Curriculum Vitae Katarina Svanberg

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Personal

Born December 11, 1944 in Falköping, Sweden. Maiden name Ragnarsson. Swedish Citizen. Two daughters: Emilie Krite Svanberg, born 1979 and Kristina Svanberg born 1982.

Personal preparation

Göteborg University B.A. and M. Sc. 1964-1970

- Economy
- Political science
- Swedish literature
- Nordic languages
- Economic History
- Geography
- Oceanography

Göteborg University, Teachers College 1970

Lund University

Medical School, M.D.	1979-1984
Registered M.D.	1988
Medical Doctor, PhD	1989
Specialization Oncology	1992
Special teacher´s course in medicine	1993
Docent/Habilitation Oncology, Associated Prof.	1995

Appointments

Highschool teacher, Dean	1970-1979
Physician	1984-2012
Chief Consultant	2008-cont.
Adjunct Professor Oncology	2008
South China Normal University (SCNU)	
Distinguished Professor, Biophotonics	2011-cont.

Commission of trust

Lund University Medical Laser Centre (LUMLAC)

- Board Member 1991-ongoing
- Scientific Secretary 1992-2000
- Director 2000-2012
- Chair of the Board 2012-ongoing

Lund Laser Centre

- Board Member 1993-ongoing

Quadra Logic Technologies, Vancouver

- Scientific Advisory Board Member 1989-1995

Journal of Biomedical Optics
Editorial Board Member1995-ongoing

Lasers in Medical Science (Scientific journal)
Editorial Board Member1995-2000, 2009-ongoing

US Public Health Service Office on Women´s Health and National Cancer Institute, *Washington:*

- Scientific Advisory Board Member, Optical Technologies 1997-2005

Pharmacyclics, Pharmacological Company, Sunnyvale, Calif., USA

- Scientific Advisory Board Member 1998-2005

European Laser Association, Amsterdam

- Scientific Secretary 1998-2002

The International Society for Optics and Photonics (SPIE), *Bellingham, WA, USA*

- Member of the Board of Directors, 2005-2008
- Fellows' Committee 2011-2017
- Presidential Chain from 2008-2012
- Elected president candidate 2008
- Vice President 2009
- President Elect 2010
- President 2011
- Immediate Past President 2012

The UNESCO proclaimed "Year of Light" 2015, Trieste and Paris

- Member of the International Steering Committee, 2015

European Commission sub-committee Photonics 21, Brussels:

- Member of the Health Sector of Photonics 21, 2009-ongoin

UNESCO International Centre for Theoretical Physics (ICTP), Trieste, Italy:

- Member of the ICTP Advisory Committee 2009-ongoing

Center for Nanoscale Biophotonics, Australian Research Centre of Excellence, Sydney and Adelaide, Australia,

- Member of the International Scientific Advisory Committee 2014-ongoing

Entrepreneurial Achievements

Co-author of about 15 patent applications resulting in a number of granted patents.
Main medical advisor for the US based STI Inc., resulting in US-Lund research grants and clinical researched studies 1997-2008

Co-founder of and main medical advisor for

- Spectraphos AB (bought by Xillix Inc. 1997)
- SpectraCure AB, Lund 2004-ongoing

Co-founder of
GasPorox AB, Lund
GPX Medical, Lund
Board Member of

- SpectraCure AB 2004-ongoing
- GasPorox AB, Lund 2005-2016
- GPX Medical, Lund 2015-ongoing

Training Experience in academia

Scientific supervisor and co-supervisor for

- 19 PhD students
- 7 MSc students

Faculty opponent and PhD committee member for

- 6 PhD students

Prizes and awards

Recipient of:
The Royal Scientific Society Interdisciplinary Research Prize, Uppsala, 1995. Prize citation: "For outstanding interdisciplinary work on tissue diagnostics and tumour therapy using lasers"
The SKAPA Innovation Prize in memory of Alfred Nobel, 2004
The Innovator Award, Society for Industrial Development, Sweden, 2007
Fellow of the International Society for Optics and Photonics, SPIE, 2005
Fellow of the Academy of Electromagnetic Research, PIERS, 2014
The Lifetime Achievement Award in Biophotonics, National Institute of Health (NIH); Bethesda, USA. Prize citation: Pioneering scientific contributions and visionary leadership in creating a vibrant global Biophotonics community and improving the lives of patients" 2015
SPIE Gold Medal 2017; The International Society for Optics and Photonics; USA

Scientific achievements

Katarina Svanberg started her research career by studying laser light interaction with biological tissue. Her PhD thesis in Medical Science presented pre-clinical research work within experimental photodynamic therapy and tissue spectroscopy. The subsequent research activity has focused on clinical application of the pre-clinical achievements. K.S. has been active as an invited speaker at more than 200 international scientific conferences. She has about 170 peer-reviewed original scientific papers and is the co-author of 20 scientific review papers and also book chapters and more than 10 patents and patent applications. Katarina Svanberg has combined her clinical activity with research work and thus she has introduced a new cancer treatment modality, Photodynamic Therapy, in Oncology at the Lund University Hospital. The validation of the new modality was presented after performing two different randomized clinical studies at the hospital. She has been a key person in the collaboration in between several clinics and departments at the Lund University Hospital in introducing and applying laser-induced fluorescence spectroscopy for early tumor detection. K.S. has been instrumental in bringing out this clinical research work to several other countries within scientific networks, including many countries in Europe, Africa and the US. Her 3rd World activity is also manifested through her role as a member of the advisory board of the UNESCO International Centre for Theoretical Physics (ICTP). K.S. is a board member of Lund Laser Centre since 1993. Since 1991 she is also a board member of Lund University Medical Laser Centre, where she now serves as the chair of the Board. K.S. has also been acting as principal investigator coordinating a research programme within National Institute of Health, Rockville. She has also served as medical coordinator within EU-projects (BRIGHT, BRIGHTER and Photonics4Life) for laser application in medicine, in which programme industrial as well as scientific partners collaborate. During the years 2005 - 2008 she was appointed as one of the Directors in the Board for the International Society for Optics and Photonics, SPIE. SPIE is a learned society in Optics, Photonics and Lasers and serves more than 264,000 constituents from approximately 166 countries. The number of members exceeds 19 000 members globally. She was elected to the SPIE Presidential chain serving as Vice President 2009, President Elect 2010 and President 2011. She has remained centrally within SPIE as one of the five regular members of the European SPIE advisory board until late 2016 as in the Fellows Committee also until late 2016. She has also a role in the EU Health sector through her engagement within Photonics 21 Platform. In 2015 she was awarded the National Institute of Health Bench-to-Bedside Pioneer Award with the citation for “Pioneering scientific contributions and visionary leadership in creating a vibrant global Biophotonics community and improving the lives of patients”. At the conference Optics and Biophotonics in San Diego in August 2017 K.S. was awarded the SPIE Gold Medal for her contribution for Biophotonics achievements in photodynamic therapy and tissue spectroscopy for cancer treatments and diagnostics. Katarina Svanberg has also a record of being involved in starting up companies directly related to research she and in particular her collaborator Professor Sune Svanberg have been leading. After compulsory retirement from her clinical activity at 67 years of age she was directly appointed as Distinguished Professor of Biophotonics at the South China Academy of Advanced Optoelectronics, South China Normal University, where she now leads a new group of PhD and MSc students together with Sune Svanberg. The activities in China has a more than 30 years background including organization of conferences very early supported by SPIE. Katarina Svanberg keeps her research activities at Lund University and is continuously active within the Lund University Medical Laser Centre, closely related to the Lund Laser Center.

Scientific Publications, Katarina Svanberg

(Up till 1992 all authors in alphabetic order by policy, except for 7)

1. K. Svanberg and S. Svanberg, Diagnostics and Treatment of Cancer Tumours Based on Photoactivation of Hematoporphyrin Derivative (HpD)-A Literature Survey, *Lund Reports on Atomic* Physics **LRAP-23** (1983).
2. J. Ankerst, S. Montán, E. Sjöholm, K. Svanberg and S. Svanberg, Spectral characteristics in tissue diagnostics using laser-induced fluorescence, *Laser Inst. Amer.* **43**, 52-60 (1984).
3. J. Ankerst, S. Montán, K. Svanberg and S. Svanberg, Contrast enhancement in tumor localization using hematoporphyrin derivative (HpD) laser-induced fluorescence, *J. Opt. Soc. Am.* B1, 558-558 (1984).
4. J. Ankerst, S. Montán, K. Svanberg and S. Svanberg, Laser-induced fluorescence studies of hematoporphyrin derivative (HpD) in normal and tumor tissue of rat, *Appl. Spectr.* 38, 890-896 (1984).
5. S. Montán, K. Svanberg and S. Svanberg, Multi-color imaging and contrast enhancement in cancer tumor localization using laser-induced fluorescence in hematoporphyrin derivative (HpD)-bearing tissue, *Opt. Lett.* **10**, 56-58 (1985).
6. S. Andersson, J. Ankerst, E. Kjellén, S. Montán, E. Sjöholm, K. Svanberg and S. Svanberg, Tumour localization by means of laser-induced fluorescence in hematoporphyrin derivative, in *Laser Spectroscopy VII,* eds. T.W. Hänsch and Y.R. Shen, 401-406, Springer Verlag, Heidelberg, Germany, (1985).
7. K. Svanberg, E. Kjellén, J. Ankerst, S. Montán, E. Sjöholm and S. Svanberg, Fluorescence studies of hematoporphyrin derivative (HpD) in normal and malignant rat tissue, *Cancer Res.* **46**, 3803-3808 (1986).
8. P.S. Andersson, J. Ankerst, E. Kjellén, S. Montán, K. Svanberg and S. Svanberg, Tissue diagnosics using laser-induced fluorescence techniques, *Proc. Second International Laser Science Conference*, Seattle, (1986).
9. P.S. Andersson, A. Gustafson, U. Stenram, K. Svanberg and S. Svanberg, Diagnosis of arterial atherosclerosis using laser-induced fluorescence, *Lasers Med. Sci.* **2**, 261-266 (1987).
10. P.S. Andersson, E. Kjellén, S. Montán, K. Svanberg and S. Svanberg, Autofluorescence of various rodent tissues and human skin tumour samples, *Lasers Med. Sci.* **2**, 41-49 (1987).
11. S. Andersson-Engels, J. Johansson, D. Killander, E. Kjellén, L.O. Svaasand, K. Svanberg and S. Svanberg, Photodynamic therapy and simultaneous near-infrared light-induced hyperthermia in human malignant tumors: A methodological case study, *Proc. L. I. A. ICALEO* **60**, 67-74 (1987).
12. P.S. Andersson, J. Ankerst, E. Kjellén, S. Montán, K. Svanberg and S. Svanberg, Tissue diagnostics using laser-induced fluorescence techniques, in *Advances in Laser Sciences II*, Proc. American Institute of Physics **160**, 715-721 (1987).
13. P.S. Andersson, J. Johansson, E. Kjellén, S. Montán, K. Svanberg and S. Svanberg, Diagnostics of cancer tumours and atherosclerotic plaque using laser-induced fluorescence, in *Laser Spectroscopy VIII*, eds. W. Persson and S. Svanberg, 372-373, Springer Verlag, Heidelberg, Germany, (1987).
14. S. Andersson-Engels, J. Ankerst, S. Montán, K. Svanberg and S. Svanberg, Aspects of tumour demarcation in rats by means of laser-induced fluorescence and hematoporphyrin derivatives, *Lasers Med. Sci.* **3**, 239-248 (1988).
15. S. Andersson-Engels, J. Johansson, D. Killander, E. Kjellén, L.O. Svaasand, K. Svanberg and S. Svanberg, Photodynamic therapy alone and in conjunction with near-infrared light-induced hyperthermia in human malignant tumors: A methodological case study, *SPIE* **908**, 116-125 (1988).

16. S. Andersson-Engels, J. Ankerst, J. Johansson, K. Svanberg and S. Svanberg, A comparison of tumour demarcation potential for various hematoporphyrin derivatives and phthalocyanine using laser-induced fluorescence, *SPIE* **907**, 80-86 (1988).
17. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Laser light interaction with tissue used for laser-induced fluorescence diagnostics and photodynamic therapy, *Proc. Lasers in Medicine Seminar*, Soria Moria, Oslo, Norway, (1988).
18. S. Andersson-Engels, J. Ankerst, J. Johansson, K. Svanberg and S. Svanberg, Tumour marking properties of different haematoporphyrins and tetrasulphonated phthalocyanine - a comparison, *Lasers Med. Sci.* **4**, 115-123 (1989).
19. S. Andersson-Engels, A. Gustafson, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Laser-induced fluorescence used in localizing atherosclerotic lesions, *Lasers Med. Sci.* **4**, 171-181 (1989).
20. S. Andersson-Engels, A. Brun, E. Kjellén, L.G. Salford, K. Svanberg and S. Svanberg, Identification of brain tumours in rats using laser-induced fluorescence and haematoporphyrin derivative, *Lasers Med. Sci.* **4**, 241-249 (1989).
21. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Fluorescence diagnosis and photochemical treatment of diseased tissue using lasers: Part I, *Anal. Chem.* **61**, 1367-1373 (1989).
22. S. Andersson-Engels, J. Ankerst, A. Brun, Å. Elner, A. Gustafson, J. Johansson, S.-E. Karlsson, D. Killander, E. Kjellén, E. Lindstedt, S. Montán, L.G. Salford, B. Simonsson, U. Stenram, L.-G. Strömblad, K. Svanberg and S. Svanberg, Tissue diagnostics using laser-induced fluorescence, *Ber. Bunsenges. Phys. Chem.* **93**, 335-342 (1989).
23. S. Andersson-Engels, R. Berg, J. Johansson, K. Svanberg and S. Svanberg, Medical applications of laser spectroscopy, in *Laser Spectroscopy IX*, eds. M.S. Feld, J.E. Thomas and A. Mooradian, 500-504 (1989).
24. K. Svanberg, The interaction of laser light with tissue - fluorescence diagnosis of tumours and atherosclerotic lesions and photochemical treatment, Dissertation thesis, Lund University Hospital, Department of Internal Medicine and Department of Oncology, Lund, Sweden (1989).
25. S. Andersson-Engels, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Malignant tumor and atherosclerotic plaque diagnosis using laser-induced fluorescence, *IEEE J. Quant. Electr.* **26**, 2207-2217 (1990).
26. S. Andersson-Engels, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Time-resolved laser-induced fluorescence spectroscopy for enhanced demarcation of human atherosclerotic plaques, *J. Photochem. Photobiol. B* **4**, 363-369 (1990).
27. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Laser-induced fluorescence in medical diagnostics, *SPIE* **1203**, 76-96 (1990). Invited paper.
28. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Fluorescence diagnosis and photochemical treatment of diseased tissue using lasers, Part I, *Biochim. Clin.* **14**, 936-942 (1990).
29. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Fluorescence diagnosis and photochemical treatment of diseased tissue using lasers: Part II, *Biochim. Clin.* **14**, 1043-1051 (1990).
30. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Fluorescence diagnosis and photochemical treatment of diseased tissue using lasers: Part II, *Anal. Chem.* **62**, 19-27 (1990).
31. S. Svanberg, S. Andersson-Engels, E. Bak-Jensen, R. Berg, A. Brun, S. Colleen, I. Idvall, C. Ingvar, J. Johansson, S.-E. Karlsson, D. Killander, R. Lundgren, S. Montán, L.G. Salford, U. Stenram, L.-G. Strömblad, K. Svanberg and I. Wang, Diagnostik av maligna tumörer utnyttjande laser-inducerad fluorescens, *Proc. Scand.* **34**, 506-510 (1990). In Swedish.
32. S. Andersson-Engels, Å. Elner, J. Johansson, S.-E. Karlsson, L.G. Salford, L.-G. Strömblad, K. Svanberg and S. Svanberg, Clinical recording of laser-induced fluorescence spectra for evaluation of tumour demarcation feasibility in selected clinical specialities, *Lasers Med. Sci.* **6**, 415-424 (1991).

33. S. Andersson-Engels, J. Johansson, K. Svanberg and S. Svanberg, Fluorescence imaging and point measurements of tissue: Applications to the demarcation of malignant tumors and atherosclerotic lesions from normal tissue, *Photochem. Photobiol.* **53** , 807-814 (1991).
34. S. Andersson-Engels, L. Baert, R. Berg, M.A. D'Hallewin, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Fluorescence characteristics of human atherosclerotic plaque and malignant tumors, *SPIE* **1426**, 31-43 (1991).
35. S. Andersson-Engels, R. Berg, J. Johansson, S. Svanberg, O. Jarlman, K. Svanberg and S. Montán, Fluorescence and transillumination imaging for tissue diagnostics, *Proc. CLEO'91*, Baltimore, Maryland, USA, (1991).
36. L. Baert, R. Berg, B. van Damme, M.A. D' Hallewin, J. Johansson, K. Svanberg and S. Svanberg, Clinical fluorescence diagnosis of human bladder carcinoma following low-dose Photofrin injection, *SPIE* **1525**, 385-390 (1991).
37. S. Andersson-Engels, A. Gustafson, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Investigation of possible fluorophores in human atherosclerotic plaque, *Lasers Life Sci.* **5**, 1-11 (1992).
38. K. Svanberg and S. Svanberg, Fluorescence diagnosis and photochemical treatment of diseased tissue using lasers, *Proc. Conference on Spectroscopic Approaches to Analysis of Biological Tissue,* Albuquerque, New Mexico, USA, (1992). Invited paper.
39. K. Svanberg, R. Berg, J. Johansson and S. Svanberg, Photodynamic laser therapy of malignant superficial lesions, *Therapy* **3**, 5-8 (1992).
40. S. Andersson-Engels, R. Berg, S. Colleen, J. Johansson, S.-E. Karlsson, R. Lundgren, L.G. Salford, L.-G. Strömblad, K. Svanberg and S. Svanberg, *In vivo* fluorescence spectra of malignant lesions in various clinical specialities, in *Photodynamic Therapy and Biomedical Lasers*, eds. P. Spinelli, M. Dal Fante and R. Marchesini, 871-875 (Elsevier, Amsterdam, the Netherlands, 1992).
41. K. Svanberg, T. Andersson, D. Killander, S. Andersson-Engels, R. Berg, J. Johansson, S. Svanberg and Y.L. Yang, Photodynamic therapy of human skin malignancies and laser-induced fluorescence diagnostics utilizing Photofrin and δ-amino levulinic acid, in *Photodynamic Therapy and Biomedical Lasers,* eds. P. Spinelli, M. Dal Fante and R. Marchesini, 436-440 (Elsevier Science Publishers B.V., Amsterdam, the Netherlands, 1992).
42. S. Andersson-Engels, R. Berg, J. Johansson, U. Stenram, K. Svanberg and S. Svanberg, Laser Spectroscopy in Medical Diagnostics, In: *Photodynamic Therapy: Basic Principles and Clinical Aspects*, eds. Th. J. Dougherty and B.W. Hendersson, 387-424, Marcel Dekker Inc., New York, (1992).
43. T. Andersson, R. Berg, J. Johansson, D. Killander, K. Svanberg, S. Svanberg and Y.L. Yang, Photodynamic therapy in interplay with fluorescence diagnostics in the treatment of human superficial malignancies, *SPIE* **1645**, 187-199 (1992).
44. S. Andersson-Engels, J. Ankerst, J. Johansson, K. Svanberg and S. Svanberg, Laser-induced fluorescence in malignant and normal tissue of rats injected with benzoporphyrin derivative, *Photochem. Photobiol.* **57**, 978-983 (1993).
45. L. Baert, R. Berg, B. van Damme, M.A. D'Hallewin, J. Johansson, K. Svanberg and S. Svanberg, Clinical fluorescence diagnosis of human bladder carcinoma following low-dose Photofrin injection, *Urology* **41**, 322-330 (1993).
46. L. Liu, K. Svanberg, I. Wang, U. Stenram, S. Andersson-Engels and S. Svanberg, Liver twin tumours: A new experimental hepatic tumour model in the investigation of various treatment strategies, *Med. Sci. Res.* **21**, 703-706 (1993).
47. S. Andersson-Engels, R. Berg, J. Johansson, K. Svanberg and S. Svanberg, Medical fluorescence diagnostics and photodynamic tumour therapy, *NUTEK Symposium on Biomedical Measurement Technology*, Stockholm, Sweden, (1993).
48. W. Alian, S. Andersson-Engels, K. Svanberg and S. Svanberg, Laser-induced fluorescence studies of *meso*-tetra(hydroxyphenyl)chlorin in malignant and normal tissues in rat, *Br. J. Cancer* **70**, 880-885 (1994).

49. K. Svanberg and S. Svanberg, Le laser en médicine, *La Recherche* **255**, 686-693 (1993).
50. K. Svanberg and S. Svanberg, El láser en medicina, *Mundo Cientifico* **138** 718-725 (1993).
51. J. Aganauskiene, S. Andersson-Engels, C. Blomström-Lundqvist, B. Olsson, S. Steen, U. Stenram, K. Svanberg and S. Svanberg, Characterization of Myocardial Tissue Utilizing Laser-Induced Fluorescence Spectroscopy, Internal Report 93-02, (Lund University, (1993).
52. S. Svanberg, S. Andersson-Engels, E. Bak-Jensen, R. Berg, A. Brun, S. Colleen, I. Idvall, C. Ingvar, J. Johansson, S.-E. Karlsson, D. Killander, R. Lundgren, S. Montán, L.G. Salford, U. Stenram, L.-G. Strömblad, K. Svanberg and I. Wang, Diagnostik av maligna tumörer utnyttjande laser-inducerad fluorescens, Svenska läkarsällskapets handlingar Hygiea **102**, 287-297 (1993). In Swedish.
53. D.L. Liu, B. Jeppsson, H.O. Heuer, C.H. Håkansson, K. Svanberg, S. Svanberg and U. Stenram, Beneficial effects of platelet activating factor receptor antagonist WEB 2170 on 90-minute hepatic inflow interruption, *Eur. J. Gastroenterol. Hepatol.* **6**, 1015-1022 (1994).
54. H. Nilsson, J. Johansson, K. Svanberg, S. Svanberg, G. Jori, E. Reddi, A. Segalla, D. Gust, A.L. Moore and Th. A. Moore, Laser-induced fluorescence in malignant and normal tissue in mice injected with two different carotenoporphyrins, *Br. J. Cancer* **70**, 873-879 (1994).
55. K. Svanberg, T. Andersson, D. Killander, I. Wang, U. Stenram, S. Andersson-Engels, R. Berg, J. Johansson and S. Svanberg, Photodynamic therapy of non-melanoma malignant tumours of the skin using topical δ-amino levulinic acid sensitization and laser irradiation, *Br. J. Dermatol.* **130**, 743-751 (1994).
56. K. Svanberg, S. Andersson-Engels, L. Baert, E. Bak-Jensen, R. Berg, A. Brun, S. Colleen, I. Idvall, M.A. D'Hallewin, C. Ingvar, J. Johansson, S.-E. Karlsson, R. Lundgren, L.G. Salford, U. Stenram, L.-G. Strömblad, S. Svanberg and I. Wang, Tissue characterization in some clinical specialities utilizing laser-induced fluorescence, *SPIE* **2135**, 2-15 (1994).
57. K. Svanberg, I. Wang, R. Rydell, Å. Elner, J. Wennerberg, L. Pais Clemente, E. Cardoso, R. Pratas, M. Pais Clemente, S. Andersson-Engels and S. Svanberg, Fluorescence diagnostics of head and neck cancer utilizing oral administration of δ-amino levulinic acid, *SPIE* **2371**, 129-141 (1994).
58. H. Messmann, P. Mlkvy, S. Montán, I. Wang, A. Nilsson, K. Svanberg, S. Svanberg, A. MacRobert and S. Bown, Endoscopic fluorescence of gastrointestinal neoplasia after sensitisation with 5-amino laevulinic acid (ALA) or Photofrin, *SPIE* **2371**, 506-509 (1994).
59. I. Wang, S. Andersson-Engels, I. Idvall, C. Ingvar and K. Svanberg, *In vitro* laser-induced fluorescence studies of breast tumours following low-dose injection of Photofrin, *SPIE* **2135**, 139-146 (1994).
60. I. Wang, K. Svanberg, S. Andersson-Engels, R. Berg and S. Svanberg, Photodynamic therapy of non-melanoma skin malignancies with topical δ-amino levulinic acid: diagnostic measurements, *SPIE* **2371**, 243-252 (1994).
61. R. Rydell, K. Svanberg, J. Wennerberg, Å. Elner and S. Svanberg, Photodynamic imaging of cancer *in situ* and cancer of the head and neck, *Head and Neck* **16**, 521 (1994).
62. K. Svanberg, I. Wang, R. Rydell, Å. Elner, J. Wennerberg, L. Pais Clemente, E. Cardosa, R. Pratas, M. Pais Clemente, S. Andersson-Engels and S. Svanberg, Fluorescence Diagnostics of Head and Neck Cancer Utilizing Oral Administration of δ-Amino Levulinic Acid, *Proc. 5th International Photodynamic Association Meeting*, Florida, September 1994
63. I. Wang, K. Svanberg, S. Andersson-Engels, R. Berg and S. Svanberg, Photodynamic Therapy of Non-Melanoma Skin Malignancies with Topical δ-Amino Levulinic Acid: Diagnostic Measurements, *Proc. 5th International Photodynamic Association Meeting,* Florida, September 1994
64. S. Andersson-Engels, R. Berg, K. Svanberg and S. Svanberg, Multi-colour fluorescence imaging in combination with photodynamic therapy of δ-amino levulinic acid (ALA) sensitised skin malignancies, *Bioimaging* **3**, 134-143 (1995).
65. D.L. Liu, I. Wang, S. Andersson-Engels, C.H. Håkansson, U. Stenram and K. Svanberg, Intra-operative laser-induced photodynamic therapy in the treatment of experimental hepatic tumours, *Eur. J. Gastroenterol. Hepatol.* **7**, 1073-1080 (1995).

66. E. Palmqvist, C. Berggren Kriz, M. Khayyami, K. Svanberg and D. Kriz, DC-resistometric urea sensitive device utilising a conducting polymer film for the gas-phase detection of ammonia, *Biosens. Bioelectron.* **10**, 283 (1995).
67. A.M.K. Nilsson, C. Staël von Holstein, S. Andersson-Engels, R. Willén, B. Walther and K. Svanberg, Clinical detection studies of Barrett's metaplasia and oesophageal adenocarcinoma by means of laser-induced fluorescence, *SPIE* **2627**, 49-56 (1995).
68. I. Rokahr, S. Andersson-Engels, S. Svanberg, M.A. D'Hallewin, L. Baert, I. Wang and K. Svanberg, Optical detection of human urinary bladder carcinoma utilising tissue autofluorescence and protoporphyrin IX-induced fluorescence following low-dose ALA instillation, *SPIE* **2627**, 2-12 (1995).
69. K. Svanberg, L. Pais Clemente, M. Pais Clemente, I. Wang, T. Warloe, S. Andersson-Engels, R. Berg, J. Moan, Q. Peng and S. Svanberg, Pharmacokinetic studies of 5-amino levulinic acid-induced protoporphyrin IX build-up in some malignant tumours, *SPIE* **2387**, 30-42 (1995).
70. K. Svanberg, L. Pais Clemente, M. Pais Clemente, I. Wang, T. Warloe, S. Andersson-Engels, R. Berg, J. Moan, Q. Peng and S. Svanberg, Pharmacokinetic Studies of Delta-aminolevulinic Acid-induced Protoporphyrin IX Build-up in Some Malignant Tumors, SPIE **2397**, 30 (1995)
71. C. af Klinteberg, A.M.K. Nilsson, I. Wang, S. Andersson-Engels, S. Svanberg and K. Svanberg, Laser-induced fluorescence diagnostics of basal cell carcinomas of the skin following topical ALA application, *Biomedical Optics Newsletter* **5**, 1-6 (1996).
72. K. Svanberg, C. af Klinteberg, A. Nilsson, I. Wang, S. Andersson-Engels and S. Svanberg, Laser spectroscopy in tissue characterisation, *Biomedical Optical Spectroscopy and Diagnostics*, Orlando, FL, (1996).
73. C. Staël von Holstein, A.M.K. Nilsson, S. Andersson-Engels, R. Willén, B. Walther and K. Svanberg, Detection of adenocarcinoma in Barrett's oesophagus by means of laser-induced fluorescence, *Gut* **39**, 711-716 (1996).
74. K. Svanberg, D.L. Liu, I. Wang, S. Andersson-Engels, U. Stenram and S. Svanberg, Photodynamic therapy using intravenous δ-aminolaevulinic acid-induced protoporphyrin IX sensitisation in experimental hepatic tumours in rats, *Br. J. Cancer* **74**, 1526-1533 (1996).
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