))
- Baig, T.T., Lanchy, J.-M., Lodmell, J.S. (2007) HIV-2 RNA dimerization is regulated by intramolecular interactions *in vitro*. *RNA* **13**, 1341-1354. ([PubMed link](#))

- Lanchy, J.M. and Lodmell, J.S. (2007) An extended stem-loop 1 is necessary for human immunodeficiency virus type 2 replication and affects genomic RNA encapsidation. *J. Virol*, **81**, 3285-3292. ([PubMed link](#))
- Fabbretti, A., Pon, C.L., Hennelly, S.P., Hill, W.E., Lodmell, J.S. and Gualerzi, C.O. (2007) The Real-Time Path of Translation Factor IF3 onto and off the Ribosome. *Mol Cell*, **25**, 285-296. ([PubMed link](#))
- Criswell, D., Tobiasson, V.L., Lodmell, J.S. and Samuels, D.S. (2006) Mutations conferring aminoglycoside and spectinomycin resistance in *Borrelia burgdorferi*. *Antimicrob Agents Chemother*, **50**, 445-452. ([PubMed link](#))
- Knight, W., Hill, W.E. and Lodmell, J.S. (2005) Ribosome Builder: A software project to simulate the ribosome. *Computational Biology and Chemistry*, **29**, 163-174. ([PubMed link](#))
- Hennelly, S.P., Antoun, A., Ehrenberg, M., Gualerzi, C.O., Knight, W., Lodmell, J.S. and Hill, W.E. (2005) A Time-resolved Investigation of Ribosomal Subunit Association. *J Mol Biol*, **346**, 1243-1258. ([PubMed link](#))
- J.-M. Lanchy, Q.N. Szafran, J.S. Lodmell (2004) Splicing affects presentation of RNA dimerization and encapsidation signals *in vitro* . *Nucleic Acids Research* **32**, 4585-4595. ([PubMed link](#))
- Bowen, W.S., Van Dyke, N., Murgola, E.J., Lodmell, J.S. and Hill, W.E. (2005) Interaction of thiostrepton and elongation factor-G with the ribosomal protein L11-binding domain. *J Biol Chem*, **280**, 2934-2943. ([PubMed link](#))
- L. Brandi, S. Marzi, A. Fabretti, C. Fleischer, W.E. Hill, C.O. Gualerzi, & J.S. Lodmell (2004). The translation initiation functions of IF2: A novel target for thiostrepton inhibition. *J. Mol. Biol.* **335**(4), 881-894. ([PubMed link](#))
- S. Marzi, W. Knight, L. Brandi, E. Caserta, N. Soboleva, W.E. Hill, C.O. Gualerzi, and J.S. Lodmell (2003) Ribosomal localization of translation initiation factor IF2. *RNA* **9**(8): 958-969. ([PubMed link](#))
- J.-M. Lanchy, J.D. Ivanovitch, J.S. Lodmell (2003) A structural linkage between dimerization and encapsidation signals in HIV-2 RNA *in vitro*. *RNA* **9**(8), 1007-1018. ([PubMed link](#))
- J.-M. Lanchy, C.A. Rentz, J.D. Ivanovitch, and J.S. Lodmell. (2003) Elements located upstream and downstream of the major splice donor site influence the ability of HIV-2 leader RNA to dimerize *in vitro*. *Biochemistry* **42**, 2634-2642. ([PubMed link](#))
- E. L. Deer, B. Douk, J.-M. Lanchy, and J.S. Lodmell. (2003) Elucidation and characterization of oligonucleotide-accessible sites on HIV-2 leader region RNA. *Antisense and Nucleic Acid Drug Development* **13**, 45-55. ([PubMed link](#))

- J.-M. Lanchy & J.S. Lodmell (2002) "Alternate usage of two dimerization sites in HIV-2 viral RNA in vitro." *J Mol Biol.* **319**, 637-648.
- J.S. Lodmell & Hennelly, S. P. (2002). "Conformational Dynamics Within the Ribosome." In *Translational Mechanisms* (Brakier-Gingras, L. & Lapointe, J., eds.). Landes Bioscience, Austin, TX.
- W.S. Bowen, W.E. Hill, and J.S. Lodmell (2001). "Comparison of rRNA cleavage by complementary 1,10-phenanthroline-Cu(II)- and EDTA-Fe(II)- derivatized oligonucleotides". *Methods* **25**, 344-350.
- J.S. Lodmell, C. Ehresmann, B. Ehresmann, and R. Marquet (2001). "Structure and dimerization of RNA kissing loop aptamers." *J. Mol. Biol.* **311**, 475-490.
- F. Jossinet, J.S. Lodmell, C. Ehresmann, B. Ehresmann, and R. Marquet (2001) "Identification of the *in vitro* HIV2/SIV RNA dimerization site reveals striking differences with HIV-1". *J. Biol. Chem.* **276**, 5598-5604.
- J.S. Lodmell, C. Ehresmann, et al. (2000). "Convergence of natural and artificial evolution on an RNA loop-loop interaction: The HIV-1 dimerization initiation site." *RNA* **6**, 1267-1276.
- O'Connor, M., Bayfield, M., Gregory, S.T., Lee, W.-C.M., Lodmell, J.S., Mankad, A., Thompson, J.R., Vila-Sanjurjo, A., Squires, C.L. and Dahlberg, A.E. (2000) Probing Ribosomal Structure and Function. In Garrett, R.A., Douthwaite, S.R., Liljas, A., Matheson, A.T., Moore, P.B. and Noller, H.F. (eds.), *The Ribosome: Structure, Function, Antibiotics, and Cellular Interactions*. ASM Press, Washington, D.C., pp. 217-227.
- F. Jossinet, J.-C. Paillart, E. Westhof, T. Hermann, E. Skripkin, J.S. Lodmell, C. Ehresmann, B. Ehresmann, and R. Marquet. (1999). " Dimerization of HIV-1 genomic RNA of subtypes A and B: RNA loop structure and magnesium binding." *RNA* **5**, 1222-1234.
- J. S. Lodmell, J.-C. Paillart, D. Mignot, B. Ehresmann, C. Ehresmann, and R. Marquet (1998). Oligonucleotide-mediated inhibition of genomic RNA dimerization of HIV-1 strains MAL and LAI: A comparative analysis. *Antisense Nucleic Acid Drug Dev.* **8**, 517-529.
- S.T. Gregory, C.A. Brunelli, J.S. Lodmell, M. O'Connor, and A.E. Dahlberg (1998). Genetic selection of rRNA mutations. *Methods Mol Biol.* **77**, 271-81.
- J.S. Lodmell & A.E. Dahlberg (1997) A Conformational Switch in *Escherichia coli* 16S Ribosomal RNA during Decoding of Messenger RNA. *Science* **277**: 1262-1267.
- M. O'Connor, C.A. Brunelli, M.A. Firpo, S.T Gregory, K.R. Lieberman, J.S. Lodmell, H. Moine, D.I. Van Ryk, & A.E. Dahlberg (1995) Genetic Probes of Ribosomal RNA Function. *Biochem. Cell Biol.* **73**: 859-868.

J.S. Lodmell, R.R. Gutell, & A.E. Dahlberg (1995) Genetic and Comparative Analyses Reveal an Alternative Secondary Structure in the nt 912 Region of *Escherichia coli* 16S Ribosomal RNA. *Proc. Nat. Acad. Sci. USA* 92:10555- 10559.

J.S. Lodmell, W.E. Tappich, & W.E. Hill (1993) Evidence for a Conformational Change in the Exit Site of the *Escherichia coli* ribosome upon tRNA Binding. *Biochemistry* 32: 4067-4072.

R.T. Marconi, J.S. Lodmell, & W.E. Hill (1990) Identification of a rRNA/Chloramphenicol Interaction Site within the Peptidyltransferase Center of the 50S Subunit of the *Escherichia coli* Ribosome. *J. Biol. Chem.* 265: 7894-7899.

SELECTED MEETINGS AND SEMINAR PRESENTATIONS:

Meeting seminar: “Role of the atypical protein kinase RIOK3 in the cellular antiviral response”, Presented remotely to the IDG R03 Experimental Work Group, Nov 17, 2020.

Poster presentation: J. Stephen Lodmell, Katherine Havranek, and Jean-Marc Lanchy. “Role of the atypical protein kinase RIOK3 in the cellular antiviral response”, Presented at the Illuminating the Druggable Genome annual meeting, Arlington, VA, Feb 12, 2020.

Poster presentation: Luke White, Katherine Havranek, Jean-Marc Lanchy, and J. Stephen Lodmell. “Role of splicing factor TRA2- β in Rift Valley fever virus-induced alternative splicing” at the American Society for Virology annual meeting, Minneapolis, MN July 20-24, 2019.

Oral presentation: Miyuki Hayashi, Katherine E. Havranek, Connor King-Ries, Jean-Marc Lanchy, and J. Stephen Lodmell. “Rift Valley Fever Virus Nucleocapsid Protein Binds snoRNA by Recognition of C/D Box-like Motifs” at the American Society for Virology annual meeting, Minneapolis, MN July 20-24, 2019.

Seminar: Stephen Lodmell. “How Rift Valley fever virus N protein recognizes viral and host RNAs”. Chemistry Department freshmen seminar series, November 14, 2018.

Poster Presentation: Miyuki Hayashi, Jean-Marc Lanchy, and J. Stephen Lodmell. “Rift Valley Fever Virus Nucleocapsid Protein Binds to C/D Box Motifs of snoRNAs”. CBSD Symposium, Sept 8, 2018.

Poster presentation: Luke White, Miyuki Hayashi, Katie Hornak, Jean-Marc Lanchy & Stephen Lodmell. “RVFV affects host alternative splicing via a mechanism involving splicing factor Tra2 β ”. CBSD Symposium, Sept 8, 2018.

Seminar: J. Stephen Lodmell, Katherine Hornak, Luke White, Miyuki Hayashi, and Jean-Marc Lanchy. “Induction of alternative splicing in Rift Valley fever virus infected cells”. CBSD Symposium, Sept 8, 2018.

Poster Presentation: Miyuki Hayashi, Jean-Marc Lanchy, and J. Stephen Lodmell. "Rift Valley Fever Virus Nucleocapsid Protein Binds to C/D Box Motifs of snoRNAs" ASBMB Annual Meeting, San Diego, CA April 22, 2018.

Seminar: Stephen Lodmell, Katherine Hornak, Jean-Marc Lanchy "RVFV Triggers Aberrant Splicing of Genes Essential for the Cellular Antiviral Response". CBSD Symposium, September 8, 2017.

Poster presentation: J. Stephen Lodmell, Katherine E. Hornak, Ilona C. Csik, Miyuki Hayashi, Christopher Peterson, Rebecca Hoerner, Stephanie Schell, Jessey Birdrattler and Jean-Marc Lanchy. "Rift Valley fever virus nucleocapsid protein recognizes and preferentially binds to snoRNA-like motifs". Presented at the American Society for Virology meeting, Madison, WI, June 25, 2017.

Poster presentation: Katherine E. Hornak, Jean-Marc Lanchy and J. Stephen Lodmell. "RVFV infection induced modification of host alternative splicing." Presented at the American Society for Virology meeting, Madison, WI, June 26, 2017.

Seminar: Stephen Lodmell, Katherine Hornak, Jean-Marc Lanchy "RVFV Triggers Aberrant Splicing of Genes Essential for the Cellular Antiviral Response". CBSD Symposium, September 8, 2017.

Poster presentation: J. Stephen Lodmell, Katherine E. Hornak, Sean G. Lodmell, Ilona C. Csik, Jean-Marc Lanchy, and Nigel Priestley. "An RNA targeting drug inhibits the Rift Valley fever virus nucleocapsid protein-RNA interaction" Presented at the ASV meeting, Blacksburg, VA, June 21, 2016.

Oral presentation: Katherine E. Hornak, Jean-Marc Lanchy and J. Stephen Lodmell. "RVFV nucleocapsid protein binds the mRNA of a host antiviral factor" Presented at the ASV meeting, Blacksburg, VA, June 22, 2016.

Poster presentation: J. Birdrattler, I. Csik, K. Hornak, D. Raiford, J-M. Lanchy, J. S. Lodmell. "A Dual Bioinformatic/Biochemical Approach to Determine RNA Recognition Motifs for the Rift Valley Fever Virus N Protein" at the American Society for Microbiology meeting, New Orleans, LA, June 1, 2015.

Poster presentation: K. Hornak, J.M. Lanchy, J.S. Lodmell. "Elucidating RNA Binding Preferences of RVFV Nucleocapsid Protein Using Deep Sequencing" at the American Society for Microbiology meeting, New Orleans, LA, May 31, 2015.

Poster presentation: Katie Hornak, Jessey Birdrattler, Jeremy St. Goddard, Mary Ellenbecker, Doug Raiford, Jean-Marc Lanchy, and J. Stephen Lodmell. "Dissection of molecular determinants of binding between Rift Valley fever virus nucleocapsid protein and its cognate RNA" at the American Society for Virology meeting in Ft. Collins, CO, June 23, 2014.

Invited seminar: "RNA Recognition by RVFV Nucleocapsid Protein" Montana State University. February 4, 2014

Invited seminar: "RVFV Nucleocapsid protein as a target for antiviral drug development". Presented to the School of Life Sciences, University of Nevada- Las Vegas. December 7, 2012.

Invited seminar: "Combinatorial and high throughput approaches to RVFV antiviral drug discovery" Department of Biological Sciences, University of Idaho, Moscow. March 20, 2012.

Invited seminar: "Combinatorial and high throughput approaches to antiviral drug discovery", UM Division of Biological Sciences departmental seminar, November 21, 2011.

Invited seminar: "Antiviral Drug Discovery", Montana Tech, November 16, 2011.

Oral presentation: "Characterization and targeting of Rift Valley fever virus N protein-RNA interactions." Presented at the RMRCE annual meeting, Estes Park, CO. September 27, 2010.

Invited seminar: "Isolation and preliminary characterization of spectinomycin resistant mutants of the thermophilic bacterium *Thermus thermophilus*" Brown University, August 3, 2011.

Oral presentation: "RNA binding characteristics of Rift Valley fever virus N protein." Presented at the 6th Annual National RCE Meeting, Las Vegas, NV. April 11-14, 2010.

Seminar: "Discerning viral functional motifs using combinatorial methods." Presented to the Microbiology Department, Montana State University, Bozeman, MT April 9, 2010.

Seminar: "Characterization and targeting of Rift Valley fever virus nucleocapsid protein-RNA interactions". Presented at the RMRCE Biodefense and Emerging Infectious Diseases Research annual meeting. Logan, UT, September 27-29, 2009.

Seminar: "RNA binding specificity of Rift Valley Fever Virus N protein." Presented at the Rocky Mountain Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research annual meeting, Bozeman, MT October 7, 2008.

Seminar: "Combinatorial approaches to discerning essential structures in HIV." Chemistry/DBS/CBSD joint departmental seminar. September 15, 2008.

Poster presentation: Strong, C.L., Lanchy, J.-M., Lodmell, J.S. (2008) Effects of 5' UTR structure on HIV-2 translation. Presented at the Annual Meeting of the RNA Society, Berlin, Germany. June 2008.

Poster presentation: *In vivo* SELEX of the HIV-2 packaging signal, Tayyba T. Baig, Jean-Marc Lanchy, and J. Stephen Lodmell. Presented at "25 Years of HIV", Pasteur Institute, Paris. May 22-25, 2008.

Invited seminar: Department of Genetics and Molecular Biology, University of Camerino, Italy, "Identification of functionally important RNA structures in HIV by SELEX and phenotypic reversion analysis", March 23, 2007.

Invited seminar: Institute of Biochemistry, University of Ancona, Italy, "Palindromes and panhandles: characterization of RNA signals in viral genomes", March 22, 2007.

Invited seminar: Department of Pathology, University of Cambridge, UK, "Stems, hairpins, and panhandles: RNA structures that modulate viral functions", February 8, 2007.

Poster presentation: Jean-Marc Lanchy & J. Stephen Lodmell (2007) A Structural and Functional Linkage between Encapsidation and Dimerization Motifs in the Leader Region of HIV-2 Genomic RNA. Presented at the RNA Society Meeting, Seattle, June 20-25, 2006.

Poster presentation: Baig, T.T., Lanchy, J.-M., Lodmell, J.S. (2006) SELEX analysis of secondary structures regulating dimerization of HIV-2 Leader region RNA. Presented at the RNA Society Meeting, Seattle, June 20-25, 2006.

Oral presentation at the Fribush Centre/University of Edinburgh Virology Symposium, Killin, UK, "Packaging Signals in HIV and BUNV". August 30, 2006.

Poster presentation at the EMBO Workshop: Viral RNA: Structure, Function, and Targetting. "Characterization of RNA binding by Rift Valley Fever Nucleocapsid protein N" J.S. Lodmell, P. Li, R.M. Elliott. March 5, 2007.

Poster presentation at the EMBO Workshop: Viral RNA: Structure, Function, and Targetting. "An extended stem-loop 1 is necessary for HIV-2 replication and affects genomic RNA encapsidation." J.-M. Lanchy, J.S. Lodmell. March 5, 2007.

Poster presentation: Baig, T.T., Lanchy, J.-M., Lodmell, J.S. (2007) SELEX analysis of the intramolecular interactions regulating HIV-2 leader RNA dimerization in vitro. Poster presented at the Cold Spring Harbor Retroviruses meeting, May 2007.

Poster presentation: J.S. Lodmell, P. Li, R.M. Elliott (2007) "Characterization of RNA binding by Rift Valley Fever Nucleocapsid protein N". European Meeting on Viral Zoonoses: June 4, 2007.

Invited seminar: Centre for Biomolecular Sciences, The University of St. Andrews, UK, "RNA structures that modulate viral functions", October 6, 2006.

Invited seminar: Fribush Centre/University of Edinburgh Virology Symposium, Killin, UK, "Packaging Signals in HIV and BUNV". August 30, 2006.

Invited seminar at the Université Louis Pasteur, Strasbourg, France entitled "The role of secondary structure elements in the control of HIV-2 RNA dimerization, encapsidation, and translation". October 29, 2005.

Invited seminar at Ecole Normale Supérieure Cachan (Paris) entitled "Regulation of translation and encapsidation of HIV-2 genomic RNA". October 24, 2005.

Invited seminar at Université de Montréal entitled "Regulation of translation and encapsidation of HIV-2 genomic RNA". August 1, 2005.

Invited seminar: University of Missouri Kansas City, School of Biological Sciences 10/23/03. "The role of HIV-2 leader RNA structure in the regulation of replicative functions"

Cold Spring Harbor Symposium on Retroviruses, May 20-25, 2003. Jean-Marc Lanchy, John D. Ivanovitch, and J. Stephen Lodmell "A Functional Linkage Between The

Dimerization And Encapsidation Signals In HIV-2 Leader Region RNA In Vitro.”
Poster presented.

Cold Spring Harbor Symposium on Retroviruses, May 21-26, 2002. John D. Ivanovitch and J. Stephen Lodmell "Structural characterization of dimerization initiation elements within the HIV-2 genome" Poster presented.

RNA Society meeting, Madison, WI, May 28-June 2, 2002. L. Brandi, S. Marzi, A. Fabbretti, C.O. Gualerzi, W. E. Hill, J. S. Lodmell (2002) "Ribosomal localization of the bacterial initiation factor IF2" Poster presented.

Invited seminar at the Department of Chemistry and Biochemistry, University of Texas at Arlington (January 24, 2003) Invited lecture: "Self-recognition and dimerization site selection in HIV-2 leader region RNA"

Sigma Xi Lecture, The University of Montana (October 25, 2001) Lecture: "Self recognition among viral RNA molecules: What is the nature of the 'glue' that binds them?"

Department of Veterinary Molecular Biology, Montana State University (October 16, 2001) Lecture: "Intermolecular recognition in HIV-2 genomic RNA".

Cold Spring Harbor Laboratory Meeting on Retroviruses (May, 1998) Lecture: In vitro evolution of the HIV-1 Dimerization Initiation Site.

Methods of Selection in RNA Biochemistry (Mittelwihr, France, February, 1998) Lecture: In vitro evolution of the Dimerization Initiation Site of HIV-1 RNA.

Agence Nationale pour la Recherche sur le SIDA annual meeting (Paris, France, April 1997) Lecture: SELEX study of the Dimerization Initiation Site of HIV-1.

Methods of Selection in RNA Biochemistry (Mittelwihr, France, February 1997).

Frontiers in Translation (Victoria, B.C. Canada, May 1995). Lecture and poster: Mutational analysis of the central domain of 16S rRNA of *Escherichia coli*: Implications in structure and function.

Vassar Meeting on rRNA (Vassar College, April 1995). Lecture: Mutations in the 912 region of 16S rRNA affect translational fidelity and elongation rate.

Vassar Meeting on rRNA (Vassar College, April 1994). Lecture: A second-site suppressor of a deleterious mutation in the central domain of 16S rRNA.

Vassar Meeting on rRNA (Haverford College, April 1993). Lecture: rRNA mutations affecting protein secretion in *E. coli*.

Keystone Symposium on Translational Control (Tamarron, CO, February 1991). Poster: Evidence for a conformational change in the ribosomal exit site upon tRNA binding.

AWARDS, FELLOWSHIPS AND GRANTS:

Center for Biomolecular Structure and Dynamics Pilot Project "Structural and phenotypic characterization of the ubiquitin binding domain of RIOK3" (JSL PI) \$35,000 TDC. Funding from August 1, 2023-July 31, 2024.

UM UGP “Phenotypic characterization of RIOK3 knockout mice” (JSL PI) \$5,000 TC.
Funding from May 1, 2023- April 30, 2024.

NIH R41 STTR “Novel therapeutic target to combat cutaneous lupus erythematosus” (F. Astruc-Diaz, PI; JSL MPI/Academic PI) \$120,000 TC. Funding from 4/1/21-3/31/22.

NIH ASCEND Award: “A novel therapeutic target to combat human autoinflammatory skin disease” JSL, PI. \$ 100,000 (\$50k NIH/\$50k match from CTM). Funded for the period 8/15/2020-8/14/2021.

NIH R03 TR002937-01: “Role of the atypical protein kinase RIOK3 in the cellular antiviral response” JSL, PI. \$142,771. Funded for the period 9/1/2019-8/31/2020.

NIH R03 AI137620 “A role for snoRNAs in RVFV-induced enhancement of alternative splicing” JSL, PI. For the period 01/01/2019-12/31/2020 TDC: \$100,000. Total award: \$145,000.

NIH COBRE Center for Biomolecular Structure and Dynamics Pilot Project Grant: “The role of Tra2- β 1 in splice site selection during RVFV infection”. JSL, Pilot project PI; S. Sprang is the PI on the CoBRE (P20GM103546). August 2018-July 2019. TDC: \$25,000.

NIH COBRE CBSD “Characterization of virus-triggered isoforms of RIOK3, a host antiviral protein”. Pilot project award for 9/30/16-12/31/17. Total award \$50,000.

NIH R15 AI105737 “Mechanism of nucleocapsid targeting drugs” JSL, PI. For the period 08/2014-07/2016 TDC: \$300,000. Total award: \$422,073.

NIH COBRE Center for Biomolecular Structure and Dynamics (University of Montana) Pilot Project Grant: “Mechanism of novel inhibitors of Rift Valley fever virus nucleocapsid-RNA interactions”. JSL, PI. December 2011-July 2012. Awarded January 2012. TDC: \$25000.

Promiliad Biopharma: “Primary screen of Promiliad natural products library for anti-HIV activity.” (Lodmell, P.I.) \$16,528 total costs for the period September-December, 2010.

NIH Rocky Mountain Regional Center of Excellence for Biodefense and Emerging Infectious Disease Research award 2U54 AI065357 to Colo. State Univ., John Belisle PI; Subaward G-7826-12009-2014 for the period 2009-2014 to J.S. Lodmell, PI: “Characterization and targeting of RVFV Nucleocapsid protein-RNA Interactions”.

Rocky Mountain Regional Center of Excellence for Biodefense and Emerging Infectious Disease Research 2008 “Characterization of RVFV Nucleocapsid protein-RNA Interactions” (Developmental project funded 2008-2009).

University of Montana Small Grants Program, 2008. Award to initiate research on Rift Valley fever virus N protein interactions with genomic RNA.

N.I.H. R01 Grant number 2-R01 AI45388 entitled "HIV genomic RNA structure" continuously funded 2000-present. (Renewal application pending for 2010-2015)

N.I.H. R01 Grant number 2-R01 GM35717-14 entitled "Probing ribosomal function".

J.S. Lodmell was surrogate P.I. on this project (2000-2003) awarded to W.E. Hill, who was on extended leave.

Agence Nationale pour la Recherche sur le SIDA (France) Postdoctoral Fellowship awarded for the period January, 1998- December 1999 (one year with competitive renewal - renewed for the period January, 1999- July, 1999).

Fondation pour la Recherche Medicale (France) Postdoctoral Fellowship awarded for the period October, 1997-September, 1998. (accepted until January, 1998).

Chateaubriand Postdoctoral Fellowship awarded by the Embassy of France for the period October, 1997-September 1997.

Barry Rosen award for exceptional doctoral thesis in Biology (Brown University, 1996).

N.I.H. Predoctoral Trainee (NIH Grant #GM07601; Division of Biology and Medicine, Brown Univ., Dec. 1991 to 1995).

Biochemistry "Enhancer" Award for contributions toward teaching/training others in Biochemistry (Div. of Biol. Sciences, Univ. of MT, Dec. 1990)

Bertha Morton scholarship for academic performance and research progress (Univ. of MT, Sept. 1990).

Watkins research scholarship for senior thesis (Univ. of MT, Sept. 1984)

Merit award for potential in analytical chemistry (Univ. of MT, May 1984)

GRANT REVIEWER ACTIVITIES:

Member NIAID Microbiology and Infectious Diseases (MID) Research Study Section 2022-2026.

NIH Grant panel Ad hoc reviewer for study section MID: K and T awards. February 15-16, 2022 (remote review panel).

NIH Grant panel reviewer for study section ZRG1 BCMB-G (10) B: Small Business Applications- Drug Discovery and Development June 28-29, 2021 (remote review panel).

NIH Grant panel reviewer for study section ZRG1 IDM-W (02) M: Topics in virology Special Emphasis Panel. Dec. 3, 2020 (remote review panel).

NIH Grant panel reviewer for study section ZRG1 IDM-Y (82): Antimicrobial Therapeutics and Resistance. July 8-9, 2020 (remote review panel).

INBRE-Nebraska Grant reviewer Sept 2019.

NIH Grant panel reviewer for study section ZRG1 IDM-Y (82): Antimicrobial Therapeutics and Resistance. July 31, 2019, (Remote review).

NIH Grant Panel Reviewer (R21) ZRG1 IDM-Y June 3, 2019

NIH Grant Panel Reviewer Centers of Excellence for Translational Research (U19 grants) October 11, 2018

NIH Grant Panel Reviewer Centers of Excellence for Translational Research (U19 grants) September 7, 2018
NIH Grant Panel Reviewer (R15)ZRG1 IDM-S (82) A March 28, 2017
NIH Grant Panel Reviewer (R01 applications): Therapeutics, Immunotherapeutics, and Vaccines Review Committee (ZAI1-LR-M-M2) Feb 28, 2017
NIH Grant panel reviewer for R15 applications ZRG1 IDM S 81 Nov 7, 2016
NIH Grant panel reviewer for R15 applications ZRG1 IDM S81 March 8, 2016
NIH Grant panel reviewer for R15 applications ZRG1 IDM S 81 July 16, 2015.
NIH Grant panel reviewer "Influenza therapeutics" March 9-10 2015.
NIH Grant reviewer for NIAID Centers of Excellence in Translational Research (CETR) U19 applications. July, 2013.
NIH Grant panel reviewer "Host targeted interventions as therapeutics for infectious diseases" March 16, 2012.
Grant reviewer for the French national biomedical research agency, Agence pour la Recherche Scientifique (ANRS) March 2012.
Grant reviewer for the French national biomedical research agency, Agence pour la Recherche Scientifique (ANRS) March 2011.
US Air Force Office of Scientific Research- ad hoc reviewer 2009
Ad hoc reviewer for The Wellcome Trust research grant 2008
US Air Force Office of Scientific Research- ad hoc reviewer 2008
Terry Fox Cancer Fund- ad hoc reviewer 2008
National Institute of Allergy and Infectious Disease grant review study section entitled "NOVEL HIV THERAPIES: INTEGRATED PRECLINICAL/CLINICAL PROGRAM" March 23-25, 2005. Washington DC.
National Institute of Allergy and Infectious Disease grant review study section entitled "NOVEL HIV THERAPIES: INTEGRATED PRECLINICAL/CLINICAL PROGRAM" March 22-23, 2004, Washington DC.
Ad hoc reviewer for The Wellcome Trust research grant 2005
Ad hoc reviewer for the Medical Research Council (MRC) research grant (Aug 2005)

JOURNALS- REVIEWER ACTIVITIES:

Associate editor- *Retrovirology* 2004-2007

Reviewer for:

Analytical Biochemistry

Antiviral Research

Biochimie

Biochemistry

Biopolymers

EMBO Journal

Frontiers in Cellular and Infection Microbiology

Journal of Biomolecular Screening
Journal of Clinical Microbiology
Journal of Inorganic Biochemistry
Journal of Molecular Biology
Journal of Virology
Journal of Virological Methods
Microorganisms (MDPI)
Molecular Genetics and Genomics
Nature Structural and Molecular Biology
Nucleic Acids Research
Pathogens
PLOS Molecular Biology
PLOS-One
PNAS
RNA
Retrovirology
Scientific Reports (Nature)
Traffic
Virology
Viruses
Yonsei Medical Journal

GRADUATE STUDENTS:

Thomas Bisom, Ph.D. (expected completion 2024)

Miyuki Hayashi, Ph.D. 2021. Currently postdoctoral researcher at Thomas Jefferson University

Luke White, Ph.D. (Ph.D. 2022. Currently postdoctoral researcher at University of Uppsala, Sweden)

Katherine E. Havranek, Ph.D., 2019. Currently Senior Scientist at Fyr Diagnostics, Missoula, MT.

Mary Ellenbecker, Ph.D., 2014. Currently postdoctoral researcher- Voronina laboratory, UM

Christy Strong, Ph.D., 2011. Currently faculty member UNLV

Tayyba Baig, Ph.D., 2008. Currently Research Associate at Vaccine and Infectious Disease Organization (VIDO), University of Saskatchewan

Scott P. Hennesly, Ph.D., 2005. Currently staff scientist at Los Alamos National Laboratories.

William A. Knight, Ph.D., 2005. Currently science and technology educator, Missoula International School.

William S. Bowen, Ph.D., 2004. Currently Research Scientist at FasCure Therapeutics/
University of Louisville Medical School.

Stephen A. George, M.S. 2003. Obtained M.D./Ph.D. at University of Utah.

John D. Ivanovitch, M.S. 2003. (Current position unknown)

Hector Valtierra, M.S. 2003 Currently faculty member San Diego Mesa College, CA.

Jing Yuan, M.S. 2001. (Earned Ph.D. at Yale University; current position unknown)