

CURRICULUM VITAE
David Lloyd Emerson, Ph.D.

EDUCIATION:

- 1983 Ph.D., Immunology and Microbiology;
Medical University of South Carolina, Charleston, SC
- 1976 M.S., Biology,
State University of New York, Brockport, NY
- 1974 B.S., Biology,
SUNY, Brockport, NY
- 1972 A.S., Monroe Community College, Rochester, NY

AWARDS AND ACCOMPLISHMENTS:

- 1974 Assistantship, Monroe County Cancer and Leukemia Society
- 1980 Society of Experimental Biology and Medicine, Research Award
- 1984 Postdoctoral Research Award, MUSC
- 1984 Research Foundation of South Carolina Award
- 1989 Co-Organized international symposium entitled "Endothelial Cells in Development and Disease" November 19-21 ,1989, Crystal City, VA.
Organizers: David L. Emerson; George R. Martin, NIH; Daniel B. Rifkin, NYU

PROFESSIONAL EXPERIENCE:

- 2005-2008 Vice President, Cancer Biology,
Tapestry Pharmaceuticals
Boulder, Colorado
- 2001-2005 Senior Director of *In Vivo* Pharmacology and Translational Research
OSI Pharmaceuticals Inc.
Boulder, Colorado
- 1999-2001 Senior Director of Pharmacology,
Gilead Sciences Inc.
Boulder, Colorado
- 1997-1999 Director, Cancer Biology, Pharmacology;

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NeXstar Pharmaceuticals, Inc.
Boulder, Colorado

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| 1991-1997 | Group Leader, Tumor Biology, Dept. of Pharmacology
Glaxo Research Institute
Research Triangle Park, North Carolina |
| 1989-1991 | Principal Scientist, Department of Tumor Biology
Schering-Plough Research
Bloomfield, New Jersey |
| 1987- 1989 | Senior Scientist, Department of Tumor Biology
Schering-Plough Research
Bloomfield, New Jersey |
| 1985-1987 | Research Assistant/Professor
Department Basic and Clinical Immunology and Microbiology
Medical University of South Carolina
Charleston, South Carolina |
| 1983-1985 | Postdoctoral Fellow, Department of Immunology
MUSC, Charleston, South Carolina |

SOCIETY MEMBERSHIPS:

American Association for the Advancement of Science
American Society for Microbiology
American Association for Cancer Research

US PATENTS AND APPLICATIONS:

1. US 6,740,335 “Liposomal camptothecin formulations” Moynihan; Karen Lewis; Emerson; David Lloyd; Chiang; Su-Ming ; Hu; Ning; May 25, 2004.
2. US 6,689,381 “Liposomal benzoquinazoline thymidylate synthase inhibitor formulations” Ashvar, Claudine S.; Chiang, Su-Ming; Emerson, David L.; Hu, Ning; Jensen, Gerard M. February 10, 2004.
3. US 2004/0057990 “Liposomal benzoquinazoline thymidylate synthase inhibitor formulations” Ashvar, Claudine S.; Chiang, Su-Ming; Emerson, David L.; Hu, Ning; Jensen, Gerard M.
4. US 60/894,169 filed March9, 2007 “ Method of Treatment of Brain Cancer with TPI 287” Emerson, David L.; Jones, Mark; Bell, Carol; Brown, Eric.

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PUBLISHED WORKS (Abstracts not included):

1. Bank, H.L., Davis, R.F., Emerson, D., "Cryogenic preservation of isolated rat islets of langerhans: Effect of cooling and warming rates" *Diabetologia* 16:195-199 **1979**.
2. Emerson, D.L., Chapuis-Cellier, C., Arnaud, P., "Horizontal two-dimensional (iso-dalt) electrophoresis: Use of agarose isoelectric focusing and SDS gel electrophoresis in an exponential gradient for characterization of plasma proteins" *Electrophoresis* 1:159-163 **1980**.
3. Emerson, D.L., Galbraith, R.M., "Cleavage of purified C3 by immobilized trypsin" *Clinical Chimica Acta* 122:305-312 **1982**.
4. Kantor, R.R.S., Galbraith, R.M., Emerson, D.L., Galbraith, G.M.P., "Placental alkaline phosphatase is a major specificity in antisera raised to human trophoblast membranes" *American Journal of Reproductive Immunology* 1:336-339 **1981**.
5. Emerson, D.L., Kantor, R., Arnaud, P., Galbraith, R.M., "Studies of the normal human placental syncytiotrophoblast membrane: A combined immunological and physicochemical approach" *American Journal of Reproductive Immunology* 3:31-42 **1983**.
6. Kantor, R.R.S., Galbraith, R.M., Emerson, D.L., Galbraith, G.M.P., "Inhibition of lymphocyte activation by antisera to embryonic antigens shared with human placental trophoblast" *American Journal of Reproductive Immunology* 3:114-118 **1983**.
7. Emerson, D.L., Galbraith, R.M., McMillan, J.P., Higerd, T.B., "Preliminary immunological studies of ciguatera poisoning" *Archives of Internal Medicine* 143:1931-1933 **1983**.
8. Emerson, D.L., Galbraith, R.M., Arnaud, P., "Electrophoretic demonstration of interactions between Gc (Vitamin D-binding protein), actin and 25-hydroxycholecalciferol" *Electrophoresis* 5:22-26 **1984**.
9. Petrini, M., Emerson, D.L., Galbraith, R.M., "Linkage between surface immunoglobulin and the cytoskeleton of B lymphocytes may involve Gc protein" *Nature* 306:73-74 **1983**.
10. Arnaud, P., Emerson, D.L., Gianazza, E., "Interaction of 2-HS-glycoprotein with immobilized triazine dyes." *Biochimica et Biophysica Acta* 749:270-275 **1983**.
11. Emerson, D.L., Arnaud, P., Galbraith, R.M., "Evidence of increased Gc-actin complexes in pregnant serum: A possible result of trophoblast embolism" *American Journal of Reproductive Immunology* 4:185-189 **1983**.
12. Gianazza, E., Emerson, D.L., Dykes, D., Arnaud, P., "The genetic variants of group-specific component (Vitamin D-binding protein) possess different binding characteristics for immobilized Cibacron Blue 3-GA" *Biochemical Journal* 218:969-973 **1984**.

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13. Petrini, M., Galbraith, R.M., Werner, P.A.M., Emerson, D.L., Arnaud, P., "Gc (Vitamin D-binding protein) binds to cytoplasm of all human lymphocytes, and is expressed on B-cell membranes" *Clinical Immunology Immunopathology* 31:282-295 **1984**.
14. Lee, W.M., Emerson, D.L., Werner, P.A.M., Arnaud, P., Goldschmidt-Clermont, P., Galbraith, R.M., "Decreased serum Gc levels and increased Gc:actin complexes in serum of fulminant hepatic necrosis" *Hepatology* 5:271-275 **1985**.
15. Arnaud, P., Gianazza, E., Emerson, D.L., Boutin, B., "Combined pseudo-ligand affinity chromatography as a general method for plasma protein purification" In: *Protides of Biological Fluids* (H. Peters, ed.), Pergamon Press, Vol. 32, pp. 1117-1120 **1984**.
16. Laurent, P., Emerson, D.L., Allen, R.C., Arnaud, P., "Recent findings on the isoelectric points of human C-reactive protein" In: *Marker Proteins in Inflammation II*, (edited by P. Arnaud, J. Bienvenue and P. Laurent), Walter de Gruyter, Berlin, New York, pp. 43-46, **1984**.
17. Emerson, D.L., Werner, P.A.M., Cheng, M.H., Galbraith, R.M., "Presence of Gc (Vitamin D-binding protein) and interactions with actin in human placental tissue" *American Journal of Reproductive Immunology and Microbiology* 7:15-21 **1985**.
18. Petrini, M., Galbraith, R.M., Emerson, D.L., Nel, A.E., Arnaud, P., "Structural studies of T-lymphocyte Fc-receptors: Association of Gc protein with IgG binding to Fc gamma" *Journal of Biological Chemistry* 260:1804-1810 **1985**.
19. Goldschmidt-Clermont, P.J., Galbraith, R.M., Emerson, D.L., Werner, P.A.M., Lee, W.M., "Effects of ligand binding upon measurement of Gc by rocket immunoelectrophoresis: Implications for protein determination and for studies of protein/ligand interactions" *Electrophoresis* 6:155-161 **1985**.
20. Goldschmidt-Clermont, P.J., Galbraith, R.M., Emerson, D.L., Marsot, F., Nel, A.E., Arnaud, P., "Tertiary complex formation between G-actin, Gc and DNase: Evidence for two separate binding sites on the G-actin molecule" *Biochemical Journal* 228:471-477 **1985**.
21. Goldschmidt-Clermont, P.J., Galbraith, R.M., Emerson, D.L., Werner, P.A.M., Nel, A.E., Lee, W.M., "Accurate quantitation of native Gc in serum and estimation of endogenous Gc:G-actin complexes by rocket immunoelectrophoresis" *Clinical Chimica Acta* 148:173-183 **1985**.
22. Emerson, D.L., Werner, P.A.M., Cheng, M.H., Galbraith, R.M., "Distribution and interactions of D-binding protein (Gc) and actin in human placental tissue" Sixth International Vitamin D Workshop, Walter DeGruyter and Co., Berlin, pp. 660-661 **1985**.
23. Goldschmidt-Clermont, P.J., Galbraith, R.M., Emerson, D.L., Lee, W.M., "Evidence of circulating Gc:G-actin complexes in health and disease" Sixth International Vitamin D Workshop, Walter DeGruyter and Co., Berlin, pp. 1103-1104 **1985**.

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24. Galbraith, R.M., Nel, A.E., Emerson, D.L., "Apparent vertical displacement of Gc protein in the membrane of normal T lymphocytes" Sixth International Vitamin D Workshop, Walter DeGruyter and Co., Berlin, pp. 697-698 **1985**.
25. Nel, A.E., Petrini, M., Emerson, D.L., Galbraith, R.M., "Altered configuration of D-binding protein (Gc) on membranes of abnormal and malignant B lymphocytes" Sixth International Vitamin D Workshop, Walter DeGruyter and Co., Berlin, pp. 691-692 **1985**.
26. Nel, A.E., Navailles, M., Emerson, D.L., Goldschmidt-Clermont, P.J., Pathak, S.K., Tsang, K.Y., Galbraith, R.M., "Altered configuration of Gc on the plasma membrane of transformed and malignant human B lymphocytes" *Clinical Immunology and Immunopathology* 37:191-202 **1985**.
27. Krayer, J., Emerson, D.L., Goldschmidt-Clermont, P.J., Galbraith, R.M., "Qualitative and quantitative studies of Gc (Vitamin D-binding protein) in normal and abnormal saliva" *Journal of Periodontal Research* 22:259-263 **1987**.
28. Goldschmidt-Clermont, P.J., Allen, R.C., Nel, A.E., Emerson, D.L., Day, J.R., Galbraith, R.M., "Gc (Vitamin D-binding protein) binds the 33.5K tryptic fragment of actin" *Life Sciences* 38:735-742 **1986**.
29. Galbraith, G.M.P., Emerson, D.L., Fedenberg, H.H., Gibbs, C.J., Gajdusek, D.C., "Antibodies to neurofilament protein in retinitis pigmentosa" *Journal of Clinical Investigation* 78:865-869 **1986**.
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33. Lee, W.M., Emerson, D.L., Young, W.O., Goldschmidt-Clermont, P.J., Jollow, D.J., Galbraith, R.M., "Diminished serum group-specific component (Gc) protein levels and increased Gc:G-actin complexes in a Hamster model of fulminant hepatic necrosis (FHN)" *Hepatology* 7:825-830 **1987**.
34. Chou, Y.K., Emerson, D.L., Fedenberg, H.H., "Characterization of a Macrophage-derived Interleukin 1 inhibitor and preparation of its specific antiserum" *Scandinavian Journal of Immunology*, Sep 24(3) 291-296, 1986.

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35. Galbraith, G.M.P., Miller, D., Emerson, D.L., “Western blot analysis of antibody reactivity with human melanoma cell antigens in patients with alopecia areata and vitiligo” *Clinical Immunology and Immunopathology* 48: 317-324 **1988**.
36. Young, W.O., Goldschmidt-Clermont, P.J., Emerson, D.L., Lee, W.M., Jollow, D.J., Galbraith, R.M., “Correlation between extent of liver damage in fulminant hepatic necrosis and complexing of circulating Gc (Vitamin D-binding protein)” *The Journal of laboratory and clinical medicine* 110:83-90 **1987**.
37. Lee, W.M., McLeod, L., Martin, K., Emerson, D.L., Galbraith, R.M., “Antibodies to polymerized human serum albumin in acute and chronic liver disease” *Hepatology* 7:906-912 **1987**.
38. Singh, V.K., Fudenberg, H.H., Emerson, D.L., Coleman, M., “Immunodiagnosis and Immunotherapy in Autistic Children” *Annals of the New York Academy of Sciences* 540:602-604 **1988**.
39. Schwarz, M.A., Mitchell, M., Emerson, D.L., “Reconstituted Basement Membrane Enhances Neurite Outgrowth in PC12 Cells Induced by Nerve Growth Factor” *Cell Growth & Differentiation* 1:313-318 **1990**.
40. Nielsen, L.L., Gurnani, M., Porter, G., Trexler, S., Emerson, D., and Tyler, R.D., “Development of a nude mouse model of ras-mediated neoplasia using WR21 cells from a transgenic mouse salivary tumor” *In Vivo* 8: 295-302 **1994**.
41. Emerson, D.L., Besterman, J.M., Brown, H.R., Evans, M.G., Leitner, P.P., Luzzio, M.J., Shaffer, J.E., Sternbach, D.D., Uehling, D., Vuong, A., “*In Vivo* antitumor activity of two new seven-substituted water-soluble camptothecin analogues” *Cancer Research* 55: 603-609 **1995**.
43. Luzzio, M.J., Besterman, J.M., Emerson, D.L., Evans, M.G., Lackey, K., Leitner, P.L., McIntyre, G., Morton, B., Myers, P.L., Peel, M., Sisco, J.M., Sternbach, D.D., Tong, W.Q., Truesdale, A., Uehling, D.E., Vuong, A., Yates, J., “Synthesis and antitumor activity of novel water soluble derivatives of camptothecin as specific inhibitors of Topoisomerase I” *Journal of Medicinal Chemistry* 38: 395-401 **1995**.
44. Uehling, D.E., Suganthini, S.N., Croom, D., Emerson, D.L., Leitner, P.P., Luzzio, M.L., McIntyre, G., Morton, B., Profeta, S., Sisco, J., Sternbach, D.D., Tong, W-Q., Vuong, A., Besterman, J.M., “Synthesis, Topoisomerase I inhibitory activity, and *in vivo* evaluation of 11-azacamptothecin analogs” *Journal of Medicinal Chemistry* 38 1106-1118 **1995**.
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46. Witherspoon, S. M., Emerson, D. L., Kerr, B. M., Dalton, W. S., Wissel, P.S., “Flow cytometric assay of modulation of P-glycoprotein function in whole blood by the MDR inhibitor GG918” *Clinical Cancer Research* 2:7-12 **1996**.
47. Conway, J.G., Trexler, S.J., Wakefield, J.A., Marron, B.E., Emerson, D.L., Bickett, D.M., Deaton, D.N., Garrison, D., Elder, M., McElroy, A., Willmott, N., Dockerty, A.J.P., McGeehan, G.M., “Effect of matrix metalloproteinase inhibitors on tumor growth and spontaneous metastasis” *Clinical Experimental Metastasis* 14:115-124 **1996**.
48. Lackey, K., Sternbach, D.D., Croom, D.K., Emerson, D.L., Evans, M.G., Leitner, P.L., Luzzio, M.J., McIntyre, G., Vuong, A., Yates, J., Besterman, J.M., “Water soluble inhibitors of Topoisomerase I: Quaternary salt derivatives of camptothecin” *Journal of Medicinal Chemistry* 39:713-719 **1996**.
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51. Emerson, D.L., “Liposomal delivery of camptothecins” *Pharmaceutical Science and Technology Today* 3(6):205-209 **2000**.
52. Emerson, D.L., Bendele, R., Brown, E., Chiang, S., Desjardins, J.P., Dihel, L.C., Gill, S.C., Hamilton, M., LeRay, J.D., Moon-McDermont, L., Moynihan, K., Richardson, F.C., Tomkinson, B., Luzzio, M.J., Bacanari, D., “Antitumor efficacy, pharmacokinetics, and biodistribution of NX 211: A low-clearance liposomal formulation of Lurtotecan” *Clinical Cancer Research* 6:2903-2912 **2000**.
53. Desjardins, J.P., Abbott, E.A., Emerson, D.L., Tomkinson, B.E., LeRay, J.D., Brown, E.N., Hamilton, M., Dihel, L., Ptaszynski, M., Bendele, R.A., Richardson, F.C., “Biodistribution of NX211, liposomal lurtotecan, in tumor-bearing mice” *Anti-Cancer Drugs* 12:235-245 **2001**.
54. Holy, A., Otova B., Budesinsky, M., Emerson, D., Wiles, M.E. “O-Phosphonomethylcholine, its analogues, alkyl esters, and their biological activity” *J. Med. Chem.* 44:4462-4467 **2001**.
55. Tomkinson, B., Bendele, R., Giles, F.J., Brown, E., Gray, A., Hart, K., LeRay, J.D., Meyer, D., Pelanne, M., and Emerson, D.L., “OSI-211, a novel liposomal Topoisomerase I inhibitor, is active in SCID mouse models of human AML and ALL” *Leukemia research* 27(11):1039-1050 **2003**.

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56. Desjardins, J., Emerson, D.L., Colagiovanni, D.B., Abbott, E., Brown, E.N., Drolet, D.W. "Pharmacokinetics, safety, and efficacy of a liposome encapsulated thymidylate synthase inhibitor, OSI-7904L [(S)-2-[5-[(1,2-dihydro-3-methyl-1-oxobenzo[f]quinazolin-9-yl)methyl]-amino-1-oxo-2-isoindolynl]-glutaric acid] in mice" *The Journal of pharmacology and experimental therapeutics* 309(3):894-902 **2004**.
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60. Mulvihill, M.J., Kan, J.L., Cooke, A., Bhagwat, S., Beck, P., Bittner, M., Cesario, C., Keane, D., Lazarescu, V., Nigro, A., Nillson, C., Panicker, B., Smith, V., Srebernak M., Sun, F.L., O'Connor M., Russo, S., Fischetti, G., Vrkljan, M., Winski, S., Castelhana, A.L., Emerson, D., Gibson, N.W., "3-[6-(2-Dimethylamino-1-imidazol-1-yl-butyl)-naphthalen-2-yloxy]-2,2-dimethyl-propionic acid as a highly potent and selective retinoic acid metabolic blocking agent" *Bioorg. Med. Chem. Lett.* 16(10):2729-33 **2006**