

**CURRICULUM VITAE****MICHAEL H. WIGLER**

**EDUCATION:** 1970 B.A. Mathematics Princeton University New Jersey.  
1972 B.S. Medicine Rutgers University New Jersey.  
1978 Ph.D. Microbiology Columbia University New York.

**PROFESSIONAL BACKGROUND:**

1973-1978 Graduate Research Assistant Department of Microbiology Columbia University NY.  
1978 Staff Associate Institute of Cancer Research Columbia University NY.  
1978-Present Professor, Mammalian Cell Genetics, Cold Spring Harbor Laboratory NY.  
1988-Present Adjunct Professor Department of Genetics College of Physicians and Surgeons Columbia University NY.  
2008-2014 Foreign Adjunct Professor Tumor Biology Dept. of Oncology-Pathology at Karolinska Institutet Stockholm Sweden.  
2015-Present Senior Associate Core Member, New York Genome Center, New York, NY

**AWARDS - HONORS:**

1982 American Business for Cancer Research Award  
1985 Pfizer Biomedical Award  
1985 NIH Outstanding Investigator Award  
1986 American Cancer Society Lifetime Research Professorship Award  
1986 CIBA-GEIGY/Drew Award in Biomedical Research  
1998 Boyce Thompson Institute for Plant Research at Cornell University Award  
1989 Member of the National Academy of Sciences  
1989 Distinguished Alumni University of Medicine & Dentistry of New Jersey  
1990 Lucy Wortham James Laboratory Basic Research Award in Cancer Research  
1991 G.H.A. Clowes Memorial Award for Cancer Research  
1995 Katharine Berkan Judd Award from Memorial Sloan-Kettering Cancer Center  
1997 American Academy of Microbiology  
1998 American Academy of Arts and Sciences  
1998 The Stevens Triennial Prize from Columbia University  
2007 Double Helix Award  
2020 Fellow of the American Association for Cancer Research (AACR)

**SELECTED PATENTS (9 of 32):**

Axel R. Wigler M.H. & Silverstein S.J. Processes For Inserting DNA Into Eucaryotic Cells And For Producing Proteinaceous Materials U.S. Patent No. 4399216 (1983)

Wigler M.H. & Colicelli J.J. Cloning By Complementation And Related Processes U.S. Patent No. 5527896 (1996)

Still C.W. Wigler M.H. Ohlmeyer M.H.J. Dillard L.W. Reader J.C. Complex Combinatorial Chemical Libraries Encoded With Tags U.S. Patent No. 5565324 (1996)

Wigler M.H. Lisitsyn N. Representational Approach To DNA Analysis U.S. Patent No. 5876929 (1996)

Wigler M.H. & Sorge J.A. Method For Generating Libraries Of Antibody Genes Comprising Amplification Of Diverse Antibody Dnas And Methods For Using These Libraries For The Production Of Diverse Antigen Combining Molecules U.S. Patent No. 5780225 (1998)

Wigler M.H. Muthuswamy L. & Sebat J. Determining A Probabilistic Diagnosis Of Autism By Analysis Of Genomic Copy Number Variation U. S. Patent No. 8554488 (2013)

Hicks J et al. Varietal Counting Of Nucleic Acids For Obtaining Genomic Copy Number Information US Patent No. 9404156 issued August 2 2016 (Patent applications pending in US EP and Canada)

Wigler M & Levy D. Random Nucleotide Mutation For Nucleotide Template Counting And Assembly International Patent Application Publication No. WO 2016057947 April 14 2016 (patent applications pending in US EP Australia Israel)

Wigler M Levy D. Wang Z. Genetic Copy Number Determination Using High Throughput Multiplex Sequencing of Smashed Nucleotides International Patent Application Publication No. WO2017044609 March 16 2017

**PUBLICATIONS:** (Total 206)

1. Wigler M.H. and Weinstein I.B. (1975) A preparative method for obtaining enucleated mammalian cells. *Biochemical and Biophysical Research Commun.* 63: 669-674. PMID: 1169063
2. Wigler M.H. Ford J.P. and Weinstein I.B. (1975) Glucocorticoid inhibition of fibrinolytic activity production by tumor cells. *Cold Spring Harbor Symp. on Proteases and Biological Control* 849-856.
3. Wigler M.H. and Weinstein I.B. (1976) A tumor promoter induces plasminogen activator. *Nature* 259: 232-233. PMID: 1250353
4. Wigler M.H. and Axel R. (1976) Nucleosomes in metaphase chromosomes. *Nucleic Acids Res.* 3: 1463-1472. PMID: 958895
5. Wigler MH, Silverstein S, Lee LS, Pellicer A, Cheng Y and Axel R. (1977) Transfer of purified herpes virus thymidine kinase gene to cultured mouse cells. *Cell* 11: 223-232. PMID: 194704
6. Weinstein I.B. and Wigler M. (1977) Cell culture studies provide new information on tumour promoters. *Nature* 270: 659-690.
7. Pellicer A, Wigler M, Axel R, and Silverstein S. (1978) The transfer and stable integration of the HSV thymidine kinase gene into mouse cells. *Cell* 14: 133-141. PMID: 208776
8. Wigler M, DeFeo D, and Weinstien IB. (1978) Induction of plasminogen activator in cultured cells by macrocyclic plant diterpene esters and other agents related to tumor promotion. *Cancer Res.* 38: 1434-1437. PMID: 639070
9. Wigler M, Pellicer A, Silverstein S, and Axel R. (1978) Biochemical transfer of single-copy eucaryotic genes using total cellular DNA as donor. *Cell* 14: 725-731. PMID: 210957

10. Wigler M, Pellicer A, Silverstein S, Axel R, Urlaub G, and Chasin L. (1979) DNA-mediated transfer of the *aprt* locus into mammalian cells. *Proc. Natl. Acad. Sci. USA* 76: 1373-1376. PMID: 286319
11. Wigler M, Sweet R, Sim GK, Wold B, Pellicer A, Lacy E, Maniatis T, Silverstein S, and Axel R. (1979) Transformation of mammalian cells with genes from prokaryotes and eukaryotes. *Cell* 16: 777-785. PMID: 222468
12. Wold B, Wigler M, Lacy E, Maniatis T, Silverstein S, and Axel R. (1979) Introduction and expression of the rabbit  $\beta$ -globin gene in mouse fibroblasts. *Proc. Natl. Acad. Sci. USA* 76: 56-84. PMID: 293672
13. Wigler M, Perucho M, Kurtz D, Dana S, Pellicer A, Axel R, and Silverstein S. (1980) Transformation of mammalian cells with an amplifiable dominant acting gene. *Proc. Natl. Acad. Sci. USA* 77: 3567. PMID: 6251468
14. Perucho M, Hanahan D, Lipsich L, and Wigler M. (1980) Isolation of the chicken thymidine kinase gene by plasmid rescue. *Nature* 285: 207. PMID: 6246445
15. Perucho M, Hanahan D, and Wigler M. (1980) Genetic and physical linkage of exogenous sequences in transformed cells. *Cell* 22: 309-317. PMID: 6253083
16. Hanahan D, Lane D, Lipsich L, Wigler M, and Botchan M. (1980) Characteristics of an SV40-plasmid recombinant and its movement into and out of the genome of a murine cell. *Cell* 21: 127-139. PMID: 6250708
17. Perucho M, and Wigler M. (1981) Linkage and expression of foreign DNA in cultured animal cells. *Cold Spring Harbor Symp. Quant. Biol.* 45: 829-838. PMID: 6942952
18. Wigler M, Levy D, and Perucho M. (1981) The somatic replication of DNA methylation. *Cell* 24: 33-40. PMID: 6263490
19. Wigler MH. (1981) The inheritance of methylation patterns in vertebrates. *Cell* 24: 285-286. PMID: 7195315
20. Perucho M, Goldfarb M, Shimizu K, Lama C, Fogh J, and Wigler M. (1981) Human-tumor-derived cell lines contain common and different transforming genes. *Cell* 27: 467-476. PMID: 6101201
21. Goldfarb M, Shimizu K, Perucho M, and Wigler M. (1982) Isolation and preliminary characterization of a human transforming gene from T24 bladder carcinoma cells. *Nature* 296: 404-409. PMID: 7063039
22. Taparowsky E, Suard Y, Fasano O, Shimizu K, Goldfarb M, Wigler M. (1982) Activation of the T24 bladder carcinoma transforming gene is linked to a single amino acid change. *Nature* 300: 762-765. PMID: 7177195
23. Shimizu K, Goldfarb M, Perucho M, Wigler M. (1983) Isolation and preliminary characterization of the transforming gene of a human neuroblastoma cell line. *Proc. Natl. Acad. Sci. USA* 80: 383-387. PMID: 6300838

24. Shimizu K, Goldfarb M, Suard Y, Perucho M, Li Y, Kamata T, Feramisco J, Stavnezer E, Fogh J, and Wigler M. (1983) Three human transforming genes are related to the viral *ras* oncogenes. *Proc. Natl. Acad. Sci. USA* 80: 2112-2116. PMID: 6300838
25. Fasano O, Taparowsky E, Fiddes J, Wigler M, and Goldfarb M. (1983) Sequence and structure of the coding regions of the human H-*ras* -1 gene from T24 bladder carcinoma cells. *J. Mol. Appl. Genetics* 2: 173-180. PMID: 6308118
26. Kwoh TJ, Zipser D, and Wigler M. (1983) Mutational analysis of the cloned chicken thymidine kinase gene. *J. Mol. Appl. Genetics* 2: 191-200. PMID: 6875426
27. Barker D, McCoy M, Weinberg R, Goldfarb M, Wigler M, Burt R, Gardner E, and White R. (1983) A test of the role of two oncogenes in an inherited predisposition to colon cancer. *Molecular Biology and Medicine* 1: 199-206. PMID: 6594558
28. Taparowsky E, Shimizu K, Goldfarb M, and Wigler M. (1983) Structure and activation of the N-*ras* gene. *Cell* 34: 581-586. PMID: 6616621
29. Shimizu K, Birnbaum D, Ruley MA, Fasano O, Suard Y, Edlund L, Taparowsky E, Goldfarb M, and Wigler M. (1983) The structure of the Ki-*ras* gene of the human lung carcinoma cell line Calu-1. *Nature* 304: 497-500. PMID: 6308465
30. Ryan J, Barker PE, Shimizu K, Wigler M, and Ruddle FH. (1983) Chromosomal assignment of a family of human oncogenes. *Proc. Natl. Acad. Sci. USA* 80: 4460-4463. PMID: 6576347
31. Powers S, Kataoka T, Fasano O, Goldfarb M, Strathern J, Broach J and Wigler M. (1984) Genes in *Saccharomyces cerevisiae* encoding proteins with domains homologous to the mammalian *ras* proteins. *Cell* 36: 607-612. PMID: 6365329
32. Fasano O, Aldrich T, Tamanoi F, Taparowsky E, Furth M, and Wigler M. (1984) Analysis of the transforming potential of the human H-*ras* genes by random mutagenesis. *Proc. Natl. Acad. Sci.* 81: 4008-4012. PMID: 6308118
33. Kataoka T, Powers S, McGill C, Fasano O, Strathern J, Broach J and Wigler M. (1984) Genetic analysis of yeast RAS1 and RAS2 genes. *Cell* 37: 437-445. PMID: 6327067
34. Fasano O, Birnbaum D, Edlund L, Fogh J, and Wigler M. (1984) New human transforming genes detected by a tumorigenicity assay. *Molecular and Cellular Biology* 4: 1695-1705. PMID: 6092933
35. Tamanoi F, Walsh M, Kataoka T, and Wigler M. (1984) A product of yeast RAS2 gene is a guanine nucleotide binding protein. *Proc. Natl. Acad. Sci. USA* 81: 6924-6928. PMID: 6438624
36. Kataoka T, Powers S, Cameron S, Fasano O, Goldfarb M, Broach J, and Wigler M. (1985) Functional homology of mammalian and yeast RAS genes. *Cell* 40: 19-26. PMID: 2981628
37. Toda T, Uno I, Ishikawa T, Powers S, Kataoka T, Broek D, Cameron S, Broach J, Matsumoto K, and Wigler M. (1985) In yeast RAS proteins are controlling elements of the adenylate cyclase. *Cell* 40: 27-36. PMID: 2981630

38. Gross M, Sweet R, Sathe G, Yokoyama S, Fasano O, Goldfarb M, Wigler M, Rosenberg M. (1985) Purification and characterization of human H- *RAS* proteins produced in *E. coli*. *Molecular Cellular Biology* 5: 1015-1024. PMID: 3923330
39. Broek D, Samily N, Fasano O, Fujiyama A, Tamanoi F, Northup J, and Wigler M. (1985) Differential activation of yeast adenylate cyclase by wild type and mutant *RAS* proteins. *Cell* 41: 763-769. PMID: 3891097
40. Kataoka T, Broek D, and Wigler M. (1985) DNA sequence and characterization of the *S. cerevisiae* gene encoding adenylate cyclase. *Cell* 43: 493-505. PMID: 2934138
41. Birchmeier C, Broek D, and Wigler M. (1985) *RAS* proteins can induce meiosis in *Xenopus* oocytes. *Cell* 43: 615-621. PMID: 2416466
42. Birchmeier C, Broek D, Toda T, Powers S, Kataoka T, and Wigler M. (1985) Conservation and divergence of *RAS* protein function during evolution. *Cold Spring Harbor Symposium on Quantative Biology Volume L* pp. 721-725. PMID: 3007012
43. Young D, Waitches G, Birchmeier C, Fasano O, and Wigler M. (1986) Isolation and characterization of a new cellular oncogene encoding a protein with multiple potential transmembrane domains. *Cell* 45: 711-719. PMID: 3708691
44. Birchmeier C, Birnbaum D, Waitches G, Fasano O, and Wigler M. (1986) Characterization of an activated human *ros* gene. *Molecular Cellular Biology* 6: 3109-3116. PMID: 3785223
45. Powers S, Michaelis S, Broek D, Anna-A SS, Field J, Herskowitz I, and Wigler M. (1986) *RAM* a gene of yeast required for a functional modification of *RAS* proteins and for production of mating pheromone a - factor. *Cell* 47: 413-422. PMID: 3533274
46. Sass P, Field J, Nikawa J, Toda T, and Wigler M. (1986) Cloning and characterization of the high affinity cAMP phosphodiesterase of *S. cerevisiae*. *Proc. Natl. Acad. Sci. USA* 83: 9303-9307. PMID: 3025832
47. Birchmeier C, Young D, and Wigler M. (1986) Characterization of two new human oncogenes. *Cold Spring Harbor Symposium vol LI*: 993-1000. PMID: 3472773
48. Broek D, Toda T, Michaeli T, Levin L, Birchmeier C, Zoller M, Powers S, and Wigler M. (1987) The *S. cerevisiae* *CDC25* gene product regulates the *RAS* /adenylate cyclase pathway. *Cell* 48: 789-799. PMID: 3545497
49. Toda T, Cameron S, Sass P, Zoller M, Scott JD, McMullen B, Murwitz M, Krebs EG and Wigler M. (1987) Cloning and characterization of *BCY1* a locus encoding a regulatory subunit of the cyclic AMP dependent protein kinase in *Saccharomyces cerevisiae*. *Molecular Cellular Biology* 7: 1371-1377. PMID: 3037314
50. Field J, Broek D, Kataoka T, and Wigler M. (1987) Guanine nucleotide activation of and competition between *RAS* proteins from *Saccharomyces cerevisiae*. *Molecular Cellular Biology* 7: 2128-2133. PMID: 3299060

51. Rabin M, Birnbaum D, Young D, Birchmeier C, Wigler M, and Ruddle F. (1987) Human *ROS1* and *MAS1* oncogenes are located in regions of chromosome 6 associated with tumor-specific rearrangements. *Oncogene Research* 1: 169-178. PMID: 3329713
52. Johnson KE, Cameron S, Toda T, Wigler M, and Zoller M. (1987) Expression in *Escherichia coli* of *BCY1* the regulatory subunit of cyclic AMP-dependent protein kinase from *Saccharomyces cerevisiae*. *J. Biological Chemistry* 262: 8636-8642. PMID: 3036817
53. Toda T, Cameron S, Sass P, Zoller M, and Wigler M. (1987) Three different genes in *Saccharomyces cerevisiae* encode the catalytic subunits of the cAMP dependent protein kinase. *Cell* 50: 277-287. PMID: 3036373
54. Birchmeier C, Sharma S, and Wigler M. (1987) Expression and rearrangement of the *ros1* gene in human glioblastoma cells. *Proc. Natl. Acad. Sci. USA* 84: 9270-9274. PMID: 2827175
55. Nikawa J, Sass P, and Wigler M. (1987) Cloning and characterization of the low affinity cyclic AMP phosphodiesterase gene of *S. cerevisiae*. *Molecular and Cellular Biology* 7: 3629-3636. PMID: 2824992
56. Nikawa J, Cameron S, Toda T, Ferguson KM, and Wigler M. (1987) Rigorous feedback control of cAMP levels in *S. cerevisiae*. *Genes and Development* 1: 931-937. PMID: 2828175
57. Toda T, Broek D, Field J, Michaeli T, Cameron S, Nikawa J, Sass P, Birchmeier C, Powers S, and Wigler M. (1987) Exploring the function of *RAS* oncogenes by studying the yeast *Saccharomyces cerevisiae*. *Oncogene and Cancer S.A. Aaronson et al. (eds). Japan Sci. Soc. Press Tokyo/VNU Sci. Press* pp. 253-260. PMID: 3290050
58. Levin LR, Kuret J, Johnson KE, Powers S, Cameron S, Michaeli M, Wigler M, and Zoller M. (1988) A mutation in the catalytic subunit of the cAMP-dependent protein kinase that disrupts regulation. *Science* 240: 68-70. PMID: 2832943
59. Cameron S, Levin L, Zoller M, and Wigler M. (1988) cAMP-Independent control of sporulation glycogen metabolism and heat shock resistance in *S. cerevisiae*. *Cell* 53: 555-566. PMID: 2836063
60. Toda T, Cameron S, Sass P, and Wigler M. (1988) *SCH9* a gene of *S. cerevisiae* that encodes a protein distinct from but functionally and structurally related to cAMP dependent protein kinase catalytic Subunits. *Genes and Development* 2: 517-527. PMID: 3290050
61. Field J, Nikawa J, Broek D, MacDonald B, Rodgers L, Wilson IA, Lerner RA, and Wigler M. (1988) Purification of a RAS -responsive adenylyl cyclase complex from *Saccharomyces cerevisiae* by use of an epitope addition method. *Molecular and Cellular Biology* 8: 2159-2165. PMID: 2455217
62. Young D, O'Neill K, Jessell T, and Wigler M. (1988) Characterization of the rat *mas* oncogene and its high level expression in the hippocampus and cerebral cortex of rat brain. *Proc. Natl. Acad. Sci. USA* 85: 5339-5342. PMID: 2455902
63. Wigler M, Field J, Powers S, Broek D, Toda T, Cameron S, Nikawa J, Michaeli T, Colicelli J, and Ferguson K. (1988) Studies of RAS function in the yeast *S. Cerevisiae*. *Cold Spring Harbor Symposium* vol. LIII pages 649-655. PMID: 3076094

64. Powers S, O'Neill K, and Wigler M. (1989) Dominant yeast and mammalian *RAS* mutants that interfere with the CDC25-dependent activation of wild-type *RAS* in *S. cerevisiae*. *Molecular and Cellular Biology* 9: 390-395.
65. Colicelli J, Birchmeier C, Michaeli T, O'Neill K, Riggs M, and M. Wigler (1989) Isolation and characterization of a mammalian gene encoding a high affinity cAMP phosphodiesterase. *Proc. Natl. Acad. Sci. USA* 86: 3599-3603.
66. Sharma S, Birchmeier C, Nikawa J, O'Neill K, Rodgers L, and Wigler M. (1989) Characterization of the *ros1* -gene products expressed in human glioblastoma cell lines. *Oncogene Research* 5: 91-100.
67. Michaeli T Field J, Ballester R, O'Neill K, and Wigler M. (1989) Mutants of H-*ras* which interfere with *RAS* effector function in *S. Cerevisiae*. *EMBO J.* 8: 3039-3044. PMID: 2684634
68. Ballester R, Michaeli T, Ferguson K, Xu H-P, McCormick F, and Wigler M. (1989) Genetic analysis of mammalian *GAP* expressed in yeast. *Cell* 59: 681-686. PMID: 2684416
69. Young D, Riggs M, Field J, Vojtek A, Broek D, and Wigler M. (1989) The adenylyl cyclase gene from *schizosaccharomyces pombe*. *Proc. Natl. Acad. Sci. USA* 86: 7989-7993.
70. Field J, Xu H-P, Michaeli T, Ballester R, Sass P, Wigler M, Colicelli J. (1990) Mutations of the adenylyl Cyclase gene that block *RAS* function in *Saccharomyces Cerevisiae*. *Science* 247: 464-467. PMID: 2405488
71. Field J, Vojtek A, Ballester R, Bolger G, Colicelli J, Ferguson K, Gerst J, Kataoka T, Michaeli T, Powers S, Riggs M, Rodgers L, Wieland I Wheland B, and Wigler M. (1990) Cloning and characterization of *CAP* the *Saccharomyces cerevisiae* gene encoding the 70 kDa adenylyl cyclase associated protein. *Cell* 61: 319-327.
72. Wieland I, Bolger G Asouline G, and Wigler M. (1990) A method for difference cloning: Gene amplification following subtractive hybridization. *Proc. Natl. Acad. Sci. USA* 87: 2720-2724. PMID: 2138783
73. Colicelli J, Field J, Ballester R, Chester N, Young D, and Wigler M. (1990) Mutational mapping of *RAS*-responsive domains of the *Saccharomyces cerevisiae* adenylyl cyclase. *Mol. Cell. Biol.* 10: 2539-2543. PMID: 2111437
74. Birchmeier C, O'Neill K, Riggs M, and Wigler M. (1990) Characterization of *ROS1* cDNA from a human glioblastoma cell line. *Proc. Natl. Acad. Sci. USA* 87: 4799-4803. PMID: 2352949
75. Wigler M. (1990) GAPs in understanding *Ras*. *Nature* 346: 696-7. PMID: 2201920
76. Xu H.-P, Riggs M, Rodgers L, and Wigler M. (1990) A gene from *S. pombe* with homology to *E. coli* *RNAse III* blocks conjugation and sporulation when overexpressed in wild type cells. *Nucl. Acid Res.* 18: 5304. PMID: 2205842

77. Xu H-P, Wang Y, Riggs M, Rodgers L and Wigler M. (1990) Biological activity of the mammalian *RAP* genes in Yeast. *Cell Regulation 1*: 763-769. PMID: 1983087
78. Ballester R, Marchuk D, Boguski M, Saulino A, Letcher R, Wigler M, and Collins F. (1990) The NF1 locus encodes a protein functionally related to mammalian *GAP* and yeast *IRA* proteins. *Cell 63*: 851-859. PMID: 2121371
79. Gerst J, Ferguson K, Vojtek A, Wigler M, and Field J. (1991) CAP: A bifunctional component of the *S. cerevisiae* adenylyl cyclase complex. *Mol. Cell. Biol. 11*: 1248-1257. PMID: 1996090
80. Kawamukai M, Ferguson K, Wigler M, and Young D. (1991) Genetic and biochemical analysis of the adenylyl cyclase of *Schizosaccharomyces pombe*. *Cell Regulation 2*: 155-164. PMID: 1863602
81. Colicelli J, Birchmeier C, Rodgers L, Riggs M, and Wigler M. (1991) Expression of three mammalian cDNAs which interfere with *RAS* function in *S. cerevisiae*. *Proc. Natl. Acad. Sci. USA 88*: 2913-2917. PMID: 1849280
82. Young D, O'Neill K, Broek D, and Wigler M. (1991) The adenylyl cyclase gene from *Saccharomyces Kluyveri*. *Gene 102*: 129-132. PMID: 1864503
83. Wang Y, Xu H-P, Riggs M, Rodgers L, and Wigler M. (1991) *Byr2* an *S. pombe* gene encoding a protein kinase capable of partial phenotypic suppression of *ras1* - strains. *Mol. Cell. Biol. 11*: 3554-3563. PMID: 1883874
84. Wang Y, Boguski M, Riggs M, Rodgers L, and Wigler M. (1991) A gene from *Schizosaccharomyces pombe* encoding a GAP-like protein that regulates *ras1*. *Cell Regulation 2*: 453-465. PMID: 2046669
85. Daar I, Nebreda AR, Yew N, Sass P, Paules R, Santos E, Wigler M, and Vande Woude GF. (1991) The *ras* oncoprotein and M-phase activity. *Science 253*: 74-76. PMID: 1829549
86. Vojtek A, Haarer B, Field J, Gerst J, Pollard TD, Brown S, and Wigler M. (1991) Evidence for a functional link between profilin and CAP in the yeast *Saccharomyces cerevisiae*. *Cell 66*: 497-505. PMID: 1868547
87. Xu H-P, Jung V, Riggs M, Rodgers L, and Wigler M. (1992) A gene encoding a protein with seven zinc finger domains which acts on the sexual differentiation pathways of *Schizosaccharomyces pombe*. *Molecular Biology of the Cell 3*: 721-734. PMID: 1515675
88. Gerst J, Rodgers L, Riggs M and Wigler M. (1992) SNC1 a yeast homolog of the synaptic vesicle-associated membrane protein/synaptobrevin gene family: Genetic interactions with the *RAS* and *CAP* genes. *Proc. Natl. Acad. Sci. USA 89*: 4338-4342. PMID: 1316605
89. Kawamukai M, Gerst J, Field J, Riggs M, Rodgers L, Wigler M and Young D. (1992) Genetic and biochemical analysis of the adenylyl cyclase-associated protein CAP in *Schizosaccharomyces pombe*. *Molecular Biology of the Cell 3*: 167-180. PMID: 1550959
90. Shibuya EK, Poverino AJ, Chang E, Wigler M. and Ruderman J.V. (1992) Oncogenic *Ras* triggers the activation of 42-kDa mitogen-activated protein kinase in extracts of quiescent *Xenopus* oocytes. *Proc. Natl. Acad. Sci. USA 89*: 9831-9835. PMID: 1384061



91. Andersen LB, Ballester R, Marchuk DA, Chang E, Gutmann DH, Saulino AM, Camonis J, Wigler M, and Collins FS. (1993) A conserved alternative splice in the von Recklinghausen neurofibromatosis (*NF1*) gene produces two neurofibromin isoforms both with GAP activity. *Mol. Cell. Biol.* 13: 487-495. PMID: 8437860
92. Gutmann DH, Boguski M, Marchuk D, Wigler M, Collins FS, and Ballester R. (1993) Analysis of the neurofibromatosis type 1 (*NF1*) GAP-related domain by site-directed mutagenesis. *Oncogene* 8: 761-769. PMID: 8437860
93. Michaeli T, Bloom T, Martins T, Loughney K, Ferguson K, Riggs M, Rodgers L, Beavo J and Wigler M. (1993) Isolation and characterization of a previously undetected human cAMP phosphodiesterase by complementation of cAMP phosphodiesterase deficient *S. cerevisiae*. *J. Biological Chemistry* 268: 12925-12932. PMID: 8438152
94. Neiman AM, Stevenson BJ, Xu H-P, Sprague GF Jr., Herskowitz I, Wigler M, and Marcus S. (1993) Functional homology of protein kinases required for sexual differentiation in *Schizosaccharomyces pombe* and *Saccharomyces cerevisiae* suggests a conserved signal transduction module in eukaryotic organisms. *Mol. Biol. of the Cell* 4: 107-120. PMID: 8443406
95. Lisitsyn N, Lisitsyn N. and Wigler M. (1993) Cloning the differences between two complex genomes. *Science* 259: 946-951. PMID: 8438152
96. Van Aelst L, Barr M, Marcus S, Polverino A, and Wigler M. (1993) Complex formation between *RAS* and *RAF* and other protein kinases. *Proc. Natl. Acad. Sci. USA* 90: 6213-6217. PMID: 8327501
97. Chardin P, Camonis JH, Gale NW, Van Aelst L, Schlessinger J, Wigler M, and Bar-Sagi D. (1993) A human *Sos1*: a guanine nucleotide exchange factor for *Ras* that binds to *GRB2*. *Science* 260: 1338-1343. PMID: 8493579
98. Bolger G, Michaeli T, Martins T, St. John T, Steiner B, Rodgers L, Riggs M, Wigler M, and Ferguson K. (1993) A family of human phosphodiesterases homologous to the *Dunce* learning and memory gene of *Drosophila melanogaster* are potential targets for anti-depressant drugs. *Molecular and Cellular Biology* 13: 6558-6571. PMID: 8413254
99. Ohlmeyer MHJ, Swanson MN, Dillard LW, Reader JC, Asouline G, Kobayashi R, Wigler M, Still WC. (1993) Complex synthetic chemical libraries indexed with molecular tags. *Proc. Natl. Acad. Sci. USA* 90: 10922-10926. PMID: 7504286
100. Lisitsyn NA, Segre JA, Kusumi K, Lisitsyn NM, Nadeau JH, Frankel WN, Wigler M, and Landers ES. (1994) Direct isolation of polymorphic markers linked to a trait by genetically directed representational difference analysis. *Nature Genetics* 6: 57-63. PMID: 8136836
101. Xu H-P, White M, Marcus S, and Wigler M. (1994) Concerted action of *RAS* and *G* proteins in the sexual response pathways of *Schizosaccharomyces pombe*. *Molecular and Cellular Biology* 14: 50-58. PMID: 8264618

102. Jung V, Wei W, Ballester R, Camonis J, Mi S, Van Aelst L, Wigler M, and Broek D. (1994) Two types of *ras* mutants that dominantly interfere with activators of *RAS*. *Mol. Cell. Biol.* 14: 3707-3718. PMID: 8196614
103. Marcus S, Barr M, Polverino A, and Wigler M. (1994) Complexes between STE5 and components of the yeast pheromone-responsive MAP kinase module. *Proc. Natl. Acad. Sci. USA* 91: 7762-7766. PMID: 8052657
104. Chang E, Barr M, Wang Y, Jung V, Xu H-P, Wigler M. (1994) Cooperative interaction of *S. pombe* proteins required for mating and morphogenesis. *Cell* 79: 131-141. PMID: 7923372
105. Lisitsyn NA, Lisitsina NM, Dalbagni G, Barker P, Sanches CA, Gnarra J, Linehan WM, Reid BJ, and Wigler M. (1995) Comparative genomic analysis of tumors: detection of DNA losses and amplification. *Proc. Natl. Acad. Sci. USA* 92: 151-155. PMID: 7816807
106. White M, Nicolette C, Minden A, Polverino A, Van Aelst L, Karin M, and Wigler M. (1995) Multiple *RAS* functions can contribute to mammalian cell transformation. *Cell* 80: 533-541. PMID: 7867061
107. Jung V, Chen Li, Hofmann SL, Wigler M, Powers S. (1995) Mutations in the *SHR5* gene of *Saccharomyces cerevisiae* suppress *Ras* function and block attachment and palmitoylation of *Ras* proteins. *Mol. Cell. Biol.* 15: 1333-1342. PMID: 7532279
108. Van Aelst L, White M, and Wigler M. (1995) *Ras* partners. *Cold Spring Harbor Symposium on Quantative Biology* Volume 59: pp. 181-186.
109. Lisitsyn NA, Leach FS, Vogelstein B, and Wigler M. (1995) Detection of genetic loss in tumors by representational difference analysis. *Cold Spring Harbor Symposium on Quantative Biology* Volume 59: pp. 585-587. PMID: 7587116
110. Marcus S, Polverino A, Chang E, Robbins D, Cobb MH, Wigler M. (1995) Shk1 a homolog of the *Saccharomyces cerevisiae* Ste20 and mammalian p65<sup>PAK</sup> protein kinases is a component of a *Ras/Cdc42* signaling module in the fission yeast *Schizosaccharomyces pombe*. *Proc. Natl. Acad. Sci. USA* 92: 6180-6184. PMID: 7597098
111. Joneson T, White MA, Wigler MH, and Bar-Sagi D. (1996) Stimulation of membrane ruffling and MAP kinase activation by distinct effectors of *RAS*. *Science* 271: 810-812. PMID: 8628998
112. Thiagalingam S, Lisitsyn NA, Hamaguchi M, Wigler MH, Willson JKV, Markowitz SD, Leach FS, Kinzler KW, Vogelstein B. (1996) Evaluation of the *FHIT* gene in colorectal Cancers. *Cancer Research* 56: 2936-2939. PMID: 8674044
113. Khosravi-Far R, White MA, Westwick JK, Solski PA, Chrzanowska-Wodnicka M, Van Aelst L, Wigler M, Der CJ. (1996) Oncogenic *Ras* activation of *Raf/mitogen-activation protein kinase-independent* pathways is sufficient to cause tumorigenic transformation. *Mol. Cell. Biol.* 16: 3923-3933. PMID: 8668210
114. Barr MM, Tu H, Van Aelst L, Wigler M. (1996) Identification of Ste4 as a potential regulator of *Byr2* in the sexual response pathway of *Schizosaccharomyces pombe*. *Mol. Cell. Biol.* 16: 5597-5603. PMID: 8816472

115. White MA, Vale T, Camonis JH, Schaefer E, Wigler MH. (1996) A role for the Ral guanine nucleotide dissociation stimulator in mediating *Ras*-induced transformation. *J. Biol. Chem.* 271: 16439-16442.
116. Xu H-P, Yanak BL, Wigler MH, and Gorin MB. (1996) New polymorphic markers in the vicinity of the pearl locus on mouse Chromosome 13. *Mammalian Genome* 7: 16-19.
117. Li J, Yen C, Liaw D, Podsypanina K, Bose S, Wang S, Puc J, Miliarcsis C, Rodgers L, McCombie R, Bigner SH, Giovanella C, Ittman M, Tycko B, Hibshoosh H, Wigler MH, and Parsons R. (1997) *PTEN* a putative protein tyrosine phosphatase gene mutated in human brain breast and prostate cancer. *Science* 275: 1943-1947. PMID: 9072974
118. Myers MP, Stolarov JP, Eng C, Li J, Wang SI, Wigler M, Parsons R, and Tonks NK. (1997) *P-TEN* the tumor suppressor from human chromosome 10q23 is a dual-specificity phosphatase. *Proc. Natl. Acad. Sci. USA* 94: 9052-9057. PMCID: PMC23024
119. Tu H, Barr M, Dong DL, and Wigler M. (1997) Multiple regulatory domains on the *Byr2* protein kinase. *Mol. Cell. Biol.* 17: 5876-5887. PMID: 9315645
120. Hamaguchi M, O'Connor EA, Chen T, Parnell L, McCombie RW, and Wigler M. (1998) Rapid isolation of cDNA by hybridization. *Proc. Natl. Acad. Sci. USA* 95: 3764-3769. PMCID: PMC19911
121. Lucito R, Nakamura M, West JA, Han Y, Chin K, Jensen K, McCombie R, Gray JW, and Wigler M. (1998) Genetic analysis using genomic representations. *Proc. Natl. Acad. Sci. USA* 95: 4487-4492. PMCID:22516
122. Webb CP, Van Aelst L, Wigler MH, and Vande Woude GF. (1998) Signaling pathways in *Ras*-mediated tumorigenicity and metastasis. *Proc. Natl. Acad. Sci. USA* 95: 8773-8778. PMCID: PMC21152
123. Myers M, Pass I, Batty IH, Van der Kaay J, Stolarov JP, Hemmings BA, Wigler MH, Downes CP, Tonks NK. (1998) The lipid phosphatase activity of *PTEN* is critical for its tumor suppressor function. *Proc. Natl. Acad. Sci. USA* 95: 13513-13518. PMCID: PMC24850
124. Tu H, and Wigler M. (1999) Genetic evidence for *Pak1* autoinhibition and its release by *Cdc42*. *Mol. Cell. Biol.* 19: 602-611. PMID: 9858584
125. Dong DL, Liu R, Sherlock R, Wigler M, Nestler PH. (1999) Molecular forceps from combinatorial libraries prevent the farnesylation of *Ras* by binding to its carboxy-terminus. *Chem. & Biol.* 6: 133-141. PMID: 10074468
126. Lucito R, West J, Reiner A, Alexander J, Esposito D, Mishra B, Powers S, Norton L, and Wigler M. (2000) Detecting gene copy number fluctuations in tumor cells by microarray analysis of genomic representations. *Genome Research* 10: 1726-1736. PMCID: PMC310939
127. Wen S, Stolarov J, Myers MP, Su JD, Wigler MH, Tonks NK, and Durden DL. (2001) *PTEN* controls tumor-induced angiogenesis. *Proc. Natl. Acad. Sci. USA* 98: 4622-4627. PMCID: PMC31884

128. Casey W, Mishra B, and Wigler M. (2001) Placing probes along the genome using pairwise distance data. Algorithms in Bioinformatics O. Gascuel and B.M.E. Moret (eds.): First International Workshops Arhus Denmark. Springer-Verlag Berlin Heidelberg WABI 2001 LNCS 2149: 52-68.
129. Stolarov J, Chang K, Reiner A, Rodgers L, Hannon GJ, Wigler M, and Mittal V. (2001) Design of a retroviral-mediated ecdysone inducible system and its application to the expression profiling of the *PTEN* tumor suppressor. Proc. Natl. Acad. Sci. USA 98: 13043-13048. PMID: 60821
130. Scheffzek K, Grünewald P, Wohlgemuth S, Kabsch W, Tu H, Wigler M, Wittinghofer A, Herrmann C. (2001) The *Ras-Byr2RBD* complex: structural basis for *Ras* effector recognition in yeast. Structure 9: 1043-1050. PMID: 11709168
131. Wigler M, and Mishra B. (2002) Wild by Nature. Science 296: 1408-1408. PMID: 12029116
132. Hamaguchi M, Meth JL, von Klitzing C, Wei W, Esposito D, Rodgers L, Walsh T, Welch P, King M-C, Wigler MH. (2002) *DBC2* a candidate for a tumor suppressor gene involved in breast cancer. Proc. Natl. Acad. Sci. USA 99: 13647-13652. PMID: PMC129730
133. Mu D, Chen L, Zhang X, See L-H, Koch CM, Yen C, Tong JJ, Spiegel L, Nguyen KCQ, Servoss A, Peng Y, Pei L, Marks JR, Lowe S, Hoey T, Jan LY, McCombie WR, Wigler MH, Powers S. (2003) Genomic amplification and oncogenic properties of the *KCNK9* potassium channel gene. Cancer Cell 3: 297-302. PMID: 12676587
134. Lucito R, Healy J, Alexander J, Reiner A, Esposito D, Chi M, Rodgers L, Brady A, Sebat J, Troge J, West J, Rostan S, Nguyen KCQ, Powers S, Ye KQ, Olshen A, Venkatraman E, Norton L, and Wigler M. (2003) Representational oligonucleotide microarray analysis: a high-resolution method to detect genome copy number variation. Genome Research 13: 2291-2305. PMID: PMC403708
135. Healy J, Thomas E, Schwartz JT, and Wigler M. (2003) Annotating large genomes with exact word matches. Genome Research 13: 2306-2315. PMID: PMC403711
136. Thomas EE, Srebro N, Sebat J, Navin N, Healy J, Mishra B and Wigler M. (2004) Distribution of short paired duplications in mammalian genomes. Proc. Natl. Acad. Sci. USA 101: 10349-10354. PMID: PMC478600
137. Sebat J, Muthuswamy L, Troge J, Alexander J, Young J, Lundin P, Maner S, Massa H, Walker M, Chi M, Navin N, Lucito R, Healy J, Hicks J, Ye K, Reiner A, Gilliam TC, Trask B, Patterson N, Zetterberg A, Wigler M. (2004) Large-Scale Copy Number Polymorphism in the Human Genome. Science 305: 525-528. PMID: 15273396
138. Olshen A, Venkatraman ES, Lucito R, and Wigler M. (2004) Circular binary segmentation for the analysis of array-based *DNA* copy number data. Biostatistics 5: 557-572. PMID: 15475419
139. Daruwala R-S, Rudra A, Ostrer H, Lucito R, Wigler M, and Mishra B. (2004) A versatile statistical analysis algorithm to detect genome copy number variation. Proc. Natl. Acad. Sci. USA 101: 16292-16297. PMID: PMC528962

140. Jobanputra V, Sebat J, Chung W, Anyane-Yeboah K, Wigler M, and Warburton D. (2005) Application of ROMA (Representational Oligonucleotide Microarray Analysis) to patients with known cytogenetic rearrangements. *Genetics in Medicine* 7: 111-118. PMID: 15714078
141. West J, Healy J, Casey W, Mishra B, and Wigler M. (2006) Validation of *S. Pombe* Sequence Assembly by Micro-Array Hybridization. *Journal of Computational Biology* 13: 1-20. PMID: 16740623
142. Lakshmi B, Hall IM, Egan C, Alexander J, Leotta A, Healy J, Zender L, Spector M, Xue W, Lowe SW, Wigler M, and Lucito R. (2006) Mouse genomic Representational Oligonucleotide Microarray Analysis: detection of copy number variations in normal and tumor. *Proc. Natl. Acad. Sci. USA* 103: 11234-11239. PMCID: PMC1544071
143. Navin N, Grubor V, Hicks J, Leibu E, Thomas E, Troge J, Riggs M, Lundin P, Maner IS, Sebat J, Zetterberg A, and Wigler M. (2006) Prober: Oligonucleotide FISH probe design software. *Bioinformatics* 22: 2437-2438.
144. Zender L, Spector MS, Xue W, Flemming P, Cardon-Cardo C, Silke J, Fan S-T, Luk JM, Wigler M, Hannon GJ, Mu D, Lucito R, Powers S, and Lowe S. (2006) Identification and validation of onogenes in liver cancer using an integrative approach. *Cell* 125: 1253-1267. PMID: 16814713
145. Hicks J, Krasnitz A, Lakshmi B, Navin N, Riggs M, Leibu E, Esposito D, Alexander J, Troge J, Grubor V, Yoon S, Wigler M, Ye K, Børresen-Dale A-L, Naume B, Schlicting E, Norton L, Hagerstrom T, Skoog L, Auer G, Maner S, Lundin P, and Zetterberg A. (2006) Novel Patterns of genomic rearrangement and their association with survival in breast cancer. *Genome Research* 16:1465-1479. PMCID: PMC1665631
146. Pelham RJ, Rodgers L, Hall I, Lucito R, Nguyen KCQ, Navin N, Hicks J, Mu D, Powers S, Wigler M, and Botstein M. (2006) Identification of alterations in DNA copy number in host stromal cells during tumor progression. *Proc. Natl. Acad. Sci. USA* 103: 19848-19853. PMCID: PMC1698871
147. Sebat J, Lakshmi B, Malhotra D, Lese-Martin C, Troge J, Walsh T, Yamrom B, Yoon S, Krasnitz A, Kendall J, Leotta A, Pai D, Zhang R, Lee Y-H, Hicks J, Spence SJ, Lee AT, Puura K, Lehtimäki T, Ledbetter D, Gregersen PK, Bregman J, Sutcliffe JS, Jobanputra V, Chung W, Warburton D, King M-C, Skuse D, Geschwind DH, Gilliam TC, Ye K, Wigler M. (2007) Strong association of *de novo* copy number mutations with autism. *Science* 316: 445-449. PMID: 17363630
148. Zhao X, Leotta A, Qiu S, Kustanovich V, Lajonchere C, Geschwin DH, Lord C, Sebat J, Ye K, and Wigler M. (2007) A unified genetic theory for sporadic and inherited autism. *Proc. Natl. Acad. Sci. USA* 104: 12831-12836. PMCID: PMC1933261
149. Egan CM, Sridhar S, Wigler M, Hall IM. (2007) Recurrent DNA copy number variation in the laboratory mouse. *Nat. Genet.* 39: 1384-1389. PMID: 17965714
150. Lucito R, Suresh S, Walter K, Pandey A, B Lakshmi, Krasnitz A, Sebat J, Wigler M, Klein AP, Brune K, Palmisano E, Maitra A, Goggins M, and Hruban RH. (2007) Copy-Number Variants in Patients with a Strong Family History of Pancreatic Cancer. *Cancer Biol. Ther.* 6: 1592-9. PMID: 17912030
151. Alarcon M, Abrahams BS, Stone JL, Duvall JA, Perederiy JV, Bomar JM, Sebat J, Wigler M, Martin CL, Ledbetter DH, Nelson SF, Cantor RM, Geschwind DH. (2008) Linkage association and gene-expression

- analyses identify *CNTNAP2* as an autism-susceptibility gene. *Am. J. Hum. Genet.* 82: 150-159. PMID: PMC2253955
152. Xue W, Krasnitz A, Lucito R, Sordella R, VanAelst L, Cordon-Cardo C, Singer S, Kuehnel F, Wigler M, Powers S, Zender L, Lowe SW. (2008) *DLC1* is a chromosome 8p tumor suppressor whose loss promotes hepatocellular carcinoma. *Genes Dev* 22: 1439-1444. PMID: PMC2418580
  153. Grubor V, Krasnitz A, Troge JE, Meth JL, Lakshmi B, Kendall JT, Yamrom B, Alex G, Pai D, Navin N, Hufnagel LA, Lee Y-H, Cook K, Allen S, Rai KR, Damle RN, Calissano C, Chiorazzi N, Wigler M, and Esposito D. (2008) Novel genomic alterations and clonal evolution in Chronic Lymphocytic Leukemia revealed by Representational Oligonucleotide Microarray Analysis (*ROMA*). *Blood* 113: 1294-1303. PMID: 18922857
  154. Zender L, Xue W, Zuber J, Semighini CP, Krasnitz A, Ma B, Zender P, Kubicka S, Luk JM, Schirmacher P, McCombie RW, Wigler M, Hicks J, Hannon GJ, Powers S, Lowe SW. (2008) An Oncogenomics-Based In Vivo RNAi Screen Identifies Tumor Suppressors in Liver Cancer. *Cell* 135: 852-864. PMID: 19012953
  155. Hodges E, Smith AD, Kendall J, Xuan Z, Ravi K, Rooks M, Zhang MQ, Ye K, Bhattacharjee A, Brizuela L, McCombie RW, Wigler M, Hannon GJ, and Hicks J. (2009) High definition profiling of mammalian DNA methylation by array capture and single molecule bisulfite sequencing. *Genome Research* 19: 1593-1605. PMID: PMC2752124
  156. Bric A, Miething C, Bialucha CU, Scuoppo C, Zender L, Krasnitz A, Xuan Z, Zuber J, Wigler M, Hicks J, McCombie RW, Hemann MT, Hannon GJ, Powers S, Lowe SW. (2009) Functional Identification of tumor-suppressor genes through an in vivo RNA interference screen in a mouse lymphoma model. *Cancer Cell* 16:324-35. PMID: PMC2829755
  157. Navin N, Krasnitz A, Rodgers R, Cook K, Meth J, Kendall J, Riggs M, Eberling Y, Troge J, Grubor V, Levy D, Lundin P, Månér S, Zetterberg A, Hicks J, Wigler M. (2010) Inferring tumor progression from genomic heterogeneity. *Genome Research* 20: 68. PMID: PMC2798832.
  158. Russnes HG, Moen Vollaun HK, Lingjærde OC, Krasnitz A, Lundin P, Naume B, Sørli T, Borgen E, Rye IH, Langerød A, Chin S-F, Teschendorff AE, Stephens PJ, Månér S, Schlichting E, Baumbusch LO, Kåresen R, Stratton MP, Wigler M, Caldas C, Zetterberg A, Hicks J, Børresen-Dale A-L. (2010) Genomic architecture characterizes tumor progression paths and fate in breast cancer patients. *Science: Translational Medicine* 2: 38ra47. PMID: 20592421
  159. Kamalakaran S, Varadan V, Giercksky Russnes HE, Levy D, Kendall J, Janevski A, Riggs M, Banerjee N, Synnestvedt M, Schlichting E, Kåresen R, Karensen R, Prasada SK, Rotti H, Rao R, Rao L, Tang EMH, Satyamoorthy K, Lucito R, Wigler M, Dimitrova N, Naume B, Børresen-Dale A-L, Hicks JB. (2011) DNA methylation patterns in luminal breast cancer differ from non-luminal subtypes and can identify relapse risk independent of other clinical variables. *Molecular Oncology* 5: 77-92. PMID: 2709589
  160. Navin N, Kendall J, Troge J, Andrews P, Rodgers L, McIndoo J, Cook K, Stepansky A, Levy D, Esposito D, Muthuswamy L, Krasnitz A, McCombie RW, Hicks J, Wigler M. (2011) Tumor evolution inferred by single cell sequencing. *Nature* 472: 90-94. PMID: 21399628

161. Horev G, Ellegood J, Lerch JP, Son YE, Muthuswamy L, Vogel H, Krieger AM, Buja A, Henkelman RM, Wigler M, Mills AA. (2011) Dosage-dependent phenotypes in models of 16p11.2 lesions found in autism. *Proc. Natl. Acad. Sci. USA* 108: 17076-17081. PMID: 3193230
162. Levy D, Ronemus M, Yamrom B, Lee Y-H, Leotta A, Kendall J, Marks S, Lakshmi B, Pai D, Ye K, Buja A, Krieger A, Yoon S, Troge J, Rodgers L, Iossifov I, Wigler M. (2011) Rare *de novo* and transmitted copy-number variation in autistic spectrum disorders. *Neuron* 70: 886-897. PMID: 21658582
163. Gilman SR, Iossifov I, Levy D, Ronemus M, Wigler M, and Vitkup D. (2011) Rare *de novo* variants associated with autism implicate a large functional network of genes involved in formation and function of synapses. *Neuron* 70 898-907. PMID: 21658583
164. Lee Y-H, Ronemus M, Kendall J, Lakshmi B, Leotta A, Levy D, Esposito D, Grubor V, Ye K, Wigler M, and Yamrom B. (2012) Reducing system noise in copy number data using principal components of self-self hybridizations. *Proc. Natl. Acad. Sci. USA* 109: E103-E110. PMID: 3271883
165. Baslan T, Kendall J, Rodgers L, Cox H, Riggs R, Stepansky A, Troge J, Kandasamy R, Esposito D, Lakshmi B, Wigler M, Navin N, and Hicks J. (2012) Genome wide copy number analysis of single cells. *Nature Protocols* 7: 1024-1041.
166. Iossifov I, Ronemus M, Levy D, Wang Z, Hakker I, Rosenbaum J, Yamrom B, Lee Y-H, Narzisi G, Leotta A, Kendall J, Grabowska E, Ma B, Marks S, Rodgers L, Stepansky A, Troge J, Andrews P, Bekritsky M, Pradhan K, Ghiban E, Kramer M, Parla J, Demeter R, Fulton L, Fulton RS, Magrini VJ, Ye K, Darnell JC, Darnell RB, Mardis ER, Wilson RK, Schatz MC, McCombie WR, Wigler M. (2012) *De novo* gene disruptions in children on the autistic spectrum. *Neuron* 74: 285-299. PMID: 3619976
167. Xue W, Kitzing T, Roessler S, Zuber J, Krasnitz A, Schultz N, Reville K, Weissmueller S, Rappaport AR, Simon J, Zhang J, Luo W, Hicks J, Zender L, Wang X-W, Powers S, Wigler M, Lowe SW. (2012) A cluster of cooperating tumor-suppressor gene candidates in chromosomal deletions. *Proc. Natl. Acad. Sci. USA* 109: 8212-8217. PMID: 3361457.
168. Stadler ZK, Esposito D, Shan S, Vijai J, Yamrom B, Levy D, Lee Y-H, Kendall J, Leotta A, Ronemus M, Hansen N, Sarrel K, Raay-Murthy R, Schrader K, Kauff N, Klein RJ, Lipkin SM, Murali R, Robson M, Sheinfeld J, Feldman D, Bosl G, Norton L, Wigler M, and Offit K. (2012) Rare *De Novo* germline copy-number variation in Testicular cancer. *The American Journal of Human Genetics* 91: 379-383. PMID: 3415553
169. Wigler M. (2012) Broad applications of single-cell nucleic acid analysis in biomedical research. *Genome Med.* 4: 790. PMID: 3580448
170. Krasnitz A, Sun G, Andrews P, Wigler M, (2013) Target inference from collections of genomic intervals. *Proc. Natl. Acad. Sci. USA* 110: E2271-E2778. PMID:3690846
171. Donnenberg AD, Hicks JB, Wigler M, and Donnenberg V.S. (2013) The cancer stem cell: Cell type or cell state? *Cytometry A* 83 5-7. PMID: 4154500
172. Shi J, Whyte WA, Zepeda-Mendoza CJ, Milazzo JP, Shen C, Roe J-S, Minder JL, Mercan F, Wang E, Eckersley-Maslin MA, Campbell AE, Kawaoka S, Shareef S, Zhu Z, Kendall J, Muhar M, Haslinger C, Yu

- M, Roeder RG, Wigler MH, Blobel GA, Zuber J, Spector DL, Young RA, Vakoc CR. (2013) Role of SWI/SNF in acute leukemia maintenance and enhanced-mediated *Myc* regulation. *Genes & Development* 27: 2648-2662. PMID: 3877755
173. Ronemus M, Iossifov I, Levy D, Wigler M. (2014) The role of *de novo* mutation in the genetics of autism spectrum disorders. *Nature Reviews Genetics* 15: 133-141. doi: 10.1038/nrg3585
174. Warburton D, Ronemus M, Kline J, Jobanputra V, Williams I, Anyane-Yeboah K, Chung W, Yu L, Wong N, Awad D, Yu C-Y, Leotta A, Kendall J, Yamrom B, Lee Y-h, Wigler M, Levy D. (2014) The contribution of *de novo* and rare inherited copy number changes to congenital heart disease in an unselected sample of children with conotruncal defects or hypoplastic left heart disease. *Hum. Genet.* 133: 11-27. PMID: 3880624
175. Dago AE, Stepansky A, Carlsson A, Luttgen M, Kendall J, Baslan T, Kolatkar A, Wigler M, Bethel K, Gross ME, Hicks J, Kuhn P. (2014) Rapid phenotypic and genomic change in response to therapeutic pressure in prostate cancer inferred by high content analysis of single circulating tumor cells. *PLOS One* 9: e101777. PMID: 4118839
176. Narzisi G, O'Rawe JA, Iossifov I, Fang H, Lee Y-H, Wang Z, Wu Y, Lyon GJ, Wigler M, Schatz MC. (2014) Accurate *de novo* and transmitted indel detection in exome-capture data using microassembly. *Nature Methods* 11: 1033-1036. PMID: 4180789
177. Levy D, and Wigler M. (2014) Facilitated sequence counting and assembly by template mutagenesis. *Proc. Natl. Acad. Sci. USA* 111: E4632-4637. PMID: 4217440
178. Iossifov I, O'Roak BJ, Sanders S, Ronemus M, Krumm N, Levy D, Stessman H, Witherspoon K, Vives L, Patterson K, Smith J, Paepker B, Nickerson DA, Dea J, Dong S, Gonzalez LE, Mandell JD, Mane SM, Murtha MT, Sullivan CA, Walker MF, Waqar Z, Wei L, Willsey AJ, Yamrom B, Lee Y-h, Grabowska E, Dalgic E, Wang Z, Marks S, Andrews P, Leotta A, Kendall J, Hakker I, Rosenbaum J, Ma B, Rodgers L, Troge J, Narzisi G, Yoon S, Schatz MC, Ye K, McCombie WR, Shendure J, Eichler EE, State MW, Wigler M. (2014) The contribution of *de novo* coding mutations to autism spectrum disorder. *Nature* 515: 216-221. PMID: 4313871
179. Rye IH, Ludin P, Maner S, Fjellda R, Naume B, Wigler M, Hicks J, Borresen-Dale A, Zetterberg A, Russnes HG. (2014) Quantitative multigene *FISH* on breast carcinomas identified der (1;16) (q10;p10) as an early event in luminal A tumors. *Genes Chromosomes Cancer* 54: 235-248. PMID: 4369137
180. Jayaprakash AD, Benson EK, Gone S, Liang R, Shim J, Lamvertini L, Toloue MM, Wigler M, Aaronson SA, Sachidanandam R. (2015) Stable heteroplasmy at the single-cell level is facilitated by intercellular exchange of mtDNA. *Nucleic Acids Research* 43: 2177-2178. PMID: 4344500
181. Baslan T, Kendall J, Ward B, Cox H, Leotta A, Rodgers L, Riggs M, D'italia S, Sun G, Yong M, Miskimen K, Gilmore H, Dimitrova N, Krasnitz A, Harris L, Wigler M, Hicks J. (2015) Optimizing sparse sequencing of single cells for highly multiplex copy number profiling. *Genome Research* 25: 714-724. PMID: 4417119



182. Garvin T, Aboukhalil R, Kendall J, Baslan T, Atwal GS, Hicks J, Wigler M, Schatz MC. (2015) Interactive analysis and quality assessment of single-cell copy-number variations. *Nature Methods* 12: 1058-1060. doi:10.1038/nmeth.3578. PMID 263440432
183. Mukhopadhyay S, Wigler M, Levy D. (2015) Simple genetic models for autism spectrum disorder. bioRxiv 078261; doi: <http://dx.doi.org/10.1101/017301>.
184. Iossifov I, Levy D, Allen J, Ye K, Ronemus M, Lee Y-h, Yamrom B, Wigler M. (2015) Low load for disruptive mutations in autism genes and their biased transmission. *Proc. Natl. Acad. Sci. USA*. 112: E5600-7. PMID: 4611648
185. Baslan T, Kendall J, Rodgers L, Cox H, Riggs M, Stepansky A, Troge J, Ravi K, Esposito D, Lakshmi B, Wigler M, Navin N, Hicks J. (2016) Corrigendum: Genome-wide copy number analysis of single cells. *Nature Protocols* 11: 616. PMID: 26914320
186. Wang Z, Andrews P, Kendall J, Ma B, Hakker I, Rodgers L, Ronemus M, Wigler M, and Levy D. (2016) *SMASH* a fragmentation and sequencing method for genomic copy number analysis. *Genome Research* 26: 844-851. PMID: 4889966
187. Andrews PA, Iossifov I, Kendall J, Marks S, Muthuswamy L, Wang Z, Levy D, and Wigler M. (2016) MUMdex: MUM-based structural variation detection. bioRxiv 078261; doi: <http://dx.doi.org/10.1101/078261>
188. Fang H, Bergmann E, Arora K, Vacic V, Zody M, Iossifov I, O'Rawe J, Wu Y, Jimenez Barron L, Rosenbaum J, Ronemus M, Lee Y-h, Wang Z, Dikoglu E, Jobanputra V, Lyon G, Wigler M, Schatz M, and Narzisi G. (2016) Indel variant analysis of short-read sequencing data with Scalpel. *Nature Protocols* 11: 2529-2548.
189. Ye K, Iossifov I, Levy D, Yamrom B, Buja A, Krieger A, Wigler M. (2017) Measuring shared variants in cohorts of discordant siblings with applications to autism. *Proc. Natl. Acad. Sci. USA* 114: 7073-7076. PMID: 5502605
190. Krasnitz A, Kendall J, Alexander J, Levy D, Wigler M. (2017) Early detection of cancer in blood using single-cell analysis: A proposal. *Trends in Molecular Medicine* 23: 594-603. PMID: 5502711
191. Alexander J, Kendall J, McIndoo J, Rodgers L, Aboukhalil R, Levy D, Stepansky A, Sun G, Riggs M, Cox H, Hakker I, Nowak D, Laze J, Llukani E, Srivastava A, Gruschow S, Yadav S, Robinson B, Atwal G, Trotman L, Lepor H, Hicks J, Wigler M, and Krasnitz A. (2018) Utility of single-cell genomics in diagnostic evaluation of prostate cancer. *Cancer Research*, 78: 348-358. PMID: 5771881
192. Buja A, Volfovsky N, Krieger A, Lord C, Lash AE, Wigler M, Iossifov I. (2018) Damaging de novo mutations diminish motor skills in children on the autism spectrum. *Proc. Natl. Acad. Sci. USA* 15: E1859-E1866. PMID: 5828599
193. Munoz A, Yamrom B, Lee Y-h, Marks S, Lin K-T, Wang Z, Krainer AR, Darnell RB, Wigler M, Iossifov I. (2017) *De novo* indels within introns contribute to ASD incidence. bioRxiv 137471; <http://dx.doi.org/10.1101/137471>.

194. Kumar V, Rosenbaum J, Wang, Z, Forcier T, Ronemus M, Wigler M, Levy D. (2018) Partial bisulfite conversion for unique template sequencing. *Nucleic Acids Research*, 46: e10. PMID: 5778454
195. Andrews, PA, Alexander, J, Kendall, J, Wigler, M. (2019) G-Graph: An interactive genomic graph viewer. bioRxiv 803015; <https://doi.org/10.1101/803015>.
196. Li S, Kendall J, Park S, Wang Z, Alexander J, Moffitt A, Ranade N, Danyko C, Gegenhuber B, Fischer S, Robison B.D, Lepor H, Tollkuhn, J, Gillis, J, Brouzes, E, Krasnitz A, Levy D, and Wigler M (2020) Copolymerization of single-cell nucleic acids into balls of acrylamide gel. *Genome Research*, 30: 49-61. PMID: PMC6961581
197. Moffitt, AB, Spector, MS, Andrews, P, Kendall, J, Alexander, J, Stepansky, A, Ma, BC, Kolitz, J, Chiorazzi, N, Allen, SL, Krasnitz, A, Wigler, M, Levy, D, Wang, Z. (2020) Multiplex accurate sensitive quantitation (MASQ) with application to minimal residual disease in acute myeloid leukemia. *Nucleic Acid Research*, 48: e40. PMID: PMC7144909
198. Baslan, T, Kendall, J, Volyanskyy, K, McNamara, K, Cox, H, D'Italia, S, Ambrosio, F, Riggs, M, Rodgers, L, Leotta, A, Song, J, Mao, Y, Shah, R, Merida, RG, Chadalavada, K, Nanjangud, G, Varadan, V, Gordon, A, Curtis, C, Krasnitz, A, Dimitrova, N, Harris, L, Wigler, M, and Hicks, J. (2020) Novel insights into breast cancer copy number genetic heterogeneity revealed by single-cell genome sequencing. *eLife Science*, 9: 51480. PMID: PMC7220379
199. Chorbadjiev L, Kendall J, Alexander J, Zhygulin V, Song J, Wigler M, Krasnitz A (2020) An integrated computational pipeline for single-cell genomic profiling. *JCO Clin. Cancer Inform.* 4: 464-471. PMID: PMC7265781
200. Vasudevan, A, Baruah, PS, Smith, JC, Wang, Z, Sayles, NM, Andrews, P, Kendall, J, Leu, J, Chunduri, NK, Levy, D, Wigler, M, Storchová, Z, Sheltzer, JM. (2020) Single-Chromosomal Gains Can Function as Metastasis Suppressors and Promoters in Colon Cancer. *Dev Cell.* 4: 413-428.e6. PMID: PMC7354079
201. Miyabayashi, K, Baker, LA, Deschênes, A, Traub, B, Caligiuri, G, Plenker, D, Alagesan, B, Belleau, P, Li, S, Kendall, J, Jang, GH, Kawaguchi, RK, Somerville, TDD, Tiriác, H, Hwang, CI, Burkhart, RA, Roberts, NJ, Wood, LD, Hruban, RH, Gillis, J, Krasnitz, A, Vakoc, CR, Wigler, M, Notta, F, Gallinger, S, Park, Y, Tuveson, DA. (2020) Intraductal Transplantation Models of Human Pancreatic Ductal Adenocarcinoma Reveal Progressive Transition of Molecular Subtypes. *Cancer Discovery*, 10: 1566-1589. PMID: PMC7664990
202. Yoon S, Munoz A, Yamrom B, Lee Y-h, Andrews P, Marks S, Wang Z, Reeves C, Winterkorn L, Krieger AM, Buja, A, Pradhan K, Ronemus M, Baldwin KK, Levy D, Wigler M, Iossifov I (2021) Rates of contributory *de novo* mutation in high and low risk autism families. *Nature Communications Biology*, 4: 1026. PMID: PMC8410909.

203. Li S, Park S, Ye C, Danyko C, Wroten M, Andrews P, Wigler M, and Levy D. (2022) Targeted *de novo* phasing and long-range assembly by template mutagenesis. *Nucleic Acids Research*, 50: e103. PMID: PMC9561374
204. Wang Z, Moffitt A, Andrews P, Wigler M, Levy D. (2022) Accurate measurement of microsatellite length by disrupting its tandem repeat structure. *Nucleic Acids Research* 50: e116. PMID: PMC9723644
205. Wroten M, Yoon S, Andrews P, Yamrom B, Ronemus M, Buja A, Krieger AM, Levy D, Ye K, Wigler M, and Iossifov I. (2023) Sharing parental genomes by siblings concordant or discordant for autism. *Cell Genomics* 3: DOI:<https://doi.org/10.1016/j.xgen.2023.100319>
206. Li S, Alexander J, Kendall J, Andrews P, Rose E, Orjuela H, Park S, Podszus C, Shanley L, Ma R, Rishi A, Donoho DL, Goldberg GL, Levy D, and Wigler M. (2023) High-throughput single-nucleus hybrid sequencing reveals genome-transcriptome correlations in cancer. In progress.