

Curriculum Vitae: Alan Sabirsh Ph.D.

Birth info: Male, born Feb. 18, 1968 in Montréal, Canada
 Nationality: Swedish/Canadian (dual citizenship)
 Languages: Swedish, English, some French
 Family: Married with two children (ages 9 and 12)
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 Net: E-mail: Al.Sabirsh@gmail.com, Skype: [Al.Sabirsh](https://www.skype.com/user/Al.Sabirsh), LinkedIn: [Alan Sabirsh](https://www.linkedin.com/in/AlanSabirsh)
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Quick summary:



I work as a microscopist and cell biologist at AstraZeneca pharmaceuticals in Mölndal, Sweden, where I am responsible for our high-content biology unit and, quantitative histopathology activities. My work is currently focused mainly on cardiac regeneration, metabolic diseases and diabetic nephropathy. I was educated as a pharmacologist, and I have broad experience from industry and academia, as well as with many different target classes, ligands, pathologies, and techniques. My strengths include enthusiasm, passion, strategic and innovative thinking (especially valued by teams), a high technical aptitude, excellent communication skills, and a very collaborative attitude. I am also an award-winning teacher.

Brief history:

2012 – present **Cardiovascular and Metabolic Diseases, AstraZeneca**, Sweden. Scientific expert for cytometric and histological image analysis, responsible for our high content biology unit.
 2007 – 2012 **Department of Neuroscience, AstraZeneca**, Sweden. Many projects involving enzymatic, receptor (GPCRs, tyrosine kinases) and ion channel targets for the treatment of neurodegenerative diseases (primarily Alzheimer's and Parkinson's). I developed, and was responsible for, the high-content biology unit.
 2004 - 2007 **Post-doctoral studies, Dept. of Medical Biochemistry and Biophysics, Karolinska Institute**, Sweden, under Prof. Jesper Haeggström. Bioactive lipids, GPCRs and enzymology (within inflammation, immunity and cardiovascular disease). Lectures and graduate student supervision. Communications management within our EU network.
 1998 - 2004 **PhD. in Molecular Neurobiology, Lund University**, Sweden. The molecular pharmacology of GPCRs for bioactive lipids and, screening campaigns for receptor de-orphaning. Monoclonal antibody production and work for a small spin-off biotech company.
 1996 - 1998 Research at **Lund University**, Sweden
 1990 - 1996 **Department of Explorative Pharmacology, Astra Draco** pharmaceuticals, Sweden. Small animal models with a focus on in-vivo airway physiology and inflammation.
 1987 - 1992 **Honours B.Sc. in Biology and Pharmacology, McMaster University**, Canada. I graduated with **distinction**.

This CV is organised as follows (click the underlined text to skip to a particular section):

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Section 1: Scientific Portfolio

Current scientific activities at AstraZeneca:

Roles

Responsible for our high-content biology unit (20-30 users), lead biologist and discovery project leadership-team member (from initiation to IND), project proposer/target champion, supervisor, mentor, technical specialist, collaboration manager, leader for scientific capability-build projects.

Projects

Projects (>20) at AstraZeneca have involved regenerative, metabolic and pathophysiological targets including GPCRs, enzymes and ion channels with both small and large (biologics) molecule ligands. Research areas have included cellular differentiation, proliferation and apoptosis, amyloid and tau biology, inflammation, autophagy, lipid homeostasis and, intra-/inter-cellular signaling.

Assays delivered

Many automated image-based assays including live-cell analysis (protein translocation, intracellular transport, calcium signalling, synaptic integrity, autophagy), morphological analysis (cells and organelles), binding, protein expression and translocation, signalling, toxicity, and intracellular transport. Our digital histology and histocytometry methods are state-of-the-art and utilize machine learning, advanced classifiers and texture-based morphological analysis for automated sampling and analysis of large data sets.

Scientific output, original publications:

- Karlsson, U., Repits, J., Antonsson, L., Ahlm Cederfjäll, E., Ljungberg B., Ålenius, M., Sabirsh, A., Gisslen, M., Svennerholm, Bo., Medstrand, P., Esbjörnsson, J., Jansson, M. 2012. R5 HIV-1 isolates from individuals with low CD4+ T-cell counts exhibit reduced sensitivity to Maraviroc in vitro – correlation with an altered mode of CCR5 use.
Submitted, Antiviral Research.
- Borgegard, T., Jureus, A., Olsson, F., Rosqvist, S., Sabirsh, A., Rotticci, D., Paulsen, K., Klintonberg, R., Yan, H., Waldman, M., Stromberg, K., Nord, J., Johansson, J., Regner, A., Parpal, S., Malinowsky, D., Radesater, A.C., Li, T., Singh, R., Eriksson, H., Lundkvist, J. 2012 First and second generation gamma-secretase modulators (GSMs) modulate Abeta production through different mechanisms.
J Biol Chem.287(15):11810-9
- Schramm, S., Nagayev, I.Y., Sabirsh, A., Shevchenko, V.P., Arkhipova, A.S., Haeggström, J.Z., Myasoedov, N.F. 2008. Preparation of high specific activity tritium-labelled leukotriene B4 suitable for radioligand binding assays.
J Labelled Compds Radiopharm. 51:101-5
- Wan M., Sabirsh A., Wetterholm A., Agerberth B., Haeggström J.Z. 2007 Leukotriene B4 triggers release of the cathelicidin LL-37 from human neutrophils: novel lipid-peptide interactions in innate immune responses.
FASEB J. 21(11):2897-905.
- Sabirsh, A., Bywater, R.P., Bristulf, J., Owman, C., Haeggstrom, J.Z. 2006. Residues from Transmembrane Helices 3 and 5 Participate in Leukotriene B₄ Binding to BLT₁.
Biochemistry, 45(18): 5733-44.
- Schroder, O., Yudina, Yu, Sabirsh, A., Zahn N., Haeggstrom, J. Z., Stein, J. 2006. 15-deoxy- Δ 12,14-prostaglandin J2 inhibits microsomal prostaglandin E synthase type 2 in colon cancer cells.
J Lipid Res. 47(5):1071-80.
- Sabirsh, A., Bristulf, J., Karlsson, U., Owman, C., Haeggstrom, J.Z. 2005. Non-specific effects of leukotriene synthesis inhibitors on HeLa cell physiology.
Prostagland. Leukotrien. Ess. Fatty Acids, 73(6):431-40.
- Pettersson, A., Sabirsh, A., Bristulf, J., Kidd-Ljunggren, K., Ljungberg, B., Owman, C., Karlsson, U. 2005. Pro- and anti-inflammatory substances modulate expression of the leukotriene B₄ receptor, BLT₁, in human monocytes.

- J Leukocyte Biol. Jun;77(6):1018-25.*
- Sabirsh, A., Wetterholm, A., Bristulf, J., Leffler, H., Haeggstrom, J.Z., Owman, C. 2005. Fluorescent leukotriene B₄: potential applications. *J Lipid Res. Jun;46(6):1339-46.*
- Sabirsh, A., 2004: Molecular Pharmacology and Structure Function Modelling of the Leukotriene B₄ Receptor, BLT1. *Doctoral thesis.*
- Sabirsh, A., Bristulf, J., Owman, C. 2004. Exploring the pharmacology of the leukotriene B₄ receptor BLT1, without the confounding effects of BLT2. *Euro J Pharmacol. 499: 53-65.*
- Sabirsh, A., Pettersson, A., Boketoft, A., Kotarsky, K., Owman, C. 2003. Differential inhibition of receptor activation by two mouse monoclonal antibodies specific for the human leukotriene B₄ receptor, BLT1. *Int. Immunopharmacol. 3: 1829-1839.*
- Owman, C., Sabirsh, A., Garzino-Demo, A., Cocchi, F. 2000. Cloning of a novel chemoattractant receptor activated by leukotriene B₄ and used by human immunodeficiency virus type 1 to infect CD4-positive immune cells. A therapeutic connection to asthma? *Am. J Resp. Crit. Care Med. 161: S56-61.*
- Pettersson, A., Boketoft, A., Sabirsh, A., Nilsson, N.E., Kotarsky, K., Olde, B., Owman, C. 2000. First-generation monoclonal antibodies identifying the human leukotriene B₄ receptor-1. *Biochem. Biophys. Res. Comm. 279: 520-525.*
- Owman, C., Garzino-Demo, A., Cocchi, F., Popovic, M., Sabirsh, A., Gallo, R.C. 1998. The Leukotriene B₄ Receptor Functions As A Novel Type Of Coreceptor Mediating Entry Of Primary HIV-1 Isolates Into CD4-Positive Cells. *PNAS 95, p9530-9534*
- Olde, B., Sabirsh, A., Owman, C. 1998. Molecular mapping of epitopes involved in ligand activation of the human receptor for the neuropeptide, VIP, based on hybrids with the human secretin receptor. *J Mol. Neurosci. 11(2):127-34.*
- Owman, C., Sabirsh, A., Boketoft, A., Olde B. 1997. Leukotriene B₄ is the functional ligand binding to and activating the cloned chemoattractant receptor, CMKRL1. *Biochem. Biophys. Res. Comm. 240, p162-166.*

Activities affecting publication frequency:

During most of my time at AstraZeneca corporate policy was to not prioritize publication. As is customary in Sweden, I have taken full-time parental leave twice for a total of about 1.5 years, the first time in 2001 and the second time in 2004.

Recent conferences and meetings:

- High-content analysis; San Diego, USA, 2014
- The Swedish Society for Image Analysis (SSBA), Gothenburg, 2013
- AIMday Imaging: academics and professionals for applied image analysis, The Royal Institute of Technology, 2012, Chalmers Institute of Technology, 2013, Sweden
- High-content analysis; San Francisco, USA, 2012
- Morphology Day (a national meeting for high-content biology organised by me), AstraZeneca, Sweden, 2011
- Neurodegenerative Disorders; Uppsala, Sweden, 2011
- 5th Annual Conference on Cell-based Assays for Compound Screening and 3D Assays, Köln, Germany, 2010
- The 6th Forum of European Neuroscience (FENS), Geneva, 2008
- Alzheimer's 100 years - A turning point of strategy. Karolinska Institutet Nobel Forum International Symposium, Stockholm, 2007
- An international series of symposia regarding receptor and enzyme pharmacology organized by the EU Network Eicosanox (England, Germany, Italy, Sweden, 2004-2007).
- G-protein-coupled receptors (GPCRs) - from molecular aspects to novel therapy. Karolinska Institutet Nobel Forum International Symposium, Stockholm, 2006

Invited lectures and conference organization:

- Swedish Society for Image Analysis, Gothenburg, 2012
- RNAi & High-content Imaging Symposium, Dublin, Ireland, 2010, Oxford, England, 2011
- Natural products in drug discovery, 27 April, Stockholm Pharmacy Society, 11 May 2009 Uppsala Pharmacy Society
- Natural products in drug discovery, PharmSci Fair, Nice, France, 2009
- Invited lectures, academic courses (Copenhagen Univ., Lund Univ., Karolinska Institutet, Uppsala Univ.).
- I organise national, high-content imaging and image analysis meetings in Sweden

Awards and funding:

2011	Awarded funding as principle applicant and supervisor for a full-time, two year AstraZeneca post-doc by in an open competition (approx. 100,000€) “The impact of ApoE isoform expression in human, stem-cell derived, neuronal cells”.
2009	AstraZeneca, CNS&Pain Södertälje Honorary Award for Excellence in Experimental Work (1000 €) for my work with high-content biology
2004 – 2006	Member of the European Union project <u>Eicosanox</u> , “Eicosanoids and Nitric Oxide: mediators of cardiovascular, cerebral and neoplastic diseases” with 13 international partners (10,000,000€over five years).
2006 – 2008	Co-applicant (with Professor Jesper Heaggström) for the Swedish Research Council project “THE LEUKOTRIENES, biosynthesis, signalling and their role in inflammation”, which received a total of 210000€over three years.
2006 - 2007	Principle applicant for the AFA Insurance Anniversary Stipend for Research on Common Diseases (two years, 60000 €).
2006	Principle applicant, Karolinska Research fund, approximately 7500 €in an open competition

Membership and participation in scientific organisations:

2012 – present	European Light Microscopy Initiative (ELMI), Swedish Society for Image Analysis
2009 – present	European Microscopy Society
2009 – present	Society for Neuroscience
2005 – 2006	American Association for the Advancement of Science
2004 – 2006	Member of the management team for the 6 th frame European Union integrated project “Eicosanoids and Nitric Oxide: mediators of cardiovascular, cerebral and neoplastic diseases” (Eicosanox)
2000 – 2002	Board of directors, Department of Physiological Sciences, Lund University

Section 2: Technical Skills

Laboratory techniques, past and present:

Imaging and cytometry

- High-content biology (including automated image analysis development and programming), [Molecular Devices (ImageXpress), Cellomics (ArrayScan), some experience with Perkin Elmer (Operetta), Cytellect (LEAP)]
- Fully automated, live-cell, time-lapse imaging and analysis
- Image analysis: MetaXpress/MetaMorph, Visiomorph (for digital histology and stereology), CellProfiler, ImageJ, various deconvolution programs, some experience with MatLab, Definiens and Volocity
- Cytometric data (image and flow): Genedata Screener, DeNovo FCS Express, BD FACSuite
- Experience with the design of systems for image-based cytometry and digital histology (network, processing, storage), database requirements and maintenance (SQL/Oracle)
- Confocal and structured illumination fluorescent microscopy (scanning and spinning disk, Zeiss, Olympus, Nikon)
- Flow cytometry and fluorescence-activated-cell-sorting (BD and Coulter)
- Fluorescence techniques:
 - immunofluorescence (multicolour staining)
 - dyes and dye-like substances (e.g. Hoechst, propidium iodide, many calcium dyes, phalloidin, lysotracker, mitotracker, JC-1, lipid dyes)
 - genetically encoded fluorophors (e.g. GFP variants, mCherry, DsRed)
 - signal enhancement (CARD techniques e.g. proximity ligation, TSA)
 - quantum dots
 - RNA visualisation (Quantigene, single copy in-situ cellular visualisation of specific RNAs)
- Histology, immunocytochemistry

Laboratory automation

- robotic systems for fluidic handling (Biomek, Velocity Biocell, Gyros)
- general robotics (Thermo Polara CatX)

Software

- Data handling/visualisation: Spotfire, Gephi, Genedata Screener
- Curve fitting: XLfit, GraphPad Prism, SoftMax Pro
- Molecular modelling: WhatIf, PyMol
- Systems biology: GeneGo, Gephi

Methods for general pharmacology

- robotic automated analysis of fluorescence (including TRF), fluorescence polarisation, luminescence (chemical, electrochemical), resonant energy transfer and absorbance, including various reporter gene assays and functional assays for cell function, receptor activation and enzyme activity
- experience with a variety of screening reagents: small molecules, large molecules (peptides, antibodies, enzymes, aptamers), natural products, RNAi
- binding assays using radio-ligands (including SPA) and fluorescence polarisation
- mediator analysis using RIA, EIA, ELISA, luciferase bioassays, electrochemiluminescence, fluorescence polarisation
- transfection and culture of hybridomas, primary and immortalised cells
- various small animal models and sample preparation from in-vivo material

Protein science

- protein-protein interactions, surface plasmon resonance (Biacore)
- protein modelling
- antibody development and validation
- point mutation and tagging of proteins, PAGE (native, SDS)

Genomics

- DNA/RNA isolation and real time PCR analysis of gene expression
- microarray screening of gene expression and receptor signal transduction

Section 3: Teaching Portfolio

Summary: I consistently receive positive feedback regarding my performance as a teacher, presenter and communicator and I am sought-after as a resource in these contexts. I have taught a wide range of subjects in variety of different contexts that are too numerous to list. I have participated in university courses as an instructor or administrator at the undergraduate, graduate and post graduate levels. My students have come from industry and the fields of medicine, nursing, engineering, dentistry, natural science, the humanities and the general public. Teaching forms have included lectures, group work, problem-based learning, laboratory exercises, multimedia and IT-based instruction, as well as the supervision of individual projects at all levels.

Graduate student supervision and education:

Student supervision

- 2011 – present, I am currently co-supervising a graduate student in collaboration with the University of Linköping, Sweden
- 2004 – 2006 Assistant supervisor for two graduate students (Yu Yudina and Marija Rakonjac) during the course of their Ph.D. studies. Both successfully defended their doctoral theses.

Teaching

- 2004 – 2005, 2007, 2011, Lectures, course administration and design at the Karolinska Institute
- Guest lectures (the University of Frankfurt am Main, the University of Copenhagen, the Karolinska Institute, Uppsala University)

Pedagogical development

- 2000 – 2002, Member of the Graduate Student Education Committee, Physiological Sciences, Lund University

Undergraduate student supervision and education:

Student supervision

- 2001 – 2006, Supervision of undergraduate thesis projects.

Teaching, 1994 - 2006

- Lectures, laboratory demonstrations, course design and course administration
- Group leader for both problem-based learning groups and project groups
- Guest lectures (Copenhagen University, The Karolinska Institute, and Lund University)
- Design and evaluation of examination questions, course evaluation and administration (Lund University, Karolinska Institute)
- Academic opposition

Pedagogical training:

Course:

“Presentation techniques”, Unit for Medical Pedagogy, Lund University, 2000

Pedagogical Conference:

“Gender, University, Learning and ICT – Research, Theories and Experiences”, 2001, Lund, Sweden

Educational Awards:

- “Teacher of the year, 2002”, Lund University (1000 €)
- 2004, received the highest possible grade, for a lecture on endocrinology, from *all* of the students attending a course on physiology. This is not a formal award, but one which I am very proud of.

Section 4: Leadership Activities

Activities with managerial responsibility:

- Multiple project deliveries throughout preclinical phase (initiation to IND) as a member of international core teams with responsibility for supervision, delivery, quality, resource management and interactions with external contract research organisations (CROs).
- Directed various scientific initiatives including the development of two high-content biology units, the implementation of stem-cell-derived cell cultures and the implementation of new technologies.
- I am currently responsible for the performance and function of the AstraZeneca high-content screening unit in Sweden, including training, daily operations and long term development. This involves coordinating 20-30 users, functioning as an interface for IT-service functions, managing the acquisition of new equipment, driving the strategic implementation of new technologies, maintaining external collaborations and, providing expert interpretations of high-content biology data.
- 2004 – 2006, Member and communication manager for the European Union project Eicosanox, “Eicosanoids and Nitric Oxide: mediators of cardiovascular, cerebral and neoplastic diseases” with 13 international, academic and commercial partners.
- 2000 – 2002, Board of directors, Department of Physiological Sciences, Lund University
- 1998 – 2002, Course coordinator, Lund University: Physiology for engineers.

Research leadership training:

“Managing research scientists” an extensive course given by the Karolinska Institute Medical Management Centre (Dept. of Learning, Informatics, Management and Ethics) that included: managing a research group, leadership, group dynamics, project management, scientific communication, research funding and, the commercialisation of research findings.

Within AstraZeneca “leadership capabilities” are used to describe aspects of one’s work that are not captured by descriptions of technical competence. They are useful for providing a little more depth and I can provide examples for all of these from real situations:

Strategic thinking:

Strategic thinking is something I excel at and enjoy, and I like to innovate and push technological boundaries whenever possible. I am known for my innovative thinking, creativity and ability to see possibilities that others do not. I am good at inspiring people to move towards a common vision.

Passion for customers:

I work to identify unmet needs and, help others make informed choices, by clearly communicating the potential of complex technologies. I also provide the scientific expertise necessary to interpret complex datasets appropriately, while working to ensure data quality and integrity. High quality information, delivered faster and with more clarity, means more cost-effective decisions.

Decisive action:

Inefficiency really bugs me and I analyse obstacles and attack problems systematically and methodically to remove obstacles. I have also coordinated complicated tasks that required many decisions over short periods of time.

Driving performance:

I try to maximize my own performance by exposing ideas to constructive criticism and, I encourage balanced group dynamics that facilitate this. I challenge and change organisations that are impeding progress. I value integrity very highly: my own, my colleagues and that of the organisation I work in.

Collaborative skills:

My ability to collaborate is one of my most well-known, strongest and appreciated characteristics. My working style is characterised by enthusiasm, accessibility, supportive encouragement, respect and empathy.

Ethics, equal treatment and environment:

Scientific conduct is something I take very seriously. During 2009 and 2010 I was responsible for an investigation regarding scientific misconduct at AstraZeneca. I received this challenging appointment *specifically* because of my scientific and ethical integrity and, my high level of competence.

I have been interested for many years in the effects of inequality on the performance of scientific teams. For example, it has been systematically and quantitatively demonstrated that, in mixed gender groups, women's expertise is under-utilized and under-valued. I have studied and implemented a number of strategies for increasing equity in laboratory environments. The goal of these efforts was to make optimum use of everyone's expert knowledge, regardless of gender, in the interest of creating more effective teams.

AstraZeneca is a chemical company very interested in safety, health and the environment and I have received comprehensive training to reduce the environmental impact of my research activities.

I am an experienced meditator and hold seminars for co-workers interested in exploring mindfulness techniques. I have also run team activities to increase well-being and increase performance.

Collaboration with the surrounding community:*Public relations:*

2007 – 2012: Active and frequent participation in AstraZeneca's visitor information and scientific outreach programs (including general public, politicians, diplomats and policy makers, funding agencies, universities and high schools)

Media relations:

2004 – 2006: Communication Manager for the EU integrated project "Eicosanoids and Nitric Oxide: mediators of cardiovascular, cerebral and neoplastic diseases" (Eicosanox). As Communication Manager for this project my duties include relaying information to the general public and patient interest groups, both via media and direct interactions.

Public lectures:

2007- 2010: Very popular lecture series about capsaicin, TRPV1, chilli, pain and sensory perception (Stockholm Botanical Gardens, Swedish chilli growers association, Swedish pharmacy association).

Mentorship:

- As an industrial researcher I am an active member of the Karolinska Institutet mentor program (2 previous students and one current).
- Within AstraZeneca it is part of my role to mentor more junior scientists and, drive their personal and scientific development, in a way that is very similar to the supervision of graduate students and post-doctoral researchers.

Section 5: Referees and Contact Information

Former manager (2011-2012):

Dr. Camilla Niva, (formerly Dahlqvist)
currently Senior Project Manager, Exeger Sweden AB
P.O. Box 8144, SE-104 20 Stockholm, Sweden
E-mail: camillaniva@gmail.com, camilla.niva@exeger.com
Phone: +46(0)70-2770727

Leadership reference:

Dr. Christin V. Andersson
currently Head of Pharmaceutical Review Unit, The Swedish National Dental and
Pharmaceutical Benefits Agency
E-mail: christin.andersson@ownit.nu
Phone: +46 (0)73-9393434
Christin was formerly my immediate manager (2008 – 2011) and we worked closely together
for several years so Christin has lots of experience with my working style (see also her letter
of reference in [section 5](#))

Past colleagues:

Dr. Gabriel von Euler, Assoc. Principle Scientist at AstraZeneca
E-mail: Gabriel.von.Euler@astrazeneca.com or Gabriel.von.Euler@ki.se
Phone: +46 (0)70-6439164

Dr. Anders Ericsson-Dahlstrand, CEO Offspring Biosciences AB
E-mail: AndersEDahlstrand@gmail.com
Phone: +46 (0)8-40011230

Additional references and more documentation are available on request.

Section 6: Documentation

Please note that in PDF versions of this file the following text may become illegible as a result of compression artefacts. A high-resolution version or, printed copies, are available on request.

This is a letter of reference from my previous line manager at AstraZeneca, Dr. Christin Andersson (please see [section 4](#) for contact information).

AstraZeneca R&D Södertälje · SE-151 85 Södertälje · Sweden
T: +46 8 553 260 00 · F: +46 8 553 290 00 · astrazeneca.com



I have been Alan Sabirsh's line manager at the Neuroscience department at AstraZeneca R&D Södertälje (Sweden) from November 2008 to January 2011.

During those years, Al's main task has been to be the scientific lead for our high-content biology platform. The task involved many things, including responsibility for the platform operations (hardware, software and ensuring a secure and efficient IT infrastructure for data storage and analysis), user education and, scientific leadership. In this role, Al has also taken on the development of complex, high-content biology assays, and he has produced high-quality, decision making data according to agreed timelines for our drug discovery projects. For example, he has successfully developed assays that characterise protein translocation, binding patterns in difficult samples, and, neuronal outgrowth in heterogenous primary cultures. Before working in this role, Al also worked in other projects involving enzymology and biopharmaceuticals. In those projects he worked with a range of other techniques, such as fluorescent based enzyme assays (FRET) and protein-protein interaction assays (Biacore).

Al has a great ability to express himself in oral and written format. He has on several occasions presented our imaging platform to large audiences or management teams and, made smaller demonstrations in the lab for external visitors, journalists and students.

During his time at AZ, Al has always taken on new tasks with great enthusiasm and a positive attitude and he has not only used conventional methods but also suggested innovative solutions to problems. He has also always taken the time and energy to explain his new way of thinking in a way that everyone can understand. Al is ambitious, hard working, thorough and has throughout his time in my team performed his tasks in a very professional manner.

Al is a fantastic team member. He is very easy to collaborate with and he is a sought-after co-worker at the department. He always considers what is best for the team and he is never afraid to speak up in difficult situations. Al willingly contributes with his scientific knowledge and his positive attitude whenever he is approached by others. He is also a well-thought of colleague and has strong social skills. For example, he took part in organising a team-building day that was much appreciated by everyone!

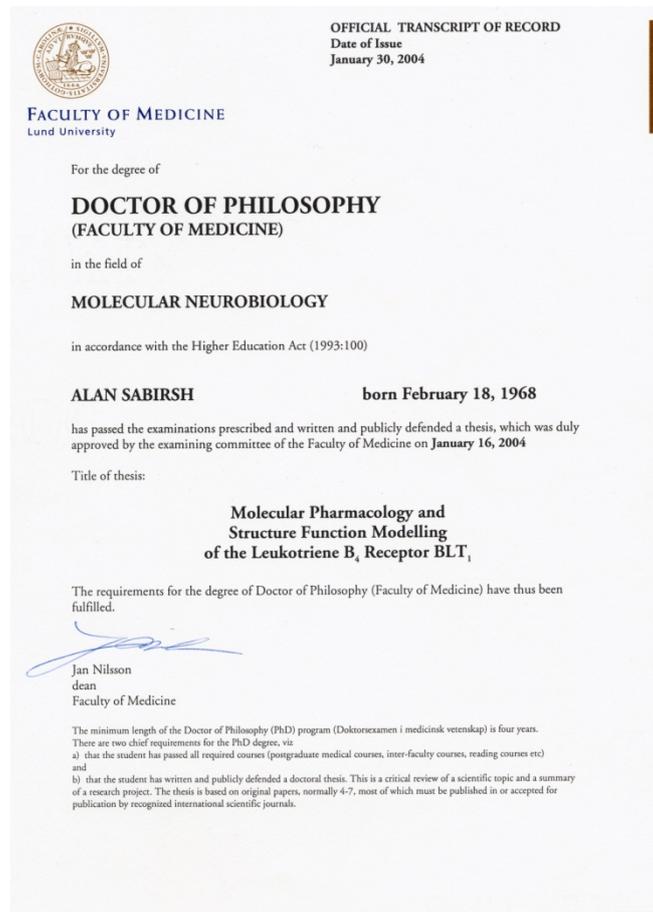
On a personal level I find Al to be a very positive person, we have had many interesting discussions about life and I really hope that I will get the opportunity to work with him again in the future.

With this letter I would like to give Al my highest recommendation and to wish him all the very best luck in his future career.

A handwritten signature in blue ink, which appears to read "Christin V Andersson".

Christin V Andersson, PhD, Associate Director
Discovery Sciences
AstraZeneca R&D Södertälje
SE-151 85 Södertälje, Sweden
+46 8 553 215 03
christin.v.andersson@astrazeneca.com

My PhD diploma from Lund University in Sweden.



A copy of a general letter of reference from my Ph.D. supervisor, Prof. emeritus Christer Owman, formerly at the Department of Physiological Sciences, Lund University, Sweden.

I have known Alan Sabirsh since more than 7 years in my capacity as supervisor for his PhD training (according to the "old" Swedish curriculum, which emphasizes independent research without any precise time limit). The doctoral thesis work is finished at the end of this year. Compared to several others I assess AI as an exceptionally talented student and scientist.

AI is an extremely creative, hard-working, competent and succesful scientist, much more than merely a "student". He is very critical, wants to discuss and debate problems, and is never afraid of attacking difficult tasks. He is technically and methodologically excellent, and has contributed a lot to technological development here. He has published, and is finishing, work with a very high degree of originality.

AI is excellent with computer-related work and handles the most complex programs easily. He has received high ratings, and has even been given awards, for his medical student teaching.

AI Sabirsh is taking science very seriously, and there is no doubt that he is among those who sees a reasearch career as the most important goal in professional life, and for whom science is really (already) a lifestyle.

I would like to give my warmest recommendation for his candidateship.

Name of Sponsor	Position / Department / Institution
Christer Owman, Professor, PhD, MD	Supervisor, Dept. Physiol. Sci.
Signature of Sponsor	Date
	030918