Göran Stenman

Professor of Pathology

Project title: Studies of chromosome rearrangements, fusion oncogenes and hereditary cancer genes in solid tumors

Abstract

Overall goals: Fusion genes are potent oncogenes resulting from chromosome rearrangements, in particular translocations. Most fusion genes identified thus far have been found in hematological disorders and mesenchymal neoplasms, and only a few have been detected in carcinomas. The overall goal of this research project is to study the role of chromosome translocations and fusion oncogenes in the genesis of solid tumors. In particular, our aims are to (1) identify and molecularly characterize chromosome rearrangements in carcinomas and sarcomas; (2) study the pathogenetic and clinical significance of MYB-, MAML2-, PLAG1- och HMGA2-containing gene fusions in salivary gland, breast and skin tumors (incl. malignant melanoma); and (3) clone new fusion oncogenes and elucidate their molecular and clinical consequences. In a second project we are studying the role of TWIST1 and FGFR3 as hereditary breast cancer genes in patients with craniofacial malformations.

Methods: Using molecular cytogenetic techniques, including high resolution array-based comparative genomic hybridization (CGH), chromosome rearrangements are identified and characterized. Genes located at recurrent translocation breakpoints are identified by positional cloning and/or CGH- and expression arrays. Using molecular and cell biological methods the functions, mechanisms of activation and expression patterns of gene fusions and hereditary cancer genes are studied. Tumor specific mouse models are used to study the effects of these genes in vivo.

Significance: The use of high resolution molecular cytogenetic techniques in combination with CGH- and expression arrays opens up new possibilities to molecularly and clinically subclassify tumors and to identify cryptic rearrangements and new gene fusions that were previously impossible to detect. One such example is our newly identified MYB gene fusion which leads to loss of target sites for negatively regulating microRNAs and activation of the MYB oncogene. In summary, our studies are expected to provide new knowledge about pathogenetic mechanisms and signaling pathways of importance for the genesis and progression of both sporadic and hereditary tumors. This knowledge will also constitute the basis for development of new targeted cancer therapies.

10 selected scientific publications 2004-2009


Research group
Göran Stenman professor (group leader)
Annika Bergman PhD, postdoc
Mattias Andersson PhD, postdoc
André Fehr PhD, postdoc
Fredrik Persson MD, PhD, postdoc
Kaarina Sundelin MD, PhD, postdoc
Ywonne Andrén, MSc (molecular biologist)
Barbro Wedell lab technician
Marta Persson MSc, PhD student
Sarah Linéa von Holstein MD, PhD student
CURRICULUM VITAE (short)
GÖRAN STENMAN
Professor

PERSONAL HISTORY
Date of Birth: June 27, 1953
Business Address: Lundberg Laboratory for Cancer Research
Department of Pathology
The Sahlgrenska Academy at University of Gothenburg
Sahlgrenska University Hospital, SE-413 45 Göteborg, Sweden

EDUCATION AND ACADEMIC APPOINTMENTS
1977 D.M.D., University of Gothenburg, Sweden
1983 Ph.D., University of Gothenburg, Sweden
1985 Assoc. Prof. of Oral Pathology (Docent), University of Gothenburg
1985-1986 Visiting Assoc. Prof. (postdoc), Div. of Cancer Genetics, Dana-Farber Cancer Institute, Harvard Medical School, Boston, USA
1995 Professor of Medical Genetics, Faculty of Health Sciences, Linköping University, Sweden
1996 Professor of Pathology, Faculty of Medicine, University of Gothenburg
2000 Visiting Professor, University of Southern California, Los Angeles, USA

EMPLOYMENT HISTORY
1976-1982 Research Fellow, Dept. of Oral Pathology, University of Gothenburg
1977-1983 Private practice, Göteborg, Sweden (2.5 years full-time)
1982-1983 Research Fellow, Dept. of Pathology, University of Gothenburg
1982-1985 Cytogenetic consultant, Laboratory of Clinical Pathology and Cytology, Sahlgrenska University Hospital, Göteborg
1983-1985 Assistant Professor, Clinical Faculty, Dept. of Oral and Maxillofacial Surgery, Inst. for Applied Biotechnology, University of Gothenburg
1985-1986 Visiting Associate Professor, Division of Cancer Genetics, Dana-Farber Cancer Institute, Harvard Medical School, Boston, USA
1985-1993 Associate Professor (financed by the Swedish Medical Research Council 1985-1989), Dept. of Oral Pathology, University of Gothenburg
1993-1995 Associate Professor, Dept. of Pathology, Faculty of Medicine, University of Gothenburg
Since 1993 Consultant Laboratory for Pathology and Cytology, Sahlgrenska University Hospital, Gothenburg
1995-1996 Professor of Medical Genetics, Faculty of Health Sciences, Linköping University, Sweden
Since 1996 Professor of Pathology, Faculty of Medicine, University of Gothenburg
2000 Visiting Professor, University of Southern California, Los Angeles, USA
ADMINISTRATIVE AND SCIENTIFIC RESPONSIBILITIES

1990-1993  Member of the faculty board, Faculty of Odontology, University of Gothenburg
1994-2006  Member of the institutional board, Institute of Laboratory Medicine, University of Gothenburg
1997-2006  Scientific reviewer for grant applications to the Swedish Cancer Society (member of the Priority Committee for Pathology/Genetics/Hematology
1997-2002  Scientific reviewer for grant applications to the Sahlgrenska University Hospital and Faculty of Medicine (ALF), University of Gothenburg
1998-2001  Director of Graduate Studies, Institute of Laboratory Medicine, University of Gothenburg
1998-2000  Scientific reviewer for grant applications to Johan Jansson Foundation for Cancer Research, Göteborg
Since 1998  Founder and head of the Lundberg laboratory for Cancer Research, The Sahlgrenska Academy, University of Gothenburg
2000-2006  Member of the Scientific Board of the Swedish Cancer Society
2000-2006  Chairman and Vice Chairman of the Priority Committee for Pathology, Genetics and Hematology (PkA1) and member of the Working Committee (AuA), the Swedish Cancer Society
2002-2008  Member and Chairman (4 years) of the Priority Committee for National Postdoc positions, the Swedish Cancer Society
2000-2005  Chairman of the Department of Pathology, Institute of Laboratory Medicine, University of Gothenburg
2006-2009  Member of the institutional board, Institute of Biomedicine, The Sahlgrenska Academy at University of Gothenburg
Since 2006  Member of the board, scientific reviewer for grant applications to Assar Gabrielsson Foundation for Clinical Cancer Research, Volvo, Göteborg
Since 2006  Member (vice chairman) of the appointment committee for professorships and associate professorships, The Sahlgrenska Academy at University of Gothenburg
Since 2008  Scientific reviewer for grant applications to Gunvor och Ivan Svenssons Stiftelse, Göteborg
Since 2009  Co-ordinator of the strategic research area Cancer, Univ. of Gothenburg
Since 2009  Co-director of the BioCARE program (Biomarkers in Cancer Medicine), Lund Univ. and Univ. of Gothenburg

PRINCIPAL SUPERVISOR FOR Ph.D. THESIS

Currently principal supervisor for three residents in Ph.D. programs.

FACULTY OPPONENT

FELLOWSHIPS AND AWARDS

1985-1986  Fulbright scholarship, Harvard Medical School, Boston, USA
1987  Gothenburg Dental Society - 1987 Major Award to young scientists
1987  The Holger Thilander Award for research in Oral and Maxillofacial Surgery
1991  The Elander Award (Gothenburg Dental Society Award for Basic Research)
1997  The IngaBritt and Arne Lundberg Medal for the discovery of a new oncogene, and a new molecular mechanism for activation of oncogenes since 2000  Member of the Royal Society of Arts and Sciences in Gothenburg