

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Timothy W. Nilsen	POSITION TITLE Professor and Director
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EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Fordham University, Bronx, N.Y.	B.S.	1970	Biology
City College of CUNY, N.Y., N.Y.	M.A.	1974	Devel. Biology
SUNY at Albany, Albany, N.Y.	Ph.D.	1978	Molecular Biology
SUNY at Albany, Albany, N.Y.	Postdoc.	1981	Molecular Biology



NOTE: The Biographical Sketch may not exceed four pages. Items A and B (together) may not exceed two of the four-page limit. Follow the formats and instructions on the attached sample.

A. Positions and Honors

ACADEMIC APPOINTMENTS:

Case Western Reserve University School of Medicine:

Center for RNA Molecular Biology Professor & Director, 1992-present

Dept. of Biochemistry Professor, 2004-present

Dept. of Molecular Biology and Microbiology, Asst. Professor 1982-88, Assoc. Prof. 1988-91,

Professor 1991- 2004

Department of Medicine, Professor, 1991-present, Asst. Prof. 1982-88, Assoc. Prof. 1988-91, Professor 1991-

OTHER:

Presidential Young Investigator Award (NSF) 1984-89

Burroughs Wellcome Scholar in Molecular Parasitology 1990-95

AAAS Fellow 2006

Editor in Chief, *RNA*, 1994-present

Board of Reviewing Editors, *Science* 2007-

Editorial Board, *Molecular and Cellular Biology*, 2004-

Editorial Board, *Journal of Biological Chemistry*, 1991-94

Editorial Board, *Molecular and Biochemical Parasitology*, 1992-2000;

Associate Editor, *Microbial Pathogenesis* 1991-2003

Guest Editor *Methods*, 1999

Biochemistry Study Section (NIH) ad hoc 1988, 1989, 1990, Member 1990-94

Board of Scientific Counselors ad hoc, NIAID, 1997

CDF1 Molecular Biology Study Section (NIH) ad hoc 1997, 1998, 1999, 2004

CDF2 Molecular Cytology Study Section (NIH) ad hoc 1997, 1998, 1999 Member 1999-2003

MGA Study Section (NIH) ad hoc 2004, 2005 Member 2005-2009, Chair 2008-2009

B. Selected peer-reviewed publications

Valadkhan, S. and Nilsen, T.W. (2009) Reprogramming of the non-coding transcriptome during brain development. (Minireview) *J. Biol.* In Press.

Nilsen, T.W. and Graveley, B.R. (2009) Expansion of the eukaryote proteome by alternative splicing (Nature Insight) *Nature*, In Press.

Stern, M.Z., Gupta, S.K., Salmon-Divon, M., Hacham, T., Barda, O., Levi, S., Wachtel, C. Nilsen, T.W. and Michaeli, S. (2009) Multiple roles for polypyrimidine tract binding (PTB) proteins in trypanosome RNA metabolism. *RNA*, 15:648-665.

Yu, Y., Maroney, P.A., Denker, J.A., Zhang, X.H-F, Dybkov, O., Lührmann, R. Jankowsky, E., Chasin, L.A. and Nilsen, T.W. (2008) Dynamic Regulation of Alternative Splicing by Silencers that Modulate 5' Splice Site Competition, *Cell*, 135, 1224-1236.

Nilsen, T.W. (2008) Endo-siRNAs: yet another layer of complexity in RNA silencing. *Nature Structural and Molecular Biology*, 5, 546-548.

Maroney, P.A., Chamnongpol, S., Souret, F., Nilsen, T.W. (2008) Direct detection of small RNAs using splinted ligation. *Nature Protocols*, 3, 279-87.

Nilsen, T.W. (2007) RNA 1997-2007: a remarkable decade of discovery. *Molecular Cell*, 28, 715-20



- Nilsen, T.W. (2007) Mechanisms of microRNA-mediated gene regulation in animal cells. *Trends in Genetics* 23, 243-249.
- Maroney, P.A., Chamnongpol, S., Souret, F. and Nilsen, T.W. (2007) A rapid, quantitative assay for direct detection of microRNAs and other small RNAs using splinted ligation. *RNA*, 13: 930-936.
- Maroney, P.A., Yu, Y and Nilsen, T.W. (2006) MicroRNAs, mRNAs and Translation. *Cold Spring Harbor Symposia on Quantitative Biology, Symposium 71*, Pages 1-5.
- Maroney, M.A., Yu, Y. Fisher, J. and Nilsen, T.W. (2006) Evidence that microRNAs are associated with translating messenger RNAs in human cells. *Nature Structural & Molecular Biology*, 13:1102-1107.
- Bowers, H.A., Maroney, P.A., Fairman, M.E., Kastner, B., Lührmann, R. Nilsen, T.W. and Jankowsky, E.(2006) Discriminatory RNP remodeling by the DEAD-box protein DED1. *RNA* 12: 903-912.
- Nilsen, T.W. (2005) Spliceosome assembly in yeast: one ChIP at a time? *Nature Structural & Molecular Biology* 12:571-573.
- Fairman, M.E., Maroney, P.A., Wang, W., Bowers, H.A., Gollnick P., Nilsen, T.W. & Jankowsky, E. (2005) Protein displacement by DEXH/D "RNA helicases" without duplex unwinding. *Science* 340:730-734
- deHaseth, P.L. and Nilsen, T.W. (2004) When a part is as good as the whole. *Science*, 303:1307-1308.
- Nilsen, T.W. (2004) Too hot to splice. *Nature Structural & Molecular Biology* 11:208-209.
- Nilsen, T.W. (2004) The Eukaryotic Spliceosome, *Encyclopedia of Biological Chemistry*, Academic Press/Elsevier Science pp. 88-92.
- Nilsen, T.W. (2003) The spliceosome: the most complex macromolecular machine in the cell? *BioEssays*, 25:1147-9.
- Denker, J.A., Zuckerman, D.M. Maroney, P.A. and Nilsen, T.W. (2002) New components of the spliced leader RNP required for nematode trans-splicing. *Nature*, 417, 667-670.
- Gott, J.M., Nilsen, T.W., RNA processing in parasitic organisms: *Trans*-splicing and RNA editing In: *Molecular Medical Parasitology*. J.J. Marr, T.W. Nilsen, R.W. Komuniecki, eds., Academic Press, 29-45 (2003).
- Nilsen, T.W. (2002) The Spliceosome: No Assembly Required?, *Molecular Cell*, 9:8-9.
- Nilsen, T.W. (2001) Evolutionary origin(s) of SL-addition *trans*-splicing: Still an enigma. *Trends Genet.* 17:678-680.
- Romfo C., Maroney, P.A., Wu, S. and Nilsen, T.W. 3' splice site recognition in nematode *trans*-splicing involves enhancer dependent recruitment of U2 snRNP. *RNA* 7:785-792 (2001).
- Nilsen, T.W. RNA splicing: The case for an RNA enzyme. *Nature* 408:782 - 783 (2000).
- Maroney, P.A., Romfo C. and Nilsen, T.W. Nuclease protection of RNAs containing site-specific labels: A rapid method for mapping RNA-protein interactions. *RNA* 6:1905-1909 (2000).
- Maroney, P.A., Romfo C. and Nilsen, T.W. Functional recognition of the 5' splice site by U4/U6.U5 tri-snRNP defines a novel ATP-dependent step in early spliceosome assembly, *Molecular Cell*, 6: 317-328 (2000).
- Caprara M.G. and Nilsen, T.W. RNA: Versatility in form and function. (Review) *Nature Structural Biology* 7:831-833 (2000).
- Wu, S., Romfo, C., Nilsen, T.W., and Green, M.R. Functional recognition of the conserved 3' splice site AG dinucleotide by the splicing factor U2AF35. *Nature* 402:832-835 (1999).
- Nilsen, T.W. RNA/RNA interactions in nuclear pre-mRNA splicing. In: *RNA Structure and Function*. R. Simons and M. Grunberg-Manago eds., Cold Spring Harbor Press, pp. 279-307 (1998).



Principal Investigator/Program Director (Last, first, middle): Nilsen, Timothy, W.

Nilsen, T.W. *Trans*-splicing. In: *Frontiers in Molecular Biology: RNA Processing*, edited by Krainer, A., pp. 310-334 (1997).

Nilsen, T.W. A parallel spliceosome. (Perspective) *Science* 273:1813 (1996).

Denker, J.A., Maroney, P.A., Yu, Y.-T., Kanost, R.A. and Nilsen, T.W. Multiple requirements for nematode spliced leader RNP function in *trans*-splicing RNA. *RNA* 2:746-755 (1996).

Maroney, P.A., Yu, Y.-T., Jankowska, M. and Nilsen, T.W. Direct analysis of nematode *cis*- and *trans*-spliceosomes: A functional role for U5 snRNA in spliced leader addition *trans*-splicing and the identification of novel Sm snRNPs. *RNA* 2:735-745 (1996).

Maroney, P.A., Denker, J.A., Darzynkiewicz, E., Laneve, R. and Nilsen, T.W. Most mRNAs in the nematode *Ascaris lumbricoides* are *trans*-spliced: A role for spliced leader addition in translational efficiency. *RNA* 1:714-723 (1995).

Yu, Y.-T., Maroney, P.A., Darzynkiewicz, E., and Nilsen, T.W. U6 snRNA function in nuclear pre-mRNA splicing: A phosphorothioate interference analysis of the U6 phosphate backbone. *RNA* 1:46-54 (1995).

Nilsen, T.W. RNA-RNA interactions in the spliceosome: Unraveling the ties that bind. (Mini review) *Cell* 78:1-4 (1994).

Nilsen, T.W. Unusual strategies of gene expression and control in parasites. (Perspective) *Science* 264:1868-1869 (1994).

Yu, Y.T., Maroney, P. and Nilsen, T.W. Functional reconstitution of U6 snRNA in nematode *cis* and *trans*splicing: U6 can serve as both a branch acceptor and a 5' exon. *Cell* 75:10491059 (1993).

Nilsen, T.W. *Trans*splicing of nematode premRNA. *Annu. Rev. Microbiol.*, 47:413-440 (1993).

Hannon, G.J., Maroney, P.A., Yu, Y.T., Hannon, G.E. and Nilsen, T.W. Interaction of U6 snRNA with a sequence required for function of the nematode SL RNA in *trans*splicing. *Science* 258:17751780 (1992).

Maroney, P.A., Hannon, G.J., Shambaugh, J.D. and Nilsen, T.W. Intramolecular base pairing between the nematode spliced leader and its 5' splice site is not essential for *trans*splicing *in vitro*. *EMBO J.* 10:38693875 (1991).

Hannon, G.J., Maroney, P.A., Denker, J.A. and Nilsen, T.W. *Trans*splicing of nematode premessenger RNA *in vitro*. *Cell* 61:12471255 (1990).

Maroney, P.A., Hannon, G.J., Denker, J.A. and Nilsen, T.W. The nematode spliced leader RNA participates in *trans*splicing as an Sm snRNP. *EMBO J.* 9:36673673 (1990).

Hannon, G.J., Maroney, P.A., Ayers, D.G., Shambaugh, J.D. and Nilsen, T.W. Transcription of a nematode *trans*spliced leader RNA requires internal elements for both initiation and 3' end formation. *EMBO J.* 9:19151921 (1990).

Maroney, P.A., Hannon, G.J. and Nilsen, T.W. Transcription and cap trimethylation of a nematode spliced leader RNA in a cell free system. *Proc. Natl. Acad. Sci. USA* 87:709713 (1990).