

## CURRICULUM VITAE

**Name:** Craig Cameron Mello, Ph.D.

**Address:** Howard Hughes Medical Institute  
Program in Molecular Medicine  
University of Massachusetts Medical School  
373 Plantation Street, Suite 219  
Worcester, MA 01605

**Date of Birth:** October 18, 1960, U.S.A.

**Citizenship:** U.S.A.

**Education:** Brown University, 1982, Sc.B. Biochemistry  
University of Colorado, 1982-1984, (Transfer) Developmental Biology  
Harvard University, 1984-1990, Ph.D. Biology  
Fred Hutchinson Cancer Research Center 1990-1994, Postdoctoral Fellowship

**Awards:** Honors in Biochemistry, Brown University 1982  
NIH-NRSA Postdoctoral Award, 1991  
Pew Scholarship in the Biomedical Sciences, 1995  
American Cancer Society Junior Faculty Award, 1995  
March of Dimes, Basil O'Connor Starter Award, 1996  
Howard Hughes Medical Institute, Investigatorship, 2000  
Wiley Prize\* Rockefeller University, 2003  
National Academy of Sciences Molecular Biology Award,\* 2003  
Blais University Chair in Molecular Medicine, 2003  
MGH Warren Triennial Prize,\* 2004  
Lewis S. Rosenstiel Award,\* 2005  
Gairdner Foundation International Award,\* 2005  
Massry Prize,\*2005  
Paul Ehrlich and Ludwig Darmstaedter Prize,\* 2006

\*co-recipient

**Positions:** 2003-present Professor  
Howard Hughes Medical Institute, Investigator  
Program in Molecular Medicine  
University of Massachusetts Medical School

2000 - 2003	Associate Professor Howard Hughes Medical Institute, Assistant Investigator Program in Molecular Medicine University of Massachusetts Medical School
1994 – 2000	Assistant Professor Department of Cell Biology University of Massachusetts Medical School

### Review Panels and Committee Membership:

- National Institutes of Health:
  - 11/1997 Ad Hoc Member, Biological Sciences 1, Study Section
  - 02/2001 Ad Hoc Member, Cell Development and Function 2
  - 06/2002 Ad Hoc Member, Cell Development and Function 5
  - 02/2003 Ad Hoc Member, Cell Development and Function 2
- 1998/1999 Co-Organizer, International *C. elegans* Meeting
- 1999 Member, NIH Model Organisms Advisory Committee
- 1994-present Ad Hoc Reviewer for scientific journals; Developmental Biology, Development, Genes and Development, Cell, Nature, Science, Embo Journal
- 2005/2006 Co-Organizer, Keystone Symposium on RNAi and Related Pathways
- 2005- Member, National Academy of Sciences

### Patents:

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|---------------|--|
| 1998, granted | dsRNA as a tool for targeted genetic interference<br>Co-inventors: Andrew Fire, Ph.D., Craig C. Mello, Ph.D. et al.                                  |
| 1999, pending | RNAi pathway genes as tools for targeted genetic interference.<br>Co-inventors: Craig C. Mello, Ph.D., Andrew Fire, Ph.D. et al.                     |
| 2000, pending | Genetic interference via the <i>in vivo</i> expression of small hairpin RNAs<br>Co-inventors: Philip D. Zamore, Ph.D., Craig C. Mello, Ph.D., et al. |

### Scientific Advisory Board Memberships:

- |                |                                     |
|----------------|-------------------------------------|
| 1995 – 2001    | Exelixis, Inc.<br>San Francisco, CA |
| 2000 – present | Divergence Inc.<br>Saint Louis, MO  |
| 2002 – 2004    | Sequitur, Inc.<br>Natick, MA        |
| 2004 – present | Cytrx Labs<br>Worcester, MA         |
| 2004 – present | Invitrogen, Inc.<br>Carlsbad, CA    |

**Current Research Projects:****Investigator**

Howard Hughes Medical Institute

Period: 9/1/00-present

**Analysis of Cell Polarity Signaling in *C. elegans* Embryos**

Principal Investigator: Craig C. Mello

Agency: NIH/NICHD Award: 5 R01 HD36247 Period: 9/1/99-5/31/09

The major goal of this project is to understand the signaling pathways that underlie the control of anterior-posterior polarity during *C. elegans* embryogenesis.

**RNA Mediated Genetic Interference in *C. elegans***

Principal Investigator: Craig C. Mello

Agency: NIH/GMS Award: 5 R01 GM58800 Period: 1/1/99-3/31/07

The major goal of this project is to understand the mechanisms that underlie genetic interference caused by RNA injection in *C. elegans*.

**POSTDOCTORAL PERSONNEL****Previous Trainees:**

Tae Ho Shin, Ph.D. LSRF Postdoctoral Fellow March, 1995 - November, 2000	Current Position:	Assistant Professor Department of Biology Baylor College of Medicine
Hiroaki Tabara, Ph.D. USPHS Postdoctoral Fellow March, 1997 - March, 2001	Current Position:	Assistant Professor Kyoto University Kyoto, Japan
Martha Soto, Ph.D. ACS Postdoctoral Fellow September, 1998 - December, 2002	Current Position:	Assistant Professor Department of Pharmacology Rutgers University
Martin Simard, Ph.D. CIHR Postdoctoral Fellow Feb. 2002 – Dec. 2004	Current Position:	Assistant Professor Laval Univ. Cancer Research Ctr. Quebec City, Quebec

**Current Laboratory Associates:**

Julie Claycomb Postdoctoral Fellow	Graduate studies completed at: Massachusetts Institute of Technology, MA, USA
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Darryl Conte, Ph.D.  
NIH NRSA Postdoctoral Fellow

Graduate studies completed at:  
SUNY, Albany, NY, USA.

Thomas Duchaine  
CIHR Postdoctoral Fellow

Graduate studies completed at:  
University of Montreal, Canada

Weifeng Gu  
Postdoctoral Fellow

Graduate studies completed at:  
University of Rochester Medical Center

Takao Ishidate, Ph.D.  
Postdoctoral Fellow

Graduate studies completed at:  
University of Tokyo, Japan

Ji Liu, Ph.D.  
Postdoctoral Fellow

Graduate studies completed at:  
University of Georgia, GA, USA

Lisa Maduzia, Ph.D.  
Postdoctoral Fellow

Graduate studies completed at:  
Rutgers University, NJ USA

Kuniaki Nakamura, Ph.D.  
Postdoctoral Fellow

Graduate studies completed at:  
Kyoto University, Japan

Ka Ming Pang, Ph.D.  
Postdoctoral Fellow

Graduate studies completed at:  
University of Connecticut, CT USA

Masaki Shirayama, Ph.D.  
Human Frontiers Postdoctoral Fellow

Graduate studies completed at:  
University of Tokyo, Japan

Christopher Trzepacz, Ph.D.  
NIH NRSA Postdoctoral Fellow

Graduate studies completed at:  
University of Cincinnati, OH, USA

## **PUBLICATIONS**

1. **Mello, C.C.**, Kramer, J. M., Stinchcomb, D., and Ambros, V. (1991). Efficient gene transfer in *C. elegans*: extrachromosomal maintenance and integration of transforming sequences. *EMBO Journal*, *10*, 3959-3970.
2. **Mello, C.C.**, Draper, B. W., Krause, M., Weintraub, H., Priess, J. R. (1992). The *pie-1* and *mex-1* genes and maternal control of blastomere identity in early *C. elegans* embryos. *Cell* *70*, 163-176.
3. Bowerman, B., Draper, B. W., **Mello, C.C.**, and Priess, J. R. (1993). The maternal gene *skn-1* encodes a protein that is distributed unequally in early *C. elegans* embryos. *Cell*, *74*, 443-452.
4. **Mello, C.C.**, Draper, B. W., and Priess, J. R. (1994). The maternal genes *apx-1* and *glp-1* and establishment of dorsal ventral polarity in early *C. elegans* embryos. *Cell* *77*, 95-106.

5. Levitan, D., Boyd, L., **Mello, C.C.**, Kemphues, K., and Stinchcomb, D. (1994). *par-2*, a gene required for blastomere asymmetry in *C. elegans*, contains zinc finger and ATP binding motifs. Proc. Natl. Acad. Sci. USA. *91*, 6108-6112.
6. Sibley, M. H., Johnson, J. J. **Mello, C.C.**, and Kramer, J. M. (1994) Genetic identification, sequence, and alternative splicing of the *Caenorhabditis elegans* alpha-2(IV) collagen gene. J. Cell Biol., *123*, (1) 255-264.
7. **Mello, C.C.**, and Fire, A. (1995). DNA transformation in *C. elegans*. Methods in Cell Biology Vol. 48. Diane Shakes and Henry Epstein, editors. p. 451-482.
8. Mickey, K.M., **Mello, C.C.**, Montgomery, M.K., Fire, A., and Priess, J.R. (1996) An inductive interaction in 4-cell stage *C. elegans* embryos involves APX-1 expression in the signaling Cell. Development. *122*, 1791-1789.
9. **Mello, C.C.**, Schubert, C., Draper, B.W., Lobel, R., Zhang, W. and Priess, J.R. (1996) PIE-1 protein and germline specification in early *C. elegans* embryos. Nature, *382*, 710-712.
10. Seydoux, G., **Mello, C.C.**, Pettitt, J., Wood, W.B., Priess, J.R. and Fire, A. (1996) Repression of gene expression in the embryonic germ lineage of *C. elegans*. Nature, *322*, 713-716.
11. Draper, B. W., **Mello, C.C.**, Bowerman, B., Hardin, J., and Priess, J.R. Mex-3 a KH Domain protein that regulates blastomere identity in early *C. elegans* embryos. Cell *87*, 205-216.
12. Watts, J.L., Etemad-Moghadam, B., **Mello, C.C.**, Draper, B.W., Priess, J.R., and Kemphues, K.J. (1996) Par-6, a new gene involved in the establishment of asymmetry in early *C.elegans* embryos acts by mediating the asymmetric localization of PAR-3. Development *122* (10), 3133-3140.,
13. Rocheleau, C., Bei, Y. Downs, W.D., Lin, R., Wittman, C., Cha, Y.-H., Ali, M., Priess, J.R. and **Mello, C.C.** (1997). Wnt signaling and an APC related gene specify endoderm in early *C. elegans* embryos. Cell *90*, 707-716.
14. Kemphues, K. and **Mello, C.** (1997). Antisense RNA injection in *Caenorhabditis elegans*. Trends in Cell Biology *7*: 462-468.
15. Fire, A., Xu, S., Montgomery, M.K., Kostas, S., Driver, S.E., and **Mello, C.C.** (1998). Potent and specific interference in *C. elegans* mediated by double stranded RNA. Nature *391*, 806-810.
16. Shi, Y., and **Mello, C.C.** (1998). A p300/CBP homolog specifies multiple differentiation pathways in *Caenorhabditis elegans*. Genes and Development, *12*(7), 943-955.
17. Tabara, H. Grishok, A. and **Mello C.C.** (1998) Soaking in the genome sequence: RNAi in *C. elegans*. Review Article. Science *282*, pp430-431.

18. Tabara, H., Hill, R. J., **Mello, C.C.**, Priess, J. R., and Kohara, Y. (1999) pos-1 encodes a cytoplasmic zinc-finger protein essential for germline specification in *C. elegans*. *Development*;126(1):1-11.
19. Batchelder, C., Dunn, M. A., Choy, B., Suh, Y., Cassie, C., Shim, E.Y., Shin, T.-H., **Mello, C.C.**, Seydoux, G., Blackwell, T. K. (1999) Transcriptional Repression by the *C. elegans* Germline Protein PIE-1. *Genes and Development* 13(2):202-12.
20. Rocheleau, C.E., Yasuda, J., Shin, T-H., Lin, R., Sawa, H., Okano, H., Priess, J.R., Davis, R.J., and **Mello, C.C.** (1999). WRM-1 activates the LIT-1 protein kinase to transduce anterior/posterior polarity signals in *C. elegans*. *Cell* 97, 771-726.
21. Shin, T-H., Yasuda, J., Rocheleau, C.E., Lin, R., Soto, M., Bei, Y., Davis, R.J., and **Mello, C.C.** (1999). MOM-4, a MAP kinase kinase kinase-related protein, activates WRM-1/LIT-1 kinase to transduce anterior/posterior polarity signals in *C. elegans*. *Molecular Cell* 4(2), 275-280..
22. Tabara, H., Sarkissian, M., Kelly, W.G., Grishok, A., Timmons, L., Fleenor, J., Fire, A., and **Mello, C.C.** (1999). The *rde-1* gene, RNA interference, and transposon silencing in *C. elegans*. *Cell* 99, 123-132.
23. Grishok, A., Tabara, H., and **Mello, C.C.** (2000) Genetic requirements for the inheritance of RNAi in *C. elegans*. *Science*, 287, 2494-2497.
24. Parrish, S., Fleenor, J., Xu, S., **Mello, C.C.**, Fire, A. (2000). Functional anatomy of a dsRNA trigger: Differential requirements for the two trigger strands in RNA interference. *Molecular Cell* 6, 1077-1087.
25. Grishok, A., Pasquinelli, A.E., Conte, D., Li, N., Parrish, S., Baillie, D.L., Fire, A., Ruvkun, G., and **Mello, C.C.** (2001) Genes and mechanisms related to RNA interference regulate expression of the small temporal RNAs that control developmental timing in *Caenorhabditis elegans*. *Cell* 106, 23-34.
26. Soto, M.C., Qadota, H., Kasuya, K., Inoue, M., Tsuboi, D., **Mello, C.C.**, Kaibuchi, K. (2002). The GEX-2 and GEX-3 proteins are required for tissue morphogenesis and cell migrations in *C. elegans*. *Genes Dev.* 16(5), 620-632.
27. Grishok, A., and **Mello C.C.** (2002). RNAi. Review Article. *Adv Genet.* 46, 339-360.
28. Bei, Y., Hogan, J., Berkowitz, L.A., Soto, M., Rocheleau, C.E., Pang, K-M., Collins, J., and **Mello, C.C.** (2002). SRC-1 and Wnt Signaling Act Together to Specify Endoderm and to Control Cleavage Orientation in Early *C. elegans* Embryos. *Developmental Cell* 3, 113-125.
29. Tabara, H., Yigit, E., Siomi, H., and **Mello, C.C.** (2002) The double stranded RNA binding protein RDE-4 interacts in vivo with RDE-1, DCR-1 and a conserved DEXH-box helicase to direct RNA interference in *C. elegans*. *Cell* 109 (7), 861-871.

30. Unhavaithaya, Y., Shin, T-H., Miliaris, N., Lee, J., Oyama, T., and **Mello, C.C.** (2002) MEP-1 and a homolog of the NURD complex component Mi-2 act together to maintain germline-soma distinctions in *C. elegans*. *Cell* 111, 991-1002.
31. Shin, T.H., **Mello C.C.** (2003) Chromatin regulation during *C. elegans* germline development. *Current Opinion in Genetics & Development*, 13 (5), 455-462
32. Venkatesan, K., McManus, H.R., **Mello, C.C.**, Smith, T.F., Hansen, U. (2003) Functional conservation between members of an ancient duplicated transcription factor family, LSF/Grainyhead. *Nucleic Acids Res.* Aug 1; 31(15): 4304-16.
33. Timmons L., Tabara, H., **Mello C.C.**, Fire, A.Z. (2003) Inducible systemic RNA silencing in *Caenorhabditis elegans*. *Mol. Biol. Cell.* Jul; 14(7): 2972-83
34. Pang, K-M, Ishidate, T., Nakamura, K., Shirayama, M, Trzepacz, C., Schubert, C., Priess, J. and **Mello, C.C.** (2004) The minibrain kinase homolog, *mbk-2*, is required for spindle positioning and asymmetric cell division in early *C. elegans* embryos. *Developmental Biology* 265, 127-139.
35. Hutvagner, György, Simard, M.J., **Mello C.C.**, and Zamore, P.D. (2004) Sequence-specific inhibition of small RNA function. *PLoS* 3(4), 465-475.
36. **Mello C.C.** and Conte D. Jr. (2004) Revealing the world of RNA interference. *Nature* 431:338-342.
37. Grigorenko, A.P., Moliaka, Y.K., Soto, M.C., **Mello C.C.**, and Rogaev, E.L. (2004) The *Caenorhabditis elegans* IMPAS gene, *imp-2*, is essential for development and is functionally distinct from related presenilins. *Proc Natl Acad Sci USA* 2004, Oct. 12; 101(41):14955-60. Epub 2004 Oct 06
38. **Mello, C.C.** and Czech, M.P. Micromanaging insulin secretion. *Nat Med.* 2004 Dec;10(12):1297-1298.
39. Tops, B.B., Tabara, H., Sijen, T., Simmer, F., **Mello, C.C.**, Plasterik, R.H., Ketting, R.F. (2005) RDE-2 interacts with MUT-7 to mediate RNA interference in *Caenorhabditis elegans*. *Nucleic Acids Res.* 2005 Jan 13;33(1):347-55.
40. Chen, C-C.G., Simard, M.J., Tabara, H., Brownell, D.R., McCullough, J.A., **Mello, C.C.** (2005) A member of the polymerase  $\beta$  nucleotidyltransferase superfamily is required for RNA interference in *C. elegans*. *Current Biology* 15(4) 378-383.
41. Nakamura, K., Kim, S., Ishidate, T., Bei, Y., Pang, K-M, Shirayama, M., Trzepacz, C., Brownell, D.R., **Mello, C.C.** (2005) Wnt Signaling Drives WRM-1/ $\beta$ -catenin Asymmetries in early *C. elegans* embryos. *Genes & Development* (in press)

42. Wang, D., Kennedy, S., Conte Jr., D., Kim, J.K., Gabel, H.W., Kamath, R., **Mello, C.C.**, Ruvkun, G., (2005). Somatic misexpression of germline P granules and enhanced RNA interference in retinoblastoma pathway mutants. *Nature* July 28; 436(7050) 593-7.
43. Shirayama, M. Ishidate, T., Nakamura, K., Bei, Y., Mello, C.C. (2005) DYRK, CK1  $\alpha$  and GSK3 $\beta$  kinases promote the destruction of the zinc-finger protein OMA-1 to regulate the transition from germline to embryogenesis in *C. elegans*. (In press)
44. Duchaine, T.F., Wohlschlege, J.A., Kennedy, S., Bei, Y., Conte, D., Pang, K-M., Brownell, D.R., Harding, S., Mitani, S., Ruvkun, G., Yates, J.R. Mello, C.C. (2005) Functional proteomics reveals the biochemical niche of *C. elegans* DCR-1 in multiple small-RNA-mediated pathways. (In press)