

Together with BioEvent, NanoDimension co-organized a workshop during the BioSquare 2008 entitled:



The poster features a blue background with a faint image of a DNA double helix and a group of people. The text is centered and reads: "BioSquare 2008" in white, "Basel, Switzerland | March 12-14" in yellow and white, "Opportunities and Challenges in NanoMedicine" in large white font, a central logo with a globe and the word "BIO SQUARE", and "Bringing The Global Life Sciences Community Together" at the bottom.

BioSquare 2008
Basel, Switzerland | March 12-14

**“Opportunities and Challenges
in NanoMedicine”**

BIO SQUARE

Bringing The Global
Life Sciences Community Together

The 2 hours session provided the audience with an overview of how nanotechnology has already started to impact the field of life sciences by reviewing recent developments in key areas. Nanosphere Inc, BIND Biosciences Inc, and HeiQ AG introduced the participants to their concrete applications and market strategies.

NanoDimension
supporting nanotechnology

 **Nanosphere**

**BIND**
BIOSCIENCES

**HEIQ**
MATERIALS

Minutes of the workshop

Participants:

Aymeric Sallin	Founder and Managing Director, NanoDimension AG
Carl Pabo	Former Chairman of the SAB, Sangamo BioSciences, Inc.
Bill Athenson	Vice President of International Sales and Marketing, Nanosphere, Inc.
Glenn Batchelder	President and CEO, BIND Biosciences, Inc.
Carlo Centonze	CEO and Founder, HEIQ AG

Workshop moderator and host **Aymeric Sallin** gave the introductory speech, outlining the opportunities that nanotechnology offers medicine in terms of disease detection, treatment and outright avoidance. He then briefly introduced each speaker and their respective companies, one for each area of opportunity: Disease detection (Nanosphere, Inc.), treatment (BIND Biosciences, Inc.) and avoidance (HeiQ AG).

Keynote speech – Dr. Carl Pabo

Quoting the physicists Feynman (“there’s a lot of room on the bottom”) and Dyson (“infinite opportunity in all directions”), **Dr. Carl Pabo** started his talk by saying that nanotechnology applied in life science represents an outstanding opportunity.

However, the interplay at the molecular, cellular and physiological levels in biological systems creates a challenging environment for nanotechnology in medicine. Unlike in applied physics, with direct applications such as in the semiconductor space, nanotechnology cannot be isolated in biology. As a result, one of the key questions is how to properly integrate new nanotech-based design subsystems into existing nano-biological systems. The key challenge resides at the interface of the two nanotech subsystems. To illustrate the point, Dr. Carl Pabo showed the audience the lengthy and tedious process he went through while developing artificially constructed DNA-binding proteins with Sangamo Biosciences, Inc.

In summary, there is immense potential for nanotechnology in medicine. However, companies seeking to succeed in this field will have to take three things into account: The actual technology, the corresponding interface in the biological systems and the question of how to reconcile the two.

Company Presentations: Nanosphere Inc, BIND Biosciences Inc, HeiQ AG

Bill Athenson, Senior Vice President of International Sales & Marketing at Nanosphere, Inc, provided the audience with a brief background of Nanosphere and then compared molecular and traditional diagnostics. While molecular diagnostics is much more precise than traditional diagnostics, the cost & complexity has historically limited its presence to highly specialized labs. However, thanks to the use of gold nanoparticles, Nanosphere has been able to develop an inexpensive and highly sensitive diagnostic platform that enables direct detection of nucleic acids as well as ultra-sensitive protein detection (biomarkers). Nanotechnology thus has the potential to make tremendous contributions to disease detection in medicine.

Glenn Batchelder, President and CEO of BIND Biosciences, Inc, then took the podium and gave the audience an overview of nanotechnology applications in disease treatment. Using BIND Biosciences' proprietary technology as an example, Glenn Batchelder demonstrated how nanoparticles containing active medication (in BIND's case: chemotherapy) can deliver and release the active compound within the targeted cells while avoiding collateral damage in the human body. He reiterated Dr. Carl Pabo's point regarding the difficulty of introducing a sub-system within a biological environment, saying that BIND Biosciences, Inc. had to test numerous nanoparticle factor combinations in order to find the optimal combinatorial approach (e.g., size, charge, ligand density).

Carl Centonze, Founder and CEO of HeiQ AG, outlined the powerful antibacterial properties of silver additive AG-20, which can be used for a host of applications such as odour-free textiles, antimicrobial packaging and medical equipment. While the antimicrobial properties of silver are well-known, the integration of the silver functionality into materials is quite challenging. Carlo Centozzone then demonstrated how HeiQ AG has been able to successfully overcome the integration hurdle, and that nanotechnology can be successfully employed for disease avoidance.

Following the presentations a lively Q&A session took place, with inquiries about the prevention of false positives in diagnostics and a lengthy debate about how to prevent a restrictive regulatory environment for nanotechnology in medicine. After the Q&A session, the audience members had the opportunity to mingle and to talk among themselves and with the panellists.



Speaker Bios

Aymeric Sallin, Founder & Managing Director, NanoDimension AG



Mr. Sallin is the Founder of NanoDimension AG, a venture capital firm advising over USD 65 million in committed capital to invest exclusively in nanotechnology within the Life Science and IT/electronics space. Prior to NanoDimension, Mr. Sallin was a strategy consultant at Bain & Company and an entrepreneur. He holds a Master in Physical Engineering from the Federal Institute of Technology (EPFL) in Lausanne with a nanotechnology research activities background.

Dr. Carl Pabo, Former Chief Scientific Officer, Sangamo Biosciences, Inc.



Dr. Carl O. Pabo is a world leader in issues involving the structure and design of DNA-binding proteins. He received his B.S. in Biochemistry and Biophysics from Yale in 1974 and received his Ph.D. in Biochemistry from Harvard in 1980. Dr. Pabo has been a Professor at the Johns Hopkins University School of Medicine (1982-1991) and at the Massachusetts Institute of Technology (1991-2001), and has been an investigator with the Howard Hughes Medical Institute (1986-2001). He was Chief Scientific Officer at Sangamo BioSciences from 2001-2003 and has recently held appointments (while working on new theories about human thought) as a Visiting Professor at Cal Tech, Stanford, Berkeley, and Harvard. He is a member of the US National Academy of Sciences and of the American Academy of Arts and Sciences.

Bill Athenson, VP International Sales & Marketing, Nanosphere, Inc.



Mr. Athenson has more than 21 years of healthcare experience in clinical diagnostics, medical devices and information technology with Fortune 500 companies such as Baxter, American Scientific Products, Allegiance Healthcare and two start-up technology companies. Before joining Nanosphere in January 2002, Mr. Athenson served as General Manager for Allegiance Healthcare with P&L responsibility for a \$120 million revenue base. At Allegiance and in previous leadership positions at Baxter Diagnostics and American Scientific Products, he maintained a consistent track record for leading business development, consulting, and operations teams which consistently achieved double-digit revenue and EBITDA growth in the clinical-laboratory and point-of-care markets. Mr. Athenson holds an M.B.A. from Kellogg School of Business and a bachelor's degree from Fordham University.

Glenn Batchelder, President and Chief Executive Officer, BIND Biosciences, Inc.



Prior to joining BIND Biosciences, Mr. Batchelder was CEO of Acceleron Pharma, a company developing biotherapeutics for cancer and musculoskeletal disorders. He grew Acceleron from a research start-up to a clinical stage company with promising bone loss therapy in the clinic and a robust preclinical pipeline. Prior to Acceleron, Mr. Batchelder was Senior Vice President of Operations at Millennium Pharmaceuticals where he played an integral leadership role in the launch of VELCADE and was responsible for the commercial supply chain and technical operations for INTEGRILIN. Mr. Batchelder is on the Board of Directors of the Massachusetts Biotechnology Council. He received a B.S. in Chemical Engineering from Lehigh University.

Carlo Centonze, Founder and Chief Executive Officer, HeiQ AG



Carlo studied Biology and Forest Engineering at the Swiss Federal Institute of Technology ETH Zurich. He earned his Executive MBA at the University of St.Gallen. After his service as army pilot he started his professional career as co-founder of the ETH Spin-off Myclimate, today one of world's leading providers of carbon offsetting measures.