

SCIENTIFIC EVENTS

DUE TO THE RAPID GROWTH OF KNOWLEDGE, THE NEED FOR COMMUNICATION AND NETWORKING AMONG SCIENTIFIC RESEARCHERS IS INCREASING. WITH OUR EVENTS AND MEETINGS WE PAVE THE WAY FOR INTERDISCIPLINARY DISCUSSIONS AND NEW INITIATIVES IN DEVELOPING PUBLICATION STANDARDS.

Within the interdisciplinary research collaboration project “Cluster of Excellence Engineering of Advanced Materials” at the Friedrich-Alexander-Universität Erlangen-Nürnberg, Timothy Clark leads a research group at the Computer Chemistry Center. He is a regular speaker of the Beilstein Bozen Symposium and has published in the Beilstein Journal of Organic Chemistry.

FRIEDRICH-ALEXANDER-UNIVERSITÄT
ERLANGEN-NÜRNBERG



← PROFESSOR TIMOTHY CLARK



THE BEILSTEIN BOZEN SYMPOSIUM

“The Beilstein symposia are a uniquely stimulating scientific experience; a real intellectual feast. I have attended all symposia since the first in 1988 and have taken countless new ideas home from each of them.”



PROFESSOR TIMOTHY CLARK

FRIEDRICH-ALEXANDER-UNIVERSITÄT ERLANGEN-NÜRNBERG →

CONFERENCES WITH A UNIQUE CHARACTER

The Beilstein Bozen Symposium, the first conference series of the Beilstein-Institut, has a long tradition. Since 1988, the event has each time been dedicated to different subject areas and has become part of the permanent repertoire of Beilstein activities. The symposium takes its name from the Northern Italian city of Bolzano (German: Bozen), which up to 2010 was also its venue.

Every Beilstein Bozen Symposium is always an interesting experiment with an open result: the Beilstein-Institut gives the initial impulse via the title, the selection of speakers and the compilation of sessions defining the scope of subjects to be discussed. The program is designed specifically to allow sufficient time for discussions and to give participants the possibility to look beyond their own scientific horizons. In some ways the talks can be seen as providing a framework for lively discussions which have often led to subsequent cooperation projects. The resulting interdisciplinary exchange is the underlying goal of the meeting and gives the Beilstein Bozen Symposium its unique character.

The focus of the symposia in previous years was mainly on interdisciplinary aspects of chemistry and biology. In 2010, this was expanded to include topics in physics. The number of participants is limited to a maximum of 50 scientists which in particular promotes a lively and intense exchange of thoughts and ideas. The coordination and organization of the Beilstein Bozen Symposium is in the hands of Dr. Martin G. Hicks and Dr. Carsten Kettner, who are also the editors of the proceedings of the meeting, which are published after each symposium in book form and online on the web pages of the Beilstein-Institut.

www.beilstein-symposia.org

From biochemistry, organic and inorganic chemistry to physics and materials science: functional nanoscience requires interdisciplinary exchange.

THE BEILSTEIN BOZEN SYMPOSIUM 2010

The research areas grouped together under the title “Functional Nanoscience” deal with the molecular dynamics of structures on a nanometer scale. From May 17 to May 21, participants in the fields of biochemistry, organic and inorganic chemistry, physics and material sciences met to present and discuss their latest research results during the last meeting that was held in Bolzano. The symposium began with a discussion of what is meant by “Functional Nanoscience” – which in the context of the lecture program was of course very broad, ranging from self-assembly of supramolecular aggregates to nanomolecular surfaces and to sugar-based multivalent probes.

In addition to the intensive discussions, time was also available for informal exchanges beyond the scientific program. For example, during the excursion the group first visited the ice holes near Appiano – a protected biotope –, then hiked a trail leading to Boymont Castle. Strengthened and inspired, the participants returned to their discussions which subsequently took on a new and creative twist.

SPEAKERS AT THE BEILSTEIN BOZEN SYMPOSIUM 2010

TIMOTHY CLARK Erlangen, Germany
 ATHEL CORNISH-BOWDEN Marseille, France
 PETER DIMROTH Zurich, Switzerland
 KEITH FIRMAN Portsmouth, UK
 CHRISTOPH GERBER Basel, Switzerland
 MICHAEL HUTH Frankfurt am Main, Germany
 JORGEN KJEMS Aarhus, Denmark
 KERSTIN KOCH Kleve, Germany
 PETER KRÁL Chicago, USA
 JOHANNES J. L. MULDERE Eindhoven, The Netherlands
 JONATHAN D. POSNER Tempe, USA
 THOMAS SCHIMMEL Karlsruhe, Germany
 PETRA SCHWILLE Dresden, Germany
 PETER H. SEEBERGER Potsdam, Germany
 NADRIAN C. SEEMAN New York, USA
 WILLIAM M. SHIH Boston, USA
 SYLVIA SPELLER Nijmegen, The Netherlands
 FRASER STODDART Evanston, USA
 PAUL S. WEISS Los Angeles, USA
 DAVID A. WINKLER Clayton, Australia

The last Beilstein Bozen Symposium that was held in Bolzano took place in May 2010.



Stimulating and open-ended discussions: the Beilstein Bozen Symposium is a star-studded event which is focused on generating new ideas during the interdisciplinary dialog. In this experiment, we act as a catalyst.



THE BEILSTEIN BOZEN SYMPOSIUM 2012 – PREMIERE IN PRIEN

For the next meeting in 2012, the symposium changed its location to Prien on Lake Chiemsee in Germany. Extending the previous theme, the talks focused this time on the targeted control of molecular processes at the nano- and micrometer scale. Twenty scientists introduced their current research results under the heading “Molecular Engineering and Control” covering processes at and on surfaces, molecular self-organization and self-assembly and the distribution of active substances and biological transport phenomena.

During the three-day symposium, four lectures were held on each of the morning and afternoon sessions; amongst others, Jean-Marie Lehn, Nobel Prize winner from Strasbourg, provided some new and inspiring ideas in his opening lecture on the second symposium day. Following the symposium tradition, informal exchanges took place during an excursion to Herrenchiemsee Island. With lively and open-minded discussions, the meeting came to an end with the first ideas for the next meeting in 2014 starting to crystallize.



SPEAKERS AT THE BEILSTEIN BOZEN SYMPOSIUM 2012

R. DEAN ASTUMIAN **Orono, USA**
 DARRYL J. BORNHOP **Nashville, USA**
 NEDILJKO BUDISA **Berlin, Germany**
 TIMOTHY CLARK **Erlangen, Germany**
 LEE CRONIN **Glasgow, UK**
 ERIC DREXLER **Oxford, UK**
 ARMIN GÖLZHÄUSER **Bielefeld, Germany**
 MICHAEL HUTH **Frankfurt am Main, Germany**
 THOMAS A. JUNG **Villigen, Switzerland**
 ANDREAS KIRSCHNING **Hanover, Germany**
 TIBOR KUDERNAC **Enschede, The Netherlands**
 PETER LEADLAY **Cambridge, UK**
 JEAN-MARIE LEHN **Strasbourg, France**
 ROBERT J. MACFARLANE **Evanston, USA**
 EIICHI NAKAMURA **Tokyo, Japan**
 GUILLAUME SALBREUX **Dresden, Germany**
 THOMAS SCHIMMEL **Karlsruhe, Germany**
 FRANK SCHULZ **Dortmund, Germany**
 PAUL S. WEISS **Los Angeles, USA**
 DAVID A. WINKLER **Clayton, Australia**

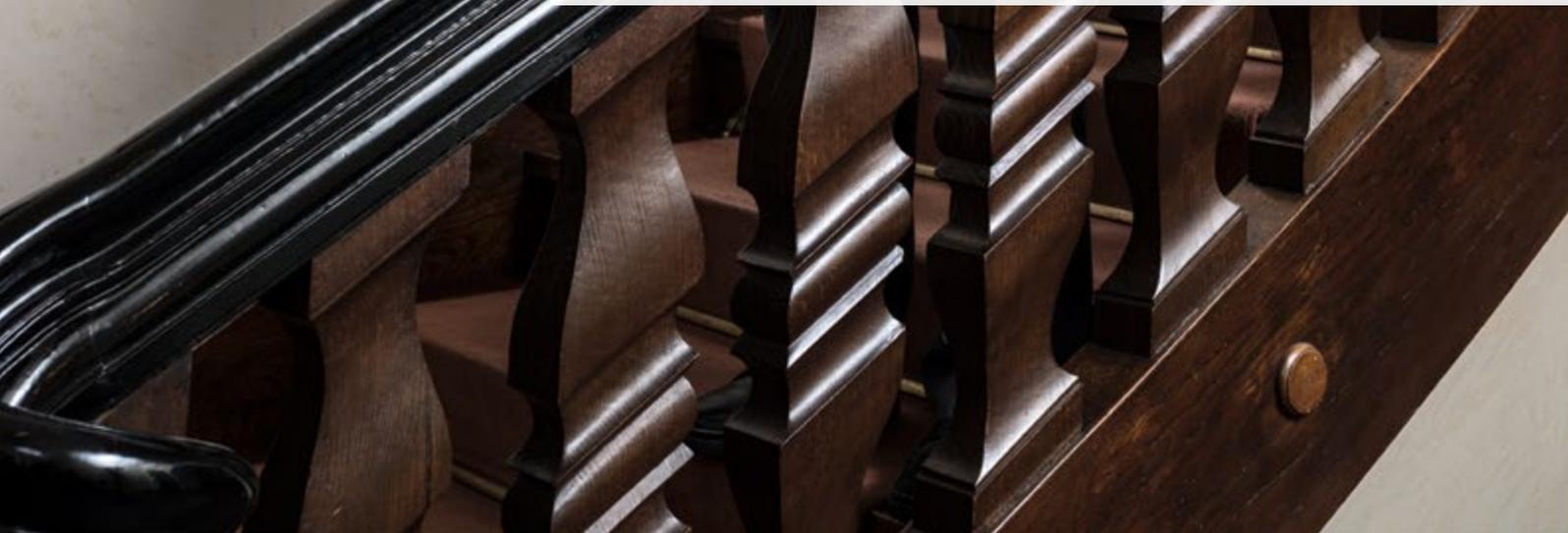


As Directeur de Recherche Émérite at the Centre National de la Recherche Scientifique (CNRS) in Marseille, Athel Cornish-Bowden can look back on a long and successful international career. He is a founding member of the STRENDA Commission and has been a regular speaker at both the Beilstein Bozen Symposium and the Beilstein ESCEC Symposium.

RÜDESHEIM AM RHEIN
LOCATION OF THE BEILSTEIN ESCEC SYMPOSIA



← **DR. ATHEL CORNISH-BOWDEN**



STRENDA AND BEILSTEIN ESCEC SYMPOSIUM

“I have had a close association with the Beilstein-Institut for a little more than ten years. All the activities have been a very positive experience for me, especially because of the numerous new contacts.”



DR. ATHEL CORNISH-BOWDEN

RÜDESHEIM AM RHEIN
LOCATION OF THE BEILSTEIN ESCEC SYMPOSIA →



STANDARDIZED PUBLISHING OF RESEARCH RESULTS

An exchange of information is only possible if transmitter and receiver agree on two basic conditions: a transmission protocol and a syntax that puts the individual terms as components into a relative context. Friedrich Konrad Beilstein's Handbook of Organic Chemistry, which was first published in the late nineteenth century, already addressed the task of finding a systematic comprehensive description of organic chemistry. The first symposium on data quality and standards, which the Beilstein-Institut hosted in 2003 facing increasing problems in the communication of information in enzyme chemistry, thus took place as part of a good tradition. The starting point for discussion was the fact that data on enzyme activity in the literature is neither comparable nor easily reproducible – the aim of the project was to change this.

Since 2004, the working group dealing with “Standards for Reporting Enzymology Data,” or STRENDA, has been financially and organizationally supported by the Beilstein-Institut.

www.beilstein-symposia.org

Worldwide, there are a number of initiatives dealing with standards for research results in proteomics and genomics. Our focus is on the improvement of data quality in enzymology.

ESCEC: ENZYME CHARACTERIZATIONS IN FOCUS

Since 2003, the Beilstein-Institut has extended an invitation to the “Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations,” or ESCEC, every two years in Rüdeshheim am Rhein in Germany. The conferences are organized by Dr. Carsten Kettner and Dr. Martin G. Hicks from the Beilstein-Institut. As usual for meetings and conferences hosted by the foundation, ESCEC also follows the motto “small is beautiful:” with a number of participants that is limited to a maximum of 50 people. International experts in enzymology meet to discuss current research findings in the field of enzyme mechanisms, structure–function relationships and systems biology. The afternoon excursions to the Middle Rhine Valley or surrounding attractions provide an ideal addition to supplement the scientific presentations at the three-day meeting in Rüdeshheim.

An important issue on the agenda of the fourth Beilstein ESCEC Symposium in 2009 was the integration with other initiatives for standardization. More than 40 participants had gathered in Rüdeshheim to discuss existing guidelines as well as possible improvements. The fifth Beilstein ESCEC Symposium held two years

later was titled “Protein structure meets enzyme kinetics.” A total of 22 lectures covered the wide range of topics from experimental annotation, through additional information obtained in experiments, to the storage and analysis of data in databases. Again, the international attendance to the conference was very good with 40 scientists from Austria, France, Germany, Iran, Ireland, Israel, the United Kingdom and the United States.

Interest in the most recent meeting in 2013 was similar and was dedicated to the 100th anniversary of the publication of the Michaelis–Menten equation: this equation provided the first correct description of enzyme kinetics and is still in use today. Almost 40 participants followed the presentations, which covered a wide area from acknowledgements of the work of Leonor Michaelis and Maud Menten to the interactions of proteins and networks up to the modeling of metabolic pathways.



In September 2013, members of the STRENDA Commission and other scientists met during the sixth Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations in Rudesheim am Rhein in Germany. From left to right: Dr. Carsten Kettner, Dr. Athel Cornish-Bowden, Professor Johann M. Rohwer, Professor Barbara M. Bakker, Professor Frank M. Raushel, Professor Richard N. Armstrong, Professor Thomas S. Leyh, Professor Jan-Hendrik S. Hofmeyer and Professor Dietmar Schomburg.





In many scientific disciplines it is often impossible to compare data and reproduce research results. Projects such as ESCEC and STRENDA aim to develop and establish standard forms of data presentation – in this case for enzyme research.



Despite the rainy weather, the participants of the sixth Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations enjoyed a walk to the Niederwald monument above the town of Rüdesheim.

STRENDA: PUBLICATION STANDARDS IN ENZYME RESEARCH

Since 2004, the STRENDA working group has been financially and organizationally supported by the Beilstein-Institut, and currently consists of ten members worldwide. Its aim is to develop standards for the publication of enzyme data. For this purpose, the group formulates recommendations as part of “Good Laboratory Practice” guidelines to ensure the comparability of results. In the meantime, more than 30 biochemistry journals recommend these guidelines in their “Instructions for Authors.” They include major journals such as the “Journal of Biological Chemistry,” “Biochemistry,” “Nature Chemical Biology” and “Proceedings of the National Academy of Sciences, U.S.A.”

The working group also started to develop a database for functional enzyme data. The prototype of this database was presented for the first time in September 2012 in Seville and in April 2013 at the BioCuration Conference in Cambridge. The idea behind the project is to offer authors a web-based tool for the formal quality review of functional enzyme data. This tool is based on the STRENDA guidelines and automatically checks the relevant manuscript data on input by the author. A STRENDA identification number is then issued to mark the data compliance if this check is passed. This number can be quoted in later publications.

After the publication of the manuscript data, the information registered in the database is published and indexed. In this way, the STRENDA database will become an important source of functional enzyme data providing the full experimental conditions under which the data was obtained. The beta version of the STRENDA database is currently undergoing testing; the release is planned for 2014.

The STRENDA Commission currently consists of ten members worldwide. The aim of the commission is the development of standards for the publication of enzyme data: by now, more than 30 biochemistry journals recommend the STRENDA guidelines in their “Instructions for Authors.”

MEMBERS OF THE STRENDA COMMISSION

RICHARD N. ARMSTRONG **Nashville, USA**
AMOS BAIROCH **Geneva, Switzerland**
BARBARA M. BAKKER **Groningen, The Netherlands**
ATHEL CORNISH-BOWDEN, **Marseille, France**
PETER HALLING **Glasgow, UK**
CARSTEN KETTNER **Frankfurt am Main, Germany (coordination)**
THOMAS S. LEYH **Bronx, USA**
FRANK M. RAUSHEL **College Station, USA**
JOHANN M. ROHWER **Stellenbosch, South Africa**
DIETMAR SCHOMBURG **Braunschweig, Germany**

SPEAKERS AT THE BEILSTEIN SYMPOSIA ON EXPERIMENTAL STANDARD CONDITIONS OF ENZYME CHARACTERIZATIONS 2009–2013

KAREN N. ALLEN Boston, USA	THOMAS S. LEYH Bronx, USA
DOUGLAS AULD Rockville, USA	KLAUS MAUCH Stuttgart, Germany
RICHARD N. ARMSTRONG Nashville, USA	PEDRO MENDES Manchester, UK
PATRICIA BABBIT San Francisco, USA	THOMAS MILLAT Rostock, Germany
BARBARA M. BAKKER Groningen, The Netherlands	ELAINE O'REILLY Manchester, UK
ANTONIO BAICI Zurich, Switzerland	MONICA PALCIC Copenhagen, Denmark
RICHARD CAMMACK London, UK	KATJA RATEITSCHAK Rostock, Germany
MARÍA LUZ CÁRDENAS Marseille, France	FRANK M. RAUSHEL College Station, USA
ATHEL CORNISH-BOWDEN Marseille, France	GREGORY D. REINHART College Station, USA
GILLES CURIEN Grenoble, France	NIGEL J. ROBINSON Durham, UK
ELISABETH DAVIOUD-CHAVET Strasbourg, France	JOHANN M. ROHWER Stellenbosch, South Africa
HOLGER DOBBEK Berlin, Germany	GARY RUDNICK New Haven, USA
OLIVER EBENHOEH Aberdeen, UK	HARTMUT SCHLÜTER Hamburg, Germany
LUCIA GARDOSSI Trieste, Italy	DIETMAR SCHOMBURG Braunschweig, Germany
ROBERT GOLDBERG Gaithersburg, USA	LIE-FEN SHYUR Taipei, Taiwan
ROGER S. GOODY Dortmund, Germany	GERTIEN J. SMITS Amsterdam, The Netherlands
F. PETER GUENGERICH Nashville, USA	VLADIMIR SOBOLEV Rehovot, Israel
MUNISHWAR N. GUPTA New Delhi, India	CHRISTOPH STEINBECK Hinxton, UK
PETER HALLING Glasgow, UK	REINHARD STERNER Regensburg, Germany
LIZBETH HEDSTROM Waltham, USA	CHRISTOPHER F. TAYLOR Hinxton, UK
ADRIANO HENNEY Heidelberg, Germany	KEITH TIPTON Dublin, Ireland
JAN-HENDRIK S. HOFMEYR Stellenbosch, South Africa	PETER UETZ Richmond, USA
MATTHEW P. JACOBSON San Francisco, USA	KAREN VAN EUMEN Gothenburg, Sweden
MINORU KANEHISA Kyoto, Japan	HANS V. WESTERHOFF Amsterdam, The Netherlands
URSULA KLINGMÜLLER Heidelberg, Germany	CHRISTIAN P. WHITMAN Austin, USA
EDDA KLIPP Berlin, Germany	JAN-OLOF WINBERG Tromsø, Norway
MANFRED KONRAD Göttingen, Germany	ULRIKE WITTIG Heidelberg, Germany
SCOTT T. LEFURGY Bronx, USA	YU (BRANDON) XIA Boston, USA

Daniel Kolarich is group leader at the Max Planck Institute of Colloids and Interfaces in Potsdam. Due to redevelopment work, he currently performs his research of glycoproteins in the rooms and labs of the Freie Universität Berlin. As a member of the MIRAGE working group and as a speaker at the Beilstein Glyco-Bioinformatics Symposium he focuses on the standardization of research results in his field.

FREIE UNIVERSITÄT BERLIN



DR. DANIEL KOLARICH



MIRAGE AND BEILSTEIN GLYCO-BIO- INFORMATICS SYMPOSIUM

“Science is at the heart of the Beilstein activities. This is the main reason why I enjoy working with the Beilstein-Institut. Moreover, it positively affects the results of the projects.”



DR. DANIEL KOLARICH

FREIE UNIVERSITÄT BERLIN →

IMPROVING SUGAR DATA QUALITY

When one hears the term “mirage,” it is usual to think of an illusion. However, at Beilstein MIRAGE is used in a very concrete way: the acronym stands for “Minimum Information Required for A Glycomics Experiment.” Similar to the STRENDA project, MIRAGE also involves formulating standards for the publication of experimental data – but this time in the field of glycomics, the science concerned with the structures of sugar molecules and their binding to other molecules such as proteins and lipids, and on cell surfaces.

Glycomics has been an emerging discipline for about a decade: its subject matter is the structure–function relationships of complex bio-synthesized carbohydrates and their role in biological systems. Whereas in the areas

of nucleic acids and proteins their sequencing (i. e., investigating the sequence of molecular components) has been automated for many years, it has only been possible to use this technique recently on carbohydrates. A number of research groups around the world have made significant scientific and technical progress within a short time. This has led to a rapidly growing number of data sets on the structure and the interactions of carbohydrates with proteins and nucleic acids. In order to make this data qualitatively and quantitatively comparable and above all reproducible for science, standardization is essential for its publication.

The standardization of experimental conditions is often an enormous challenge due to the complexity of the processes.

SPEAKERS AT THE BEILSTEIN GLYCO-BIOINFORMATICS SYMPOSIA 2009–2013

KIYOKO F. AOKI-KINOSHITA **Tokyo, Japan**
 CATHERINE E. COSTELLO **Boston, USA**
 ANNE DELL **London, UK**
 TEN FEIZI **London, UK**
 ROBERT A. FIELD **Norwich, UK**
 SABINE FLITSCH **Manchester, UK**
 MARTIN FRANK **Heidelberg, Germany**
 HANS-JOACHIM GABIUS **Munich, Germany**
 STEFFEN GOLETZ **Berlin, Germany**
 PAMELA GREENWELL **London, UK**
 GERALD W. HART **Baltimore, USA**
 STUART HASLAM **London, UK**
 HANS HEINDL **London, UK**
 BERNHARD HENRISSANT **Marseille, France**
 PETER HUFNAGEL **Bremen, Germany**
 NICLAS G. KARLSSON **Gothenburg, Sweden**
 OLIVER KOHLBACHER **Tübingen, Germany**
 DANIEL KOLARICH **Berlin, Germany**
 HARALD KOSCH **Passau, Germany**
 STEFAN KRAMER **Munich, Germany**
 JUNG-HSING LIN **Taipei, Taiwan**
 THISBE K. LINDHORST **Kiel, Germany**
 FRÉDÉRIQUE LISACEK **Geneva, Switzerland**
 THOMAS LÜTTEKE **Giessen, Germany**
 HIROSHI MAMITSUKA **Kyoto, Japan**

HISASHI NARIMATSU **Tsukuba, Japan**
 MILOS V. NOVOTNY **Bloomington, USA**
 STEFAN OSCARSON **Dublin, Ireland**
 NICOLLE PACKER **Sydney, Australia**
 JAMES C. PAULSON **La Jolla, USA**
 HANNU PELTONIEMI **Helsinki, Finland**
 THOMAS PETERS **Lübeck, Germany**
 RAHUL RAMAN **Cambridge, USA**
 RENÉ RANZINGER **Athens, USA**
 ERDMANN RAPP **Magdeburg, Germany**
 VERNON N. REINHOLD **Durham, USA**
 PAULINE M. RUDD **Dublin, Ireland**
 GISBERT SCHNEIDER **Zurich, Switzerland**
 PETER H. SEEBERGER **Potsdam, Germany**
 JÜRGEN SEIBEL **Würzburg, Germany**
 CHRISTOPH STEINBECK **Hinxton, UK**
 ROLAND STENUTZ **Stockholm, Sweden**
 MARK STOLL **London, UK**
 ICHIGAKU TAKIGAWA **Sapporo, Japan**
 MICHAEL TIEMEYER **Athens, USA**
 W. BRUCE TURNBULL **Leeds, UK**
 CARLO UNVERZAGT **Bayreuth, Germany**
 ROBERT J. WOODS **Athens, USA**
 XIAOYONG YANG **New Haven, USA**
 WILLIAM S. YORK **Athens, USA**

The aim is to make possible the comparison and reproduction of the data on the structure and the interactions of carbohydrates with proteins and nucleic acids.



Kick-off meeting of the MIRAGE working group in Seattle, USA, in 2011.





Since 2009, the Beilstein-Institut has invited experts in the field to discuss the decoding of carbohydrates. About 20 talks, poster presentations and software demonstrations are at the core of the Beilstein Glyco-Bioinformatics Symposium which takes place every two years.

SUCCESSFUL NETWORKING

Scientific progress depends on the reliable exchange of information and the interdisciplinary cooperation among scientists working in laboratories and on computational-based approaches. In 2009, inspired by the Beilstein STRENDA project, a group of scientists had the idea to develop guidelines on publication standards also for the newly derived sugar data. The first get-together of scientists who work in the field of glycochemistry and glycobiology with experts in bio-informatics and computer science took place in October of the same year at the first Beilstein Glyco-Bioinformatics Symposium. The response of the more than 60 participants in Potsdam, Germany, quickly made it clear that this idea was worth pursuing. Two years later the next symposium on sugar decoding entitled “Cracking the Sugar Code by Navigating the Glycospace” followed. In June 2013 the third symposium was organized, this time with the motto “Discovering the Subtleties of Sugars.” More than 50 participants accepted the invitation to attend the symposium to discuss, amongst other things, the decoding of carbohydrate signals and software tools for data analysis.

This new series of symposia – with Dr. Martin G. Hicks, Dr. Carsten Kettner and Professor Peter H. Seeberger as members of the scientific committee – is held every two years. Each meeting comprises a three-day scientific program with around 20 presentations, up to ten poster presentations, and software demonstrations.

www.beilstein-symposia.org

THE MIRAGE WORKING GROUP MEMBERS

SANJAY AGRAVAT **Atlanta, USA**
MATTHEW CAMPBELL **Sydney, Australia**
STUART HASLAM **London, UK**
MASAKI KATO **Saitama, Japan**
CARSTEN KETTNER **Frankfurt am Main, Germany (coordination)**
DANIEL KOLARICH **Berlin, Germany**
YAN LIU **London, UK**
RYAN MCBRIDE **La Jolla, USA**
RENÉ RANZINGER **Athens, USA**
ERDMANN RAPP **Magdeburg, Germany**
WESTON STRUWE **Oxford, UK**
WILLIAM S. YORK **Athens, USA**
JOSEPH ZAIA **Boston, USA**

THE MIRAGE ADVISORY BOARD MEMBERS

KIYOKO AOIKI-KINOSHITA **Tokyo, Japan**
CATHERINE E. COSTELLO **Boston, USA**
ANNE DELL **London, UK**
TEN FEIZI **London, UK**
NICOLAS G. KARLSSON **Gothenburg, Sweden**
KAY-HOOI KHOO **Taipei, Taiwan**
MILOS V. NOVOTNY **Bloomington, USA**
NICOLLE H. PACKER **Sydney, Australia**
JAMES C. PAULSON **La Jolla, USA**
PAULINE M. RUDD **Dublin, Ireland**
DAVID SMITH **Atlanta, USA**
MICHAEL TIEMEYER **Athens, USA**
LANCE WELLS **Athens, USA**

CONTINUING DEVELOPMENT

Seeing the need for standardized data collection and publication of data, 12 international experts in the field of glycoanalysis and bioinformatics founded a working group as part of the second Beilstein Glyco-Bioinformatics Symposium 2011: the MIRAGE project was born. Only a few months later, the “MIRAGE Kick-off Meeting” in Seattle, USA, took place over two days, where the members of the working group drafted the short- and long-term goals of the project.

Since then, the group – under the umbrella of the financial support by the Beilstein-Institut – has been intensively working on formulating and improving standards for publishing experimental data. Their work has been supported by the project coordinators Dr. Carsten Kettner, Dr. René Ranzinger and Professor William S. York – who are also responsible for the on-line publications – and by the members of the MIRAGE Advisory Board. In addition to initiating further networking in the academic environment, the Advisory Board assesses the working results and assists in establishing the use and the dissemination of the MIRAGE standards.

Since the inaugural MIRAGE working group meeting in 2011, three further meetings have been held. During the second meeting in August 2012 a draft version of the MIRAGE guidelines for mass spectrometry data was given to the Advisory Board to be reviewed. In addition, the meeting was used to discuss the guidelines for the publication of glycomics data with those scientifically responsible for journals such as “Molecular & Cellular Proteomics” (MCP), “Glycobiology” and “Journal of Biological Chemistry” (JBC). Half a year later, the mass spectrometry guidelines underwent a revision at the follow-up meeting and were then published in April 2013 in MCP.

The fourth meeting of the working group took place ahead of the third Beilstein Glyco-Bioinformatics Symposium 2013 in Potsdam. The participants were able to finalize the guidelines for liquid chromatography data collection as well as to present a first draft of a software tool that is designed to facilitate the handling of the MIRAGE guidelines.

More than 50 participants from 12 countries met for the third Beilstein Glyco-Bioinformatics Symposium at Griebnitzsee in Potsdam, Germany.

