

Thomas Glen Lawson - Curriculum Vitae

Address: Department of Chemistry
Bates College
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Citizenship: USA

Positions Held: Charles A. Dana Professor (2012 – present)
Department of Chemistry, Bates College
Lewiston, Maine

Institutional Radiation Safety Officer (2012 to present)
Bates College
Lewiston, Maine

Professor (2003 to 2012)
Department of Chemistry, Bates College
Lewiston, Maine

Visiting Professor (August – December, 2010)
Department of Basic Medical Sciences
University of Arizona College of Medicine – Phoenix
Phoenix, Arizona

Chair (2002 to 2007)
Division of Natural Sciences, Bates College
Lewiston, Maine

Program Director, Howard Hughes Medical Institutes Grant Award (2005 to 2006),
Bates College
Lewiston, Maine

Institutional Steering Committee Representative, National Institutes of Health IDeA
Networks of Biomedical Research Excellence Grant Award (2005 to 2006), Bates
College
Lewiston, Maine

Institutional Radiation Safety Officer (1997 to 2004)
Bates College
Lewiston, Maine

Associate Professor (1996 to 2003)
Department of Chemistry, Bates College
Lewiston, Maine

Chair (1997 to 2001)
Department of Chemistry, Bates College
Lewiston, Maine

Chair (1997 to 2001)
Biological Chemistry Program, Bates College
Lewiston, Maine

Visiting Scientist (April - June, 2000)
(in the laboratory of Arthur L. Haas)
Department of Biochemistry, Medical College of Wisconsin
Milwaukee, Wisconsin

Visiting Research Professor (June to December, 1996; May, 1997)
(in the laboratory of Cecile M. Pickart)
Department of Biochemistry, Johns Hopkins University
Baltimore, Maryland

Assistant Professor (1989 to 1996)
Department of Chemistry, Bates College
Lewiston, Maine

Postdoctoral Research Associate (1984 to 1989)
(in the laboratory of Robert E. Thach)
Department of Biology, Washington University
St. Louis, Missouri

Education: Ph.D. (Biochemistry) 1984
(in the laboratory of H. Lee Weith)
Purdue University
West Lafayette, Indiana

B.A. (Chemistry and Biology) 1978
Anderson University
Anderson, Indiana

Current Research Interests:

Processes that regulate picornaviral protein concentrations during virus infection and replication; Mechanisms and biological functions of the degradation of picornavirus proteins by the ubiquitin-mediated proteolytic system; Enzymology and turnover of viral proteases responsible for the processing of viral polyproteins; Anti-virus host cell defense systems

Teaching Experience:

Department of Chemistry, Bates College (1989 to present)

Courses: *Biological Chemistry I* with laboratory; *Biological Chemistry II* with laboratory; *The Chemistry and Biology of Nucleic Acids* with laboratory; *Principles of Chemistry I (Atomic and Molecular Structure)* laboratory; *Principles of Chemistry II (Chemical Reactivity)* with laboratory; *The Chemistry of Life* with laboratory; *Bioenergetics and Nutrition*; *Medicine and the American Civil War* (first-year seminar course); *Practical Genomics and Bioinformatics*; *Biotechnology: Life Science for Citizens* with laboratory

Department of Biology, Bates College (1996)

Course: *Cellular and Molecular Biology* with laboratory

Department of Biology, Washington University (1988)

Course: *Laboratory on DNA Manipulations*

Department of Biochemistry, Purdue University (1979)

Course: *Analytical Biochemistry* (teaching assistant)

Department of Biology, Anderson University (1976 to 1978)

Courses: *General Biology* (laboratory assistant); *Human Anatomy* (laboratory assistant); *Microbiology* (laboratory instructor)

Professional Affiliations:

American Society for Biochemistry and Molecular Biology

American Society for Virology

American Association for the Advancement of Science

Publications:

(Note: Undergraduate co-authors are indicated by “*”.)

Papon, L., Oteiza, A., Imaizumi, T., Kato, H., Brocchi, E., Lawson, T. G., Akira, S., and Mechti, N. (2009) The Viral RNA Recognition Sensor RIG-I is Degraded during Encephalomyocarditis Virus (EMCV) Infection. *Virology* **393**, 311-318.

Eldin, P., Papon, L., Oteiza, A., Brocchi, E., Lawson, T. G., and Mechti, N. (2009) TRIM22 E3 Ubiquitin Ligase Activity Is Required to Mediate Antiviral Activity against Encephalomyocarditis Virus (EMCV). *J. Gen. Virology* **90**, 536-545.

Schlx, P. E., Zhang*, J., Lewis*, E., Planchart, A., and Lawson, T. G. (2007) Degradation of the Encephalomyocarditis Virus and Hepatitis A Virus 3C Proteases by the Ubiquitin/26S Proteasome System *in vivo*. *Virology* **360**, 350-363.

Towle, D. W., Hand, P. H., Kent, B., McKernan, M., and Lawson, T. G. (2003) An Intensive Short-Course in Molecular Biology for Undergraduates. *CUR Quarterly* **24**, 79-84.

Losick*, V. P., Schlx, P. E., Emmons*, R. A., and Lawson, T. G. (2003) Signals in Hepatitis A Virus P3 Region Proteins Recognized by the Ubiquitin-mediated Proteolytic System. *Virology* **309**, 306-319.

Parrie*, L. E., Adams*, W., Alexander-Ozinska*, M., Boyer*, L., Costa*, R., Dean*, C., Freeman*, B., Furman*, L., Jun*, J., Kohli*, E., Lawson, G., McKernan, M., Santrakul*, C., Smith*, C. M., Sultanov*, S., Swope*, S. and Towle, D. (2002) Sequencing and Salinity-related Expression of the Na⁺/K⁺-ATPase α -Subunit in the American Lobster *Homarus americanus*. *Genbank*, accession # AY140650.

Lam, Y. A., Lawson, T. G., Velayutham, M., Zweier, J., and Pickart, C. M. (2002) ATPase Subunit of the 26S Proteasome Recognizes Polyubiquitin Chains. *Nature* **416**, 763-767.

Lawson, T. G., Sweep*, M. E., Schlx, P. E., Bohnsack, R. N., and Haas, A. L. (2001) Kinetic Analysis of the Conjugation of Ubiquitin to Picornavirus 3C Proteases Catalyzed by the Mammalian Ubiquitin-Protein Ligase E3 α . *J. Biol. Chem.* **276**, 39629-39637.

Lawson, T. G., Gronros, D. L., Evans*, P. E., Bastien*, M. C., Michalewich*, K. M., Clark*, J. K., Edmonds*, J. H., Graber*, K. H., Werner*, J. A., Lurvey*, B. A., and Cate*, J. M. (1999) Identification and Characterization of a Protein Destruction Signal in the Encephalomyocarditis Virus 3C Protease. *J. Biol. Chem.* **274**, 9871-9880.

Gladding*, R. L., Haas*, A. L., Gronros, D. L., and Lawson, T. G. (1997) Evaluation of the Susceptibility of the 3C Proteases of Hepatitis A Virus and Poliovirus to Degradation by the Ubiquitin-mediated Proteolytic System. *Biochem. Biophys. Res. Commun.* **238**, 119 -125.

Lawson, T. G. (1995) *Practical Biochemistry in the Laboratory: Proteins, Enzymes, and Nucleic Acids*. Bates College.

Lawson, T. G. (1995). An Analysis of the Involvement of Purine Ribonucleotides in Eukaryotic Protein Synthesis. An Undergraduate Biochemistry Laboratory Experiment. *J. Chem. Educ.* **72**, 1041-1043.

Lawson, T. G., Gronros, D. L., Werner*, J. A., Wey*, A. C., DiGeorge*, A. M., Lockhart*, J. L., Wilson*, J. W., and Wintrobe*, P. L. (1994) The Encephalomyocarditis Virus 3C Protease Is a Substrate for the Ubiquitin-mediated Proteolytic System. *J. Biol. Chem.* **269**, 28429-28435.

Oberst*, M. D., Gollan*, T. J., Gupta*, M., Peura*, S. R., Zydlewski*, J. D., Sudarsanan*, P., and Lawson, T. G. (1993) The Encephalomyocarditis Virus 3C Protease Is Rapidly Degraded by an ATP-Dependent Proteolytic System in Reticulocyte Lysate. *Virology* **193**, 28-40.

Lawson, T. G. and Clark, L. C. (1992) *Laboratory Experiments in Biochemistry, Vol. II. A Manual for Biological Chemistry II*. Bates College.

Lawson, T. G. and McKenna C. T. (1991) *Laboratory Experiments in Biochemistry, Vol. I. A Manual for Biological Chemistry I*. Bates College.

Lawson, T. G., Smith, L. L., Palmenberg, A. C., and Thach, R. E. (1989) Inducible Expression of the Encephalomyocarditis Virus 3C Protease Activity in Stably Transformed Mouse Cell Lines. *J. Virology* **63**, 5013-5022.

Lawson, T. G., Lee, K. A., Maimone, M. M., Abramson, R. D., Dever, T. E., Merrick, W. C., and Thach, R. E. (1989) Dissociation of Double-Stranded Polynucleotide Helical Structures by Eukaryotic Initiation Factors, as Revealed by a Novel Assay. *Biochemistry* **28**, 4729-4734.

Lawson, T. G., Cladaras, M. H., Ray, B. K., Lee, K. A., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1988) Discriminatory Interaction of Purified Eukaryotic Initiation Factors 4F Plus 4A with the 5' Ends of Reovirus Messenger RNAs. *J. Biol. Chem.* **263**, 7266-7276.

Abramson, R. D., Browning, K. S., Dever, T. E., Lawson, T. G., Thach, R. E., Ravel, J. M., and Merrick, W. C. (1988) Initiation Factors that Bind mRNA: A Comparison of Mammalian Factors with Wheat Germ Factors. *J. Biol. Chem.* **263**, 5462-5467.

Abramson, R. D., Dever, T. E., Lawson, T. G., Ray, B. K., Thach, R. E., and Merrick, W. C. (1987) The ATP-Dependent Interaction of Eukaryotic Initiation Factors with mRNA. *J. Biol. Chem.* **262**, 3826-3832.

Lawson, T. G., Ray, B. K., Dodds, J. T., Grifo, J. A., Abramson, R. D., Merrick, W. C., Betsch, D. F., Weith, H. L., and Thach, R. E. (1986) Influence of 5' Proximal Secondary Structure on the Translational Efficiency of Eukaryotic mRNAs and on Their Interaction with Initiation Factors. *J. Biol. Chem.* **261**, 13979-13989.

Ray, B. K., Lawson, T. G., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1986) Recycling of mRNA Cap Binding Proteins Mediated by eIF-4B. *J. Biol. Chem.* **261**, 11466-11470.

Ray, B. K., Lawson, T. G., Kramer, J. C., Cladaras, M. H., Grifo, J. A., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1985) ATP-Dependent Unwinding of Messenger RNA Structure by Eukaryotic Initiation Factors. *J. Biol. Chem.* **260**, 7651-7658.

Lawson, T. G., Regnier, F. E., and Weith, H. L. (1983) Separation of Synthetic Oligonucleotides on Columns of Microparticulate Silica Coated with Crosslinked Polyethylene Imine. *Anal. Biochem.* **133**, 85-93.

Published Abstracts and Major Presentations:

(Note: Undergraduate co-authors are indicated by “*”.)

Notariana*, N., Carmody, M., Kirwin*, K., and Lawson, T. G. P. E. (2014) Identification of E6AP/UBE3A as a Ubiquitin-Protein Ligase that Catalyzes Encephalomyocarditis Virus 3C Protease Ubiquitylation (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Diego, California).

Lawson, T. G., Burke*, J. M., Nguyen*, T., and Carmody, M. (2013) Purification by affinity chromatography of the UbcH7-dependent ubiquitin protein-ligase that targets the EMCV 3C protease for ubiquitylation and degradation. (Annual Meeting of the American Society for Virology, State College, Pennsylvania).

Cohen*, L. C., Carmody, M., and Lawson, T. G. (2013) Delivery of EMCV 3C protease into cultured mouse cells by direct protein transfection. (Annual Meeting of the American Society for Virology, State College, Pennsylvania).

Lawson, T. G. (2013 - Invited) Growing with Destruction: Selective Protein Degradation and Picornavirus Replication Success. (Charles A. Dana Professorship Lecture, Bates College, Lewiston, Maine).

Lawson, T. G., Gustin, K. E., and Schlax, P. E. (2011) The Ubiquitin-conjugating Enzyme UbcH7 Is a Regulator of EMCV 3C Protease Concentration in Virus-infected Cells. (Annual Meeting of the American Society for Virology, Minneapolis, Minnesota).

Lawson, T. G. (2010 - Invited) Modulation of Picornaviral 3C Protease Concentration by Multiple Ubiquitylation Pathways. (University of Arizona College of Medicine – Phoenix, Phoenix, Arizona.)

Lawson, T. G., and Schlax, P. E. (2009) A UbcH7-mediated pathway is critical for the conjugation of ubiquitin to picornaviral 3C proteases. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, New Orleans, Louisiana).

Doi*, A., Fischer*, D. D., Schlax, P. E., and Lawson, T. G. (2007) N-terminal Ubiquitination of the Encephalomyocarditis Virus 3C Protease. *FASEB J.* **21**, 1020. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Washington, D. C.).

Doi*, A. and Lawson, T. G. (2006) Evidence for Secondary Structure-mediated Down-regulation of EMCV 3D RNA Polymerase Gene Transcription. (33rd Maine Biological and Biomedical Sciences Symposium, MDI Biological Laboratory, Salisbury Cove, Maine).

Zhang*, J., Unger*, K., and Lawson, T. G. (2006) Evaluation of the Role of the N-terminal Amino Acid in HAV 3C Protease Susceptibility to Ubiquitination. (33rd Maine Biological and Biomedical Sciences Symposium, MDI Biological Laboratory, Salisbury Cove, Maine).

Lawson, T. G. (2006 - Invited) Ubiquitin-mediated Picornaviral Protease Destruction. (Chemistry Department Seminar Series, Colby College, Waterville, Maine).

Lawson, T. G. (2005 - Invited) Pathways to Picornaviral Protease Destruction. (Nineteenth Symposium of the Protein Society, Boston, Massachusetts).

Lawson, T. G. (2005 - Invited) Picornavirus 3C Proteases Are Targeted by Multiple Ubiquitin-conjugating Pathways. (32nd Maine Biological and Biomedical Sciences Symposium, MDI Biological Laboratory, Salisbury Cove, Maine).

Schlax, P. E., Planchart, A., Abrahamsen, L. H., and Lawson, T. G. (2004) Evidence of a Role for the Ubiquitin/26S Proteasome System in the Rapid Turnover of EMCV 3C Protease *in vivo*. (Annual Meeting of the American Society for Virology, Montreal, Quebec, Canada).

Fischer*, D. D., Schlax, P. E., and Lawson, T. G. (2004) Ubiquitination of the Encephalomyocarditis Virus 3C Protease by a Ubc5a-dependent E3 Ubiquitin-protein Ligase. (Annual Meeting of the American Society for Virology, Montreal, Quebec, Canada).

Waters*, P., Schlax, P. E., McCormick, C., and Lawson, T. G. (2003) Stress Effects on Bax and Bcl-2 Levels in Male and Female Rat Hippocampi. 7th Annual Conference of N.E.U.R.O.N., Norton, Massachusetts.

Lawson, T. G., Weaver*, G. W., and Schlax, P. E. (2003) Recognition of the Hepatitis A Virus 3D RNA Polymerase by the Ubiquitin/26S Proteasome System. *FASEB J.* **17**, 996. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Diego, California).

Ricaldez*, E. X., Schlax, P. E., Barlow*, J. R., and Lawson, T. G. (2003) Evaluation of the Hepatitis A Virus 3D RNA Polymerase Purified from Expressing *E. coli* cells as a Substrate for Ubiquitination. *FASEB J.* **17**, 996. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Diego, California).

Losick*, V. P., Schlax, P. E., Emmons*, R., and Lawson, T. G. (2001) A Signal in the Hepatitis A Virus 3C Protease Recognized by the Ubiquitin-Mediated Proteolytic System. (Annual Meeting of the American Society for Virology, Madison, Wisconsin).

Sweep*, M. E., Edmonds*, J. H., Lawson, T. G., and Haas, A. L. (1999) Kinetic Analysis of the E3 α -Dependent Ubiquitination of Picornavirus 3C Proteases. *FASEB J.* **13**, 1484. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Francisco, California).

Lawson, T. G., Emmons*, R. A., Gronros, D. G., and Dow*, M. A. (1999) Transferable Protein Destruction Signals in Picornavirus 3C Proteases. *FASEB J.* **13**, 1484. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Francisco, California).

Evans*, P. E., Bastien*, M. C., Pickart, C. M., and Lawson, T. G. (1998) Identification and Purification of an E3 Ubiquitin-Protein Ligase that Recognizes the EMC Virus 3C Protease as a Substrate. *FASEB J.* **12**, 1435. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Washington, D. C.).

Lawson, T. G., Gronros, D. L., Gladding*, R. L., and Michalewich*, K. M. (1997) Mapping a Signal in the Encephalomyocarditis Virus 3C Protease which Is Required for Conjugation with Ubiquitin. (FASEB Summer Research Conference on Ubiquitin and Protein Degradation, Saxtons River, Vermont).

Lawson, T. G., Michalewich*, K. M., Clark*, J. K., and Gronros, D. L. (1996) Mapping Ubiquitin Attachment Sites in the Encephalomyocarditis Virus 3C Protease. (Annual Meeting of the American Society for Virology, London, Ontario, Canada).

Lawson, T. G., Haas*, A. L., Gronros, D. L., Oliver*, C. J., and McPartland*, J. P. (1995) Evaluation of the Poliovirus 3C Protease as a Potential Substrate for Ubiquitin-Mediated Proteolysis. *FASEB J.* **9**, 1472. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Francisco, California).

Lawson, T. G. (1994 - Invited) Ubiquitin-Mediated Degradation of Picornavirus Processing Proteases. (Chemistry Department Seminar Series, Colby College, Waterville, Maine).

Lawson, T. G., Wey*, A. C., Gronros, D. L., Werner*, J. A., and Lockhart*, J. L. (1994) Evidence that the EMC Virus 3C Protease Is a Substrate for Conjugation with Ubiquitin. *FASEB J.* **8**, 1316. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Washington, D. C.).

Lawson, T. G. (1993 - Invited) Picornavirus Processing Proteases: Possible Substrates for the Ubiquitin-Mediated Proteolytic Pathway. (Merck Seminar Series, Bowdoin College, Brunswick, Maine).

Lawson, T. G., Gollan*, T. J., DiGeorge*, A. M., and Oberst*, M. D. (1993) The Selective ATP-Dependent, Ubiquitin-Stimulated Degradation of the Encephalomyocarditis Virus 3C Protease *in vitro*. (FASEB Summer Research Conference on Ubiquitin and Protein Degradation, Saxtons River, Vermont).

Lawson, T. G., Gollan*, T. J., and Oberst*, M. D. (1992) An ATP-Dependent Proteolytic System which Rapidly and Selectively Degrades the Encephalomyocarditis Virus 3C Protease *in vitro*. (Ninth International ICOP Conference on Proteolysis and Protein Turnover, Williamsburg, Virginia).

Lawson, T. G. (1992 - Invited) Cloning, Biosynthesis, and Instability of the Encephalomyocarditis Virus 3C Protease *in vivo* and *in vitro*. (American Chemical Society, Maine Section Meeting, Colby College, Waterville, Maine).

Lawson, T. G., Oberst*, M. D., Gupta*, M., Peura*, S. R., and Zydlewski*, J. D. (1991) The Rapid and Selective Degradation of the Encephalomyocarditis Virus 3C Protease in Reticulocyte Lysate. (Annual Meeting of the American Society for Virology, Fort Collins, Colorado).

Lawson, T. G., Oberst*, M. D., Gupta*, M., Peura*, S. R., and Zydlewski*, J. D. (1991) Characterization of the Rapid Degradation of the Encephalomyocarditis Virus 3C Protease in Reticulocyte Lysate. *FASEB J.* **5**, 1178. (Annual Meeting of the Federation of American Societies for Experimental Biology, Atlanta, Georgia).

Lawson, T. G., Smith, L. L., Palmenberg, A. C., and Thach, R. E. (1989) Inducible Expression of the Encephalomyocarditis Virus 3C Protease in Stably Transformed Mouse Cell Lines. (Annual Meeting of the American Society for Virology, London, Ontario, Canada).

Lawson, T. G., Cladaras, M. H., Ray, B. K., Lee, K. A., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1987) The Unwinding of mRNA Structure by Eukaryotic Initiation Factors 4F, 4A, and 4B, and the Role of mRNA Structure in Determining Translation Rates. (Cold Spring Harbor Symposium on Translational Control, Cold Spring Harbor Laboratory, New York.)

Lawson, T. G., Cladaras, M. H., Ray, B. K., Lee, K. A., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1987) Discrimination Among Reovirus mRNAs by Eukaryotic Initiation Factors 4F Plus 4A: The Roles of Cap Accessibility and 5' Proximal Secondary Structure. (Annual Meeting of the American Society for Virology, Chapel Hill, North Carolina and the VIIth International Congress of Virology, Edmonton, Alberta, Canada).

Thach, R. E., Lawson, T. G., Lee, K. A., Abramson, R. D., and Merrick, W. C. (1987) Dissociation of 5' Proximal Helical Regions in Messenger RNA by Eukaryotic Initiation Factors 4F, 4A, and 4B. *Fed. Proc.* **46**, 2185. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Philadelphia, Pennsylvania).

Rychlik, W., Lawson, T. G., Hagedorn, C. H., Thach, R. E., and Rhoads, R. E. (1987) Phosphorylation of Eukaryotic Initiation Factor eIF-4E. *Fed. Proc.* **46**, 2185. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Philadelphia, Pennsylvania).

Lawson, T. G., Ray, B. K., Grifo, J. A., Abramson, R. D., Merrick, W. C., Betsch, D. F., Weith, H. L., and Thach, R. E. (1986) Influence of 5' Proximal Secondary Structure on the Translational Efficiency of Eukaryotic mRNAs and on Their Interaction with Initiation Factors. (European Molecular Biology Organization Workshop on Eukaryotic Protein Synthesis, Patras, Greece).

Lawson, T. G., Ray, B. K., Abramson, R. D., Merrick, W. C., and Thach, R. E. (1986) Effect of Secondary Structure on Eukaryotic mRNA Translation and Its Unwinding by Initiation Factors. in *Current Communications in Molecular Biology: Translational Control*, ed. Matthews, M. B. (Cold Spring Harbor Laboratory), pp 25-29.

Abramson, R. D., Dever, T. E., Ray, B. K., Lawson, T. G., Thach, R. E., and Merrick, W. C. (1986) Binding of Initiation Factors to mRNA. *Fed. Proc.* **45**, 1678. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, Washington, D. C.).

Lawson, T. G., Cladaras, M. H., Ray, B. K., Thach, R. E. (1985) Influence of Reoviral mRNA Structure on Translational Efficiency. (Annual Meeting of the American Society for Virology, Albuquerque, New Mexico).

Lawson, T. G. and Weith, H. L. (1984) Characterization of the Activity of *E. coli* Ribonuclease H and Use in RNA Secondary Structure Analysis. *Fed. Proc.* **43**, 1885. (Annual Meeting of the American Society for Biochemistry and Molecular Biology, St. Louis, Missouri).

Academic and Professional Achievements:

Grant Award - National Institutes of Health - Academic Research Enhancement Award. (2012 to 2015). *Picornaviral 3C Protease Polyubiquitylation as a Picornavirus Replication Success Determinant.*

Fellowship

Award - Philips Faculty Fellowship (2010 – 2011). *Regulation of Protein Concentrations in Picornavirus-Infected Cells: The Role of Protein Ubiquitylation and Proteasome Activity in Picornavirus Replication.*

Grant Award - Bates College Student Research Apprenticeship Grant (2008). *An Experimental System for the Kinetic Analysis of Picornaviral 3C Protease Processing Activity Using Natural Substrates.*

Grant Award - Bates College HHMI Research Grant (2006). *Characterization of the N-terminal Ubiquitination of the Encephalomyocarditis Virus 3C Protease.*

Grant Award - Bates College HHMI Research Grant (2004). *Evaluation of the Binding of the Encephalomyocarditis Virus 3C and 3CD Proteins to Viral RNA: A Preliminary Investigation of the Viral RNA Replication Mechanism.*

Grant Award - National Science Foundation – Major Research Instrumentation (2003 to 2006). *Acquisition of a Multifunctional Imaging System for Research and Teaching in an Undergraduate Environment.*

Grant Award - National Science Foundation - Research in Undergraduate Institutions (2002 to 2005). *Ubiquitin-Mediated Degradation of Picornavirus Proteins.*

Grant Award - Bates College Schmutz Grant (2000). *The Role of a Protein Destruction Signal in Modulating the Activity of an Ubiquitin-Protein Ligase.*

Grant Award - National Science Foundation - Research in Undergraduate Institutions (1999 to 2002). *Ubiquitin-Mediated Degradation of Picornavirus Processing Proteases.*

Grant Award - National Science Foundation - Curriculum Development and Laboratory Improvement (1998 to 2000). *Capillary Electrophoresis in the Undergraduate Curriculum in Chemistry and Biological Chemistry (co-PI).*

Grant Award - National Science Foundation - Research in Undergraduate Institutions (1995 to 1999). *Ubiquitin-Mediated Degradation of Picornavirus Processing Proteases.*

Award - Henry Dreyfus Teacher-Scholar Award - Camille and Henry Dreyfus Foundation, Inc. (1995).

Grant Award - Bates College Schmutz Grant (1995). *Development of a Technique to Purify Cellular Proteins which Interact with the Encephalomyocarditis Virus 3C Protease.*

- Grant Award - Bates College HHMI Research Grant (1995). *Identification of the Ubiquitin Attachment Site in the Encephalomyocarditis Virus 3C Protease.*
- Grant Award - Bates College HHMI Instrument Grant (1994). *Funds to Purchase an Ultracentrifuge Rotor.*
- Grant Award - Bates College HHMI Curriculum Development Grant (1993 to 1994). *Support to Develop a New Interdisciplinary Course in Molecular Biology and Nucleic Acid Chemistry.* (co-PI).
- Grant Award - National Institutes of Health - Academic Research Enhancement Award. (1992 to 1995). *Turnover of Picornavirus 3C Proteases.*
- Grant Award - Bates College Schmutz Grant (1992). *The Purification of Mature Encephalomyocarditis Virus 3C Protease from Expressing E. coli Cells.*
- Grant Award - Bates College Schmutz Grant (1991). *The Expression of the Encephalomyocarditis Virus 3C Protease in E. coli Cells.*
- Grant Award - Bates College Ladd Library Grant (1991). *Library Materials for the Support of Laboratory Research in a New Area of Biochemistry.*
- Grant Award - Research Corporation (1990 to 1992). *Characterization of the Activity Responsible for the Degradation of the EMC Virus 3C Protease.*
- Grant Award - Bates College Schmutz Grant (1990). *The Role of mRNA Structure in the Selection of Initiation Codons.*
- Grant Award - National Science Foundation - Instrumentation and Laboratory Improvement (1990 to 1992). *Biochemistry Teaching Laboratory Instrumentation.*
- Grant Award - Biotechnology Training Programs (1990). *Acquisition of Molecular Biology Equipment for Teaching Laboratories.*
- Grant Award - National Science Foundation - Research in Undergraduate Institutions (1990). *High Field Nuclear Magnetic Resonance Spectrometer.* (co-PI).
- Public Health Service Predoctoral Traineeship, Purdue University (1981 to 1984).

Other Professional Activities:

- Vector Biology Study Section Member, National Institutes of Health (2014)
- Manuscript Reviewer, *PLoS ONE* (2009, 2013).
- Grant Reviewer, Research Corporation (2007 to 2009).
- Ad hoc* Grant Application Reviewer, National Science Foundation (2006 to 2008).
- Manuscript Reviewer, *Journal of Virology* (2006 to 2008).
- Organizing Committee Member, Maine Biological and Medical Sciences Symposium (2005 to 2007).
- Advisory Panel Member, Molecular and Cellular Biochemistry, National Science Foundation (2003 to 2006).
- Grant Reviewer for the Murdock College Research Program in the Life Sciences (1999).

Advisory Panel Member, National Science Foundation Instrumentation and Laboratory Improvement Program (1991).

Web Site: <http://abacus.bates.edu/~tlawson/home.htm>