CURRICULUM VITAE OF MIKAEL KUBISTA

Name:	Mikael Kubista.
Address:	Heleneviksbacken 19, 431 36 Mölndal, Sweden.
Born:	August 13, 1961 in Podborany, Czechoslovakia.
Marital Status:	Married.
Children:	Robin (29 years), Christian (26 years), Josefine (10 year).
Residence:	Resident in Sweden since 1968. Swedish citizen since 1974.
Home page:	www.tataa.com, http://genexp.ibt.cas.cz/

Brief history

I have been interested in life sciences for as long as I can remember. I studied chemistry at University of Göteborg, Sweden, and obtained B.Sc. in chemistry in 1984. I then worked at Astra Hässle (today part of AstraZeneca), studying the K+/H+-ATPase inhibitor omeprazole, which became the then most sold pharmaceutical drug under the trade names of Losec (Prilosec in US) and Nexium, and is used to treat ulcer. I returned to academia joining Chalmers University of Technology in Göteborg and received in 1986 Technology Licentiate in Chemistry and in 1988 PhD in physical chemistry on studies of nucleic acid interactions with polarized light spectroscopy. I did my first postdoc at La Trobe University, Melbourne, Australia, on transcriptional foot-printing, and my second postdoc at Yale University, New Haven, USA studied chromatin and epigenetic modulation of nucleosomes. Returning to Gothenburg in 1991 I started my own research group studying DNA-ligand interactions and elucidated some critical details about the RecA catalyzed strand exchange process, which led to the establishment of the current model of DNA strand exchange in homologous recombination. We also discovered a novel mechanism of transcriptional activation of oncogenes, which led to the development of a new class of anticancer drugs that target specific quadruplex DNA structures. We developed methods for multidimensional data analysis based on which MultiD Analyses AB was founded, and we invented the light-up probes for nucleic acid detection in homogeneous solution, which led to the foundation of LightUp Technologies AB as Europe´s first company focusing on quantitative real-time PCR (qPCR) based diagnostics. In 2001 I set up the TATAA Biocenter as center of excellence in qPCR and gene expression analysis with locations in Gothenburg, Sweden, Prague, Czech Republic, and Saarbrücken, Germany. TATAA Biocenter is the largest provider of qPCR training globally, and Europe´s largest provider of qPCR services. It was the first laboratory in Europe to obtain flexible ISO 17025 certification and was presented the Frost & Sullivan Award for Customer Value Leadership as Best-in-Class Services for Analyzing Genetic Material in 2013. I also co-authored the MIQE guidelines for RT-qPCR analysis, which receives an average of 25 citations per week, and I am member of the CEN/ISO group drafting guidelines for the pre-analytical process in molecular diagnostics.

Professional preparation

Institute of Biotechnology, Czech Academy of Sciences, 2007 – (adjunct professor)
University of A Coruña, Spain, July 2006 – June 2007 (visiting professor)
University of A Coruña, Spain, September - November, 2003 (visiting professor)
University of Maryland, College Park, USA, June, 2000 (visiting professor)
Yale University, New Haven, USA, 1991 (postdoc)
La Trobe University, Melbourne, Australia, 1990 (postdoc)
Chalmers University of Technology, Ph.D. in chemistry, 1988.
Chalmers University of Technology, Licentiate in Physical chemistry, at institute of Chemistry and Chemical Engineering, 1986.
Göteborg University, B. Sc. with major in chemistry, 1984

Appointments

2007 –	Head of the department of gene expression profiling at the Biotechnology Institute, Academy of Sciences, Czech Republic, and working chairman of TATAA Biocenter
2006 – 2007	Visiting Professor, Department of Chemistry, A Coruña University, Spain
1997 – 2006	Professor, Department of biochemistry, Chalmers University of Technology.
1993 – 1997	Associate Professor, Department of biochemistry, Chalmers University of Technology.
1991 – 1993	Assistant professor (forskarassistent), Department of physical chemistry, Chalmers University of Technology.

Commissions of trust

CEO and Chairman of the board of TATAA Biocenter AB
Chairman of the board of MultiD Analyses AB

Member of the Scientific advisory board of Life Technologies
Scientific advisor to Roche
Member of the Scientific advisory board of InSilixa Inc.
Member of the Scientific advisory board of Polyclone Inc.
Member of the Scientific advisory board of LabOnNet Ltd
Member of the Scientific advisory board for InSilixa Inc.,
Member of the Scientific advisory board of Intelligent Enterprise Solutions Inc.,

Member of the Scientific Advisory Council of Genetic Engineering News

Foreign expert for the Australian Research Council.
Foreign advisor for the Czech Academy of Sciences.
Foreign expert for the Engineering & Physical Science Research Council, Great Britain.
Foreign expert for the Medical research Council, Great Britain
Foreign advisor for the Board of Higher Education, Libya.
Foreign expert for Science Foundation, Ireland.
Foreign expert for the National Science Foundation, USA.
Foreign advisor for the Research Corporation, USA.
Expert advisor for the European Commission Research Directorate General

Special consultant in the Life Science area for Arthur D. Little Inc.

Advisor for United Nations Educational Scientific and Cultural Organization (UNESCO)

Member of the scientific advisory board for the International Biotechnology Research in Tripoli, Libya (a UNESCO effort)

Editor of Scientific Reports, Nature Publishing group
Founding Editor of Biomolecular Detection and Quantification

Member of the ISO/CEN committees writing the guidelines for the Quality management in the medical laboratory related to the preanalytical process.

Areas of expertise

Bioinformatics
Biotechnology
Chemometry
Fluorescence spectroscopy
Gene expression profiling
Physical chemistry
Spectroscopy/optics

Education
Teaching
Leadership
Entrepreneurship

Publications

Published 202 research papers (WOS; April, 2014) that have been cited 7617 times. Most cited paper is the MIQE guidelines, which are cited at a rate of 25 times per week. Average citation is 37.71 and h-index: 41.

Five most cited papers (Google Scholar & Science Citation index):

Title: The MIQE Guidelines: Minimum Information for Publication of Quantitative Real-Time PCR Experiments.

Author(s): Bustin Stephen A.; Benes Vladimir; Garson Jeremy A.; et al.
Source: CLINICAL CHEMISTRY Volume: 55 Issue: 4 Pages: 611-622 DOI: 10.1373/clinchem.2008.112797 Published: APR 2009
Times Cited: 1936

Title: The Real-time Polymerase Chain Reaction. Molecular Aspects of Medicine 27, 95-125 (2006).
Author(s): M. Kubista, J. M. Andrade, M. Bengtsson , A. Forootan, J. Jonák, K. Lind, R. Sindelka, R. Sjöback, B. Sjögreen, L. Strömbom, A.Ståhlberg & N. Zoric.
Times Cited: 690

Title: ABSORPTION AND FLUORESCENCE PROPERTIES OF FLUORESCEIN
Author(s): SJOBACK R; NYGREN J; KUBISTA M
Source: SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY Volume: 51 Issue: 6 Pages: L7-L21 DOI: 10.1016/0584-8539(95)01421-P Published: JUN 1995
Times Cited: 444

Title: DNA tetraplex formation in the control region of c-myc
Author(s): Simonsson T; Pecinka P; Kubista M
Source: NUCLEIC ACIDS RESEARCH Volume: 26 Issue: 5 Pages: 1167-1172 DOI: 10.1093/nar/26.5.1167 Published: MAR 1 1998
Times Cited: 415

Title: LINEAR DICHROISM SPECTROSCOPY OF NUCLEIC-ACIDS
Author(s): NORDEN B; KUBISTA M; KURUCSEV T
Source: QUARTERLY REVIEWS OF BIOPHYSICS Volume: 25 Issue: 1 Pages: 51-170 Published: FEB 1992
Times Cited: 316

Major research accomplishments

Characterized several biologically important chromophores and many of the dyes that are popular labels of biomolecules. These include tryptophan, DAPI, fluorescein, thiazole orange and BEBO. Our papers are key references to nucleic acid staining dyes in the Molecular Probes catalogue.

Elucidated the mechanism of DNA strand exchange in homologous recombination. Our results appear in the popular textbook “Biochemistry” by Mathew, Van Holde and Ahern (3:rd edition, 2000, Benjamin Cummings - ISBN: 0-8053-3066-6).

Identified nucleosome positioning sequences in an experiment referred to in the field as the Widlund experiment. It is detailed in the book “Chromatin” by A. Wolfe (1999, Academic Press - ISBN: 0-12-761914-3).

Discovered a novel mechanism of oncogene activation that involves internal G-quadruplex formation. This work has attracted much attention and has been incorporated in Textbook of Biochemistry with Clinical Correlations 5th ed. by Devlin (2002, John Wiley & Sons Inc – ISBN: 0-471-41136-1) and the Encyclopedia of Molecular Medicine (2002, John Wiley & Sons Inc – ISBN: 0-471-37494-6). This discovery also led to the start of Cylenepharma (www.cylenepharma.com), a San Diego based Biotechnology Company that develops quadruplex interacting agents to block expression of the cmyc oncogene.

Developed powerful experimental designs to study chemical equilibria and chemical reactions by multidimensional spectroscopy.

Developed probes that become luminescent upon binding to target nucleic acid.

Developed a highly sensitive test for Non Hodkin lymphoma based on measuring differential expression of target genes by real-time PCR.

Pioneered the field of single cell and subcellular expression profiling

Seminars and courses

I have extensive experience in teaching and lecturing. I have lectured in essentially all areas in Biosciences, and in 1994 I designed the Molecular Biotechnology course at Chalmers University, which, when I left, was the most popular course in the Chemistry and Biotechnology undergraduate programs at Chalmers University.

I was the initiator, and during 1991-1994, the organizer of a seminar series for graduate students and scientists in Chemistry at Chalmers and Gothenburg universities. The seminar series has become integrated in the graduate educational program in chemistry and are still today very popular.

In 1992 I founded the 'Arne Brändström lectures in biophysical chemistry' held annually by renowned scientists in honor of Dr. Arne Brändström, who was a leading scientist behind the development of Omeprazole at Astra. The lectures were heavily sponsored by AstraZeneca. During 1992-1996 four Nobel laureates visited Gothenburg to deliver the lecture, and the day culminated with a large party for university and AstraZeneca scientists.

During 1996-1998 I organized courses about legal protection of Biotechnology innovations for the Industry in partnership with among others AstraZeneca, PharmaciaUpjohn, the Swedish patent and trademark office (PRV) and Ström & Gulliksson patent bureau.

In 2000 I assisted Conferator AB in organizing 'Bioteknikdagarna' for investors in Life Sciences, and arranged a round-table discussion how to avoid the 'Biotechnology bubble'. Those who listened saved money.

In 2001 I founded TATAA Biocenter in Gothenburg, as a Swedish center of excellence in real-time PCR. Today TATAA Biocenters are being planned at several locations in Europe, and have become the leading real-time PCR training provider globally.

Since 2003 I am arranging Unesco training in real-time PCR for scientists from developing countries

Since 2004 I am in the organizing committee of EMBO training courses in real-time PCR. Annually we arrange a real-time PCR course for scientists from all over the world.

Since 2004 I am giving the real-time PCR course at Pittcon, US, Annually I give a real-time PCR course for scientists in US.

Since 2005 I am in the organizing committee of FEBS training courses in real-time PCR. Annually we arrange a real-time PCR course for scientists from all over the world.

Entrepreneurial achievements

The following companies were founded by Mikael Kubista

LIGHTUP TECHNOLOGIES AB

Founded in 1998. LightUp (www.lightup.se) develops real-time PCR tests for human infectious diseases based on proprietary technology. LightUp was the Connect company of the year in 1999 and in 2003 it was the first company to receive CE certification for the European market for its CMV real-time PCR test. The company is located in the Stockholm area.

MULTID ANALYSIS AB

Founded in 2001. MultiD Analyses AB (www.multid.se) develops software for multidimensional data analyses and confocal microscopy based on proprietary art. MultiD received the VinnNu award in 2002. The company is located in Göteborg.

TATAA BIOCENTER AB

Founded in 2001. TATAA Biocenter AB (www.tataa.com) provides training in real-time PCR, offers contract research in real-time PCR, and develops real-time PCR assays for the research market. The company is located in Göteborg.

TATAA BIOCENTER s.r.o.

Founded in 2012. TATAA BIOCENTER s.r.o. (www.tataa.cz) offer molecular diagnostic services in the Czech and Slovak Republics. In particular the company offers tests for circulating tumor cells. The company is located in Prague.

The following patents taken by Mikael Kubista are being exploited

PROBE FOR ANALYSIS OF TARGET NUCLEIC ACIDS

Inventors: Mikael Kubista, Nicke Svanvik

Patents: US6329144, AU3112997, BR9709495, CN1226928, EP0918852, JP2000511057T, NZ333473, PL330201, SE506700, SE9602183, WO9745539

Exploited by: LightUp Technologies AB

METHOD FOR THE PREPARATION OF A PROBE FOR NUCLEIC ACID HYBRIDIZATION

Inventors: Mikael Kubista, Gunnar Westman, Nicke Svanvik

Patents: US6461871, AU9100598, DE19882655T, GB2344823, JP2001515923T, SE9703251, WO9913105

Exploited by: LightUp Technologies AB

METHOD FOR CHARACTERIZING SAMPLES

Inventor: Mikael Kubista

Patents: AU8754998, US6876954, WO9957543

Exploited by: MultiD Analyses AB

METHOD TO MEASURE GENE EXPRESSION RATIO OF KEY GENES

Inventors: Mikael Kubista, Pierre Åman, Anders Stålberg

Patents: SE 0103991, WO02099135

Exploited by: CanAg Diagnostics AB

METHOD TO CHARACTERIZE SAMPLES BY FLUORESCENCE MICROSCOPY

Inventor: Mikael Kubista, Björn Sjögreen and Amin Forootan

Patents: Swedish patent application

Exploited by: MultiD Analyses AB

SYNTHESIS AND EVALUATION OF NEW CYANINE DYES AS MINOR GROOVE OR POLY(dA-dT)$_2$ BINDERS

Inventors: Gunnar Westman, Jonas Karlsson, Mikael Kubista (contribution to US patent)

Patents: US2004132046, WO02090443, EP1390433. CA2446982, EP1390433

Exploited by: TATAA Biocenter and LightUp Technologies AB

USE OF PANEL OF PAIRS OF PRIMERS COMPLEMENTARY TO REPORTER GENES OF CELL DIFFERENTIATION

Inventors: Peter Sartipy, Karin Noaksson, Johan Hyllner, Neven Zoric, Mikael Kubista

Patents: WO2006094798, EP1859055

Exploited by: Cellectis & TATAA Biocenter

SINGLE-CELL mRNA QUANTIFICATION WITH REAL-TIME RT-PCR

Inventors: Mikael Kubista, Martin Bengtsson, Anders Ståhlberg, Linda Strömbom and Neven Zoric

Patents: EP 2147119

Exploited by: Roche

IMPROVED LYSIS AND REVERSE TRANSCRIPTION FOR mRNA QUANTIFICATION

Inventors: Mikael Kubista, Linda Strömbom and Neven Zoric

Patents: PCT/EP2008/003451

Exploited by: Roche

METHODS FOR DETERIMINING THE EXPRESSION LEVEL OF A GENE OF INTEREST INCLUDING CORRECTION OF RT-QPCR DATA FOR GENOMIC DNA-DERIVED SIGNALS

Inventors: Mikael Kubista, Henrik Laurell, Jason Iacovoni

Patents: WO2012171997 A1

Exploited by: TATAA Biocenter

Awards

Winner of the 1996 Innovation Cup in western Sweden for the LightUp probes.

Awarded the SKAPA price in 2002 for the most promising Swedish innovation.

Pioneer of the year in western Sweden in 2012

In 2013 Frost & Sullivan Award for Customer Value Leadership as Best-in-Class Services for Analyzing Genetic Material (to TATAA Biocenter)

External funding and major grants

I have always very been successful raising grants and support from both the public sector and Industry. Some more important grants I have received are:

1995-1998 EU Biomed II grant of a total of 5 million Euro to develop PNA based detection technologies. We were 10 partners and the grant contributed to the development of the LightUp probes.

2004 -2014 Vinnova grant of 20 million Euro for Biomedical research in Western Sweden. Together with Arthur D. Little we gathered decision makers in western Sweden, had them to agree on a vision how to develop biomedical research in the region, and wrote the application on behalf of Business Region Gothenburg.

2005 -2010 EU Framework VI FP6-2004-IST-NMP-2: SmartHEALTH (Smart Integrated Biodiagnostic Systems for Healthcare). Total grant 12.3 M€. We lead WP1.

2006 – 2009 EU Framework VI LSHB-CT-2006-037575: COMICS (Comics assay and cell array for fast and efficient genotoxicity testing). Total grant of 4.9 M€ (LSHB-CT-2006-037575). We lead WP9.

2006 – 2009 EU Framework VI LSHE-CT-2006-037957: MagRSA (Fully automated and integrated Microfluidic Platform for Real-time Molecular Diagnosis of Methicillin-resistant Staphylococcus Aureus). Total grant of 2.1 M€. We lead WP6.

2008 – 2011 EU Framework VII FP7-2007-ICT-1-216031: CD-MEDICS (Coeliac Disease Management Monitoring and Diagnosis using Biosensors and an Integrated Chip System). Total grant of 9.5 M€.

2008 – 2011 EU Framework VII FP7-2007-ICT-2: LABONFOIL (Laboratory Skin Patches and SmartCards based on foils and compatible with a smartphone). Total grant of 5.5 M€.

2008 – 2012 EU Framework VII Health-2007-1.2-5: SPIDIA (Standardisation and improvement of generic pre-analytical tools and procedures for in vitro diagnostics). Total grant of 11.2 M€.

2009 – 2012 EU Marie Curie Initial Training Networks FP7-PEOPLE-ITN-2008: EduGlia (Innovative Techniques and Models to Study Glia-Neuron Interactions). One ESR funded.

2011 – 2015 EU Framework VII HEALTH.2011.2.2.2: EurHealthAging (European ResearcH on devElopmentAL, BirTH and Genetic Determinants of Ageing). Total grant will be about 6 M€.

2012 – 2016 EU Marie Curie Initial Training Networks FP7-PEOPLE-2012-ITN: EpiTrain. One ESR and one ER funded.

Laboratories setup

Set up the biotechnology laboratory at Chalmers University in 1991around which the department of Molecular Biotechnology eventually was founded. Headed the laboratory between 1991 and 2003 and recruited several of the staff members and young researchers

Since 2001 Member of the Unesco scientific advisory board overseeing and coordinating the Biotechnology Research Center in Tripoli, Libya. Responsibility included planning and executing research strategy, purchasing and installing equipment, interviewing and selecting students and young researchers, arranging training for the researchers, and evaluating proposals. Today my role is less active, but I am still member of the Scientific Advisory Board of the institute and we have annual meetings planning strategy and helping setting up international collaborations.

Recruited in 2007 as one out of five founding group leaders to set up the Biotechnology Research Institute of the Czech Academy of Sciences (www.ibt.cas.cz/en). This was the first institute setup in Czech Republic in over 40 years. Responsibilities include heading a laboratory and recruiting students, postdocs and young researchers, developing research strategy for the laboratory, setting up support and collaborative agreements with industry, applying for grants, and equipping the laboratory. I still hold a part-time position at the institute.

Founded in 2001 the TATAA Biocenters with laboratories in Gothenburg, Sweden, and in Prague, Czech Republic. Recruited the Scientific Advisory Board, all personnel, set up research program and industrial collaboration, and equipped the laboratory. It is today the best equipped laboratory in Europe for qPCR expression profiling and the only laboratory with flexible ISO17025 certification for qPCR based diagnostics Customers and collaborators include eight out of the ten largest pharmaceutical companies. I am working chairman of the board. TATAA Biocenter is still growing.

Present group members

PhD Radek Sindelka, early development
PhD Vlasta Korenkova, high throughput expression profiling
PhD Lukas Valihrach, single cell profiling
PhD Marie Jindrichova, molecular diagnostics
MD Veronika Prokopova , circulating tumor cells
B. Sc. David Svec, molecular diagnostics
M. Sc. Maria Lennerås, expression profiling induced by osteointegration
B. Sc. Vendula Rusnakova, single cell expression profiling
B.Sc. Monika Sidova, early development in Xenopus laevis (joint with R. Sindelka)
B.Sc. Lucie Langerova, technitian
M.Sc. Anna Pfister. microRNA profiling

Former graduate students

2013 PhD Dabiel Andersson, Astrocyte profiling (main supervisor: Milos Pekny)
2008 PhD Radek Sindelka, subcell expression profiling
2007 Tech. Dr. Kristina Lind 'real-time immuno PCR'.
2007 Tech. Dr. Martin Bengtsson 'Quantification of gene expression in single cells',
2005 PhD Tzachi Bar 'Kinetic quality assessment for real-time PCR'.
2005 Tech. Dr., Anders Stålberg 'Gene expression profiling with real-time PCR'.
2003 Tech. Lic. Kristina Runeberg: 'Patentability of nucleic acid related inventions in Europe and in the USA'
2001 Tech. Lic. Jennie Isacsson 'Further development of light-up probes; dye synthesis and PCR applications'.
2001 Tech. Lic. Sara Nordgren 'Pathogen diagnostics in food stuff by Q-PCR'.
2000 Tech. Dr. Nicke Svanvik 'The Light-Up probe'.
1999 Tech. Dr. Hans Widlund 'Chromatin Structure: Nucleosome formation and positioning'.
1999 Med. Lic. Cao Hui 'In vitro selection of DNA sequences with extreme affinities for nucleosome core particles'.
1999 Tech. Dr. Jan Nygren: 'Characterization of fluorescent dyes by optical spectroscopy and chemometric analysis'.
1998 Tech. Dr. Tomas Simonson 'The effect of local DNA structure on the activity of c-myc'.
1997 Tech. Dr. Robert Sjöback 'Development and applications of chemometric methods for spectral deconvolution'.

Former Postdocs

2005 Dr Radek Sindelka
2005 Dr José Manuel Andrade Garda
2004 Dr Ranka Vanková
2002 Dr Jahan Ghasemi
1999 Dr Wang Dongyuan
1998 Dr Xiao-Ying Liu
1997-2000 Dr Abdalla Elbergali
1996-1997 Dr Petr Pecinka
1993 Dr José Manual Andrade Prada
1986 Dr Ieda Scarmino

Faculty opponent

PhD thesis evaluator/opponent in Norway, United Kingdom, Australia and Spain.

Personal qualities

My main strength is that I have a sense for quality. I have always recruited the very best people to work with me, and I have the skills to make them perform and to develop under my leadership. I am a team player and appreciated leader, who guides people through respect. I have also have sense for what will be important, which guides me in making strategic decisions. On my free time I play bridge. I used to play competitive and I was twice the Swedish champion, representing Sweden in three European bridge championships. Today I only play for fun. I also play tennis, table tennis - I was a member of the team that won the local corporation championships in 1997 – and badminton. I also ski, scuba dive, and I like mushroom picking.

Prague 2014-05-05