CURRICULUM VITAE

MARIO RENATO CAPECCHI Professor

Date and Place of Birth:	October 6, 1937 - Verona, Italy
Citizenship:	U.S.
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Degrees:

B.S. Antioch College, Yellow Springs, Ohio, 1961, Chemistry and Physics
Ph.D. Harvard University, Cambridge, Massachusetts, 1967, Biophysics

Positions Held:

1969-1971	Assistant Professor, Harvard Medical School
1971-1973	Associate Professor, Harvard Medical School
1973-present	Professor of Biology, University of Utah
1982-present	Adjunct Professor of Oncological Sciences, Division of Molecular Biology and Genetics, University of Utah School of Medicine
1988-present	Investigator of the Howard Hughes Medical Institute
1989-present	Professor of Human Genetics, University of Utah School of Medicine
2002-2008	Co-Chairman of the Department of Human Genetics, University of Utah School of Medicine

Honors and Awards:

Junior Fellow of the Society of Fellows, Harvard University, 1967-69
American Chemical Society Award in Biochemistry, 1969
Established Investigator of the American Heart Association, 1969-72
America's Ten Outstanding Young Men Award, 1971
National Institutes of Health Career Development Award, 1972-74
American Cancer Society Faculty Research Award, 1974-79
Taught Cold Spring Harbor Summer Course on Microinjection and DNA Transfection, 1984, 1985
Chairman of the Gordon Conference on Molecular Genetics, 1986
Distinguished Research Award, University of Utah, 1987
Chairman of Banbury Conference on Developmental Genetics, Cold Spring Harbor, 1989
Member of the National Academy of Sciences, 1991-present
Recipient of NIH MERIT grant award, 1992 to 2001
Recipient of the Fifth Annual Bristol-Myers Squibb Award for Distinguished Achievement in Neuroscience Research, 1992
Recipient of the 1993 Gairdner Foundation International Award for Achievements in Medical Science
Distinguished Professor of Human Genetics and Biology, University of Utah, 1993-present
Recipient of the 1994 General Motors Corporation's Alfred P. Sloan Jr. Prize for Outstanding Basic Science Contributions to Cancer Research
Recipient of the 1996 Molecular Bioanalytics Prize, Germany

Laureate of the 1996 Kyoto Prize in Basic Sciences
Recipient of the 1997 Franklin Medal for Advancing Our Knowledge of the Physical Sciences
Feodor Lynen Lectureship, 1998 Miami Biosymposium
Recipient of the 1998 Rosenblatt Prize for Excellence
Recipient of the 1998 Baxter Award for Distinguished Research in the Biomedical Sciences, Association of American Medical Colleges
Helen Lowe Bamberger Colby and John E. Bamberger Presidential Endowed Chair in the Health Sciences Center, University of Utah, 1999
Phi Kappa Phi National Honor Society, 1999
Lecturer in the Life Sciences for the Collège de France, 1999-2000
Recipient of the 2000 Horace Mann Distinguished Alumni Award, Antioch College
Recipient of the 2000 Premio Phoenix-Anni Verdi for Genetic Research Award, Italy
Recipient of the 33rd Jiménez-Diáz Prize for Contributions to Medical Genetics, Spain, 2001
Recipient of the 2001 Pioneers of Progress Award
Recipient of the 2001 Albert Lasker Award for Basic Medical Research
Elected to the rank of Fellow of the American Association for the Advancement of Science, 2001
Recipient of the State of Utah Governor's Science and Technology Award, 2002
Laureate of the 2001 National Medal of Science
Recipient of NIH MERIT grant award, 2002 to 2011
Recipient of the 2002 John Scott Medal Award
Recipient of the 2002 Shaul and Meira Massry Foundation Prize
Elected to the European Academy of Sciences, 2002
Recipient of the 2003 Pezcoller Foundation-AACR International Award for Cancer Research
Recipient of the 2002/03 Wolf Prize in Medicine
Recipient of an Honorary Degree of Doctor of Medicine, University of Florence School of Medicine, Italy, 2004
Recipient of the 2005 March of Dimes Prize in Developmental Biology
2007 Jacob Heskel Gabbay Award in Biotechnology and Medicine
2007 Nobel Laureate, Physiology or Medicine with Oliver Smithies and Martin Evans
Recipient of the 2008 Distinguished Scientist Award, American Heart Association
Member of the American Academy of Arts and Sciences 2009

Teaching Responsibilities:

Biochemistry
Cell Biology
Developmental Genetics
Eukaryotic Genetics
Genetics
Molecular Biology

Memberships/Services:

Member of the American Biochemical Society, 1969-present
Member of the American Society for Biochemistry and Molecular Biology, 1969-present
Member of the National Science Foundation Advisory Panel on Genetics, 1975-1980
Member of the National Inst. of Health Advisory Panel on Mammalian Genetics, 1981-85
Member of the Utah Regional Cancer Center, 1985-present
Member of the American Association for the Advancement of Science, 1987-present
Member of the Science Innovation Program Committee, 1991-present
Member of the American Society for Microbiology, 1994-present

Charter Fellow of the Molecular Medicine Society, 1994-present
Member of the New York Academy of Sciences, 1995-2003
Member of the Advisory Panel for the European Molecular Biology Laboratory, Heidelberg, Germany, 1995-present
Member of the Genetical Society, 1997-2000
Member of the Society for Developmental Biology, 1997-present
Member of the International Mammalian Genome Society, 1997-2003
Member of the Board of Scientific Counselors, NCI, 1997-2001
Fellow of the American Academy of Microbiology, 1997-present
Member of the Genetics Society of America, 1998-present
Honorary and Lifetime Member of the American Society of Hematology, 2000-present
Member of the American Society for Clinical Investigation, 2001-present
Member of the Editorial Boards of:
- Somatic Cell and Molecular Biology, 1982-present
- DNA, 1982-present
- Molecular and Cellular Biology, 1985-present
- Bio Essays, 1985-present
- Technique, 1989-present
- Mechanisms of Development, 1990-present
- Neurobiology of Disease, 1994-2000
- Molecular Medicine, 1994-present
- Cell Structure and Function, 1994-present
- Developmental Biology, 1995-2001
- FASEB Journal, 1996-1999
- The inScight Editorial Board (Academic Press), 1998-present
- Proceedings of the National Academy of Sciences, 1998-2000
- Rejuvenation Research, 2004
- Nanotechnology Progress International (JONPI), 2010

Reviewer for Cell, Current Biology, Development, Developmental Biology, Developmental Dynamics, EMBO Journal, FASEB Journal, Genes and Development, Journal of Biological Chemistry, Molecular and Cellular Biology, Nature, Nature Genetics, Proceedings of the National Academy of Sciences, Science, Trends in Genetics, Trends in Neurosciences

Publications:

Capecchi, M. R. and G. N. Gussin (1965). Suppression *in vitro*: Identification of a serine-tRNA as a "Nonsense Suppressor." *Science* **149**:417-422. PMID17809404

Adams, J. M. and M. R. Capecchi (1966). N-formylmethionine-tRNA as the initiator of protein syntheses. *Proc. Natl. Acad. Sci. USA* **55**:147-155. PMID 5328638

Capecchi, M. R. (1966). Initiation of *E. coli* proteins. *Proc. Natl. Acad. Sci. USA* **55**:1517-1524. PMID5336288

Capecchi, M. R. (1966). Cell-free protein synthesis programmed with R17 RNA: Identification of two phage proteins. *J. Mol. Biol*. **21**:173-193. PMID5969761

Publications: (cont'd)

Bergquist, P. L. and M. R. Capecchi (1966). Fractionation of a suppressor tRNA. *J. Mol. Biol.* **19**:202-206. PMID5338521

Gussin, G. N., M. R. Capecchi, J. M. Adams, J. E. Argetsinger, J. Tooze, K. Weber and J. D. Watson (1966). Protein synthesis directed by RNA phage messengers. *Cold Spring Harbor Symp. Quant. Biol.* **31:**257-271. PMID4866373

Capecchi, M. R. (1967). Polycistronic messenger RNA and the phenomenon of suppression, BBA Library. In *Regulation of Nucleic Acid and Protein Synthesis* (V. V. Konigsberger and L. Bosch, Ed.), Vol. 10, pp. 243-258. Amsterdam: Elsevier Publishing Co.

Capecchi, M. R. (1967). A rapid assay for polypeptide chain termination. *Biophys. Res. Comm*. **28**:773-778. PMID6061555

Capecchi, M. R. (1967). Polypeptide chain termination *in vitro*: Isolation of a release factor. *Proc. Natl. Acad. Sci. USA* **58**:1144-1151. PMID5233840

Capecchi, M. R. (1967). Polarity *in vitro*. *J. Mol. Biol*. **30**:213-217. PMID6077936

Capecchi, M. R. and H. A. Klein (1969). Characterization of three proteins involved in polypeptide chain termination. *Cold Spring Harbor Symp. Quant. Biol*. **28**:469-477. PMID4909514

Capecchi, M. R. and H. A. Klein (1970). Release factors mediating termination of complete proteins. *Nature* **26**:1029-1033. PMID4911223

Klein, H. A. and M. R. Capecchi (1971). Polypeptide chain termination, purification of the release factors, R_1 and R_2 from *Escherichia coli*. *J. Biol. Chem*. **246**:1055-1061. PMID5543670

Sharp, J. D., N. E. Capecchi and M. R. Capecchi (1973). Altered enzymes in drug resistant variants of mammalian tissue culture cells. *Proc. Natl. Acad. Sci. USA* **70**:3145-3149. PMID4522295

Capecchi, M. R., N. E. Capecchi, S. H. Hughes and G. M. Wahl (1974). Selective degradation of abnormal proteins in mammalian tissue culture cells. *Proc. Natl. Acad. Sci. USA* **71**:4732-4736. PMID4531013

Hughes, S. H., G. M. Wahl and M. R. Capecchi (1975). Purification and characterization of mouse hypoxanthine-guanine phosphoribosyl transferase. *J. Biol. Chem*. **250**:120-126. PMID237883

Wahl, G. M., S. H. Hughes and M. R. Capecchi (1975). Immunological characterization of hypoxanthine-guanine phosphoribosyl transferase mutants of mouse L cells: Evidence for mutations at different loci n the HGPRT gene. *J. Cell Phys*. **85**:307-320. PMID47331

Publications: (cont'd)

Capecchi, M. R., S. H. Hughes and G. M. Wahl (1975). Yeast super suppressors are altered tRNAs capable of translating a nonsense codon *in vitro*. *Cell* **6**:269-277. PMID802681

Capecchi, M. R. and R. E. Webster (1975). Bacteriophage RNA as template for *in vitro* protein synthesis. In *RNA Phages* (N. D. Zinder, Ed.). Pp. 279-299. Cold Spring Harbor, New York: Cold Spring Harbor Press.

Capecchi, M. R., R. A. V. Haar, N. E. Capecchi and M. M. Sveda (1977). The isolation of a suppressible nonsense mutant in mammalian cells. *Cell* **12**:371-381. PMID912748

Capecchi, M. R., R. A. V. Haar, N. E. Capecchi and M. M. Sveda (1977). Molecular approaches to eucaryotic genetic systems. *ICN-UCLA Symposia* **8**:381-398.

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Capecchi, M. R. (1980). High efficiency transformation by direct microinjection of DNA into cultured mammalian cells. *Cell* **22**:479-488. PMID6256082

Folger, K. R., E. A. Wong, G. Wahl and M. R. Capecchi (1982). Patterns of integration of DNA microinjected into cultured mammalian cells: Evidence for homologous recombination between injected plasmid DNA molecules. *Mol. Cell. Biol*. **2**:1372-1387. PMID6298598

Hudziak, R. M., F. A. Laski, U. L. R. Bhandary, P. A. Sharp and M. R. Capecchi (1982). Establishment of mammalian cell lines containing multiple nonsense mutations and functional suppressor tRNA genes. *Cell* **31**:137-146. PMID6760983

Luciw, P. A., J. M. Bishop, H. E. Varmus and M. R. Capecchi (1983). Location and function of retroviral and SV40 sequences that enhance biochemical transformation after microinjection of DNA. *Cell* **33**:705-716. PMID6307525

Young, J. F., M. R. Capecchi, F. A. Laski, U. L. R. Bhandary, P. A. Sharp and P. Palese (1983). Measurement of suppressor transfer RNA activity. *Science* **221**:873-875. PMID6308765

Folger, K. R., K. R. Thomas and M. R. Capecchi (1984). Analysis of homologous recombination in cultured mammalian cells. *Cold Spring Harbor Symp. Quant. Biol.* **49**:123-138. PMID6099232

Laski, F. A., R. Belagaje, R. M. Hudziak, M. R. Capecchi, G. P. Norton, P. Palese, U. L. R. Bhandary and P. A. Sharp (1984). Synthesis of an ochre suppressor tRNA gene and expression in mammalian cells. *EMBO J*. **3**:2445-2452. PMID6096120

Publications: (cont'd)

Folger, K. R., K. R. Thomas and M. R. Capecchi (1985). Nonreciprocal exchanges of information between DNA duplexes coinjected into mammalian cell nuclei. *Mol. Cell. Biol*. **5**:59-69. PMID2984556

Folger, K. R., K. R. Thomas and M. R. Capecchi (1985). Efficient correction of mismatched bases in plasmid heteroduplexes injected into cultured mammalian cell nuclei. *Mol. Cell. Biol*. **5**:70-74. PMID3982420

Frels, W. I., J. A. Bluestone, R. J. Hodes, M. R. Capecchi and D. S. Singer (1985). Expression of a microinjected porcine class I major histocompatibility complex gene in transgenic mice. *Science* **228**:577-580. PMID3885396

Wong, E. A. and M. R. Capecchi (1985). Effects of cell cycle position on transformation by microinjection. *Somat. Cell Mol. Genet*. **11**:45-51. PMID3856330

Goddard, J. M., J. J. Weiland and M. R. Capecchi (1986). Isolation and characterization of *Caenorhabditis elegans* DNA sequences homologous to the V-*abl* oncogene. *Proc. Natl. Acad. Sci. USA* **83**:2172-2176. PMID3002636

Thomas, K. R., K. R. Folger and M. R. Capecchi (1986). High frequency targeting of genes to specific sites in the mammalian genome. *Cell* **44**:419-428. PMID3002636

Wong, E. A. and M. R. Capecchi (1986). Analysis of homologous recombination in cultured mammalian cells in a transient expression and a stable transformation assay. *Somat. Cell Mol. Genet*. **12**:63-72. PMID3003931

Thomas, K. R., and M. R. Capecchi (1986). Introduction of homologous DNA sequences into mammalian cells induces mutations in the cognate gene. *Nature* **324**:34-38. PMID3785372

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Thomas, K. R. and M. R. Capecchi (1987). Site-directed mutagenesis by gene targeting in mouse embryo-derived stem cells. *Cell* **51**:503-512. PMID2822260

Mansour, S. L., K. R. Thomas and M. R. Capecchi (1988). Disruption of the proto-oncogene int-2 in mouse embryo-derived stem cells: A general strategy for targeting mutations to nonselectable genes. *Nature* **336**:348-352. PMID3194019

Capecchi, M. R. (1989). Altering the genome by homologous recombination. *Science* **244**:1288-1292. PMID2660260

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Capecchi, M. R., K. R. Thomas and S. L. Mansour (1989). Creating mice with specific mutations by gene targeting. In *Molecular Genetics of Early Drosophila and Mouse Development* (M. R. Capecchi, Ed.). Pp. 45-52. Cold Spring Harbor, New York: Cold Spring Harbor Press.

Capecchi, M. R. (1989). The new mouse genetics: altering the genome by gene targeting. *Trends Genet*. **5**:70-76. PMID2308628

Mansour, S. L., K. R. Thomas, C. Deng and M. R. Capecchi (1990). Introduction of a *lacZ* reporter gene into the mouse *int-2* locus by homologous recombination. *Proc. Natl. Acad. Sci. USA* **87**:7688-7692. PMID2120706

Thomas, K. R. and M. R. Capecchi (1990). Targeted disruption of the murine *int-1* proto-oncogene resulting in severe abnormalities in midbrain and cerebellar development. *Nature* **346**:847-850. PMID2202907

Capecchi, M. R. (1990). Tapping the cellular telephone. *Nature* **344**:105. PMID2308328

Capecchi, M. R. (1990). How efficient can you get? *Nature* **348**:109. PMID2234072

Chisaka, O. and M. R. Capecchi (1991). Regionally restricted developmental defects resulting from targeted disruption of the mouse homeobox gene *hox-1.5*. *Nature* **350**:473-479. PMID1673020

Thomas, K. R., T. A. Musci, P. E. Neumann and M. R. Capecchi (1991). *Swaying* is a mutant allele of the proto-oncogene *Wnt-1*. *Cell* **67**:969-976. . PMID1835670

Chisaka, O., T. S. Musci and M. R. Capecchi (1992). Developmental defects of the ear, cranial nerves and hindbrain resulting from targeted disruption of the mouse homeobox gene *hox-1.6*. *Nature* **355**:516-520. PMID1346922

Thomas, K. R., C. Deng and M. R. Capecchi (1992). High-fidelity gene targeting in embryonic stem cells by using sequence replacement vectors. *Mol. Cell. Biol*. **12**:2919-2923. PMID1620105

Deng, C. and M. R. Capecchi (1992). Reexamination of gene targeting frequency as a function of the extent of homology between the targeting vector and the target locus. *Mol. Cell. Biol*. **12**:3365-3371. PMID1321331

Mansour, S. L., J. M. Goddard and M. R. Capecchi (1993). Mice homozygous for a targeted disruption of the proto-oncogene *int-2* have developmental defects in the tail and inner ear. *Development* **117**:13-28. PMID8223243

Deng, C., K. R. Thomas and M. R. Capecchi (1993). Location of crossovers during gene targeting with insertion and replacement vectors. *Mol. Cell. Biol*. **13**:2134-2140.

Capecchi, M. R. (1993). YACs to the rescue. *Nature* **362**:205-206. PMID8096325

Publications: (cont'd)

Carpenter, E. M., J. M. Goddard, O. Chisaka, N. R. Manley and M. R. Capecchi (1993). Loss of *Hoxa-1* (*Hox-1.6*) function results in the reorganization of the murine hindbrain. *Development* **118**:1063-1075. PMID7903632

Condie, B. G. and M. R. Capecchi (1993). Mice homozygous for a targeted disruption of *Hoxd-3* (*Hox-4.1*) exhibit anterior transformations of the first and second cervical vertebrae, the atlas and the axis. *Development* **119**:579-595. CONDI PMID7910549

Capecchi, M. R. (1994). Targeted gene replacement. *Sci. Am*. **270**:54-61. PMID8134827

Kostic, D. and M. R. Capecchi (1994). Targeted disruptions of the murine *hoxa-4* and *hoxa-6* genes result in homeotic transformations of components of the vertebral column. *Mech. Dev*. **46**:231-247. PMID7918106

Davis, A. P. and M. R. Capecchi (1994). Axial homeosis and appendicular skeleton defects in mice with targeted disruption of *hoxd-11*. *Development* **120**:2187-2198. PMID7925020

Condie, B. G. and M. R. Capecchi (1994). Mice with targeted disruptions in the paralogous genes *hoxa-3* and *hoxd-3* reveal synergistic interactions. *Nature* **370**:304-307. PMID7913519

Spyropoulos, D. D. and M. R. Capecchi (1994). Targeted disruption of the *even-skipped* gene, *evx1*, causes early postimplantation lethality of the mouse conceptus. *Genes Dev*. **8**:1949-1961. PMID7958869

Rancourt, D. E., T. Tsuzuki and M. R. Capecchi (1995). Genetic interaction betweeen *hoxb-5* and *hoxb-6* is revealed by nonallelic noncomplementation. *Genes Dev*. **9**:108-122. PMID7828847

Capecchi, M. R. (1995). A personal view of gene targeting. In *Accomplishments in Cancer Research 1994*. (J. G. Fortner and J. E. Rhoads, Ed.) Philadelphia: J. B. Lippincott, pp. 67-78.

Manley, N.R. and M.R. Capecchi (1995). The role of hoxa-3 in mouse thymus and thyroid development. *Development* **121**:1989-2003. PMID7635047

Davis, A.P., D.P. Witte, H.M. Hsieh-Li, S.S. Potter and M.R. Capecchi (1995). Absence of radius and ulna in mice lacking *hoxa-11* and *hoxd-11*. *Nature* **375**:791-796. PMID7596412

Capecchi, M.R. (1995). The molecular genetic analysis of mouse development. In *Seminars in Developmental Biology*. (M.R. Capecchi, Ed.) London: Academic Press **6**:233-237.

Zeiher, B.G., E. Eichwald, J. Zabner, J.J. Smith, A.P. Puga, P.B. McCray, Jr., M.R. Capecchi, M.J. Welsh, and K.R. Thomas (1995). A mouse model for the Δ-F508 allele of cystic fibrosis. *J. Clin. Invest*. **96**:2051-2064. PMID7560099

Publications: (cont'd)

Davis, A.P. and M.R. Capecchi (1996). A mutational analysis of the 5' Hox D genes: Dissection of genetic interactions during limb development in the mouse. *Development* **122**:1175-1185. PMID8620844

Delort, J.P. and M.R. Capecchi (1996). TAXI/UAS: a molecular switch to control expression of genes *in vivo*. *Hum. Gene Ther*. **7**:809-820. PMID8860833

Boulet, A.M. and M.R. Capecchi (1996). Targeted disruption of *hoxc-4* causes esophageal defects and vertebral transformations. *Dev. Biol*. **177**:232-249. PMID8660891

Esther, C. R., Jr., T. E. Howard, E. M. Marino, J. M. Goddard, M. R. Capecchi and K. E. Bernstein (1996). Mice lacking angiotensin-converting enzyme have low blood pressure, renal pathology, and reduced male fertility. *Lab. Invest*. **74**:953-965. PMID8642790

Goddard, J. M., M. Rossel, N. R. Manley and M. R. Capecchi (1996). Mice with targeted disruption of Hoxb-1 fail to form the motor nucleus of the VIIth nerve. *Development* **122:**3217-3228. PMID8898234

Barrow, J. R. and M. R. Capecchi (1996). Targeted disruption of the hoxb-2 locus in mice interferes with expression of hoxb-1 and hoxb-4. *Development* **122**:3817-3828. PMID9012503

Esther, C. R., Jr., T. E. Howard, Y. Zhou, M. R. Capecchi, M. B. Marrero and K. E. Bernstein (1996). Lessons from angiotensin-converting enzyme-deficient mice. *Curr. Opin. Nephrol. Hypertens*. **5**:463-467. PMID8978990

Capecchi, M. R. (1996). Function of homeobox genes in skeletal development. In *Molecular and Developmental Biology of Cartilage*, Vol. 785. (B. de Crombrugghe, W. A. Horton, B. R. Olsen, and F. Ramirez, Eds.) *Ann. N. Y. Acad. Sci*. **785**:34-37. PMID8702174

Chen, F. and M. R. Capecchi (1997). Targeted mutations in *Hoxa-9* and *Hoxb-9* reveal synergistic interactions. *Dev. Biol*. **181**:186-196. PMID9013929

Humphries, M. M., D. Rancourt, G. J. Farrar, P. Kenna, M. Hazel, R. A. Bush, P. A. Sieving, D. M. Sheils, N. McNally, P. Creighton, A. Erven, A. Boros, K. Gulya, M. R. Capecchi and P. Humphries (1997). Retinopathy induced in mice by targeted disruption of the rhodopsin gene. *Nature Genet.* **15**:216-219. PMID9020854

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Capecchi, M. R. (1997). The role of Hox genes in hindbrain development. In Molecular and Cellular Approaches to Neural Development. (W.M. Cowan, T.M. Jessell and S.L. Zipursky, Eds.) New York: Oxford University Press, pp. 334-355.

Publications: (cont'd)

Esther, C. R., Jr., E. M. Marino, T. E. Howard, A. Machaud, P. Corvol, M. R. Capecchi and K. E. Bernstein (1997). The critical role of tissue angiotensin-converting enzyme as revealed by gene targeting in mice. *J. Clin. Invest*. **99**:2375-2385. PMID9153279

Carpenter, E. M., J. M. Goddard, A. P. Davis, T. P. Nguyen and M. R. Capecchi (1997). Targeted disruption of *Hoxd10* affects mouse hindlimb development. *Development* **124**:4505-4514. PMID9409668

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Condie, B. C., G. Bain, D. I. Gottlieb and M. R. Capecchi (1997). Cleft palate in mice with a targeted mutation in the γ-aminobutyric acid-producing enzyme glutamic acid decarboxylase 67. *Proc. Natl. Acad. Sci. USA* **94**:11451-11455. PMID9326630

Manley, N. R. and M. R. Capecchi (1997). Hox group 3 paralogous genes act synergistically in the formation of somitic and neural crest-derived structures. *Dev. Biol.* **192**:274-288. PMID9441667

Wilder, P. J., D. Kelly, K. Brigman, C. L. Peterson, T. Nowling, Q.-S. Gao, R. D. McComb, M. R. Capecchi and A. Rizzino (1997). Inactivation of the FGF-4 gene in embryonic stem cells alters the growth and/or the survival of their early differentiated progeny. *Dev. Biol.* **192**:614-629. PMID9441693

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Hostikka, S. L. and M. R. Capecchi (1998). The mouse *Hoxc11* gene: genomic structure and expression pattern. *Mech. Dev*. **70**:133-145. PMID 9510030

Godwin, A. R. and M. R. Capecchi (1998). *Hoxc13* mutant mice lack external hair. *Genes Dev*. **12**:11-20. PMID9420327

Manley, N. R. and M. R. Capecchi (1998). *Hox* group 3 paralogs regulate the development and migration of the thymus, thyroid and parathyroid glands. *Dev. Biol.* **195:**1-15. PMID9520319

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Chen, F., J. Greer and M. R. Capecchi (1998). Analysis of *Hoxa7/Hoxb7* mutants suggests periodicity in the generation of the different sets of vertebrae. *Mech. Dev.* **77:**49-57. PMID9784603

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