Stanford



Gerald Silverberg

Professor of Neurosurgery, Emeritus

NIH Biosketch available Online

Bio

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Neurosurgery

ADMINISTRATIVE APPOINTMENTS

- Acting Chairman, Department of Neeurosurgery, (1989-1992)

PROFESSIONAL EDUCATION

- MD, Stanford University , Medicine (1964)
- BA, Dartmouth College , English Literature (1959)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I have developed a model of aging in the Brown Norway/Fisher rat and a separate model of chronic hydrocephalus in a kaolin-induced hydrocephalus rat model. We are studying the accumulation of amyloid by immunostaining and ELISA in relation to age and hydrocephalus-induced decrease in CSF formation and turnover, measured by ventricular cisternal perfusion, and the change in expression of the blood-brain barrier receptors for A-beta transport, LRP-1 and RAGE, measured by immunostaining, PCR and western blot.

Thus far we have found that A-beta accumulation increases with age and this increase is related to a decrese in microvessel expression of LRP-1, the endothelial receptor that transports A-beta from the brain to the plasma pool, an increase in microvesselRAGE, the endothelial receptor that transfers A-beta from the plasma to the brain interstitium. CSF production and turnover falls and further A-beta accumulation occurs. Changes similar to advanced aging occur with the rat kaolin-hydrocephalus model, but at an earlier age, and amyloid accumulates prematurely, as is seen in patients with NPH.

Publications

PUBLICATIONS

- **Brain amyloid accumulates in aged rats with kaolin-induced hydrocephalus** *NEUROREPORT*
  Klinge, P. M., Samii, A., Niescken, S., Brinker, T., Silverberg, G. D.
  2006; 17 (6): 657-660
- **Novel ventriculo-peritoneal shunt in Alzheimer's disease cerebrospinal fluid biomarkers.** *Expert review of neurotherapeutics*
  Silverberg, G. D., Mayo, M., Saul, T., Carvalho, J., McGuire, D.
  2004; 4 (1): 97-107

- **Effects of tumor suppressor gene (p53) on brain tumor angiogenesis and expression of angiogenic modulators** *ANTICANCER RESEARCH*
  Tse, V., Yung, Y., Santarelli, J. G., Juan, D., Hsiao, M., Haas, M., Harsh, G., Silverberg, G.
  2004; 24 (1): 1-10

- **The temporal-spatial expression of VEGF, angiopoietins-1 and 2, and Tie-2 during tumor angionenesis and their functional correlation with tumor neovascular architecture** *NEUROLOGICAL RESEARCH*
  Tse, V., Xu, L., Yung, Y. C., Santarelli, J. G., Juan, D., Fabel, K., Silverberg, G., Harsh, G.
  2003; 25 (7): 729-738

- **Alzheimer's disease, normal-pressure hydrocephalus, and senescent changes in CSF circulatory physiology: a hypothesis** *LANCET NEUROLOGY*
  Silverberg, G. D., Mayo, M., Saul, T., Rubenstein, E., McGuire, D.
  2003; 2 (8): 506-511

- **Downregulation of cerebrospinal fluid production in patients with chronic hydrocephalus** *JOURNAL OF NEUROSURGERY*
  Silverberg, G. D., Huhn, S., Jaffe, R. A., Chang, S. D., Saul, T., Heit, G., Von Essen, A., Rubenstein, E.
  2002; 97 (6): 1271-1275

- **Assessment of low-flow CSF drainage as a treatment for AD - Results of a randomized pilot study** *NEUROLOGY*
  Silverberg, G. D., Levinthal, E., SULLIVAN, E. V., Bloch, D. A., Chang, S. D., Leverenz, J., Flitman, S., Winn, R., Marciano, F., Saul, T., Huhn, S., Mayo, M., McGuire, et al
  2002; 59 (8): 1139-1145

- **The cerebrospinal fluid production rate is reduced in dementia of the Alzheimer's type** *NEUROLOGY*
  Silverberg, G. D., Heit, G., Huhn, S., Jaffe, R. A., Chang, S. D., Bronte-Stewart, H., Rubenstein, E., Possin, K., Saul, T. A.
  2001; 57 (10): 1763-1766

- **Sonic hedgehog promotes proliferation and tyrosine hydroxylase induction of postnatal sympathetic cells in vitro** *NEUROREPORT*
  Williams, Z., Tse, V., Hou, L., Xu, L., Silverberg, G. D.
  2000; 11 (15): 3315-3319

- **Combined assessment of tau and neuronal thread protein in Alzheimer's disease CSF** *NEUROLOGY*
  Kahle, P. J., Jakowec, M., Teipel, S. J., Hampel, H., Petzinger, G. M., Di Monte, D. A., Silverberg, G. D., Moller, H. J., Yesavage, J. A., Tinklenberg, J. R., Shooter, E. M., Murphy, G. M.
  2000; 54 (7): 1498-1504

- **Differential contributions of cognitive and motor component processes to physical and instrumental activities of daily living in Parkinson's disease** *ARCHIVES OF CLINICAL NEUROPSYCHOLOGY*
  Cahn, D. A., SULLIVAN, E. V., Shear, P. K., Pfefferbaum, A., Heit, G., Silverberg, G.
  1998; 13 (7): 575-583

- **Bilateral cavernous malformations resulting from cranial irradiation of a choroid plexus papilloma** *NEUROLOGICAL RESEARCH*
  Chang, S. D., Vanefsky, M. A., Havton, L. A., Silverberg, G. D.
  1998; 20 (6): 529-532

- **Trigeminal neuralgia resulting from infarction of the root entry zone of the trigeminal nerve: Case report** *NEUROSURGERY*
  Golby, A. J., Norbash, A., Silverberg, G. D.
  1998; 43 (3): 620-622

- **Neuropsychological and motor functioning after unilateral anatomically guided posterior ventral pallidotomy - Preoperative performance and three-month follow-up** *NEUROPSYCHIATRY NEUROPSYCHOLOGY AND BEHAVIORAL NEUROLOGY*
  Cahn, D. A., SULLIVAN, E. V., Shear, P. K., Heit, G., Lim, K. O., Marsh, L., Lane, B., Wasserstein, P., Silverberg, G. D.
  1998; 11 (3): 136-145

- **Functional expression of human p21(WAF1/CIP1) gene in rat glioma cells suppresses tumor growth in vivo and induces radiosensitivity** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  Hsiao, M., Tse, V., Carmel, J., Costanzi, E., Strauss, B., Haas, M., Silverberg, G. D.
  1997; 233 (2): 329-335

- **Intracavitary liposome-mediated p53 gene transfer into glioblastoma with endogenous wild-type p53 in vivo results in tumor suppression and long-term survival** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*

Hsiao, M., Tse, V., Carmel, J., TSAI, Y., Felgner, P. L., Haas, M., Silverberg, G. D.
1997; 233 (2): 359-364

- **Cerebellar hemorrhage complicating temporal lobectomy - Report of four cases** *JOURNAL OF NEUROSURGERY*
  Toczek, M. T., Morrell, M. J., Silverberg, G. A., Lowe, G. M.
  1996; 85 (4): 718-722
- **PLEOMORPHIC GRANULAR-CELL ASTROCYTOMA OF THE PINEAL-GLAND** *CANCER*
  Snipes, G. J., Horoupian, D. S., Shuer, L. M., Silverberg, G. D.
  1992; 70 (8): 2159-2165
- **Stereotactic, angiography-guided clipping of a distal, mycotic intracranial aneurysm using the Cosman-Roberts-Wells system: technical note.** *Neurosurgery*
  Steinberg, G. K., GUPPY, K. H., Adler, J. R., Silverberg, G. D.
  1992; 30 (3): 408-411
- **STEREOTAXIC HELIUM ION BRAGG PEAK RADIOSURGERY FOR INTRACRANIAL ARTERIOVENOUS-MALFORMATIONS - DETAILED CLINICAL AND NEURORADIOLOGICAL OUTCOME** *HARVARD RADIOSURGERY UPDATE COURSE ON RADIOSURGERY : ENHANCEMENT OF CLINICAL EXCELLENCE*
  Steinberg, G. K., FABRIKANT, J. I., Marks, M. P., Levy, R. P., Frankel, K. A., Phillips, M. H., Shuer, L. M., Silverberg, G. D.
  KARGER.1991: 36–49
- **OCCULT VASCULAR MALFORMATIONS OF THE OPTIC CHIASM - MAGNETIC-RESONANCE-IMAGING DIAGNOSIS AND SURGICAL LASER RESECTION** *NEUROSURGERY*
  Steinberg, G. K., Marks, M. P., Shuer, L. M., SOGG, R. L., Enzmann, D. R., Silverberg, G. D.
  1990; 27 (3): 466-470
- **STEREOTAXIC HEAVY-CHARGED-PARTICLE BRAGG-PEAK RADIATION FOR INTRACRANIAL ARTERIOVENOUS-MALFORMATIONS** *NEW ENGLAND JOURNAL OF MEDICINE*
  Steinberg, G. K., FABRIKANT, J. I., Marks, M. P., Levy, R. P., Frankel, K. A., Phillips, M. H., Shuer, L. M., Silverberg, G. D.
  1990; 323 (2): 96-101
- **MIXED GANGLIOCYTOMA-ADENOMA - A DISTINCT NEUROENDOCRINE TUMOR OF THE PITUITARY FOSSA** *HUMAN PATHOLOGY*
  Kamel, O. W., Horoupian, D. S., Silverberg, G. D.
  1989; 20 (12): 1198-1203
- **PEEP DOES NOT AFFECT LEFT ATRIAL-RIGHT ATRIAL PRESSURE DIFFERENCE IN NEUROSURGICAL PATIENTS** *ANESTHESIOLOGY*
  ZASSLOW, M. A., Pearl, R. G., Larson, C. P., Silverberg, G., SHUER, L. F.
  1988; 68 (5): 760-763
- **DO FOLLICULO-STELLATE ADENOMAS OF THE PITUITARY-GLAND EXIST OR ARE THEY INTRASELLAR MENINGIOMAS** *ACTA NEUROPATHOLOGICA*
  Vogel, H., Horoupian, D. S., Silverberg, G.
  1988; 77 (2): 219-223