

Biography and Curriculum Vitae of Senthamil R. Selvan, Ph.D.:

Dr. Senthamil Selvan was born and educated in India. His grandfather was a Siddha Traditional Medicine Vaithiyar in whose guidance Dr. Selvan spent his childhood and early education. This developed an interest to pursue a research career in clinical science. Dr. Selvan came to the United States after initially working on herbal prevention of cancer, and later receiving his doctorate degree for his work in immunotoxicology from Jawaharlal Nehru University at New Delhi, India in 1988. Prior to coming to Hoag Hospital Cancer Center, Newport Beach, California, USA in 1999 to serve as Associate Scientific Director in directing the tumor cell vaccine clinical trial science program, Dr. Selvan served as Assistant Research Professor in the Department of Surgery at Duke University, as well as an Associate Member at the Duke Comprehensive Cancer Center focusing on human tumor immunology and immunotherapy, transplant immunology, and cytokine and chemokine gene regulation. He has actively collaborated with scientists at national and international levels in the area of basic immunology, cancer biomarkers, and complementary and alternative therapeutic approaches of radioprotection and cancer. Dr. Selvan has authored more than three dozen publications, with some recognized as the best contributions to the field by Current Awareness in Biomedicine, UK and as journal highlights. He has participated in numerous workshops and advanced courses in the area of immunology and tumor biology, including serving as a lecturer at several national and international conferences. Dr. Selvan is an active leading member of the International Society for Biological Therapy of Cancer (iSBTc) serving as a member of the Development Committee, Chair of the Public Relations, Publications and Communications Committee and a Liaison Member of the Membership Committee. He is further associated with American Association of Cancer Research (AACR), Society for In Vitro Biology, Complementary and Alternative Medicine (CAM) international working group and Tumor Vaccine and Cell Therapy international working group (TVACT). His primary mission is to discover and develop novel anti-cancer therapeutic approaches to boost immunocompetence, to regress or control tumor growth, and to stabilize or eradicate disease in patients.

Dr. Selvan's Work on Cancer Vaccine Immunotherapy:

In 1988, while working on chemomodulation of tumor in an animal model, Dr. Selvan discovered the augmentation of immune response against tumor and rejection of subsequently transplanted tumor (International Journal of Cancer 1990; 45(6):1096-1104). This provided an opportunity to establish several cytotoxic T cell clones against the syngeneic tumor (International Journal of Cell Cloning 1991; 9(6):594-605). This led him to work on understanding and manipulating the immune response against human pancreatic cancer and melanoma. For two decades, Dr. Selvan has been actively involved in identifying and characterizing changes that occur in the profile of antigens associated with human cancer cells and how these influence immune recognition and function (pancreatic cancer: *Proceedings of* 10th International Congress of Immunology 1999; 2:1123-1127; Br J Cancer. 2000 Feb;82(3):691-701; melanoma: Int J Cancer. 2008 Mar 15;122(6):1374-83). There is no effective treatment for metastastic melanoma or any other neoplasia. Multiple chemotherapeutic regimens have been used to treat advanced stage patients, but they made practically no improvement on overall survival rates. Dr. Selvan felt that it is important to focus on alternative treatment that can induce potential immune response against tumor-associated antigens (TAA) by vaccination, the so-called active-specific immunotherapy. In 1989, he developed a first ever human autologous pancreatic tumor cell and tumor-reactive T cell model to identify and characterize tumor-associated antigens recognized by T-cells (Br J Cancer. 2000 Feb;82(3):691-701). In light of this, he developed a need to associate with potential clinical groups interested in developing autologous and allogeneic tumor cell vaccines. His prior expertise on TAAs of pancreatic cancer and melanoma together with progressive understanding on the immune recognition of TAAs by both T-cells and antibodies encouraged him to improve strategies for antigen-targeted vaccine therapies. He is also aware immune responses alone do not prevent tumor growth because of the weakness of antigenicity, inability of different components of immune system in TAA-recognition, immunosuppression induced by TAAs with tumor progression and burden (Int J Cancer. 2008 Mar 15;122(6):1374-83).

There is no doubt that vaccine therapy is one of the most exciting areas of cancer immunotherapy. Targeting single antigen often results in failure to stabilize the disease, because of heterogeneity in the expression of TAAs and the escape of tumor cells that do not express target antigen. An alternate approach was to identify a set of antigens that are identified on the surface of or within cancer cells using antigen-specific antibodies and T-cells *in vitro* and try to boost the immune system to recognize the tumor cells. Immune response to TAAs in a variety of formulations did not produce a meaningful curative potential due to lack of understanding of immunopotentiating and immunosuppressive characteristics of the TAAs expressed by tumor cells. To overcome this, in the clinical trial for patients with metastatic melanoma currently conducted by a team of clinicians and scientists at Hoag Cancer Center, Dr. Selvan tested a type of vaccine that is comprised of a patient's own dendritic cells (DC) exposed to patient's own tumor cells (TC; *manuscript submitted for publication, 2009*) that will have all the tumor-associated antigens of a particular patient. This approach probes deeply into the complexities of the human immune response, and tumor cell biology as illustrated below.

The dendrtic cells govern the body's immune response, engulfing and destroying cells that are abnormal. One of the critical prerequisites to this trial is to grow purified tumor cells from the patient's own tumor and feed them directly to a supply of one's own DC's generated *ex vivo*. The premise is that the DC's will identify the cancer cells as foreign and abnormal. Once the vaccine is given to the patient, the DCs trained *in vitro* to distinguish tumor from normal

cells, will elicit immune response against the patient's alive, proliferating tumor cells. In order to achieve this goal, one needs the tumor cells from the tumor tissues that have been surgically removed from the patient. The tumor tissue sample is processed and the cells are put into appropriate media to grow. Dr. Selvan's tumor cell culture definitely pays off, because when it comes to growing purified lines of malignant melanoma – Dr. Selvan's success rates are well above international averages (established more than 150 patient-specific melanoma lines in nine years with ~70% success rate). Once the tumor cell line is established, following leukopheresis of the same patient, monocytes are isolated and incubated in DC culture medium containing GM-CSF and IL-4 that cause some of the cells to convert to dendritic cells. Before the tumor cells and DC's are introduced to one another, the tumor cells are radiated so they cannot reproduce once reintroduced into the body. The DC's and tumor cells. The primary objective is to train the DCs to distinguish normal healthy cells from tumor cells, so that they can identify, attack and destroy the tumor. To accomplish this objective, the vaccine is then injected into the patient's arm with adjuvant GM-CSF.

"Albeit autologous tumor cell based personalized DC vaccine approach, melanoma patients with measurable disease did not benefit from the treatment. However, there are a number of metastatic patients who were treated previously by other modalities, with no measurable disease at the time of vaccine treatment, which showed no progression for 34 to 86 months. Such patients had many frequent recurrences before the vaccine treatment. We are intrigued at the possibility that we may have been able to induce an immune response against tumor stem cells, the ones responsible for growing new tumors, in these patients," says Dr. Selvan. The outcomes observed with this approach were recently reported in the *N Engl J Med. 2006 Sep 14*;355(11):1179-8; Int J Cancer. 2008 Mar 15;122(6):1374-83; and Cancer Biotherapy and Radiopharmaceuticals 2009;24:311-319).

Concept of Immune System and Cancer Relationships:

Considering varied clinical responses, albeit patient-specific vaccine approach, the clinical trial opens up a number of unanswered mechanistic questions including the major impact of other systemic therapies received by the patients. These therapies include interferon alpha, biochemotherapy, GM-CSF, chemotherapy, interleukine-2, other investigational vaccines, and natural supplements such as curcumin before and/or after autologous tumor cell pulsed DC vaccine therapy. In addition, progression of disease after vaccination in some patients are possibly linked to the evasion of host immune attack induced by the ever growing list of complex network of tumor-dependent and immune system-dependent mechanisms. Tumor-dependent mechanisms include selective loss of variant tumor cells in culture, instability of tumor genome, abnormal HLA class I antigens, expression of non-classical immunosuppressive HLA-E or G, lack of expression of co-immune stimulatory molecules, immunosuppressive cytokines and factors (TGF-β, IL-10, VEGF, PGE2, Gangliosides: Int J Cancer. 2008 Mar 15;122(6):1374-83), inhibition of apoptosis in residual tumor cells, and apoptosis of tumor-reactive T-cells. The immune system-dependent mechanisms include induction of T-regulatory cells (as that of in a human pancreatic tumor model: Dr. Selvan observed the induction of T-regulatory cells directly by tumor cells: Br J Cancer. 2000 Feb;82(3):691-701), T-helper 2 anti-tumor immune diversion, T-cell anergy, innate immune suppressor cells (myeloid), tumor growth factors (IL-6, IL-2), and immune cytokines that affect immunogenicity of tumor that in turn, circumvent elimination. This reveals that immune system has a dual role of containing and augmenting cancer. As a

consequence, tumor-induced immunological alterations and, in turn, immune system-induced tumor alterations are the results of the complex tumor-immune relationship.

Advantageously, this opens up avenues to better understand the dynamics of cancer and immune system relationships to further explore combinatorial therapeutic approaches in strengthening the immunological reactivity against cancer.

Note: References in parentheses refer to Dr. Selvan's select primary and collaborative work.

CURRICULUM VITAE

Senthamil R. Selvan, Ph.D., Hoag Hospital Cancer Center, Cell Biology Laboratory One Hoag Drive, Building 41, Suite 3F Newport Beach, CA 92663. USA

Email: <u>Senthamil.Selvan@hoaghospital.org</u> Phone: (949) 764-4624x57005

Education:

- Ph.D. (Life Sciences with focus on Cancer and Immunology), 1988, Jawaharlal Nehru University, New Delhi, INDIA
 - **<u>Ph.D. Thesis</u>:** Immunotoxicity of Arecoline, an Areca Nut Alkaloid in Mice (Resulted in three peer reviewed papers)
- M.Phil. (Life Sciences), 1983, Jawaharlal Nehru University, New Delhi, INDIA
 - <u>M. Phil. Research Project</u>: Chemo-modulation of Chemical-Induced Ovarian Carcinogenesis in Mice (Resulted in one peer reviewed paper)
- M.Sc. (Special Zoology), 1979, Madras University, Madras, INDIA
 - <u>M. Sc. Research Project:</u> Effect of various buffers and pH on the activity of acid and alkaline phosphatases in helminth parasite, Fasciola gigantica
- B.Sc. (Zoology, Chemistry and Geology), 1977, Madras University, Madras, INDIA

Executive Management Program:

 Global BioExecutive Program (2006), Haas School of Management, University of Berkeley, CA, USA

Positions:

- Associate Scientific Director/Principal Scientist, Since November 2004, Tumor Cell Vaccine Program, Cell Biology Laboratory, Hoag Cancer Center, Newport Beach, CA
- Senior Scientist, 1999-2004, Tumor Cell Vaccine Program, Cell Biology Laboratory, Hoag Cancer Center, Newport Beach, CA
- Scientist (Adjunct), January 2001-2004, Long Beach VA Medical Center, Long Beach, CA
- Associate Professor, 2003, School of Life Sciences, Jawaharlal Nehru University, New Delhi (Considered as top choice but did not accept the position).
- Associate Member, 1999, Duke Comprehensive Cancer Center, Durham, NC

- Assistant Research Professor, 1995 to 1999, Department of Surgery, Duke University, Durham, NC
- Research Associate, 1995, Department of Surgery, Duke University, Durham, NC
- Research Associate, 1989 to 1994, Department of Immunology, Duke University, Durham, NC
- Post-Doctoral Fellow, 1988 to 1989, Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, VA
- Assistant Professor, 1987, Kasturba Gandhi Medical College, Mangalore, INDIA (Did not accept the offer since joined post-doctoral program at Virginia Tech)

Areas of Expertise and Interest:

- Direct and Coordinate Research and Development of Clinical Science Projects: Clinical Trials, Clinical Diagnostics, and Regulatory Affairs
- Biological Product, Process Method/Technology Development, Optimization, and Quality Assurance and Quality Control Validation
- Cancer Cell Biology and Immunotherapy (Vaccine and Adjuvants): Autologous and Allogeneic Cancer Cell Vaccine Production and Characterization under GMP and GLP guidelines; Immune-Monitoring Assays (Cellular and Humoral Immune Responses); Tumor-Associated Antigens; Prognostic Biomarker of Clinical Outcomes in Metastatic Cancer; Tumor Models
- Cytokine and Chemokine Gene Expression, Regulation and Function
- Chemoprevention of Cancer and Chemomodulation of Tumor and Immune Response
- Cellular and Molecular Immunotoxicology/Immunopharmacology
- Evidence based Complementary and Alternative Medicine Botanicals of Medicinal Value with Interrelated Approach

Basic and Clinical Research Contributions:

I. Established and Characterized Primary Tumor Cell Lines (Human and Animal) and Tumor-Specific T cell Lines and Clones ($CD4^+$ and $CD8^+$):

- Transplantable Hamster (LSH and MHA) Pancreatic Tumor Cell Lines from Primary Tumors
- Several Human Melanoma, Glioblastoma, Liposarcoma, Leiomyosarcoma, Osteosarcoma, Renal Cell Carcinoma, and Pancreatic, Ovarian, Prostate and Lung Adenocarcinoma Cell Lines
- Established and Characterized Tumor-Specific T-Helper/T-Regulatory and T-Cytotoxic Responses in Thymic Tumor (LSA; Mouse), and Pancreatic and Ovarian Adenocarcinomas (Human) models
- II. Delineated Molecular Mechanisms of Immune Response: Cytokine Gene Expression and Function using Cellular and Molecular Approaches
- III. Developed Allogeneic Tumor Cell Vaccine for Ovarian and Breast Cancers for the Purpose of Phase I Clinical Trial
- IV. Developed Monocyte-Derived Dendritic Cells and Made Autologous Tumor Cell Pulsed-DC Vaccine for Melanoma and Renal Cell Carcinoma
- V. Established Whole Blood Immuno-Assay for Immune-Monitoring of Patients Receiving Vaccine

Clinical Trial Development, Implementation and Monitoring:

Co-Investigator, 1999-Present, Current Clinical Trial Protocols of Hoag Hospital, Newport Beach, CA, and Past Protocols of Cancer Biotherapy Research Group (CBRG) (Formerly National Biotherapy Study Group):

- MAC-VAC comparative clinical trial (BB-IND-5838 and BB-IND-8554): autologous melanoma cell vaccine vs. autologous melanoma cell-pulsed dendritic cell vaccine (on going)
- BB-IND-8554, Vaccine Biotherapy of Cancer: Tumor Cells and Dendritic Cells as Active Specific Immunotherapy of Patients with Metastatic Renal Cell Carcinoma (on hold)
- Cryoablation and Immune Response Correlation of Breast Cancer: Clinical Trial Sponsored by Sanarus Corporation and conducted by Hoag Hospital, Newport Beach and Dartmouth Medical School, New Hampshire (reached accrual; immune response assessment is in progress)
- BB-IND-8554, Vaccine Biotherapy of Cancer: Tumor Cells and DC as Active Specific Immunotherapy of Patients with Metastatic Melanoma (completed)
- CBRG 98-09, Intra-Lesional Adoptive Cellular Therapy of Gliomas with IL-2 Stimulated Autologous Lymphocytes (completed)
- NBSG 92-12, Randomized Phase II Trial of Autologous Tumor Cell Vaccine (completed)
- NBSG 91-15, Phase II Trial of Autologous Activated Lymphocytes for the Treatment of Metastatic Cancer (completed)

Programs Undertaken Through Research Collaborations:

- Worked with Prof David Jablons at UCSF to develop Lung Cancer Tissue Procurement and Storage proposal to carry out Pharmacogenomics Study, 2008-2009.
- Takayasu's Arteritis of Carotid Arteries: A Distinct Role for Sonography in Monitoring Disease Status and Follow up Care, 2008-2009, Dianne Masri, R.D.M.S. and John Puckett, M.D., Hoag Hospital Heart Institute, Newport Beach, CA 92663 (Resulted in one research paper)
- Gangliosides as a therapeutic response and tumor burden biomarker in patients with metastatic melanoma, 2006-2007, Mepur H. Ravindranth, Ph.D., John Wayne Cancer Institute, Santa Monica, CA, USA (Resulted in one research paper and a book chapter)
- Determination of Differential Expression of Genes in Primary Renal Cell Carcinoma and Normal Cell Lines using Microarray Technology: 2005-2007, Chitra Manohar, Ph.D., Lawrence Livermore National Laboratory, Livermore, CA, USA (*Manuscript in preparation*)
- Cytogenetics of Primary Renal Cell Carcinoma and Normal Cell Lines using Chromosome Technology: 2005-present, Nagesh Rao, Ph.D., UCLA, Los Angeles, CA, USA (Manuscript in preparation)
- Immune-monitoring of patients treated with tumor cell vaccine: Multiplex assay. 2003present, Kodumudi Venkateswaran, Ph.D., Radix Biosolution, Austin, TX, USA (*Manuscript in preparation*)
- Gangliosides during Tumor Progression in Patients with Prostate Cancer, 2000-present, Mepur H. Ravindranth, Ph.D., John Wayne Cancer Institute, Santa Monica, CA, USA (Resulted in one research paper)
- Gangliosides of Ovarian Carcinoma, 2001-present, Mepur H. Ravindranth, Ph.D., John Wayne Cancer Institute, Santa Monica, CA, USA (**Resulted in one research paper**)

- Human Squamous Cell Carcinoma Modulation of Lymphocyte-Endothelial Cell Adhesion, 1998 to 1999, William J. Richtsmeier, M.D., Ph.D. and Christopher T. Wenzel M.D., Department of Surgery, Duke University, Durham, NC, USA
- Expression and Function of IL-8, 1995 to 1999, Nikolai N. Voitenok, M.D., Foundation for Fundamental Research, Minsk, Republic of Belarus (**Resulted in one research paper**)
- Anti-Tumor Steroids, 1991 to 1999, Vladimir Petrow, D.Sc. and George M. Padilla, Ph.D., Departments of Pathology and Cell Biology, Duke University, Durham, NC, USA (Resulted in two research papers)

Awards and Recognitions:

- Recognized in Journal Highlights Section of "In Vitro Report," July-Sept, 2000 (Volume34 (3):9, Spontaneous Activation of Endothelial Cells: A Central Role for Endogenous IL-1α, MB Steen, FL Tuck, and <u>RS Selvan</u>, In Vitro Cellular and Developmental Biology 35:327-332, 1999.
- Best Contribution to the Field: Quoted in Current Awareness in Biomedicine, 1999, Spontaneous Activation of Endothelial Cells: A Central Role for Endogenous IL-1α, MB Steen, FL Tuck, and <u>RS Selvan</u>, In Vitro Cellular and Developmental Biology 35:327-332, 1999.
- Best Contribution to the Field: Quoted in Current Awareness in Biomedicine, 1997, Regulation of I-309 gene expression in human monocytes by endogenous interleukin-1, <u>RS Selvan</u>, L Ji-Zhou, and MS Krangel, European Journal of Immunology 27:687-694, 1997.
- Career Advancement Awards, 1984, 1986, and 1987, UNESCO, IDRC (CANADA), Council of Scientific and Industrial Research (INDIA), and Department of Science and Technology (INDIA).
- Junior and Senior Research Fellowships, 1981 to 1985, Council of Scientific and Industrial Research, INDIA.
- Invited to Lecture at National (USA) and International Universities, Institutions, and Conferences, Since 1989.
- Reviewed Research Grant Applications, Manuscripts and Reviews for Scientific Journals (Cancer Immunological Review, Vaccine, Melanoma Research, eCAM, Future Medicine, Personalized Medicine, Cancer Immunology and Immunotherapy, etc.) and Colleagues, Since 1989.
- Written and Reviewed Research Grant Applications, Since 1989.
- Served as external examiner of several Ph.D. Theses.

Memberships:

- Member, Editorial Board of the journal "Evidence based Complimentary and Alternate Medicine," Since 2007
- Member, 2003-2008, International Association for Biologicals (IABs), a Commission of the International Union of Microbiological Societies, Switzerland.
- Member, Since 2001, Cancer Committee, Hoag Cancer Center, Newport Beach, CA, USA.
- Member, Since 2000, Continuous Quality Improvement Committee, Hoag Cancer Center, Newport Beach, CA, USA.
- Member, Since 2000, International Society for Biological Therapy of Cancer (ISBTC), USA

- Member, Since 2000, American Association for Cancer Research (AACR), USA
- Member, Since 1999, Society for In Vitro Biology (SIVB), USA

Participation in Workshops/Advanced Courses:

- Participated in 3rd International Workshop and Symposium on Cancer Metastasis and the Lymphovascular System: Basis for Rational Therapy, May 6-9, 2009 organized by University of California, San Francisco, CA.
- Faculty, 1st International Congress on Ayurveda: the Meaning of Life Awareness, Environment and Health," March 21-22, 2009, Milan, Italy
- Faculty, iSBTc-FDA-Taskforce on Immunotherapy Biomarkers, 2008-2009.
- Participated in the Global Regulatory Summit, October 29, 2008 organized by International Society for Biological Therapy of Cancer at San Diego, CA.
- Participated in the Workshop on Inflammation and Cancer, October 30, 2008 organized by International Society for Biological Therapy of Cancer at San Diego, CA.
- Served as Resource Person and Conducted a workshop on How to Write Scientific Paper at IGCC meeting (Arogya) August 21-24, 2008, Coimbatore, Tamil Nadu, INDIA
- Participated in the Tumor Vaccine and Cell Therapy working group meeting, April 11, 2008 at San Diego, CA
- Participated in the Workshop on Future Opportunities for Combination Biological Therapy of Cancer, November 1, 2007 organized by International Society for Biological Therapy of Cancer at Boston, MA.
- Participated in the Perspectives in Melanoma XI, October 3-4, 2007 organized by SWOG at Huntington Beach, CA.
- Participated in the Molecular Medicine Workshop, September 7, 2007 organized by the Salk Institute, La Jolla, CA.
- Participated in the Combinatorial Cancer Biotherapuetic Approaches Workshop, November, 2006 organized by International Society for Biological Therapy of Cancer at Los Angeles, CA.
- Participated in the Clinical Trials Working Group Meeting: ELISPOT Panel and Vaccine Potency Issues, November 13-14, 2005 organized by Cancer Vaccine Consortium at Alexandria, VA.
- Invited Participant of the Cancer Vaccine Clinical Trial Workshop, November 10, 2005 sponsored by Society for Biological Therapy of Cancer and Cancer Vaccine Consortium at Alexandria, VA.
- Participated in the International Immunotherapy of Cancer Workshop-2004, November 14-19, 2004, organized by Pan-American Health Organization/World Health Organization at Havana, Cuba
- Participated in "Tumor Immune-Monitoring Workshop" organized by international Society for Biological Therapy of cancer, November 4, 2004 at San Francisco, CA.
- Pathobiology of Cancer Workshop, July 18-25, 2004 organized by American Assciation for Cancer Research at Snowmass Village, CO.
- Consensus Conference on Patient Specific Therapy, November 2, 2003 sponsored by Society for Biological Therapy at Bethesda, MD.
- Cancer Biometrics Workshop, October 30, 2003 sponsored by Society for Biological Therapy at NIH, Bethesda, MD.
- Flowcytometry Workshop 2003, UCLA, Los Angeles, CA.
- Primer Course on Tumor Immunology, November 7, 2002 sponsored by Society for Biological Therapy at La Jolla, San Diego, CA.

- Immune Monitoring Workshop, November 8, 2001 sponsored by Society for Biological Therapy, NIH, Bethesda, MD.
- Scale-up Strategies in Animal Cell Culture, May 14-18, 2001, Pennsylvania State University, State College, PA.
- Primer Course on Tumor Immunology, October 26, 2000 organized by Society for Biological Therapy at Seattle, WA.
- Essentials of Successful Grant Writing, April 1, 2000, organized by AACR Associate Member Council at San Francisco, CA.
- Clinic Facilitator Training Program on "Freedom from Smoking", February 26, 2000, organized by American Lung Association, CA.
- Advanced Cell and Tissue Culture: Foundations and Advanced Applications, June 10, 2000, organized by Society for In Vitro Biology at San Diego, CA, USA.
- Differential mRNA Display, March 18, 1997, organized by KT Biotechnology at Duke University, Durham, NC, USA
- Genetic, Molecular, and Structural Control of Signal Transduction, October 31-November 6, 1996, organized by Cambridge Symposia at Lake Tahoe, NV, USA
- Immunological Staining Techniques, September 5, 1991, organized by DAKO Corporation (DAKOPATTS), Durham, NC, USA
- Regulatory Mechanisms in Immunity, June 16-23, 1991, organized by American Association of Immunologists at Colorado College, Colorado Springs, USA
- Polymerase Chain Reactions: Its Subtleties and Applications, May 26, 1990, organized by American Association for Cancer Research, Washington DC, USA
- Methods of Immunologic Research and Diagnosis, June 7-20, 1987, organized by Ernest Witebsky Center for Immunology, State University of New York, Buffalo, NY, USA
- Immune System: Genes, Receptors and Regulation, September 15-24, 1986, organized by Federation of European Biochemical Society (FEBS), Ionian Village, GREECE
- Immunogenetics, March 19-April 6, 1984, organized by Cancer Research Institute, INDIA and UNESCO (International Cell Research Organization) at Cancer Research Institute, Bombay, INDIA
- Application of Electron Microscopy to Biological/Biomedical Research, October 4-23, 1982, organized by Electron Microscopy Unit, Department of Anatomy, All India Institute of Medical Sciences, New Delhi, INDIA
- Basic Immunology Techniques: I & II, September 4, 1982 and April 9, 1983, organized by Society of Young Scientists, All India Institute of Medical Sciences, New Delhi, INDIA

Administrative and Advisory Positions:

- Member, Development Committee, international Society of Biological Therapy of cancer (iSBTc), USA, Since 2008
- Chair, Public Relation, Publication, Communication committee of international Society of Biological Therapy of cancer (iSBTc), USA, Since 2008
- Collaboration Committee Member, Since November 2005, International Society for Biological Therapy of Cancer (ISBTC), USA.
- Mentor, Da Vinci Mentor Program, Newport Beach Harbor High School, 2004-2009, Newport Beach, CA, USA
- Vice-President, Community Advisory Committee, Gifted and Talented Education, Irvine Unified School District, Irvine, CA, USA, Since 2007
- Member, Hoag Cancer Committee, Since 2000

- Ph.D. Thesis Committee Member and Examiner, University of Southern California (USC), Los Angeles, CA, USA.
- Ph.D. Thesis External Examiner (2007, 2008), University of Madras, Chennai, INDIA.
- Promoter, 1999, The Orange County Festival of Trees at South Coast Plaza to benefit Hoag Hospital, Newport Beach, California, organized by 552 Club
- Chairman, Technology Committee, 1996-1999, Seawell Elementary School Parents-Teachers Association, Chapel Hill, North Carolina, USA
- Key-Member of Three Member Fact Finding Committee, 1984-1985, Appointed by the Vice-Chancellor, Jawaharlal Nehru University, New Delhi, INDIA
- Key-Member of Ten Member Hostel Re-Structuring Committee, 1983-1984, appointed by the Dean of Students, Jawaharlal Nehru University, New Delhi, INDIA
- President and Secretary of Student Body, 1981-1985, Jawaharlal Nehru University, New Delhi, INDIA

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Chemomodulation of Immune Response:

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- <u>R. S. Selvan</u>, T. N. Dean, H. P. Misra, P. S. Nagarkatti, and M. Nagarkatti. 1989. Immunotoxic effects of aldicarb: I. Suppression of macrophage but not natural killer (NK) cell mediated cytotoxicity of tumor cells. Bulletin of Environmental Contamination and Toxicology 43:676-682.
- T. N. Dean, <u>R. S. Selvan</u>, H. P. Misra, M. Nagarkatti, and P. S. Nagarkatti. 1990. Aldicarb treatment inhibits the stimulatory activity of macrophages without affecting the T-cell responses in syngeneic mixed lymphocyte reaction. International Journal of Immuno-pharmacology 12(3):337-348.
- 4. <u>R. S. Selvan</u>, M. Selvakumaran, and A. R. Rao. 1991. Influence of arecoline on immune system: II. Suppression of T-cell mediated responses and parameter of non-specific resistance after short-term exposure. Immunopharmacology and Immunotoxicology 13(3):281-309.
- 5. <u>R. S. Selvan</u> and A. R. Rao. 1993. Influence of arecoline on immune system: III. Suppression of B-cell mediated immune response in mice after short term exposure. Immunopharmacology and Immunotoxicology 15(2&3):291-305.
- 6. <u>R. S. Selvan</u>, N. S. Ihrcke, and J. L. Platt. 1996. Heparan sulfate in immune responses. Annals of New York Academy of Sciences 797:127-139.

Tumor Models, Tumor Immunology (T-cell and Antibody Response), Vaccine Therapy, and Biomarker:

- <u>R. S. Selvan</u>, P. S. Nagarkatti, and M. Nagarkatti. 1990. Role of IL-2, IL-4, and IL-6 in the growth and differentiation of tumor-specific CD4⁺ T-helper cells and CD8⁺ T-cytotoxic cells. International Journal of Cancer 45(6):1096-1104.
- 8. <u>R. S. Selvan</u>, P. S. Nagarkatti, and M. Nagarkatti. 1991. Characterization of Tlymphocyte clones isolated from BCNU-cured LSA mice. International Journal of Cell Cloning 9(6):594-605.

- 9. <u>R. S. Selvan</u>. 1999. Mucin may not be the recognition antigen for autologous and heterologous pancreatic tumor-reactive T-cells. Proceedings of 10th International Congress of Immunology 2:1123-1127.
- 10. <u>R. S. Selvan</u>, T. N. Pappas, and F. E. Ward. 2000. Lack of evidence for MHCunrestricted (atypical) recognition of mucin by mucinous pancreatic tumorreactive T-cells. British Journal of Cancer 82(3):691-701.
- R. O. Dillman, <u>S. R. Selvan</u>, P. M. Schiltz, C. Peterson, K. Allen, C. DePriest, E. F. McClay, N. M. Barth, P. F. Sheehy, C. de Leon, L. D. Beutel. 2004. Phase I/II Trial of Melanoma Patient-Specific Vaccine of Proliferating Autologous Tumor Cells, Dendritic Cells, and GM-CSF: Planned Interim Analysis. Cancer Biotherapy and Radiopharmapeuticals 19(5):658-665.
- M. H. Ravindranath, S. Muthugounder, N. Presser, <u>S. R. Selvan</u>, J. Portoukalian, S. Brosman, D. L. Morton. 2004. Gangliosides of Organ-Confined versus Metastatic Androgen Receptor-Negative Prostate Cancer. Biochem. Biophy. Res. Comm. 324: 154-165.
- R. O. Dillman, N. M. Barth, <u>S. R. Selvan</u>, L. D. Beutel, C. de Leon, C. DePriest, C. Peterson, S. K. Nayak. 2004. Phase I/II Trial of Autologous Tumor Cell Line-Derived Vaccines for Recurrent or Metastatic Sarcomas. Cancer Biotherapy and Radiopharmapeuticals 19: 581-588.
- 14. <u>S. R. Selvan, A. N. Cornforth, N. R. Rao, Y. Reid, P. M. Schiltz, Ray P. Liao,</u> David T. Price, F. S. Heinemann, R. O. Dillman. 2005. Establishment and characterization of a human primary prostate carcinoma cell line HH870. The Prostate 63: 91-103.
- R. O. Dillman, L. D. Beutel, S. K. Nayak, DePriest, <u>S. R. Selvan</u>, P. M. Schiltz. 2005. Cancer vaccine potency: Is there a dose/response relationship for patientspecific vaccines and clinical outcomes? Cancer Biotherapy and Radiopharmapeuticals 20: 373-378.
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