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 (32 years), Christian (29 years), Josefine (13 year).
Residence:	Resident in Sweden since 1968. Swedish citizen since 1974.
Home page:	www.tataa.com, http://genexp.ibt.cas.cz/

Brief history

Kubista has been interested in life sciences his entire life. He studied chemistry at University of Göteborg, Sweden, and obtained B.Sc. in chemistry in 1984. Kubista 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. He 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. He did first postdoc at La Trobe University, Melbourne, Australia, on transcriptional foot-printing, and a second postdoc at Yale University, New Haven, USA studying chromatin and epigenetic modulation of nucleosomes. Returning to Gothenburg in 1991 Kubista started his 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. His group 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. They developed methods for multidimensional data analysis based on which MultiD Analyses AB was founded, and they 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 Kubista set up the TATAA Biocenter as center of excellence in qPCR and gene expression analysis with locations in Gothenburg, Sweden and Prague, Czech Republic. 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 accreditation and was presented the Frost & Sullivan Award for Customer Value Leadership as Best-in-Class Services for Analyzing Genetic Material in 2013. In 2014 Kubista introduced non-invasive prenatal testing (NIPT) in Sweden founding the company Life Genomics AB. He also co-authored the MIQE guidelines for RT-qPCR analysis, which recently reached 5000 citations, and became member of the CEN/ISO working group that developed the guidelines for the pre-analytical process in molecular diagnostics that came in force during 2015. Since 2007 Kubista heads the department of gene expression at the institute of Biotechnology, CAS.

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 –	CEO and chairman of TATAA Biocenter and Head of the department of gene expression profiling at the Biotechnology Institute, Academy of Sciences, Czech Republic,
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

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 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) and 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

Areas of expertise

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

Education
Teaching
Leadership
Entrepreneurship

Publications

Published over 200 researcher papers that have been cited over 15000 times. h-index: 49. The MIQE guidelines, cited over 4000 times, is the most cited molecular diagnostics paper.

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-Hodgkin 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.

LIFE GENOMICS AB

Founded in 2014. Life Genomics AB (www.lifegenomics.se) offer genetic testing to the consumer market. Among company products are Non-Invasive Prenatal Testing (NIPT) and Nutrigenomic test Nutritest.

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, US20080280295 A1
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 & TATAA Biocenter

IMPROVED LYSIS AND REVERSE TRANSCRIPTION FOR mRNA QUANTIFICATION
Inventors: Mikael Kubista, Linda Strömbom and Neven Zoric
Patents: PCT/EP2008/003451
Exploited by: Roche & TATAA Biocenter

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

METHODS FOR ASSESSING RNA QUALITY
Inventors: Mikael Kubista
Patents: EP12160602.4
Exploited by: Roche & TATAA Biocenter

METHODS AND COMPOSITIONS FOR NUCLEIC ACIDS DETECTION
Inventor: Mikael Kubista
Patents: US 62/039,207
Exploited by: Roche & 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:

- H2020-EU.2.1.1. “Next generation sepsis diagnosis” SMARTDIAGNOS
- IMI call 11 “Blood-based biomarker assays for personalised tumour therapy: value of latest circulating biomarkers”. CANCER-ID.
- EU Marie Curie Initial Training Networks FP7-PEOPLE-2012-ITN: EpiTrain.

- EU Framework VII HEALTH.2011.2.2.2: EurHealthAging (European ResearcH on devElopmentAL, BirTH and Genetic Determinants of Ageing).
- EU Marie Curie Initial Training Networks FP7-PEOPLE-ITN-2008: EduGlia (Innovative Techniques and Models to Study Glia-Neuron Interactions).
- EU Framework VII Health-2007-1.2-5: SPIDIA (Standardisation and improvement of generic pre-analytical tools and procedures for in vitro diagnostics).
- EU Framework VII FP7-2007-ICT-1-216031: CD-MEDICS (Coeliac Disease Management Monitoring and Diagnosis using Biosensors and an Integrated Chip System).
- EU Framework VII FP7-2007-ICT-2: LABONFOIL (Laboratory Skin Patches and SmartCards based on foils and compatible with a smartphone).
- EU Framework VI LSHE-CT-2006-037957: MagRSA (Fully automated and integrated Microfluidic Platform for Real-time Molecular Diagnosis of Methicillin-resistant Staphylococcus Aureus).
- EU Framework VI LSHB-CT-2006-037575: COMICS (Comics assay and cell array for fast and efficient genotoxicity testing).
- EU Framework VI FP6-2004-IST-NMP-2: SmartHEALTH (Smart Integrated Biodiagnostic Systems for Healthcare).
- EU Biomed II grant to develop PNA based biosensors. The grant contributed to the development of the LightUp probes behind LightUp Technologies.
- 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.

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

2016 PhD Maria Lennerås, biocompatibility of biomaterials (main supervisor: Peter Thomsen)
2014 PhD David Svec, Single Cell Expression profiling
2014 PhD Vendula Novosadova, Single Cell Expression profiling
2013 PhD Daniel 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 2016-05-25