

CURRICULUM VITAE

Clifford William Schweinfest

EDUCATION

Undergraduate: The Johns Hopkins University
 B.A., 1973 – 1976

 The Johns Hopkins University
 M.A., 1977 – 1979

Medical School: The Johns Hopkins University
 Ph. D., 1979 – 1985

POST-DOCTORAL TRAINING

National Institutes of Health, Laboratory of Molecular Oncology, Takis S. Papas, Ph.D.,
Chief, 1985-1987: Isolation and characterization of genes regulated by c-myc.

POSITIONS HELD

1999-pres. Professor of Medicine (Hematology/Oncology) and Research Scientist Scientist
 in the Center for Molecular and Structural Biology, Medical University of South
 Carolina, Charleston, SC.

1997-1999 Associate Professor of Medicine and Associate Research Scientist in the Center
 for Molecular and Structural Biology, Medical University of South Carolina,
 Charleston, SC. Tenure granted January 1, 1999.

1993-1997 Associate Professor of Experimental Oncology and Associate Research Scientist
 in the Center for Molecular and Structural Biology, Medical University of South
 Carolina, Charleston, SC

1989-1993 Senior Staff Fellow, Laboratory of Molecular Oncology, NCI-FCRDC, Frederick,
 MD

1987-1989 Staff Fellow, Laboratory of Molecular Oncology, NCI-FCRDC, Frederick, MD

1985-1987 Leukemia Society of America Fellow, Laboratory of Molecular Oncology, NCI-
 FCRDC, Frederick, MD

1984 Instructor, Genetics Lab, The Johns Hopkins University, Baltimore, MD

1978-1979 Instructor, Molecular Biology Lab, The Johns Hopkins University, Baltimore, MD

AWARDS

Merit Awards, National Cancer Institute: 1988-1993

SOCIETY MEMBERSHIPS

American Association for Cancer Research (AACR)
American Association for the Advancement of Science (AAAS)
American Society for Microbiology (ASM)

CURRENT AREAS OF INVESTIGATION

Molecular genetics of colorectal tumorigenesis, prostate cancer and pancreatic cancer. These studies investigate the identity and function of genes involved in human cancer using a subtraction hybridization technique I have developed, as well as differential display of mRNA. We are able to identify new genes not identifiable by more conventional methods. These genes and their products may play a direct causal role in tumorigenesis and/or may be useful clinical agents for early detection or therapy. The techniques we have developed are useful for studying any human cancer.

GRANT REVIEW STUDY SECTIONS

- 1) March of Dimes, Jan.-Feb. 1991
- 2) American Cancer Society (Md. Division), May 1991
- 3) Dutch Cancer Society, 1994
- 4) National Science Foundation, 1995
- 5) American Cancer Society (National) (ad hoc), January 1998
- 6) American Cancer Society (National) (regular member), Cell Structure and Metastasis, 1999-2002

PATENTS

- 1) Colon mucosa gene having down-regulated expression in colon adenomas and adenocarcinomas. U.S. Patent Number 5,569,755.
- 2) Colon mucosa gene having down-regulated expression in colon adenomas and adenocarcinomas (Addendum). U.S. Patent Number 5,831,015.
- 3) Methods for evaluating colon tissue for expression of the DRA (down regulated in adenoma) gene. U.S. Patent Number 6,210,887.
- 4) Methods and Compositions for Diagnosis and Treatment of Cancer (Pending). U.S. Patent Application Number 20020086812.

JOURNAL REVIEWER (AD HOC)

- 1) Cell Growth and Differentiation (1992-3)
- 2) International Journal of Oncology (1992-3)
- 3) Gastroenterology (1993)
- 4) Gene (1996)
- 5) Genomics (1996-present)
- 6) Proceedings of the National Academy of the Sciences, U.S.A. (1996-present)
- 7) Oncogene (1997-present)
- 8) Cancer Research (1997-present)
- 9) Science (1998)
- 10) American Journal of Physiology
- 11) Clinical Science

MEETINGS ORGANIZED/CHAIRMANSHIPS

- 1) AACR Annual Meeting (National) April 1999. Member of Organizing committee for Cancer Genetics III: Human and Retroviral Oncogenes.
- 2) AACR Annual Meeting (National) April 1999. Symposium Chairman for section under for Cancer Genetics III: Human and Retroviral Oncogenes.

TEACHING EXPERIENCE

Courses Taught:

- 1978-1979 Molecular Biology Lab, The Johns Hopkins University, Baltimore, MD
- 1984 Genetics Lab, The Johns Hopkins University, Baltimore, MD
- 1994-1999 Biology of Neoplasia (Course Director: Dr. Daniel Fernandes), The Medical University of South Carolina, Charleston, SC
- 1996-2001 Foundations in Cell and Molecular Biology (Course Director: Dr. Barry Ledford), MUSC
- 1997 Advances in Cytokine Research (Course Director: Dr. Nasrin Nabavi), MUSC
- 1998-pres. Topics in Cancer Research (Course Directors: Dr. Schweinfest and Dr. Dennis Watson), MUSC, Charleston, SC
- 1999-2001 Advanced Cell Biology (Course Director: Adam Smolka, Ph.D.), MUSC, Charleston, SC
- 2000 Mechanisms of Pathogenesis (Course Directors: Joan Olson, Ph.D., Cynthia Wright, Ph.D.), MUSC, Charleston, SC
- 2005-pres. Foundations in Biomedical Sciences (Course Directors: Adam Smolka, Ph.D., Dayna Wolfe, Ph.D./Nucleic Acids (Section Director: Chris Davies, Ph.D.)

Post-doctoral Fellows Trained:

- 1989-1993 Nobuo Kondoh, Ph.D., DDS: Trained in colon cancer, general molecular biology. Seven (7) publications.
- 1990-1992 Peter S. Nelson, M.D.: Trained in subtraction hybridization, general molecular biology. Four (4) publications.
- 1993-1996 Michael W. Graber, M.D.: Trained in subtraction hybridization, general molecular biology. Nine (9) publications. MUSC Student Research Day 1995
- 1994-1998 Mee Kyeong Byeon, Ph.D.: Trained in colon cancer, general molecular biology. Four (4) publications. MUSC Student Research Day 1995
- 1998-pres Yian Chen, Ph.D. Mismatch repair in prostate cancer progression. One (1) publication.
- 1999-2000 Jae-Ho Kim, Ph.D. Colon cancer molecular biology.

Graduate Students Trained:

- 1998-2005 Jeannie Chapman. Growth suppression function of DRA.

Summer Undergraduate Research Program:

- 1995 Jeannie Chapman, College of Charleston, SC. DNA transfection, mammalian cell culture, molecular biology techniques. MUSC Student Research Day—Second Place Prize (Nov. 1995). One (1) publication.
- 1995 Cayce Cole, College of Charleston, SC. Mammalian cell culture, molecular biology techniques.
- 1996 Amy Smialowicz, Salve Regina University, Newport, Rhode Island. molecular biology techniques.
- 1997 Ashley Badgwell, University of Texas (Austin), molecular biology techniques.

Other Persons Trained:

- 1988 Stavros D. Kottaridis, Ph.D. (sabbatical from Hellenic Anticancer Institute, Athens, Greece). Trained in subtraction hybridization, molecular biology techniques). Four (4) publications.
- 1989 Jian-Ren Gu, M.D., Ph.D. (Sabbatical from Shanghai Cancer Institute): Trained in subtraction hybridization. Two (2) publications.
- 1989 Evi Panotopoulou, Ph.D. (Sabbatical from Hellenic Anticancer Institute): Trained in subtraction hybridization. One (1) publication.
- 1994-1997 Xian-Kui Zhang, Ph.D.: Trained in DNA transfection of mammalian cell culture. Four (4) publications.

- 1995-1996 Joseph R. Kelley. M.D./Ph.D. student, MUSC. Molecular biology techniques, DNA transfection, mammalian cell culture.
- 1995-1996 Girish Mishra, M.D., Gastroenterology Fellow, MUSC: mammalian cell culture, immunohistochemical localization, molecular biology. Student Research Day Presentation (Nov. 1995).
- 1996 Marc Hyer. Ph.D. student, MUSC. Molecular biology techniques.
- 1996 Stuart Knoepp. M.D./Ph.D. student, MUSC. Molecular biology techniques, DNA transfection, mammalian cell culture.
- 1996 Michelle Phillips. M.D. student, MUSC. DNA transfection, mammalian cell culture.
- 1996 John Yordy. M.D./Ph.D. student, MUSC. DNA transfection, mammalian cell culture.
- 1997 Kevin Becker. M.D./Ph.D. student, MUSC.
- 2001 Guru Aithal, M.D., GI Fellow
- 2005 Sampa Ghose, Ph.D.

UNIVERSITY (MUSC) SERVICE

- 1993-1996 Member of Ph.D. Advisory Committee for Ms. Gloria Bullock (Ph.D. awarded 1996), Molecular and Cellular Biology and Pathobiology Program, Medical University of South Carolina
- 1994-pres Judge, Student Research Day, Medical University of South Carolina
- 1994-pres Ad Hoc Interviewer/Evaluator for prospective MUSC faculty
- Nov. 1996 MUSC University Research Committee (subcom. chairman: M. Willingham)
- 1997 MUSC Search Committee for Chairman, Department of Physiology
- 1997 Speaker to Polish Breast Cancer group, 4-9-97 (through Office of Public Relations, Ellen Bank)
- June 1997 MUSC University Research Committee (as subcommittee chairman)
- 1997-pres Hollings Cancer Center Scientific Advisory Committee
- 1997-2000 University Research Council
- 2/1998-pres MUSC University Research Committees, various.
- May 1998 Member of Ph.D. Advisory Committee for Mr. Jeffrey Jones (Ed McClay, M.D., mentor).

- 9/98-1999 Member of Ph.D. Advisory Committee for Mr. Joseph M. Lambert (Daniel Fernandes, Ph.D., mentor)
- 12/98-2001 Member of Ph.D. Advisory Committee for Mr. Victor I. Sementchenko (Dennis Watson, Ph.D. mentor)
- 7/99-2002 Member of Ph.D. Advisory Committee for Ms. Melissa M. Fraser (Dennis Watson, Ph.D. mentor)
- 10/99-pres Member of Ph.D. Advisory Committee for Mr. Kevin Scott Orwig (T. A. Dix, Ph.D. mentor)

INVITED SEMINARS

1. September 1989. First International Conference on Gene Regulation, Oncogenesis, and AIDS. Loutraki, Greece
2. May 1992. MUSC
3. June 1993. Fourth Annual Meeting on The Molecular Basis of Cancer
4. March 1994. The Immune Consequences of Trauma, Shock and Sepsis. Munich, Germany
5. November 1995. MUSC Gastroenterology Grand Rounds
6. February 1996. MCBP Seminar
7. May 1997. American Thoracic Society. Advanced Molecular Biology Techniques Course. San Francisco, CA
8. September 1997. Third International Conference on Gene Regulation, Oncogenesis, and AIDS. Spetses, Greece
9. April 1999. American Thoracic Society. Advanced Molecular Biology Techniques Course. San Diego, CA
10. October 2000. American Health Foundation, Valhalla NY.
11. April 2002. Sterling College, Sterling KS.
12. December 2002. Univ. Texas M.D. Anderson Cancer Center.
13. April 2003. Yale University.

EXTRAMURAL EDUCATIONAL ACTIVITIES

- 1997 Career Day at The Porter-Gaud School (Feb. 20, 1997)
- 1999 Organized "Open House" visit by College of Charleston Students (C of C Faculty: Dr. Stephanie Dellis) to CMSB (March 19, 1999)

2000-pres Speaker at several Relay for Life events (5) for the American Cancer Society

GRANTS

Past:

1. Leukemia Society of America Fellowship, (PI=C. Schweinfest) 1985-1987
"Identification of genes whose expression is controlled by c-myc"
Total Costs = Approx. \$50,000
2. NIH (IDeA) P20RR09885 (PI= James Norris, Ph.D., Co-Investigator = C. Schweinfest)
9/30/93-9/29/95
"Enhancement in Health Related Research in South Carolina"
Total Costs = \$112,926
3. Dept of Energy DE-FG05-94ER61893 (PI=P.Fischinger, D. Fernandes, Co-Investigator
for Task 4 = C. Schweinfest) 9/1/94-8/31/96
"Enhancement of the Medical University of South Carolina Cancer Research
and Molecular Biology Programs"
Task 4: Enhancement of The Center for Molecular and Structural Biology
Total Costs for Task 4 = \$1,179,774
4. American Cancer Society Research Grant CB-187 (changed to RPG-96-098-03-CSM)
as of 7/1/99, (PI=C. Schweinfest) 1996-2000
Total Costs = \$307,000
"Structural and Functional Analysis of the Colon Tumor-Regulated Protein, DRA"
5. NSF Grant EPSCoR Reference # 13100-Z136 (Co-PI's=C. Schweinfest, D. Watson)
1998-2000
"Molecular studies of CaSm as a model for novel protein-protein interactions"
Total Costs = \$100,000
6. Office of Naval Research Grant N00014-96-1-1298 (Program PI=Daniel Nixon, M.D.,
Project 5 PI=C. Schweinfest) 1996-2001
"Coastal Cancer Control Project; Project 5: Expression of the DRA Gene in
Colon Epithelial Cells"
Total Costs for Project 5 = \$1,217,978
(Total Direct Program Costs = \$4,524,000)
7. Office of Naval Research (Program PI=Daniel Nixon, M.D., Project 5 Co-PI=C.
Schweinfest, D. Watson) 1997-2001
"Coastal Cancer Control Project: Phase 1; Project 8: Genetic Mechanisms for
Prostate Cancer Progression"
Total Costs Project 8 = \$581,240
8. DoD Program; PI= Mark Green, M.D., Project #1 (Co-PI's= C. Schweinfest, D. Watson,
A. Boylan) 1998-2001
"Thoracic Oncology/Telemedicine Initiative: Project #1: Molecular Genetic
Studies in Thoracic Neoplasia"
Total Direct Costs for Project #1 = \$352,170
Total Direct Costs for Program = \$7,520,919

9. Dod Program
 PI: Clifford W. Schweinfest
 June 2000 - May 2002
 \$106,732 in direct costs
 E1A Abrogation of DRA-mediated growth arrest

Active:

1. Models of DRA growth suppression in colon cancer
 NIH/NCI 1R01CA0095172
 July 2003 – 2007
 \$712,000 in Direct Costs
 PI: Clifford W. Schweinfest (50% effort)
2. Elucidation of a DRA signaling pathway in colon cancer
 NIH/NCI R21 1R21CA100072
 2004-2006
 \$178,000 in Direct Costs
 PI: Clifford W. Schweinfest (25% effort)

BIBLIOGRAPHY

1. **Schweinfest, C. W.**, Kwiatkowski, R. W. and Dottin, R.: Molecular cloning of a DNA sequence complementary to creatine kinase M from chickens. Proc. Natl. Acad. Sci. USA 79: 4997-5000, 1982.
2. Kwiatkowski, R. W., **Schweinfest, C. W.** and Dottin, R.: Molecular cloning and the complete nucleotide sequence of the creatine kinase-M cDNA from chicken. Nucleic Acids Res. 12: 6926-6934, 1984.
3. **Schweinfest, C. W.**, Nigro, J. M., Rajkovic, A., Dottin, R. P., Hart, J. M., Karmack, M. E. and Rae, P. M. M.: Localization of the human creatine kinase-M gene to chromosome 19. Human Gene Mapping 8: 740-741, 1985.
4. Kwiatkowski, R. W., Ehrismann, R., **Schweinfest, C. W.** and Dottin, R.: Accumulation of creatine kinase mRNA during myogenesis: Molecular cloning of a B-creatine kinase cDNA. Dev. Biol. 112: 84-88, 1985.
5. Fishel, B., Ragheb, J., Rajkovic, A., Haribabu, B., **Schweinfest, C. W.** and Dottin, R.: Molecular cloning of a cDNA complementary to UDP glucose pyrophosphorylase mRNA of *Dictyostelium discoideum*. Dev. Biol. 110: 369-381, 1985.
6. Nigro, J. N., **Schweinfest, C. W.**, Rajkovic, A., Pavlovic, J., Jamal, S., Dottin, R. P., Hart, J. T., Kamarck, M. E., Rae, P. M. M., Carty, M. D. and Martin-DeLeon, P.: cDNA cloning and mapping of the human creatine kinase M gene to 19q13. Am. J. Human Gen. 40: 115-125, 1987.
7. Dottin, R. P., Haribabu, B., **Schweinfest, C. W.** and Manrow, R. E.: Activity gels: Reformation of functional proteins from SDS-polyacrylamide gels. In Setlow, J. K. (Ed.): Genetic Engineering: Principles and Methods. New York, Plenum Press, 1987, Vol. 9,

pp. 121-133.

8. **Schweinfest, C. W.**, Fujiwara, S. and Papas, T. S.: c-myc protein expression can induce the expression of G₀/G₁ transition genes. In Brew, K., Ahmad, F., Bialy, H., Black, S., Fenna, R. E., Puett, D., Scott, W. A., Van Brunt, J., Voellmy, R. W., Whelan, W. J. and Woessner, J. F. (Eds.): Advances in Gene Technology: Protein Engineering and Production. Oxford/Washington DC, IRL Press, 8: 113, 1988.
9. **Schweinfest, C. W.**, Fujiwara, S., Lau, L. F. and Papas, T. S.: c-myc can induce the expression of G₀/G₁ transition genes. Mol. Cell Biol. 8: 3080-3087, 1988.
10. Watson, D. K., McWilliams, M. J., Lapis, P., Lautenberger, J. A., **Schweinfest, C. W.** and Papas, T. S.: Human and mouse ets-2 genes encode for highly conserved proteins. Proc. Natl. Acad. Sci. USA 85: 7862-7866, 1988.
11. **Schweinfest, C. W.**, Jorcyk, C. L., Fujiwara, S. and Papas, T. S.: A heat shock inducible eukaryotic expression vector. Gene 71: 207-210, 1988.
12. Papas, T. S., Samuel, K. P., Lautenberger, J. A., DuBois, G. C., Zweig, M., Showalter, S. D., Seth, A., Fisher, R. J., Fujiwara, S., **Schweinfest, C.W.**, Shih, T. Y. and Ascione, R.: Vector systems for the high-level expression of oncogenes, HTLV-I and HIV polypeptides. In Albertini, A., Paoletti, R. and Reisfeld, R. A. (Eds.): Molecular Probes: Technical Medical Applications. New York, Raven Press, 1989, pp. 79-90.
13. Papas, T. S., Fisher, R. J., Bhat, N., Fujiwara, S., Watson, D. K., Lautenberger, J., Seth, A., Chen, Z-Q., Burdett, L., Pribyl, L., **Schweinfest, C. W.** and Ascione, R.: The ets family of genes: Molecular biology and functional implications. In Shen-Ong, G. L. C., Potter, M. and Copeland, N. G. (Eds.): Current Topics in Microbiology and Immunology: Mechanisms in Myeloid Tumorigenesis, Vol. 149. Berlin-Heidelberg: Springer-Verlag, 1989, pp. 143-147.
14. Fisher, R. J., Fujiwara, S., Bhat, N. K., **Schweinfest, C. W.** and Papas, T. S.: C-ets-2 and the mitogenic signal pathway. Modern Trends in Human Leukemia VIII: 1-15, 1989.
15. Fisher, R.J., Fujiwara, S., Bhat, N.K., **Schweinfest, C.W.**, and Papas, T.S.: c-ets-2 and the mitogenic signal pathway. Hamatol Bluttransfus (West Germany) 32: 441-448, 1989.
16. Papas, T. S., Blair, D. G., Watson, D. K., Yuan, C. C., Ruscetti, S. K., Fujiwara, S., Seth, A. K., Fisher, R. J., Bhat, N. K., Mavrothalassitis, G., Koizumi, S., Jorcyk, C. L., **Schweinfest, C. W.** and Ascione, R.: The ETS family of genes: Structural analysis, gene products, and involvement in neoplasia and other pathologies. In Patterson, D. and Epstein, C. J. (Eds.): Molecular Genetics of Chromosome 21 and Down Syndrome. New York, Wiley-Liss, 1990, pp. 137-168.
17. **Schweinfest, C. W.**, Jorcyk, C. L. and Papas, T. S.: Efficient inducible expression of HIV-1 tat cDNA in transfected T-cells. In Streilein, J. W., Ahmad, F., Bialy, H., Black, S., Blomberg, B., Chin, Y. H., Lopez, D., Malek, T., Podack, E. R., Rabin, M. B., Stein-Streilein, J., Van Brunt, J. and Whelan, W. J. (Eds.): Advances in Gene Technology: The Molecular Biology of Immune Diseases and the Immune Response. Oxford, IRL

Press, 10: 31, 1990.

18. Lautenberger, J. A., DuBois, G. C., Samuel, K. P., Seth, A. K., Showalter, S. D., **Schweinfest, C. W.**, Zweig, M. and Papas, T. S.: Expression of human retroviral proteins in a heterologous system. In Gropman, J. E., Chen, I. S. Y., Essex, M. and Weiss, R. A. (Eds.): Human Retroviruses, UCLA Symposia on Molecular and Cellular Biology, New Series, Vol. 119. New York, Wiley-Liss, 1990, pp. 85-95.
19. **Schweinfest, C. W.**, Henderson, K. W., Gu, J-R., Kottaridis, S. D., Besbeas, S., Panotopoulou, E. and Papas, T. S.: Subtraction hybridization cDNA libraries from colon carcinoma and hepatic cancer. Genet. Anal. Techn. Appl. 7: 64-70, 1990.
20. **Schweinfest, C. W.**, Fujiwara, S., Lau, L. F. and Papas, T. S.: Regulation of G₀/G₁ transition genes by c-myc. In Papas, T. S. (Ed.): Oncogenesis. Houston, Gulf Publishing Co., 1990, pp. 169-181.
21. Watson, D. K., Seth, A., Smyth, F. E., **Schweinfest, C. W.** and Papas, T. S.: The chicken, mouse and human ets-1 proteins have the same predicted mass but different electrophoretic mobilities. In Papas, T. S. (Ed.): Oncogenesis. Houston, Gulf Publishing Co., 1990, pp. 221-232.
22. Papas, T. S., Watson, D. K., Sacchi, N., Fujiwara, S., Seth, A. K., Fisher, R. J., Bhat, N. K., Mavrothalassitis, G., Koizumi, S., Jorcyk, C. L., **Schweinfest, C. W.**, Kottaridis, S. D. and Ascione, R.: The ETS family of genes in leukemia and Down syndrome. Am. J. Med. Genet. (Suppl.) 7: 251-261, 1990.
23. Papas, T. S., Blair, D. G., Watson, D. K., Yuan, C. C., Ruscetti, S. K., Fujiwara, S., Seth, A. K., Fisher, R. J., Bhat, N. K., Mavrothalassitis, G., Koizumi, S., Jorcyk, C. L., **Schweinfest, C. W.** and Ascione, R.: The ETS family of genes: Structural analysis, gene products, and involvement in neoplasia and other pathologies. Prog. Clin. Biol. Res. 360: 137-168, 1990.
24. **Schweinfest, C. W.**, Henderson, K. W., Kondoh, N., Nelson, P. and Papas, T. S.: Molecular genetic alterations in colorectal carcinoma: Isolation and identification by subtractive hybridization. In Advances in Gene Technology: The Molecular Biology Of Human Genetic Disease. Ahmad, F., Bialy, H., Black, S., Howell, R.R., Johnson, D.H., Lubs, H.A., Puett, J.D., Rabin, M.B., Scott, W.A., Van Brunt, J., and Whelan, W.J., eds. Miami Short Reports 1: 83, 1991.
25. Gu, J.-R., Jiang, H.-Q., He, L.-P., Li, D.-Z., Zhou, X.-M., Chen, Y.-Q., **Schweinfest, C.** and Papas, T. S.: Transthyretin (prealbumin) gene in human primary hepatic cancer. Science in China 34(11): 1312-1318, 1991.
26. Kondoh, N., **Schweinfest, C. W.**, Henderson, K. W. and Papas, T. S.: Differential expression of S19 ribosomal protein, laminin binding protein and HLA Bw62 mRNAs associated with colon carcinoma, progression and differentiation. Cancer Res. 52: 791-796, 1992.
27. **Schweinfest, C. W.** and Papas, T. S.: Subtraction hybridization: An approach to the isolation of genes differentially expressed in cancer and other biological systems (Review). Int. J. Oncol. 1: 499-506, 1992.

28. Ascione, R., Qi, S., Papas, L. A., **Schweinfest, C.**, Kondoh, N., Hodge, D. R., Venanzoni, M., Kottaridis, S. D. and Papas, T. S.: Recent advances in gene therapy for the treatment of human cancers. In Kosmidis, P. (Ed.): Advanced Seminars in Oncology. Greece, Metaxas Hospital, Publisher, 1993, pp. 28-34.
29. Nelson, P. S., Papas, T. S. and **Schweinfest, C. W.**: Restriction endonuclease cleavage of 5-methyl-deoxycytosine hemimethylated DNA at high enzyme-to-substrate ratios. Nucleic Acids Res. 21: 681-686, 1993.
30. **Schweinfest, C. W.**, Henderson, K. W., Suster, S., Kondoh, N. and Papas, T. S.: Identification of a colon mucosa gene that is down-regulated in colon adenomas and adenocarcinomas. Proc. Natl. Acad. Sci. USA 90: 4166-4170, 1993.
31. Kondoh, N., **Schweinfest, C. W.** and Papas, T. S.: Chromosomal alterations in permanently differentiated HT29 colon carcinoma cells induced with sodium butyrate. Int. J. Oncol. 3: 177-183, 1993.
32. **Schweinfest, C. W.**: Letter to Gastroenterology. Gastroenterology 105: 1581-1582, 1993.
33. **Schweinfest, C.W.**, Henderson, K.W., Suster, S., Green, J.E., Maroulakou, I., and Papas, T.S. Identification of DRA, a colon mucosa-specific candidate tumor suppressor gene. In Advances in Gene Technology: Molecular Biology And Human Disease. Whelan, W.J., Ahmad, F., Baumbach, L., Bialy, H., Black, S., Davies, K., Hodgson, J., Howell, R.R., Huijing, F., and Scott, W.A., eds. Miami Short Reports 4: 20, 1994.
34. Taguchi, T., Testa, J. R., Papas, T. S. and **Schweinfest, C. W.** Localization of a candidate colon tumor suppressor gene (DRA) to 7q22-q31.1 by fluorescence *in situ* hybridization. Genomics 20: 146-147, 1994.
35. **Schweinfest, C. W.**, Nelson, P. S., Graber, M.W., Demopoulos, R.I., and Papas, T. S.: Subtraction hybridization cDNA libraries. In Tymms, M. J. (Ed.): Methods in Molecular Biology, Vol 37: In Vitro Transcription and Translation Protocols. Humana Press Inc., Totowa NJ, 1995. pp. 13-30.
36. Graber, M. W., **Schweinfest, C. W.**, Reed, C. E., Papas, T. S., and Baron, P. L.: Isolation of differentially expressed genes in carcinoma of the esophagus (CAE). In 48th Annual Cancer Symposium, Society of Surgical Oncology & The University of Texas M. D. Anderson Cancer Center, 1995. p. 16.
37. Baron, P.L., Graber, M.W., Papas, T.S., **Schweinfest, C.W.**, and Watson, D.K.: Isolation and characterization of novel genes with elevated expression in pancreatic cancer. Surgical Forum 46: 485-488, 1995.
38. Byeon, M.K., Westerman, M.A., Maroulakou, I.G., Henderson, K.W., Suster, S., Zhang, X.-K., Papas, T.S., Vesely, J., Willingham, M.C., Green, J.E., and **Schweinfest, C.W.**: The Down-Regulated in Adenoma (DRA) Gene Encodes an Intestine-Specific Membrane Glycoprotein. Oncogene 12: 387-396, 1996.
39. Graber, M.W., **Schweinfest, C.W.**, Reed, C.E., Papas, T.S., and Baron, P.L.: Isolation of differentially expressed genes in carcinoma of the esophagus. Annals of Surgical

Oncology 3(2): 192-197, 1996.

40. Kondoh, N., Noda, M., Fisher, R.J., **Schweinfest, C.W.**, Papas, T.S., Kondoh, A., Samuel, K.P., and Oikawa, T.: The S29 ribosomal protein increases tumor suppressor activity of *Krev-1* gene on *v-Kras*-transformed NIH/3T3 cells. Biochem. et Biophys. Acta 1313(1): 41-46, 1996.
41. Papas, T. S., **Schweinfest, C. W.**, Kondoh, N., Kottaridis, S. D., Besbeas, S., Seth, A. and Ascione, R.: Oncogenes and cancer genes in colon cancer. In Sekeris, C. (Ed.): Proceedings of Meeting on "Molecular Genetics and Cytogenetics of Colon Cancer". Athens: University of Athens. 1996.
42. **Schweinfest, C.W.**, Graber, M.W., Zhang, X.-K., Vanek, P.G., and Watson, D.K.: Gene Cloning I: Preparation of DNA Libraries. In The Immune Consequences of Trauma, Shock and Sepsis—Mechanisms and Therapeutic Approaches, vol II.1 (Faist, E., Baue, A.E., Schilberg, F.W., eds.). Lengerich, Pabst Science Publishers, 1996: 215-228.
43. Watson, D.K., Vanek, P.G., Zhang, X.-K., Graber, M.W., and **Schweinfest, C.W.**: Gene Cloning II: Screening and Sequencing of Genes. In The Immune Consequences of Trauma, Shock and Sepsis—Mechanisms and Therapeutic Approaches, vol II.1 (Faist, E., Baue, A.E., Schilberg, F.W., eds.). Lengerich, Pabst Science Publishers, 1996: 229-242.
44. **Schweinfest, C.W.** and Papas, T.S.: A candidate colon tumor suppressor gene, DRA, is a membrane anion transporter. In Sekeris, C. (Ed.): Proceedings of Meeting on "Molecular Genetics and Cytogenetics of Colon Cancer". Athens: University of Athens. 1997.
45. **Schweinfest, C.W.**, Graber, M.W., Chapman, J.M., Papas, T.S., Baron, P.L., Watson, D.K.: CaSm: an Sm-like protein that contributes to the transformed state in cancer cells. Cancer Res. 57: 2961-2965, 1997.
46. Chen, S.-L., Zhang, X.K., Halvorson, D.O. Byeon, M.K., **Schweinfest, C.W.**, Ferris, D.K., and Bhat, N.K.: Characterization of human N8 protein. Oncogene 15: 2577-2588, 1997.
47. Byeon, M.K., Frankel, A., Papas, T.S., and **Schweinfest, C.W.**: Human DRA functions as a sulfate transporter in Sf9 insect cells. Protein Expression and Purification 12: 67-74, 1998.
48. **Schweinfest, C.W.**, Graber, M.W., Papas, T.S., Baron, P.L., and Watson, D.K.: Cloning and sequencing analysis of Hsp89 N, a new member of the HSP90 gene family. Biochem et Biophys Acta - Gene Structure and Expression 1398: 17-23, 1998.
49. Antalis, T.M., Reeder, J.A., Gotley, D.C., Byeon, M.K., Walsh, M.D., Henderson, K.W., Papas, T.S., and **Schweinfest, C.W.**: DRA down-regulation correlates with colon tumor progression. Clinical Cancer Research 4: 1857-1863, 1998.
50. Kelley J.R., Brown, J., Demcheva, M., **Schweinfest, C.W.**, Watson, D.K., Vournakis, J.N., Cole, D.J.: Local regional adenoviral delivery for gene therapy of pancreatic cancer. Cancer Gene Therapy 5: S31, 1998.

51. Sementchenko, V, **Schweinfest, C.W.**, Papas, T.S., and Watson. D.K.: ETS2 function is required to maintain the transformed state of human prostate cancer cells. Oncogene 17:2883-2888, 1998.
52. Yang, H.Y., Jiang, W., Furth, E.E., Wen, X.M., Katz, J.P., Sellon, R.K., Silberg, D.G., Antalis, T.M., **Schweinfest, C.W.**, Wu, G.D.: Intestinal inflammation reduces expression of DRA, a transporter responsible for congenital chloride diarrhea. Am. J. Physiol. - Gastrointestinal & Liver Phys. 38: G1445-G1453, 1998.
53. Sementchenko, V. I., **Schweinfest, C. W.**, Papas, T. S. and Watson, D. K.: ETS2 contributes to the transformed phenotype of prostate cancer cells. In Ahmad, F., Bernstein, P., Black, S., Carraway, K. L., Deutscher, M. P., Hassler, S., Huijing, F., Podack, E. R., Verde, F. and Whelan, W. J. (Eds.): *Advances in Gene Technology: Signal Transduction and Therapeutic Strategies*, Oxford University Press, p. 122, 1999.
54. Fraser, M. M., Papas, T. S., Baron, P. L., **Schweinfest, C. W.** and Watson, D. K.: CaSm expression is correlated with cellular transformation. In Ahmad, F., Bernstein, P., Black, S., Carraway, K. L., Deutscher, M. P., Hassler, S., Huijing, F., Podack, E. R., Verde, F. and Whelan, W. J. (Eds.): *Advances in Gene Technology: Signal Transduction and Therapeutic Strategies*, Oxford University Press, p. 113, 1999.
55. Smolka, A.J, Larsen, K.E., **Schweinfest, C.W.** and Hammond, C.E.. H,K-ATPase subunit C-terminal membrane topology: Epitope tags in the insect cell expression system. Biochem. J. 340: 601-611, 1999.
56. Kunieda, T., Takahashi, K., Shinkai, Y., Tsuji, T., **Schweinfest, C.W.** and Katoh, H. The down regulated in adenoma (*Dra*) gene encoding intestine-specific anion transporter maps to mouse chromosome 12. Exp. Anim. 49: 67-8, 2000.
57. **Schweinfest, C. W.**, Nelson, P. S., Graber, M.W., Demopoulos, R.I., and Papas, T. S.: Subtraction hybridization cDNA libraries. In The Nucleic Acids Handbook (Ralph Rapley, ed.) Humana Press, Totowa, NJ, 2000, pp.305-318.
58. Kelley, J.R., Brown, J.M., Frasier, M.M., Baron, P.L., **Schweinfest, C.W.**, Vournakis, J.N., Watson, D.K., and Cole, D.J. The cancer-associated Sm-like oncogene: a novel target for the gene therapy of pancreatic cancer. Surgery 128: 353-360, 2000.
59. Rajendran, V. M., Black, J., Ardito, T. A., Sangan, P., Alper, S. L., **Schweinfest, C. W.**, Kashgarian, M., and Binder, H. J. Regulation of DRA and AE1 in rat colon by dietary Na depletion. Am. J. Physiol. - Gastrointestinal & Liver Phys. 279: G931-G942, 2000.
60. Chen Y., Wang, J., Fraig, M. M., Metcalf, J., Turner, W. R., Bissada N. K., Watson, D. K. and **Schweinfest, C. W.**: Defects of DNA Mismatch Repair in Human Prostate Cancer. Cancer Research 61: 4112-4121, 2001.
61. Greely, T., Shumaker, H., Wang, Z., **Schweinfest, C. W.** and Soleimani, M. Downregulated in adenoma and putative anion transporter are regulated by CFTR in cultured pancreatic duct cells. Am. J. Physiol Gastrointest. Liver Physiol. 281: G1301-8, 2001.
62. Grammatikakis, N., Vultur, A., Ramana, C.V., Siganou, A., **Schweinfest, C.W.**, Watson

and D.K., Raptis, L.: The Role of Hsp90N, a new member of the Hsp90 family, in signal transduction and neoplastic transformation. J. Biol. Chem. 277:8312-20, 2002.

63. **Schweinfest, C.W.:** More watchful (less waiting?) for mismatch repair in prostate cancer. Cancer Biology and Therapy 1(4): 372-3, 2002.
64. Chapman, J. M., Knoepp, S. M., Byeon, M.K., Henderson, K.W. and **Schweinfest, C.W.:** The colon anion transporter DRA induces growth suppression that is abrogated by E1A. Cancer Research. 62: 5083-5088, 2002.
65. Chen, Y., Wang, J., Fraig, M.M., Henderson, K.W., Bissada, N.K., Watson, D.K., and **Schweinfest, C.W.:** Alterations in PMS2, MSH2 and MLH1 Expression in Human Prostate Cancer. International Journal of Oncology. 22: 1033-1043, 2003.
66. Chernova, M.N., Jiang, L., Shmukler, B.E., **Schweinfest, C.**, Blanco, P., Freedman, S.D., Stewart, A.K., Alper, S.L.: Acute regulation of the SLC26A3 congenital chloride diarrhoea anion exchanger (DRA) expressed in *Xenopus* oocytes. J. Physiol. 547: 3-19, 2003.

MANUSCRIPTS IN PREPARATION/REVISION

1. Spyropoulos, D. D., Henderson, K. W., Kim, J.-H., Chapman, J. M. and **Schweinfest, C.W.:** Dra-deficient mice mimic congenital chloride diarrhea and exhibit an expanded colonic crypt proliferative zone.
2. Chapman, J.M., Henderson, K.W., and **Schweinfest, C.W.:** Functional studies of growth suppression by the DRA protein.
3. Soleimani, M. and **Schweinfest, C. W.:** Colonic transport in Dra-deficient mice.
4. Clarke, L. and **Schweinfest, C.W.:** Ileal transport in Dra-deficient mice.