

CURRICULUM VITAE

Name: Charles S. Greenberg, M.D.

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Medical University of South Carolina
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P.O. Box 250623
Charleston, SC 29425

EDUCATION:

University of Pennsylvania
Philadelphia, PA
1969 – 1972
B.A.

Hahnemann Medical College (Currently named Drexel University School of Medicine)
Philadelphia, PA
1972 – 1976
M.D.

University of Minnesota
Minneapolis, MN
1976 – 1977
Internship

University of Minnesota
Minneapolis, MN
1977 – 1979
Residency

University of California
San Francisco, CA
1979 – 1981
Fellowships: Hematology/Oncology

Northern California Affiliate
1981 - 1983
American Heart Association Fellowship,

FACULTY APPOINTMENTS:

Instructor in Medicine
University of California

San Francisco, CA
1982 – 1983

Assistant Professor of Medicine
Duke Medical Center
Durham, NC
1983 – 1989

Director, Coagulation Laboratory
Duke Medical Center
Durham, NC
1983 – 1991

Director, Coagulation Program
Duke Medical Center
Durham, NC
1983 – 1999

Member
UNC Center for Thrombosis & Hemostasis
Durham, NC
1991 – 2009

Member
Duke Comprehensive Cancer Center
Durham, NC
1987 – 2009

Member
Stroke Center, Duke Medical Center
Durham, NC
1986 – 2009

Member
Duke University Program in Cell & Molecular Biology
Durham, NC
1993 – 2009

Director
Thrombosis Research Program
Durham, NC
1994 – 1999

Scientific Director
Duke Sickle Cell Center
Durham, NC
1994 – 2000

Director
Thrombosis Research Center
Durham, NC
1999 – 2004

Assistant Professor of Medicine
Duke University Medical Center
1983 – 1989

Associate Professor of Medicine
Duke University Medical Center
1989 – 1997

Professor of Medicine and Pathology (with tenure)
Duke University Medical Center
1997 – 2009

Professor of Medicine
Medical University of South Carolina
Hematology/Oncology Division
Charleston, SC
2009 - Present

HOSPITAL APPOINTMENTS:

Active Staff
Duke University Medical Center
Durham, NC
1983 – 2009

Active Staff
Medical University of South Carolina
Charleston, South Carolina
2009 – Present

ADMINISTRATIVE RESPONSIBILITIES:

Member – Stroke Center
Member – Duke Cancer Center
Member – Heart Center
Member – Molecular Medicine Committee, Department of Medicine
Member – Institutional Review Board for Clinical Studies

BOARD CERTIFICATIONS:

1976 National Board of Medical Examiners, I-III
1979 American Board of Internal Medicine
1982 American Board of Internal Medicine (Hematology)
1982 Board Eligible Oncology

LICENSURE:

1979 California
1983 North Carolina
2009 South Carolina

MEMBERSHIPS IN PROFESSIONAL SOCIETIES:

American Association of Physicians
American Society of Clinical Investigation
American Society of Hematology
American Federation for Clinical Research
International Society on Thrombosis and Haemostasis
Thrombosis Council, American Heart Association
Scientific Subcommittee on Thrombosis, American Society of Hematology
American Society of Biological Chemistry and Molecular Biology
Protein Society

TEACHING RESPONSIBILITIES INCLUDING CONTINUING EDUCATION:

Attending Physician, Hematology Service – Duke University Medical Center
Attending Physician Duke Hospital
Attending Physician Duke Sickle Cell Center
Attending Physician Durham Regional Hospital
Summer on the Edge High School Student Sponsor
Stroke Center Lecturer
Sickle Cell Outreach Lecturer
Molecular Basis of Disease Lecturer – Pathology
Clinical Laboratory Practice Course: School of Medicine

AWARDS AND HONORS:

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|------|--|
| 1972 | Cum Laude, University of Pennsylvania |
| 1972 | Special Honors, Molecular Biology |
| 1982 | California Affiliate – Dorothy Penrose Stout Research Award,
American Heart Association |
| 1986 | Established Investigator Award – American Heart Association |
| 1986 | Sigma Xi |
| 1992 | Focused Giving Award, Johnson and Johnson |
| 1998 | American Association of Physicians |
| 2000 | Alumnus of the Year: MCP/Hahnemann University |

PEER REVIEW ACTIVITIES:

Journal Reviewer: Journal of Biological Chemistry
Biochemistry
Journal of Clinical Investigation
Blood
Immunology
New England Journal of Medicine
Ann. Int. Med
Anesthesiology
American Journal of Medicine
Southern Medicine Journal
Thrombosis and Haemostasis
Blood Coagulation
Fibrinolysis, Thrombosis Research
Am. J. Medicine

Editorial Board Member: Thrombosis Research, 1987 – 1992

VA Merit Review Board: Hematology Section, 1992 – 1995

PREVIOUSLY FUNDED GRANTS;

5P60HL028391-150015 Molecular Basis of Vaso Occlusion in Sickle Cell Disease

5R01HL032342 Characterization of Vascular Transglutaminases

5R01CA071753	Tissue Transglutaminase and Breast Cancer Biology
5R01HL038245	Role of Factor XIII Binding to the Hemostatic Plug
3P50CA068438	Inhibitor of Angiogenesis and matrix Formation
5P50HL026309	Role of Transglutaminase in Vascular Disease had individual grant as part of this program project Specialized Center of Research in Thrombosis a Duke-UNC collaboration
5U19AI067798	Role of Transglutaminase inhibitors to modify radiation fibrosis 2 year pilot grant Centers for Medical Countermeasures Against Radiation.

CLINICAL STUDIES:

- Clinical Utility of D-dimer in Sickle cell Disease
- FDA study to evaluate Latex agglutination assay for D-dimer
- FDA study to evaluate PFA-100 analyzer to replace bleeding time assays.
- PIOPED study to measure D-dimer in pulmonary embolism
- Core lab to measure Org 10172 levels for stroke treatments NIH sponsored
- D-dimer levels to quantitate disease severity index in sickle cell disease
- Use of thrombin generation assay in whole blood to monitor hypercoagulable state (active)
- D-dimer to monitor effect of novel antiangiogenic agents. Collaborated with Genentech and anti-VEGF studies.
- D-dimer measurements to evaluate benign and malignant breast masses.
- Effect of transglutaminase inhibitors on gene expression by monocytes stimulated by inflammatory cytokines ex vivo

RESEARCH INTERESTS:

Basic:

1. Transglutaminase structure and function
2. Molecular genetics of thrombosis
3. Angiogenesis
4. Cancer metastasis

Applied:

1. Clinical utility of fibrin D-dimer assays
2. Gene expression in thrombosis for diagnosis and treatment

PATENTS:

1. United States Patent 5328898: Factor XIIIa fibrin binding fragments US Patent Issued on July 12, 1994: used to prove angiotensin receptors were crosslinked in Atherosclerosis: Cell 2004 Oct 29, 119(3):343-54. Factor XIIIa transglutaminase crosslinks AT1 receptor dimmers of monocytes at the onset of atherosclerosis.
2. United States Patent 6972122: Contrast enhancement agent for magnetic resonance imaging US Patent Issued on December 6, 2005. Currently collaborating with Stanford Research Institute on developing method to monitor the tumor boundaries and wound healing.
3. United States Patent application filing US 2004/0043462 A1 Chamber for invivo screening of angiogenesis and tumor growth: Chamber used to monitor tumor growth, wound healing and angiogenesis.

MEETINGS ORGANIZED:

International Conference, sponsored by Duke Comprehensive Cancer Center on Thrombosis and Cancer, entitled: "Cancer, Angiogenesis and Thrombosis" held at the Grove Park Inn in Asheville, NC in 2002.

PUBLICATIONS (original articles):**Original Articles :**

1. J.F. Poduslo, **C.S. Greenberg**, and M.C. Glick. "Proteins Exposed on the Surface of Mammalian Membranes," Biochemistry 11, 2616- 2621, 1972.
2. **C.S. Greenberg** and M.C. Glick. "Electrophoretic Study of the Polypeptides From Surface Membranes of Mammalian Cells," Biochemistry 11, 3680-3685, 1972.
3. **C.S. Greenberg** and N.V. Dimitrov. "The Effect of Hydrocortisone on the Immune Response of Mice Treated with Corynebacterium Parvum," Clin. Immunol. Immunopathol. 5, 264-271, 1976.
4. N.V. Dimitrov, **C.S. Greenberg** and T. Denny. "Organ Distribution of Corynebacterium Parvum Labeled With Iodine -125," J. Nat. Cancer Inst. 58, 287-294, 1977.
5. **C.S. Greenberg**, D.E. Hammerschmidt, P.R. Craddock, H.S. Jacob. "Atheroma Cholesterol Activates Complement and Aggregates Granulocytes : Possible Role in Ischemic Manifestations of Atherosclerosis," (Review). Trans Assoc Am Physicians. 92 : 130-5, 1979.

6. **C.S. Greenberg**, S. Davies, T. McGowan, A. Schorer, and C. Drage. "Acute Respiratory Failure Following Severe Arsenic Poisoning," *Chest* 76, 596-598, 1979.
7. **C.S. Greenberg**, D.E. Hammerschmidt, P.R. Craddock, and H.S. Jacob. "Atheroma Cholesterol Activates Complement and Aggregates Granulocytes : Possible Role in Ischemic Manifestations of Atherosclerosis," *Trans. Amer. Assoc. Physicians* 92, 130-135, 1979.
8. D.E. Hammerschmidt, **C.S. Greenberg**, O. Yamada, P.R. Craddock, and H.S. Jacob. "Cholesterol and Atheroma Lipids Activate Complement and Stimulate Granulocytes : A Possible Mechanism for Amplification of Ischemic Injury in Atherosclerotic States," *J. Lab. Clin. Med.* 98, 68-77, 1981.
9. D.L. Coleman, **C.S. Greenberg**. "Iron Deficiency Anemia and Pica From Tomato Seeds," *N Engl J. Med.* 304 : 848, 1981.
10. **C.S. Greenberg** and P.R. Craddock. "Rapid Single-Step Membrane Protein Assay," *Clin. Chem.* 28, 1725-1726, 1982.
11. **C.S. Greenberg** and M.A. Shuman. "The Zymogen Forms of Blood Coagulation Factor XIII Bind Specifically to Fibrinogen," *J. Biol. Chem.* 257, 6096-6101, 1982.
12. **C.S. Greenberg** and P.R. Craddock. "Rapid Single-Step Membrane Protein Assay," *Clin Chem.* 28 : 1725-6, 1982 Jul.
13. G.M. Rodgers, **C.S. Greenberg**, and M.A. Shuman. "Characterization of the Effects of Cultured Vascular Cells on the Activation of Blood Coagulation," *Blood* 61, 1155-1162, 1983.
14. **C.S. Greenberg** and M.A. Shuman, "Specific Binding of Blood Coagulation Factor XIIIa to Thrombin-stimulated Platelets," *J. Biol. Chem.* 259 : 14721-14727, 1984.
15. **C.S. Greenberg**, C.C. Miraglia, F.R. Rickles, and M.A. Shuman. "Cleavage of Blood Coagulation Factor XIII and Fibrinogen by Thrombin During *In Vitro* Clotting," *J. Clin. Invest.* 75, 1463-1470, 1985.
16. C.C. Miraglia and **C.S. Greenberg**. "Measurement of Blood Coagulation Factor XIIIa Formation in Plasma Containing Glycyl-L-prolyl-L-arginyl-L-proline" *Anal. Biochem.* 144 : 165-171, 1985.
17. S.L. Gonias, J.J. Pasqua, **C.S. Greenberg** and S.V. Pizzo. "Precipitation of Fibrinogen, Fibrinogen Degradation Products and Fibrin Monomer by Histone H3," *Thromb. Res.* 39, 97-116, 1985.
18. J.I. Cohen, M.R. Cooper and **C.S. Greenberg**. "Streptokinase Therapy of Pulmonary Emboli with Heparin-Associated Thrombocytopenia," *Arch. Intern. Med.*, 145 : 1725-1726, 1985.

19. **C.S. Greenberg**, J.V. Dobson, and C.C. Miraglia. "Regulation of Factor XIII Binding to Fibrin In Vitro," Blood 66 : 1028-1034, 1985.
20. **C.S. Greenberg**, C.C. Miraglia. "The Effect of Fibrin Polymers on Thrombin-Catalyzed Plasma Factor XIIIa Formation," Blood 66 : 466-469, 1985.
21. **C.S. Greenberg**, K.E. Achyuthan, and C.C. Miraglia. "Thrombin Binding to Fibrin is Necessary for Fibrin Polymers to Enhance Factor XIIIa Formation," Semin. Thromb. Hemost., 12 : 226-227, 1986.
22. **C.S. Greenberg**, K.E. Achyuthan, C.C. Miraglia and J.V. Dobson. "Regulation of Thrombin Cleavage of Plasma Factor XIII Bound to Fibrin," Ann. N.Y. Acad. Sci. 485 : 140-143, 1986.
23. D.V. Devine, T.R. Kinney, P.F. Thomas, W.F. Rosse and **C.S. Greenberg**. "Fragment D-dimer levels : An Objective Marker of Vaso-Occlusive Crisis and Other Complications of Sickle Cell Disease," Blood 69 : 317-319, 1986.
24. **C.S. Greenberg**, J.P. Adams, P.E. Mullen, and J.A. Koepke. "The Effect of Calcium Ions on the Activated Partial Thromboplastin Time of Heparinized Plasma," Am. J. Clin. Pathol. 86 : 484-489, 1986.
25. K.E. Achyuthan, J.V. Dobson, and **C.S. Greenberg**. "Gly-Pro-Arg-Pro Modifies the Glutamine Residues in the α - and γ -chains of fibrinogen : Inhibition of Transglutaminase Cross-linking," Biochem. Biophys. Acta 872 : 261-268, 1986.
26. R.G. Makhoul, **C.S. Greenberg**, and R.L. McCann. "Heparin Associated Thrombocytopenia and Thrombosis : A Serious Clinical Problem and Potential Solution," J. Vasc. Surg. 4 : 522-528, 1986.
27. J.A. Kreager, D.V. Devine, **C.S. Greenberg**. "Thrombin Stimulated Platelets Provide Substrates and Binding Sites for Factor XIIIa to Stabilize the Hemostatic Plug," Blood 320a: 1158, 1986.
28. L.J. Weinberg, D.T. Shiu, **C.S. Greenberg**, Y. W. Kan, and M.A. Shuman. "Localization of the Gene for Coagulation Factor XIII α -chain to Chromosome 6 and Identification of Sites of Synthesis," J. Clin. Invest., 79 : 649-652, 1987.
29. **C.S. Greenberg**, D.V. Devine and K.M. McCrae. "Measurement of Plasma Fibrin D-dimer Levels With the Use of a Monoclonal Antibody Coupled to Latex Beads," Am. J. Clin. Pathol., 87 : 94-100, 1987.
30. R.G. Makhoul, R.L. McCann, E.H. Austin, **C.S. Greenberg**, and J.E. Lowe. "Management of Patients with Heparin Associated Thrombocytopenia and Thrombosis Requiring Cardiac Surgery," Ann. Thorac. Surg. 43 : 617-621, 1987.

31. K.E. Achyuthan and **C.S. Greenberg**. "Identification of a Guanosine Triphosphate Binding Site on Guinea Pig Liver Transglutaminase : Role of GTP and Calcium Ions in Modulating Activity," J. Biol. Chem. 262 : 1901-1906, 1987.
32. **C.S. Greenberg**, K.E. Achyuthan, and J.W. Fenton II. "Factor XIIIa Formation Promoted by Complexing of α -Thrombin, Fibrin and Plasma Factor XIII," Blood 69 : 867-871, 1987.
33. **C.S. Greenberg**, K.E. Achyuthan, M.J. Borowitz and M.A. Shuman. "The Transglutaminase in Vascular Cells and Tissues Could Provide an Alternate Pathway for Fibrin Stabilization," Blood 70 : 702-709, 1987.
34. R.G. Makhoul, D.V. Devine, W.D. Brenckman Jr., R.L. McCann and **C.S. Greenberg**. "Evidence for the Involvement of Platelet Glycoproteins Other Than GPIb in Heparin-Associated Thrombocytopenia and Thrombosis," Thromb. Res. 45 : 421-425, 1987.
35. A. Mary, K.E. Achyuthan, and **C.S. Greenberg**. "Factor XIII Binds to the Aa and Bb Chains in the D-domain of Fibrinogen. An Immunoblotting Study," Biochem. Biophys. Res. Commun. 147 : 608-614, 1987.
36. D.V. Devine, M.S. Currie, W.F. Rosse, and **C.S. Greenberg**. "Pseudo-Bernard-Soulier Syndrome : Thrombocytopenia Caused by Autoantibody to Platelet Glycoprotein Ib," Blood, 70 : 428-431, 1987.
37. Y. Hannun, **C.S. Greenberg**, and R. Bell. "Sphingosine Inhibition of Agonist-Dependent Secretion and Activation of Human Platelets Implies that Protein Kinase C is a Necessary and Common Event of the Signal Transduction Pathway," J. Biol. Chem. 262 : 13620-13626, 1987.
38. D.L. Simel, E.W. St. Clair, J. Adams, and **C.S. Greenberg**. "Correction of Hypoprothrombinemia by Immunosuppressive Treatment of the Lupus Anticoagulant-Hypoprothrombinemia Syndrome" Am. J. Med. 83 : 563-566, 1987.
39. M. Hoffman, and **C.S. Greenberg**. "The Effect of Fibrin Polymerization Inhibitors on Quantitative Measurements of Plasma Fibrinogen" Am. J. Clin. Path. 88 : 490-493, 1987.
40. J.J. Regan Jr., **C.S. Greenberg**, A.D. Mooradian, N. Stanley, and F.Q. Nuttall. "Reversible Renal Resistance to Aldosterone Associated With Interstitial Nephritis," West J. Med. 146 742-745, 1987.
41. P.R Conkling, C.C. Chua, P. Nadler, **C.S. Greenberg**, E. Doty, M.A. Misukonis, A.F. Haney, R.C., Bast, Jr., J.B. Weinberg. "Clinical Trials with Human Tumor Necrosis Factor : In Vivo and In Vitro Effects on Human Monoclear Phagocyte Function," Cancer Res. 48 : 5604-9, 1988.

42. G. C. Li, **C. S. Greenberg**, and M. S. Currie. "Procainamide-Induced Lupus Anticoagulants and Thrombosis," Southern Med. J. 81 : 262-264, 1988.
43. D.V. Devine, and **C.S. Greenberg**, "Monoclonal Antibody to Fibrin D-dimer (DD-3B6) Recognizes An Epitope on the α -Chain of Fragment D," Am. J. Clin. Path. 89 : 663-666, 1988.
44. P.R. Conkling, **C.S. Greenberg**, and J.B. Weinberg. "Tumor Necrosis Factor Induces Tissue Factor-like Activity in Human Leukemia Cell Line U937 and Peripheral Blood Monocytes," Blood 72, 128-133, 1988.
45. A. Mary, K.E. Achyuthan, and **C.S. Greenberg**. "B-Chains Prevent the Proteolytic Inactivation of the A-Chains of Plasma Factor XIII," Biochim. Biophys. Acta 966 : 328-335, 1988.
46. K.E. Achyuthan, A. Mary, and **C.S. Greenberg**. "The Binding Sites on Fibrin (ogen) for Guinea Pig Liver Transglutaminase are Similar to Those of Blood Coagulation Factor XIII : Characterization of the Binding of Liver Transglutaminase to Fibrin," J. Biol. Chem. 263 : 14296-14301, 1988.
47. **C.S. Greenberg**, K.E. Achyuthan, S. Rajagopalan, and S.V. Pizzo. "Characterization of the Fibrin Polymer Structure that Accelerates Thrombin Cleavage of Plasma Factor XIII," Arch. Biochem. Biophys. 262 : 142-148, 1988.
48. A. Mary, K.E. Achyuthan and **C.S. Greenberg**. "The Binding of Divalent Metal Ions to Platelet Factor XIII Modulates its Proteolysis by Trypsin and Thrombin," Arch. Biochem. Biophys. 261 : 112-121, 1988.
49. D.C. Sane, T.L. Moser, A.M.M. Phippen C.J. Parker, K.E. Achyuthan, and **C.S. Greenberg**. "Vitronectin is a Substrate for Factor XIIIa and Tissue Transglutaminase," Biochem. Biophys Res Commun 157 : 115-120, 1988.
50. **C.S. Greenberg**, J.J. Enghild, A. Mary, J.V. Dobson and K.E. Achyuthan. "Isolation of a Fibrin Binding Fragment from Blood Coagulation Factor XIII Capable of Crosslinking Fibrin (ogen)," Biochem. J. 256 : 1013-1019, 1988.
51. J. Kreager, D. V. Devine, and **C. S. Greenberg**. "Cytofluorometric Identification of Plasmin-Sensitive Factor XIIIa Binding to Platelets," Thromb Haem 60; 88-93 , 1988.
52. **C.S. Greenberg**, K.E. Achyuthan, A. Mary. "Fibrin is a Co-factor for α -Thrombin Cleavage of Plasma Factor XIII," Fibrinogen 3. Biochemistry, biological functions, M.W. Mosesson et al, editors, Else vier Science Publishers B.V., 1988, pp.161-164.
53. K.E. Achyuthan, A. Mary, J.J. Enghild, **C.S. Greenberg**. "Guinea Pig Liver Transglutaminase and Factor XIII A-chains Are Homologous Fibrin (ogen) Binding Proteins," Fibrinogen 3. Biochemistry, biological functions, M.W. Mosesson et al, editors, Else vier Science Publishers B.V. (Biomedical Division), 1988, pp. 165-169.

54. K.E. Achyuthan, A. Mary, and **C.S. Greenberg**. "Terbium Binding Induced Conformational Changes in Platelet Factor XIII," *Biochem J*, Vol 257; 2 : 331-338, 1989.
55. K.M. Skubitz, G.M. Vercellotti, **C.S. Greenberg** and J.W. Eaton. "Impermeant Stilbene Disulfonic Acids Block Chemotactic Peptide Receptor Function on Human Granulocytes," *Inflammation*. Vol 13; 1 : 31-45, 1989.
56. K.E. Achyuthan, A. Mary, R. Bhaerman, and **C.S. Greenberg**. "Consequences of Terbium (III) Binding on the Conformation and Enzymatic Activity of Guinea Pig Liver Transglutaminase," *Mol. Cell. Biochem*. 85 : 57-65, 1989.
57. J. Biller, E.W. Massey, J.R. Marlar, H.P. Adams, J.N. Davis, A. Bruno, R.A. Enriksen, R.J. Linhardt, L.B. Goldstein, A. Alberts, C.T. Kisner, G. J. Toffol, **C.S. Greenberg**, R.N. Banwart, C. Bertels, D.W. Beck, M. Walher, and H.N. Magnani. "A Dose Escalation Study of Org 1012 Low Molecular Weight Heparinoid in Stroke," *Neurology* 39 : 2 : 262-265, 1989.
58. D.C. Sane, S. V. Pizzo, **C.S. Greenberg**. "Elevated Urokinase-Type Plasminogen Activator Level and Bleeding in Amyloidosis : Case Report and Literature Review," *Am J. Hem* 31 : 53-57, 1989.
59. P.A. Kaufman, J.P. Gockerman, **C.S. Greenberg**. "Production of a Novel Anticoagulant by Neoplastic Plasma Cells," *American J. Med*. 86 : 612-616, 1989.
60. K.F. Trofatter, Jr., M.L. Howell, **C.S. Greenberg** and M.L. Hage. "Use of the Fibrin D-dimer in Screening for Coagulation Abnormalities in Preeclampsia," *Obstet Gynec* 73 435-439, 1989.
61. P.R. Conkling, K.E. Achyuthan, **C.S. Greenberg**, T.F. Newcomb, J.B. Weinberg. "Human Mononuclear Phagocyte Transglutaminase Activity Cross-links Fibrin," *Thromb. Res*. 55 : 57-68, 1989.
62. P.R. Conkling, K.L. Patton, Y.A. Hannun, **C.S. Greenberg**, and J.B. Weinberg. "Sphingosine Inhibits Monocyte Tissue Factor Initiated Coagulation by Altering Factor VII Binding," *J. Biol. Chem*. 264 : 18440-18444, 1989.
63. D.C. Sane, R. M. Califf, E.J. Topol, D.C. Stump, D. B. Mark, and **C. S. Greenberg**. "Bleeding During Thrombolytic Therapy for Acute Myocardial Infarction : Mechanisms and Management," *Ann. of Internal Medicine* 111 : 1010-1022, 1989.
64. D. C. Sane, A Bielawska, **C. S. Greenberg**, and Y. A. Hannun. "Cyclic GMP Analogs Inhibit Gamma Thrombin-Induced Arachidonic Acid Release in Human Platelets," *Biochem. and Biophys. Res. Comm*. 165 : 708-714, 1989.

65. T.J. Panella, W. Peters, J.G. White, Y.A. Hannun, and **C.S. Greenberg**. "Platelets Acquire a Secretion Defect following High Dose Chemotherapy," *Cancer* 65 : 1711-1716, 1990.
66. M.S. Currie, M. Vala, D.S. Pisetsky, **C.S. Greenberg**, J. Crawford, and H.J. Cohen, "Correlation between Erythrocyte CR1 Reduction and Other Blood Proteinase Markers in Patients with Malignant and Inflammatory Disorders," *Blood* 75 : 1699-1704, 1990.
67. D. C. Sane, T. L. Moser, C. J. Parker, D. Seiffert, D. J. Loskutoff, and **C. S. Greenberg**. "Highly Sulfated Glycosaminoglycans Augment the Crosslinking of Vitronectin by Guinea Pig Liver Transglutaminase," *J. Biol. Chem.* 265 : 3543-3548, 1990.
68. G.J. Olt, **C. Greenberg**, I. Synan, R.E. Coleman, and D. Clarke-Pearson. "Preoperative Assessment of Fragment D-dimer as a Predictor of Postoperative Venous Thrombosis," *Am. J. Obstet. & Gynec.* 162 : 772-775, 1990.
69. D.C. Doherty, T.L. Ortel, N. de Bruijn, and **C.S. Greenberg**. "Heparin-free Cardiopulmonary Bypass : First Reported Use of Heparinoid (Org 10172) to Provide Anticoagulation for Cardiopulmonary Bypass," *Anesthesiology* 73 : 562-565, 1990.
70. P.A. Kaufman, R.B. Jones, **C.S. Greenberg**, and W.P. Peters. "Autologous Bone Marrow Transplantation and Factor XII, Factor VII, and Protein C Deficiencies. Report of a New Association and its Possible Relationship to Endothelial Cell Injury," *Cancer* 66 : 51521, 1990.
71. J. B. Weinberg, A. M.M. Phippen, and **C. S. Greenberg**. "Extravascular Fibrin Formation and Dissolution of Synovial Tissue of Patients with Osteoarthritis and Rheumatoid Arthritis," *Arthritis & Rheumatism* 34 : 996-1005, 1990.
72. P.D. Stein and **PIOPED investigators**. "Tissue Plasminogen Activator for the Treatment of Acute Pulmonary Embolism," *Chest* 97 : 528-533, 1990.
73. F. Blum, G. Gilkeson, **C.S. Greenberg**, J. Murray. "Superficial Migratory Thrombophlebitis and the Lupus Anticoagulant," *Int j Dermatol.* 29 : 190-2, 1990.
74. D.C. Sane, T.L. Moser, and **C.S. Greenberg**. "Vitronectin in the Substratum of Endothelial Cells is Cross-Linked and Phosphorylated," *Biochem. and Biophys. Res. Comm.* 174 : 465-469, 1991.
75. D.C. Sane, T. L. Moser, T. M. Bashore, C. L. Wagner, and **C. S. Greenberg**. "Diatrizoate-Containing Contrast Media Inhibit Platelet Aggregation by Disrupting Fibrinogen Binding," *Coronary Artery Disease* 2 : 389-396, 1991.
76. D.C. Sane, T.L. Moser, and **C.S. Greenberg**. "Limited Proteolysis of Vitronectin by Plasmin Destroys Heparin Binding Activity," *Thromb Haemostas* 66 : 310-314, 1991.

77. S.M. Steele, T.F. Slaughter, **C.S. Greenberg** and J.G. Reves. "Epidural Anesthesia and Analgesia : Implications for Perioperative Coagulability," *Anesth Analg* 73 : 683-685, 1991.
78. **C.S. Greenberg**, P.J. Birckbichler, and R. H. Rice. "Transglutaminases : Multifunctional Cross-linking Enzymes that Stabilize Tissues," *FASEB* 5 : 3071-3077, 1991.
79. D.C. Sane, N.J. Gresalfi, L.A. Enney-O'Mara, R.M. Califf, **C.S. Greenberg**, E.G. Bovill, and B.J. Oberhardt. "Exploration of Rapid Bedside Monitoring of Coagulation and Fibrinolysis Parameters During Thrombolytic Therapy," *Blood Coag and Fibrinolysis* 5 : 105-112, 1992.
80. T. L. Ortel, J. P. Gockerman, R. M. Califf, R. M. McCann, C. M. O'Connor, D. M. Metzler, and **C. S. Greenberg**. "Parenteral Anticoagulation with the Heparinoid Lomoparan in Patients with Heparin Induced Thrombocytopenia and Thrombosis," *Thromb Haem.* 67 (3) : 292-296, 1992.
81. T.F. Slaughter, K.E. Achyuthan, T-S Lai, and **C.S. Greenberg**. "A Microtiter Plate Transglutaminase Assay Utilizing 5- (Biotinamido) Pentylamine as Substrate," *Anal Biochem* 205 : 166-172, 1992.
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