

CURRICULUM VITAE*

Name: Paul A. Seligman, M.D.

Title: Professor of Medicine

Birthplace: Buffalo, New York

Present Address: University of Colorado Anschutz Medical Campus
Department of Medicine/Division of Hematology
12700 E. 19th Avenue, Room 9122
Building RC2, MS B170
Aurora, CO 80045

Citizenship: U.S. Citizen

Education: Michigan State University, East Lansing, Michigan - B.S. - 1968
State University of New York at Buffalo School of Medicine,
Buffalo, NY - M.D. - 1972

Board Certification: Internal Medicine - 1975
Hematology - 1980
Medical Oncology – 1983

Licensure: New York - 1972
Colorado - 1978

Academic Appointments:

1972 - 1973 Intern in Medicine, State University of New York at Buffalo Affiliated Hospitals, Buffalo, NY
1973 - 1975 Resident in Medicine, State University of New York at Buffalo Affiliated Hospitals
1975 - 1978 Fellow in Hematology/Oncology, Washington University School of Medicine, St. Louis, MO
1978 - 1984 Assistant Professor of Medicine, University of Colorado School of Medicine, Denver, CO
1984 - 1991 Associate Professor of Medicine, University of Colorado School of Medicine
1991 - Present Professor of Medicine, University of Colorado School of Medicine, Aurora, CO
2004 - Received Endowed Chair - Ruth and Ralph Seligman Endowed Chair in Hematology Research

Major Scientific Interest: Cancer cell proliferation, cell surface receptors and the cellular uptake of iron

- Updated 2/11/16

Honors and Awards:

- 1972 Alpha Omega Alpha
1988 Sophomore Class Teaching Award
1991 Colorado Permanente Teaching Award
1994 Colorado Permanente Teaching Award
2008 Department of Medicine Student Teaching Award
2010 Adult Ambulatory Care Clerkship Appreciation Award for Outstanding Dedication to Student Teaching and Education
2011 Adult Ambulatory Care Clerkship Appreciation Award for Outstanding Dedication to Student Teaching and Education

Professional Society Memberships:

- American Federation for Clinical Research
American Society for Clinical Investigation (elected in 1984)
Western Society for Clinical Investigation
Academy of Hospice Physicians (founding member)

Gordon Conferences:

- 1980 *Lysosome Conference*: Spoke on topic entitled "The Isolation of the Transferrin Receptor"
1983 *Red Cell Conference*: Session Chairman for session entitled "The Transferrin Receptor"

Patents Held:*Immunoassay for Measurement of Reticulocytes, and Immunoreactive Reagents for Use Therein*

Inventors: Robert H. Allen, Paul A. Seligman
Patent No.: 4,332,785
Date of Issue: June 1, 1982

Immunoassay for Measurement of Reticulocytes, and Immunoreactive Reagents for Use Therein

Inventors: Robert H. Allen, Paul A. Seligman
Patent No: 4,447,547
Date of Issue: May 8, 1984

Manuscript Reviews:

Blood
Clinical Chemistry
Journal of the American Medical Association
American Journal of Clinical Nutrition
Journal of American Geriatric Society
New England Journal of Medicine
Annals of Internal Medicine
Journal of Nutritional Biochemistry
Cancer
Laboratory and Clinical Medicine
Journal of Biologic Chemistry

Other Positions Held:

1981-1991 Director Hematology/Oncology Fellowship Training Program, University of Colorado Health Sciences Center
1983 Secretary/Treasurer, National Blood Club
1984-2013 Medical Director at the Hospice of St. John, Lakewood, Colorado
1988-2007 Course Director, Medicine 7000-Clerkship in Internal Medicine for Jr. Medicine Students
Co-Director for the new course called, "The Hospitalized Patient"
1988-2006 Director, Medicine elective courses for Senior Medical Students
1983-2005 Director, specific elective course in Hospice Medicine for Senior Medical Students
2004-Present Course Director, Medicine 8014 – Hematology/Oncology course
1994-2001 Coordinator of Medical School Curriculum
Chair of Curriculum Committee and Curriculum Review Committee
2000-2002 Co-Director of new course for Fourth year students entitled, "Preparing for Residency"
2001-2003 Coordinator of Fourth year Curriculum, University of Colorado School of Medicine
2003-2006 Director of new course for Fourth year students entitled, "Preparing for Residency"
2004-2006 Elected Secretary of the Faculty Senate

Ad Hoc Committees: Radiation Safety, 1983-1986
Clinical Research Scientific Advisory Committee, 1986-1989
Curriculum Committee and New Committee called "Clinical Block Committee"
1988

GRANT SUPPORT

PAST SUPPORT (Extramural Since 2000):

Source: National Institutes of Health
Identifying Number: 5R25CA67066
Project Title: "Comprehensive, Educational Program in Palliative Care"
Principal Investigator: Paul A. Seligman, M.D.
Percent of Effort: 12½%
Annual Direct Costs Requested: \$70,000
Proposed Budget Period: 09/30/94 – 01/31/01

Source: R & D Systems
Identifying Number: RDS P CT02 – Clinical Trial
Project Title: "Soluble Transferrin Receptor Concentration in the Serum of Healthy Adults"
Principal Investigator: Paul A. Seligman, M.D.
Annual Direct Costs Requested: \$9,500
Proposed Budget Period: 03/01/95-12/31/00

Source: R & D Systems
Identifying Number: RDS P CT03 – Clinical Trial
Project Title: "Soluble Transferrin Receptor in the Differential Diagnosis of Anemia"
Principal Investigator: Paul A. Seligman, M.D.
Current Support: \$17,500
Current Budget Period: 03/01/95-12/31/00

Source: Schein Pharmaceuticals
Identifying Number: Clinical Trail
Project Title: "Proposal for InVitro & In Vivo Analysis of Ferrlecit in Serum Samples"
Principal Investigator: Paul A. Seligman, M.D.
Annual Direct Costs Requested: \$37,800
Proposed Budget Period: 08/01/98-07/31/99
Additional Direct Costs Request: \$10,000
Additional Budget Period: 06/01/00-12/31/01

ACTIVE SUPPORT:

Ruth and Ralph Seligman Endowed Chair in Hematology Research 2004-Present
Paul A. Seligman Hematology Research Endowment 2004-Present

BIBLIOGRAPHY

Peer-Reviewed Manuscripts

1. **Seligman PA**, Plaut ME, Lippes J, Montes M. Tubo-Ovarian actinomycosis. NY State J Med 76:278-280, 1976 (PMID: 1061880).
2. **Seligman PA** and Allen RH. Characterization of the receptor for transcobalamin II isolated from human placenta. J Biol Chem 253:1766-1772, 1978 (PMID: 632241).
3. **Seligman PA**, Schleicher RB, Allen RH. Isolation and characterization of the transferrin receptor from human placenta. J Biol Chem 254:9943-9946, 1979 (PMID: 226547).
4. Murphy WA, **Seligman PA**, Tillack T, Eichling JO, Teitelbaum SL, Joist H. Osteosclerosis, osteomalacia, and bone marrow aplasia: A combined late complication of thorotrast. Administration. Skelet Radiol 3:234-238, 1979.
5. **Seligman PA**, Steiner LL, Allen RH. Studies of a patient with megaloblastic anemia and an abnormal transcobalamin II. N Engl J Med 303:1209-1212, 1980 (PMID: 7421948).
6. Frazier JL, Caskey JH, Yoffee M, **Seligman PA**. Studies of the transferrin receptor on both human reticulocytes and nucleated human cells in culture. Comparison of factors regulating receptor density. J Clin Invest 69:853-865, 1982 (PMID: 6804495).
7. **Seligman PA**, Caskey JH, Frazier JL, Zuker RM, Podell ER, Allen RH. Measurements of iron absorption from prenatal multivitamin-mineral supplements. Obstet Gynecol 61:356-362, 1983 (PMID: 6823378).
8. **Seligman PA**, Allen RH, Kirchanski SJ, Natale PJ. Automated analysis of reticulocytes using fluorescent staining with both acridine orange and an immunofluorescence technique. Am J Hematol 14:57-66, 1983 (PMID: 6301264).
9. Caskey JH, Jones C, Miller Y, **Seligman PA**. Human ferritin is assigned to chromosome 19. Proc Natl Acad Sci USA 80:482-496, 1983 (PMID: 6572903).
10. Miller YE, Jones C, Scoggin CH, Morese H, **Seligman PA**. Chromosome 3q (22-ter) encodes the human transferrin receptor. Am J Hum Genet 35:573-583, 1983 (PMID: 6309000).
11. Chitambar CR, Massey EJ, **Seligman PA**. Regulation of transferrin receptor expression on human leukemic cells during proliferation and induction of differentiation: Effects of gallium and dimethylsulfoxide. J Clin Invest 72:1314-1325, 1983 (PMID: 6313760).
12. **Seligman PA**, Butler CD, Massey EJ, Kaur JA, Brown JP, Plowman GD, Miller YE, Jones C. The p97 antigen is mapped to the q24-qter region of chromosome 3; the same region as the transferrin receptor. Am J Hum Genet 38:540-548, 1986 (PMID: 3010712).
13. Chitambar CR and **Seligman PA**. Effects of different transferrin forms on transferrin receptor expression, iron uptake and cellular proliferation of human leukemic HL60 cells: Mechanisms responsible for specific cytotoxicity of transferrin-gallium. J Clin Invest 78:1538-1546, 1986 (PMID: 3465751).
14. Vostrejs M, Moran P, **Seligman PA**. Transferrin synthesis by small cell lung cancer cells acts as an autocrine regulator of cellular proliferation. J Clin Invest 82:331-339, 1988 (PMID: 2839550).
15. **Seligman PA**, Chitambar C, Vostrejs M, Moran PL. The effects of various transferrins on iron utilization by proliferating cells. Ann NY Acad Sci 526:136-140, 1988 (PMID: 3164599).
16. Moran PL and **Seligman PA**. Effects of transferrin-indium on cellular proliferation of human leukemia cell line. Cancer Res 49:4237-4241, 1989 (PMID: 2743310).
17. Yuan B, Klein M, Contiguglia R, Mishell J, **Seligman P**, Miller N, Molitoris B, Alfrey A, Shapiro J. The role of aluminum in the pathogenesis of anemia in an outpatient hemodialysis population. Ren Fail 11:91-96, 1989 (PMID: 2623200).
18. Kovar J, **Seligman PA**, Gelfand E. Differential growth inhibitory effects of gallium on B lymphocyte lines in high versus low iron concentrations. Cancer Res 50:5727-5730, 1990 (PMID: 2393846).

19. White S, Taetle R, **Seligman PA**, Rutherford M, Trowbridge IS. Combinations of anti-transferrin receptor monoclonal antibodies inhibit human tumor cell growth *in vitro* and *in vivo*: Evidence for synergistic antiproliferative effects. Cancer Res 50:6295-6301, 1990 (PMID: 2400993).
20. Dienhart D, Schmelter R, Lear J, Miller G, Glenn S, Bloedow D, Kasliwal R, Moran P, **Seligman P**, Murphy J, Kortright K, Bunn P Jr. Imaging of non-small cell lung cancers with a monoclonal antibody, KC-4G3, which recognizes a human milk fat globule antigen. Cancer Res 50:7068-7076, 1990 (PMID: 2170015).
21. **Seligman PA** and Crawford ED. Treatment of advanced transitional cell carcinoma of the bladder with continuous-infusion gallium nitrate. J Natl Cancer Inst 83:1582-1584, 1991 (PMID: 1960756).
22. **Seligman PA**, Kovar J, Schleicher RB, Gelfand EW. Transferrin-independent iron uptake supports B lymphocyte growth. Blood 78:1526-1531, 1991 (PMID: 1884019).
23. **Seligman PA**, Moran PL, Schleicher RB, Crawford ED. Treatment with gallium nitrate: Evidence for interference with iron metabolism *in vivo*. Am J Hematol 41:232-240, 1992 (PMID: 1337663).
24. **Seligman PA**, Kovar J, Gelfand EW. Lymphocyte proliferation is controlled by both iron availability and regulation of iron uptake pathways. Pathobiology 60:19-26, 1992 (PMID: 1543546).
25. Kovar J, **Seligman PA**, Gelfand EW. Inhibition of growth of the lymphocyte lines by deferoxamine under various iron-supply conditions. Folia Biol 39:29-39, 1993 (PMID: 8348983).
26. Brodie C, Siriwardana G, Lucas J, Schleicher R, Terada N, Szepesi A, Gelfand E, **Seligman PA**. Neuroblastoma sensitivity to growth inhibition by deferoxamine: Evidence for a block in the G1 phase of the cell cycle. Cancer Res 53:3968-3975, 1993 (PMID: 8358725).
27. **Seligman PA**, Schleicher RB, Siriwardana G, Domenico J, Gelfand EW. Effects of agents that inhibit cellular iron incorporation on bladder cancer cell proliferation. Blood 82:1608-1617, 1993 (PMID: 8364209).
28. Schwarz K, Zieber T, Sharma S, Clemens M, **Seligman P**. Activated THP-1 cells depress mitochondrial respiration in HEP G2 cells infected with influenza B virus. Mol Cell Probes 8:345-351, 1994 (PMID: 7877629).
29. Connelly K, Moss M, Parsons P, Moore E, Moore F, Giclas P, **Seligman P**, Repine J. Serum ferritin as a predictor of the acute respiratory distress syndrome. Am J Respir Crit Care Med 155:21-25, 1997 (PMID: 9001283).
30. Allen J, Backstrom K, Cooper J, Detwiler TC, Essex DW, Fritz R, Means RT, Meier PB, Pearlman S, Roitman-Johnson B, **Seligman PA**. Measurement of soluble transferrin receptor in serum of healthy adults. Clin Chem 44:35-39, 1998 (PMID: 9550555).
31. **Seligman PA**, Fink RM, Massey-Seligman EJ. Approach to the seriously ill or terminal cancer patient who has a poor appetite. Semin Oncol 25:33-34, 1998 (PMID: 9625381).
32. Nissenson A, Lindsay R, Swan S, **Seligman P**, Strobos J. Sodium ferric gluconate complex in sucrose is safe and effective in hemodialysis patients: North American clinical trial. Am J Kidney Dis 33:471-482, 1999 (PMID: 10070911).
33. Dwinnell B, Adams LJ, **Seligman PA**. Implementing national guidelines for the internal medicine clerkship: An ambulatory case workbook. Acad Med 74:588-589, 1999 (PMID: 10676208).
34. **Seligman PA** and Schleicher RB. Comparison of methods used to measure serum iron in the presence of iron gluconate or iron dextran. Clin Chem 45:898-901, 1999 (PMID: 10352001).
35. **Seligman PA**, Massey EJ, Fink RM, Nelson-Marten P, vonLobkowitz P. Practicing physicians' assessment of the impact of their medical school clinical hospice experience. J Cancer Educ 14:144-147, 1999 (PMID: 10512330).
36. Strobos J, Weeda O, **Seligman P**, Nissenson A. Transferrin oversaturation. Am J Kidney Dis 34:401-402, 1999 (PMID: 10465728).

37. **Seligman PA**, Moore GM, Schleicher RB. Clinical studies of HIP: an oral heme-iron product. Nutr Res 20:1279-1286, 2000.
38. **Seligman PA**. Hemochromatosis. Primary Care Case Rev 4:40-46, 2001.
39. Nissenson AR, Berns JS, Sakiewicz P, Ghaddar S, Moore GM, Schleicher RB, **Seligman PA**. Clinical evaluation of heme iron polypeptide: Sustaining a response to rHuEPO in hemodialysis patients. Am J Kidney Dis 42:325-330, 2003 (PMID: 12900815).
40. **Seligman PA**, Dahl NV, Strobos J, Kimko HC, Schleicher RB, Jones M, Ducharme MP. Single-dose pharmacokinetics of sodium ferric gluconate complex in iron-deficient subjects. Pharmacotherapy 24:574-583, 2004 (PMID: 15162891).
41. Kutner J, Metcalfe T, Vu K, Fink R, Nelson-Marten P, Armstrong J, **Seligman P**. Implementation of an ad hoc hospital-based palliative care consult service. J Pain Symptom Manage 28:526-528, 2004 (PMID: 15504629).
42. Medeiros B, **Seligman P**, Everson G, Forman L. Possible autoimmune thrombocytopenia associated with pegylated interferon-alpha2a plus ribavirin treatment for hepatitis C. J Clin Gastroenterol 38:84-86, 2004 (PMID: 14679335).
43. Singh M, Capocelli K, Marks J, Schleicher R, Finlayson C, **Seligman, P**. Expression of vascular endothelial growth factor and proliferation marker MIB1 are influenced by neoadjuvant chemotherapy in locally advanced breast cancer. Appl Immunohistochem Mol Morphol 13:147-156, 2005 (PMID: 15894927).
44. Urquhart A, Borges V, Rabinovitch R, Singh M, Robinson W, **Seligman P**, Arya J, Finlayson C, Elias A. A postmenopausal woman with early-stage breast cancer and borderline hormone-receptor staining. Oncology (Williston Park) 19:278, 283-284, 287 passim, 2005 (PMID: 15828548).
45. Menter A, Urquhart A, Borges V, Rabinovitch R, Singh M, Robinson W, **Seligman P**, Finlayson C, Elias A. A woman with primary breast cancer and a solitary sternal metastasis. Oncology (Williston Park) 20:1068-71, 1075, 1079-1080, 2006.
46. Warady B, **Seligman PA**, Dahl N. Single-dosage pharmacokinetics of sodium ferric gluconate complex in iron-deficient pediatric hemodialysis patients. Clin J Am Soc Nephrol 2:1140-1146, 2007 (PMID: 17942782).
47. Siriwardana G, **Seligman PA**. Two cell cycle blocks caused by iron chelation of neuroblastoma cells: separating cell cycle events associated with each block. Physiol Rep 1:e00176, 2013 (PMID: 24744856).
48. Siriwardana G, **Seligman PA**. Iron depletion results in Src kinase inhibition with associated cell cycle arrest in neuroblastoma cells. Physiol Rep 3:e12341, 2015 (PMID: 25825542).
49. An X, Zhang C, Sclafani RA, **Seligman P**, Huang M. The late-annotated small ORF LSO1 is a target gene of the iron regulon of *Saccharomyces cerevisiae*. Microbiology Open 4:941-951, 2015 (PMID: 26450372).

Book Chapters and Review Articles

1. **Seligman PA**. Hematologic and Oncologic Problems in the Elderly. In: Clinical Internal Medicine in the Aged. RW Schrier (Ed.), WB Saunders Company, Philadelphia, PA, 1982, p. 280.
2. **Seligman PA** and Hasiba, U. Hemorrhagic and Thrombotic Disorders. In: Current Medical Therapy. RW Schrier (Ed.), Raven Press, New York, NY, 1989, p. 324.
3. **Seligman PA**, Chitambar CR, Massey EJ. Structure and Regulation of the Transferrin Receptor. In: Frontiers in Biochemical and Biophysical Studies of Proteins and Membranes. TE Liu (Ed.), Amsterdam/Elsevier-Holland, 1983, p. 443-451.
4. **Seligman PA**. Structure and Function of the Transferrin Receptor. In: Progress in Hematology. EB Brown (Ed.), Vol. XIII, Grune and Stratton, Inc., New York, NY, 1983, p. 131-147.
5. **Seligman PA**, Caskey JH, Frazier JL, Zucker RM, Podell EA, Allen RH, Babior BM, Peters WA, Briden PA, Cetrulo CL. Iron Absorption in Pregnant and Non-Pregnant Women Given Prenatal Multi-vitamin-Mineral Supplements. A Multi-Clinic Report. Litho in USA, 1984, p. 1-14.
6. **Seligman PA** and Allen RH. Isolation of the Transferrin Receptor from Human Placenta. In: Methods in Enzymology. D Barnes and DA Sirbasku (Eds.), Academic Press, New York, NY, Vol. 147, 1987, p. 239-247.
7. **Seligman PA**, Klausner RD, Huebers HA. Molecular Mechanisms of Iron Metabolism. In: Molecular Basis of Blood Diseases. A Neinhuis, P Majerus, G Stamatoyannopoulos, P Leder (Eds.), Saunders, Philadelphia, PA, 1987, p. 219-244.
8. Bettag SM and **Seligman PA**. Iron Overload. In: Hematology/Oncology Secrets. ME Wood, and PA Bunn, Jr. (Eds.), Hanley & Belfus, Inc., Philadelphia, PA, 1994, p. 57-60.
9. Bridges K and **Seligman PA**. Disorders of Iron Metabolism. In: Blood: Practice and Principles of Hematology. RI Handin, SE Lux, TP Stossel (Eds.), Part 7: Red Blood Cells, JB Lippincott Company, Philadelphia, PA, 1995 p. 1433-1472.
10. **Seligman PA**. and Prochoda K. Geriatric Hospice Care. In: Geriatric Medicine. DW Jahnigan and RW Schrier (Eds.), Blackwell Science, Cambridge, MA, 2nd ed., 1996 p. 187-195.
11. **Seligman PA**. Hematologic Problems. In: Geriatric Medicine. DW Jahnigan and RW Schrier (Eds.), Blackwell Science, Cambridge, MA, 2nd ed., 1996 p. 781-788.
12. Pickett CE and **Seligman PA**. Multiple Myeloma. In: Oncology Nursing Secrets. RA Gates and RM Fink (Eds.), Hanley & Belfus, Inc., Philadelphia, PA, 1997 p. 108-112.
13. Prochoda KP and **Seligman PA**. Palliative Care. In: Oncology Nursing Secrets. RA Gates and RM Fink (Eds.), Hanley & Belfus, Inc., Philadelphia, PA, 1997, p. 304-311.
14. **Seligman PA**. Hematology and Oncology Cases. In: The Internal Medicine Casebook: Real Patients, Real Answers. RW Schrier (Ed.), Little, Brown and Company, New York, NY, 1999.
15. **Seligman PA** and Ross DD. Palliative care education – Can we respond to the challenge? [Guest Editorial] J Cancer Educ 14:127-128, 1999.
16. **Seligman PA**, Dignon C, Ross DD, Steen PD, Abrahm JL, Boston PH, Ferris F, Foley J, Nelson-Marten P, O'Mara AM, Von Gunten CF, Weissman DE and the AACE Multi-Institutional Palliative Cancer Education Section. Development of a teaching module for quality-of-life assessment of terminal patients. [Invited Monograph] J Cancer Educ 14:129-131, 1999.
17. **Seligman PA** and Ross DD. Palliative Care Section. J Cancer Educ 17:66-67, 2002.
18. **Seligman PA**. Iron Deficiency. In: Clinical Hematology. NS Young, SL Green, KA High (Eds.), Mosby Elsevier, Philadelphia, PA, 2006, p. 231-241.
19. **Seligman PA**. Hematology and Oncology. In: The Internal Medicine Casebook: Real Patients, Real Answers. RW Schrier (Ed.), Lippincott Williams & Wilkins, Philadelphia, PA, 2007, p. 270-336.