CONTENTS

WELCOME .................................................................................................................................................. 3
WHISTLER AWARD ...................................................................................................................................... 4
PREVIOUS SYMPOSIA AND NEXT SYMPOSIUM ....................................................................................... 5
PROGRAM OVERVIEW .............................................................................................................................. 6
GENERAL INFORMATION ............................................................................................................................ 7
SOCIAL PROGRAM ..................................................................................................................................... 9

SCIENTIFIC PROGRAM ............................................................................................................................. 14
  Monday, August 28 ................................................................................................................................. 15
  Tuesday, August 29 ................................................................................................................................ 20
  Wednesday, August 30 ........................................................................................................................... 26
  Thursday, August 31 .............................................................................................................................. 30
  Friday, September 1 ............................................................................................................................... 36

POSTER ABSTRACTS
  Poster Session I – posters with odd numbers
    Section A .................................................................................................................................................. 40
    Section B ................................................................................................................................................ 44
    Section C ................................................................................................................................................ 54
    Section D ................................................................................................................................................ 58
  Poster Session II – posters with even numbers
    Section A .................................................................................................................................................. 60
    Section B ................................................................................................................................................ 64
    Section C ................................................................................................................................................ 74
    Section D ................................................................................................................................................ 78

ACKNOWLEDGEMENTS ............................................................................................................................ 83
WELCOME

The International Carbohydrate Organization (ICO) and the Local Organizing Committee cordially welcome all delegates and accompanying persons to Hamburg for the 20th International Carbohydrate Symposium to be held at the University of Hamburg in the Department of Chemistry.

Joachim Thiem  
Symposium Chairman

INTERNATIONAL CARBOHYDRATE ORGANIZATION (ICO)

President ........................................ James N. BeMiller United States  
Past President ................................. Benito Casu Italy  
Secretary ................................. Berit Smestad Paulsen Norway  
Symposium Chairman ......... Joachim Thiem Germany

SCIENTIFIC ADVISORY COMMITTEE

Harald S. Conradt ................. Braunschweig  
Fred-Robert Heiker.............. Leverkusen  
Werner Klaffke ..................... Münster  
Horst Kunz ................................. Mainz  
Markwart Kunz .................... Obrigheim  
Frieder W. Lichtenhaler .... Darmstadt  
Bernd Meyer ......................... Hamburg  
Hans Paulsen ....................... Hamburg  
Thomas Peters ..................... Lübeck

Ernst Th. Rietschel ............... Borstel  
Wolfram Saenger .................... Berlin  
Konrad Sandhoff .................. Bonn  
Roland Schauer ...................... Kiel  
Richard R. Schmidt .......... Konstanz  
Fritz Vahrenholt .............. Hamburg  
Peter Welzel ......................... Leipzig  
Klaus-Peter Wittern .......... Hamburg

LOCAL ORGANIZING COMMITTEE

Helmut Brade ...................... Borstel  
Hagen Bretting ..................... Hamburg  
Ernst Heinz ......................... Hamburg  
Thisbe K. Lindhorst ........... Kiel  
Klaus-Peter Wittern .......... Hamburg

Bernd Meyer ....................... Hamburg  
Hans Paulsen ...................... Hamburg  
Thomas Peters ..................... Lübeck  
Volkmar Vill ....................... Hamburg
NATIONAL REPRESENTATIVES OF ICO

Argentina        Oscar Varela
Australia        Robert V. Stick
Austria          Paul Kosma
Canada           Harold J. Jennings
Cuba             Vicente Verez-Bencomo
Denmark          Inge Lundt
Finland          Tapani Vuorinen
France           Pierre Sinaï
Germany          Joachim Thiem
Hungary          András Lipták
India            Mukund K. Gurjar
Ireland          Angela Savage
Israel           Uri Zehavi
Italy            Benito Casu

Japan            Tomoya Ogawa
New Zealand      Richard H. Furneaux
Norway           Berit Smestad Paulsen
Poland           Aleksander Zamojski
Portugal         Amelia Pilar Rauter
Russia           Vladimir N. Shibaev
Slovakia         Jan Hirsch
South Africa     Harambolis Parolis
Spain            Manuel Martin-Lomas
Sweden           Bertil Samuelsson
Switzerland      Beat Ernst
The Netherlands   Johannes F.G. Vliegenthart
United Kingdom   John S. Brimacombe
United States    James N. BeMiller

ROY L. WHISTLER AWARD

For the recognition of scientist “distinguished with contribution of excellence and with promise of continuing productivity in carbohydrate research” the ICO in 1984 established an US $ 10.000 award in honor of Professor Roy L. Whistler.

Previous Whistler Award winners were:

1984    Tomoya Ogawa       Tokyo, Japan
1986    Klaus Bock         Copenhagen, Denmark
1988    David R. Bundle    Ottawa, Ontario, Canada
1990    Johannis Kamerling Utrecht, The Netherlands
1992    Andrea Vasella     Zürich, Switzerland
1994    Chi-Huey Wong      San Diego, CA, USA
1996    Constant van Boeckel and Maurice Petitou Oss, The Netherlands and Toulouse, France
1998    Ole Hindsgaul      Edmonton, Alberta, Canada

The award for 2000 will be presented at the 20th ICS to

PROFESSOR ANNE DELL,
Imperial College, London, UK
20th International Carbohydrate Symposium

PREVIOUS INTERNATIONAL CARBOHYDRATE SYMPOSIA AND CHAIRMEN

I 1960 Gif-sur-Yvette, France          Jean E. Courtois
II 1962 Birmingham, UK               Maurice Stacey
III 1964 Münster, Germany           Fritz Micheel
IV 1967 Kingston, Ontario, Canada    James K.N. Jones
V  1970 Paris, France               Jean E. Courtois
VI 1972 Madison, Wisconsin, USA      Roy L. Whistler
VII 1974 Bratislava, Slovakia        Stefan Bauer
VIII 1976 Kyoto, Japan               Kinoshin Onodera
IX  1978 London, UK                  William G. Overend
X   1980 Sidney, Australia           Stephen J. Angyal
XI  1982 Vancouver, British Columbia, Canada Guy S. Dutton
XII 1984 Utrecht, The Netherlands    Johannes F.G. Vliegenthart
XIII 1986 Ithaca, New York, USA      James N. BeMiller
XIV 1988 Stockholm, Sweden           Per J. Garegg
XV  1990 Yokohama, Japan             Akira Misaki
XVI 1992 Paris, France               Pierre Sinaý
XVII 1994 Ottawa, Ontario, Canada    Harold J. Jennings
XVIII 1996 Milan, Italy              Benito Casu
XIX  1998 San Diego, California, USA David A. Brant
XX  2000 Hamburg, Germany            Joachim Thiem

ICS 2002 CAIRNS, AUSTRALIA

XXI International Carbohydrate Symposium
Cairns, Queensland, Australia
Juli 7 – 12, 2002

The Secretariat:
XXI International Carbohydrate Symposium
Congress West
PO Box 1248
West Perth, Western Australia 6872
Tel.: +61-8-9322-6906; Fax: +61-8-9322-1734
Email: conwes@congresswest.com.au
Web:  www.ics2002.uwa.edu.au
## PROGRAM OVERVIEW

### SUNDAY AUG. 27

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afternoon</td>
<td>16:00 - 19:00 Registration</td>
</tr>
<tr>
<td>Evening</td>
<td>19:00 - 21:00 Symposium Mixer</td>
</tr>
</tbody>
</table>

### MONDAY AUG. 28

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>8:30 - 9:00 Opening Ceremony</td>
</tr>
<tr>
<td></td>
<td>9:00 - 9:45 Whistler Lecture</td>
</tr>
<tr>
<td></td>
<td>9:50 - 10:35 Plenary Lecture</td>
</tr>
<tr>
<td></td>
<td>11:00 - 11:45 Plenary Lecture Lunch</td>
</tr>
<tr>
<td>Afternoon</td>
<td>14:00 - 14:30 Invited Lectures</td>
</tr>
<tr>
<td></td>
<td>14:30 - 15:30 Oral Communications</td>
</tr>
<tr>
<td></td>
<td>16:00 - 17:00 Oral Communications</td>
</tr>
<tr>
<td>Evening</td>
<td>18:00 - 19:30 Mayoral Reception</td>
</tr>
</tbody>
</table>

### TUESDAY AUG. 29

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>9:00 - 9:45 Plenary Lecture</td>
</tr>
<tr>
<td></td>
<td>9:45 - 10:15 Invited Lectures</td>
</tr>
<tr>
<td></td>
<td>10:15 - 10:55 Oral Communications</td>
</tr>
<tr>
<td></td>
<td>11:30 - 12:50 Oral Communications Lunch</td>
</tr>
<tr>
<td>Afternoon</td>
<td>14:00 - 16:15 Poster Session I</td>
</tr>
<tr>
<td></td>
<td>15:30 Coffee</td>
</tr>
<tr>
<td></td>
<td>16:15 - 16:45 Invited Lectures</td>
</tr>
<tr>
<td></td>
<td>16:45 - 17:30 Plenary Lecture</td>
</tr>
<tr>
<td>Evening</td>
<td>20:00 - 21:00 Organ Concert</td>
</tr>
</tbody>
</table>

### WEDNESDAY AUG. 30

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>9:00 - 9:45 Plenary Lecture</td>
</tr>
<tr>
<td></td>
<td>9:45 - 10:25 Oral Communications</td>
</tr>
<tr>
<td></td>
<td>11:00 - 12:20 Oral Communications Lunch</td>
</tr>
<tr>
<td>Afternoon</td>
<td>13:30 - 18:30 City and Harbour Tour</td>
</tr>
<tr>
<td></td>
<td>13:30 - 21:00 Lübeck</td>
</tr>
<tr>
<td></td>
<td>13:30 - 17:30 Boat Trip</td>
</tr>
<tr>
<td>Evening</td>
<td></td>
</tr>
</tbody>
</table>

### THURSDAY AUG. 31

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>9:00 - 9:45 Plenary Lecture</td>
</tr>
<tr>
<td></td>
<td>9:45 - 10:15 Invited Lectures</td>
</tr>
<tr>
<td></td>
<td>10:15 - 10:35 Oral Communications</td>
</tr>
<tr>
<td></td>
<td>11:00 - 12:20 Oral Communications Lunch</td>
</tr>
</tbody>
</table>

### Notes
- **Auditorium Maximum**
- **Dept. of Chemistry**
- **City Hall**
- **St. Katharinen**
- **Excursions**
The 20th International Carbohydrate Symposium will take place from Sunday afternoon, August 27, to Friday afternoon, September 1, 2000 at the University of Hamburg close to the centre of the city.

**Registration and Information Desk**
The 20th ICS Registration and Information Desk is located in front of the lecture halls at the Department of Chemistry and staffed by the Scientific Secretariat and the Symposium Service SCC. All questions concerning scientific matters as well as organisational and financial questions will be addressed here.

Delegates and accompanying persons are requested to register here and collect the conference material and their prepaid tours and dinner tickets.

**Registration at the Symposium**

<table>
<thead>
<tr>
<th>Day</th>
<th>Augmentation</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>Aug. 27.</td>
<td>16:00 - 19:00 hrs</td>
</tr>
<tr>
<td>Monday</td>
<td>Aug. 28.</td>
<td>7:30 - 18:00 hrs</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Aug. 29.</td>
<td>8:30 - 18:00 hrs</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Aug. 30.</td>
<td>8:30 - 14:00 hrs</td>
</tr>
<tr>
<td>Thursday</td>
<td>Aug. 31.</td>
<td>8:30 - 18:00 hrs</td>
</tr>
<tr>
<td>Friday</td>
<td>Sept. 01.</td>
<td>8:30 - 14:00 hrs</td>
</tr>
</tbody>
</table>

**Badges**

Delegates and accompanying persons are asked to wear their badges at all times as a courtesy to other participants and the symposium staff and for admittance to the lecture halls and functions and to obtain refreshments during the breaks. Further, the badges identify participants of the 20th ICS for free use of public transport services, free admission to the Symposium Mixer on Sunday, the Reception of the Senate on Monday, and the Organ Concert at St. Katharinen on Tuesday.
**Social Room for Accompanying Persons**
Across from the Registration Desk and next to the PC Terminal Room a separate room is reserved for Accompanying Persons. This room will provide useful additional informations and practical hints, and is ment to supported a relaxed atmosphere for personal exchange. There will be always someone to be addressed for advise and to solve problems. You can have coffee, tea or cold drinks, or if needed an aspirin. During the week the room will host the exhibition “Science in Art – Art in Science” displaying pictures painted by Nature.

**Local Transportation Services**
For registered participations and accompanying persons the name badge serves as a ticket for all local transport services (U-Bahn, S-Bahn, Bus) for the duration of the Symposium.

**Meals**
Lunch, included in the registration fee, will be provided from Aug. 28 to Sept. 1 from about 12:30 - 14:00 at the Mensa, situated in short walking distance to the lecture halls. The luncheon vouchers cover meals and drinks up to a value of DM 8.00. Selections exceeding this amount will have to be paid individually. Additional luncheon vouchers can be purchased at the Registration Desk. There will be no refund on vouchers.

Generally in German hotels breakfast is included unless otherwise stated. As an alternative to the free lunch in the Mensa, lunch can be purchased in many smaller restaurants close to the Symposium Venue. Dinners are up to the individual delegate, and Hamburg offers a great variety of restaurants with regard to ethnic food and budget requirements. A list of recommended restaurants will be provided.

**PC Terminal Room**
About opposite from the Registration Desk delegates will find the PC Terminal Room providing Internet access and CD-ROM drives.

**Banking and Payment**
In close proximity to the Symposium Venue almost all German banks are open from about 9:00 - 17:00 hrs. All standard currencies will be exchanged, and most of them operate automatic teller machines. Exchange rate 1 € = 1.95583 DM = US $ 0.93

Major credit cards are generally accepted throughout, however, in Germany paying in cash (in Deutsche Mark = DM) is standard habit, in particular for smaller amounts.

**Insurance**
Participants are responsible for arranging their own health and accident insurance. The Organizing Committee will not be held liable for accidents, theft, or property damage.

**Electricity**
German electric current is 220 V, 50 Hz. Wall-sockets are provided for two-pin plugs, and participants may have to equip themselves with appropriate adapters.

**Exhibition**
During the conference, a trade exhibition of books, scientific and technical equipment as well as computer software related to the topics of the symposium will be held in front of the lecture halls.
Medical Help
A list of doctors on duty during the day is available at the Registration and in the Social Room for Accompanying Persons. Delegate requiring medical help at other times should contact their hotel reception.

REGULAR PARTICIPANTS’ SOCIAL PROGRAM

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>Aug. 27</td>
<td>Symposium Mixer</td>
<td>(SYMPOSIUM VENUE) – FREE</td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>Aug. 28</td>
<td>Reception</td>
<td>(RATHAUS) – FREE</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Aug. 29</td>
<td>Organ Concert</td>
<td>(ST. KATHARINEN) – FREE</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>Aug. 30</td>
<td>Afternoon Excursions</td>
<td>(3 ALTERNATIVES)</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>Aug. 31</td>
<td>Symposium Dinner</td>
<td>(BÖRSE)</td>
<td></td>
</tr>
</tbody>
</table>

ACCOMPANYING PERSONS´ SOCIAL PROGRAM

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>Aug. 27</td>
<td>Symposium Mixer</td>
<td>(SYMPOSIUM VENUE) – FREE</td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>Aug. 28</td>
<td>Welcome</td>
<td>(SOCIAL ROOM) – FREE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hamburg City Tour</td>
<td>FREE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reception</td>
<td>(RATHAUS) – FREE</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Aug. 29</td>
<td>Excursion to Schwerin</td>
<td>(ST. KATHARINEN) – FREE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organ Concert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>Aug. 30</td>
<td>Afternoon Excursions</td>
<td>(3 ALTERNATIVES)</td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>Aug. 31</td>
<td>Alster Canal Cruise</td>
<td>(BÖRSE)</td>
<td></td>
</tr>
</tbody>
</table>

INCLUDED IN THE REGISTRATION FEES:
Please wear your name-badge for admittance.

Symposium Mixer
Sunday August 27 from 19:00 - 21:00 hrs
All registered participants and accompanying persons are invited to an informal food and drink reception to be held at the Department of Chemistry in front of the lecture halls.

Welcome for Accompanying Persons in the Social Room
Monday August 28 from 10:00 - 12:00 hrs
After the Opening Ceremony in the Auditorium Maximum (8:30 - ca. 9:00 hrs) the accompanying persons have the opportunity to return together to the chemistry building. In the Social Room you can enjoy the exhibition “Science in Art – Art in Science”. A short survey of the Hamburg City Tour will be given.

Sightseeing Tour of Hamburg for Accompanying Persons
Monday August 28 from 14:00 - 17:00 hrs
A guided city tour will provide lasting impressions of the Hanseatic City of Hamburg and its manifold faces.

Reception by the Mayor
Monday August 28 from 18:00 - 19:00 hrs
A brief Welcome by Representatives of the Federal State of Hamburg will be held in the City Hall.
Organ Concert at St. Katharinen
Tuesday August 29: 20:00 - 21:00 hrs
Organist and cantor Andreas Fischer will give this concert at St. Katharinen (built in 1250).
Address: Katharinenkirchhof 1, 20457 Hamburg

AVAILABLE AT EXTRA COSTS:
If you did not yet book for the following tours or events and would like to do so, please inquire with SCC at the Registration Desk and find out whether space is still available.

All tours depart in front of the Chemistry-Zoology Science Center.

Sightseeing City Tour of Hamburg
Monday Aug. 28, 2000 from 14:00 - 16:00 hrs
A three hour City Tour gives the participants a lasting impression of the Hanseatic City of Hamburg and its manifold faces. The tour encompasses the main churches in Hamburg (St. Nikolai, St. Jakobi and St. Petri), the “Reeperbahn”, the famous red-light district, as well as the TV Tower and the huge inner city park “Planten un Blomen”. A panoramic cruise around the inner Alster Lake offers an idyllic view of the beautiful villas and mansion houses as well as of the impressive skyline of Hamburg. The guests will have the chance to have a closer look inside the St. Michael’s church, the landmark of Hamburg and the “Krameramtsstuben” which was until 1783 home to the widows of rich Hanseatic citizens. Participants may also stretch their legs at one of the many beautiful recreation areas on the Alster Lake.
Including: deluxe motorcoach; English-speaking guide; information material.
Minimum: 35 participants; free of charge for Accompanying Persons; fee p.p. for Regular Participants Euro 22.50

Excursion to Schwerin
Tuesday, Aug. 30, 2000 from 9:00 - 19:00 hrs:
After a picturesque ride through the Mecklenburg countryside, the guests arrive at the former East German town of Schwerin, the second largest town in the region and capital of the new Federal State of Mecklenburg – Vorpommern.

After leaving the coaches at the theatre of Schwerin, a short walk will lead to the huge castle of Schwerin, located on an island at the edge of the charming Lake Schwerin. Surrounded by fifteen turrets and a beautiful park, the Neo-Renaissance castle is a unique mixture of historical styles, due to almost a century of fires, renovations and additions. The castle with a surrounding moat is a copy of the French Chateau Chambord. It currently serves as the official residence of the Mecklenburg – Vorpommern Parliament.

After visiting the castle and a stroll back into the city, lunch will be served in a wine restaurant. On the way to the restaurant the Neo-Renaissance State Theatre is passed and a look at the “Staatliche Galerie” with its collection of paintings by nineteenth-century German artists is offered.

After lunch, the half timbered houses of another era and the old Gothic Cathedral, built in the 13th century, with its 320-foot tower will be viewed. The Cathedral is the oldest building in Schwerin and its bronze baptismal font dates from the 14th century.

After transfer to Güstrow (approx. 1 hour), the “Gertrudenkapelle” with grave and sculptures of the famous German artist Barlach, as well as his former atelier “Haus am See” with exhibits of Ernst Barlach and Käthe Kollwitz can be visited.
Including: Transfer in a deluxe motorcoach; English-speaking guides in Schwerin and Güstrow; all entrance fees; lunch; information material.
Minimum: 35 participants; fee p.p. Euro 69.00
Wednesday Afternoon Excursions
On Wednesday afternoon no scientific sessions are scheduled. Symposium Delegates and Accompanying Persons are invited to select and book one of the three alternative tours described.

1) City and Harbor Tour Including Old Warehouse District
   *Wednesday, Aug. 31, 2000 from 13:30 - 18:30 hrs*

   A three hour City Tour gives the guests a remaining impression of the Hanseatic City of Hamburg and its manifold faces.

   Participants will take a closer look at the main churches in Hamburg (St. Nikolai, St. Jakobi and St. Petri), the famous red-light district the “Reeperbahn” as well as the TV Tower and the huge inner city park, “Planten un Blomen”.

   A panoramic cruise around the inner city Alster Lake offers a stunning view of the beautiful villas and mansion houses as well as of the impressive skyline of Hamburg. The guests will have the chance to explore St. Michael’s church, the landmark of Hamburg and the Krameramtststuben, until 1783 home of the widows of rich Hanseatic citizens. Another possibility for the guests is to stretch their legs at a particularly picturesque spot on the Alster Lake.

   Following the City Tour with visits to the most interesting points of Hamburg the guests will embark on a special charter boat for a harbor cruise.

   Including: Transfer in a deluxe motorcoach; English-speaking guide; cruise in a comfortable launch; information material.

   Minimum: 35 participants; fee p.p. Euro 44.00

2) Excursion to Lübeck
   *Wednesday, Aug. 31, 2000 from 13:30 - 21:00 hrs*

   The beautiful town of Lübeck has preserved its original flair and gives the visitors a perfect impression of an old Hanseatic town with narrow cobblestone streets, brick churches, scenic backyards etc. Lübeck is protected as an UNESCO World Heritage City and therefore large parts of the city remain closed for cars and busses. Most of the Lübeck tour must be done by walking.

   After the guided transfer, the English speaking hostess will provide some initial information and impression of the destination.

   One of the most popular “institutions” in Lübeck is “Niederegger”, the famous Marzipan Factory, home of the marzipan, the traditional sweet from Lübeck. After arrival the guests will have coffee and a piece of marzipan cake there. In the evening dinner will be served at the “Schiffergesellschaft”. Originally in 1535 built as a meeting house for the shipmasters, it shows unique interior and treasures from the world of shipping, and is now in use as a restaurant with excellent service and food.

   Including: Transfer in a deluxe motorcoach; English-speaking guide in Lübeck, coffee and pastry at “Niederegger”; dinner at “Schiffergesellschaft”; information material.

   Minimum: 35 participants; fee p.p. Euro 57.50

3) Boat Trip on River Elbe
   *Wednesday, Aug. 31, 2000 from 13:30 - 17:30 hrs*

   This tour includes the transfer to the “Landungsbrücken” where the guests embark on a typical Hamburg boat which will be cruising in the Elbe for two hours. Meanwhile the guide will explain the harbor, the warehouse city and the picturesque former fisher village Blankenese.
After arriving in Wedel the guests will walk to the “Schulauer Fährhaus” to enjoy coffee and pasty and the beautiful view of the passing ships. The transfer back to the city center will be by bus (approx. 1 hr).

Including: Transfers in a deluxe motorcoach; English-speaking guide; boat rental, coffee and pastry in the Schulauer Fährhaus; information material.

Minimum: 35 participants; fee p.p. Euro 47.50

Alster Canal Cruise

*Thursday Aug. 31, 2000 from 10:00 - 13:00 hrs*

The boat trip will be on the Inner and Outer Alster Lake and continue along the canals of the Alster Lake. It will provide an unforgettable impression: stately villas, carefully tended parks, modern flats, garden allotments and natural vegetation of many lakeside areas present a picture of constant variety.

Start: Landing stages “Alsteranleger Jungfernstieg”, (city center, a short walk from the Town Hall).

Including: coach trip; English-speaking guide; cruise in special launch.

Minimum: 35 participants, fee p.p. Euro 37.50

Symposium Dinner at the “Hamburger Börse”

*Thursday Aug. 31, 2000 from 19:30 hrs*

The Symposium Dinner will take place in the Hamburger Börse (Hamburg Stock Exchange) in a traditional Hanseatic atmosphere. Founded in 1558 the venerable Hamburger Börse is the oldest in Germany. The present neoclassicistic building of 1841 at Adolphsplatz is home of the Chamber of Commerce and directly joined to the rear of the Rathaus (City Hall) by two connecting wings.

Fee p.p. Euro 80.00

Post-Symposium Excursions

1) Weekend in Berlin

*Friday to Sunday, Sept. 1 - 3, 2000*

**Friday**

13:00 Start by deluxe motor coach to Berlin. Upon your arrival your stay in Berlin starts with an introduction to the new capital from past to present. The tour will give you an intensive historical overview of Berlin from medieval times to its present development as the capital of Germany. It covers all the renowned sights of the city: the “Brandenburg Tor”, the boulevard “Kurfürstendamm”, the avenue “Unter den Linden” with Humboldt University and the State Opera House, as well as remnants of the Berlin Wall. Check-in at hotel “Kronprinz”, a privately owned and managed hotel in a completely restored turn-of-the-century townhouse, built in 1894 and located in the city center of Berlin. Dinner at a typical Berlin pub, buffet and drinks included.

**Saturday**

Morning is reserved for the second, more detailed part of your Berlin tour. You will be taken to Berlin’s most famous museum, the “Pergamon Museum”, followed by a walking tour focussing on the fascinating district “Scheunenviertel”. This district remained from the 18th century and is known as the Jewish quarter with an impressive synagogue. The walk will end at the “Hackesche Höfe”, a unique architectural ensemble of eight courtyards, recently beautifully restored, and typical for Berlin at the turn of century. At noon we will leave Berlin for Potsdam, the second residential city of the Hohenzollern dynasty. It is famous for having the most palaces worldwide. The “youngest” palace is the one we will visit first: “Schloss Cecilienhof”, built for the last Crown Prince and his wife Cecilie. It is a site of great importance for the history of postwar Germany: the final Allied Conference at the end of World War II took place here in July/August 1945. After lunch the tour will continue with a visit to the most famous palace “Sanssouci” of Frederick the Great. Dinner will be served in a Berlin Restaurant.
Sunday
After breakfast return travel to Hamburg; arrival in Hamburg at noon.
Including: deluxe motorcoach; English-speaking guide; information material; breakfast (Sept. 2/3), lunch (Sept. 2) and dinner (Sept. 1/2); all entrance fees; Minimum: 30 participants; fee p.p. Euro 468.00

2) One Day trip to Berlin
Saturday Sept. 2, 2000 from 9:00 - 22:00 hrs
This day trip will give an intensive historical overview of Berlin from medieval times to its present development as the capital of Germany. It covers all the renowned sights of the city: the “Brandenburger Tor”, the boulevard “Kurfürstendamm”, the avenue “Unter den Linden” with Humboldt University and State Opera House. Lunch will be served in a typical Berlin restaurant with regional specialties, two drinks and coffee included. A visit to the “Reichstag”, the German Parliament, with its new glass dome and Berlin’s most famous museum the “Pergamon Museum”, are scheduled for this afternoon. Dinner will be served during a stopover in Schwerin in a historic restaurant from the 18th century, two drinks and coffee included. The group will be accompanied by a Berlin guide for the whole tour.
Including: deluxe motorcoach; English-speaking guide; lunch and dinner; all entrance fees; information material.
Minimum: 30 participants; fee p.p. Euro 133.00

3) Excursion to Lüneburg Heath and EXPO 2000 in Hannover
Friday to Sunday, Sept. 1 - 3, 2000
Friday:
13:00 Start by deluxe motor coach to Hannover with a stop for lunch in Lüneburg, a wonderful old town in the middle of the heath; two drinks and coffee included. In the late afternoon arrival in Sarstedt, a small town very close to the EXPO 2000. Stay at a wonderful restored estate in an enchanting countryside. Traditional buffet including drinks.
Saturday:
After breakfast transportation to the EXPO near Hannover. “Humankind, Nature, Technology – A Whole World” is the theme of the Expo 2000. It is based on the AGENDA 21, the environmental policy action program for the 21st century which was signed by 179 countries at the conference of the United Nations in Rio de Janeiro in 1992. The Topics of the AGENDA 21 are i.e.: free trade, the reduction of greenhouse gasses, sustainable agriculture and forestry and the economic development worldwide, with a view to linking economic activity with social responsibility.
Sunday:
After breakfast return travel to Hamburg. Arrival in Hamburg approx. 12:00 hrs.
Including: deluxe motorcoach; English-speaking guide; two overnight stays with breakfast; one lunch; one dinner; entrance fee; information material. Minimum: 30 participants; fee p.p. Euro 414.50

4) One Day Trip to EXPO 2000 in Hannover
Saturday, Sept. 2, 2000 from 9:00 - 20:00 hrs
Activities see: Weekend trip to EXPO 2000 Hannover, Saturday program
Including: deluxe motor coach; English-speaking guide; entrance fee; information material.
Minimum: 30 participants; fee p.p. Euro 82.50
SCIENTIFIC PROGRAM

The Scientific program will include presentations and discussions of all activities on glycoscience and is traditionally structured into four sessions:

A. **Structure and Analysis**: primary, secondary and higher order structure; conformational analysis; spectroscopic and instrumental analysis.

B. **Synthesis**: chemical and enzymatic synthetic methods; synthesis of carbohydrates, nucleosides, nucleotides, antibiotics involving carbohydrate moieties, carbohydrates as chiral precursors.

C. **Biochemistry, Chemical Biology and Medicinal Chemistry**: biological functions; metabolic roles; pharmaceutical and therapeutic implications of carbohydrates and glycoconjugates.

D. **Biotechnology and Industry**: commercial applications of carbohydrates; methods of production; industrial and biotechnological developments; carbohydrates as organic raw materials. Contributions from Section D and associated studies will be the thematic focus of the agenda on Thursday, Aug. 31.

**Lecture Halls**

Please Note
- The Morning Session on Monday August 28 from 08:30 - 12:00 hrs with the Opening Ceremony, the Whistler Award Lecture and two Plenary Lectures will be held at the Auditorium Maximum in the centre of the University Campus as indicated on the map.
- All other agenda of the Symposium from Monday August 28 afternoon to Friday September 1 afternoon will be at the Chemistry-Zoology Science Center.
- All Plenary Lectures will be given in the largest lecture hall. The lecture halls for Invited Lectures and Oral Communications of the individual sessions are indicated by head letters.

**Slide Preview Room**

All speakers are advised to check their material and are asked to submit their slides to the staff in the Slide Preview Room at least two hours before the start of the session.

**Poster Presentation**

All posters will be on display for the duration of the Symposium at the Chemistry-Zoology Centre in the glass corridor and the entrance hall. Posters can be mounted on Sunday Aug. 27 evening and should not be removed before Friday Sept. 1.

Authors of posters with odd numbers (Poster Session I) should present their poster on Tuesday Aug. 29, 14:00 - 16:15 hrs. The authors of posters with even numbers (Poster Session II) should present their poster on Thursday Aug. 31, 14:00 - 16:15 hrs.
# Auditorium Maximum

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
</table>
| 8:30 | Opening Ceremony | Chair: Joachim Thiem  
Opening: **Krista Sager** Deputy Mayor of the Freie und Hansestadt Hamburg and Deputy Mayor of the Freie und Hansestadt Hamburg and Senator for Science and Research  
Welcome: **Jürgen Lüthje** President Universität Hamburg  
Greeting: **Jürgen Heck** Dean Fachbereich Chemie  
Address on behalf of IUPAC: **Johannes F.G. Vliegenthart** Director Bijvoet Center, Utrecht, NL |
| 9:00 | Whistler Award | Chair: James N. BeMiller  
Presentation of the Roy L. Whistler Award to **Anne Dell**, Imperial College, London, UK  
Whistler Award Lecture  
A-001 *Mass Spectrometry: A powerful tool for high sensitivity covalent structure analysis*  
**Anne Dell** |
| 9:50 | Plenary Lectures | Chair: Frieder W. Lichtenthaler  
B-001 *Total synthesis and development of natural products using carbohydrates*  
**Kuniaki Tatsuta** |
| 10:35 | Coffee Break | |
| 11:10 | A-002 | Chair: Johannes F.G. Vliegenthart  
Heparin: Structure and Biological Activities  
**Robert J. Linhardt** and **Melissa Fath** |
| 12:00 | Lunch | |

All other scientific agenda will take place in the Chemistry-Zoology Science Center
Monday August 28

Session A

INVITED LECTURE

Chair: Stephen J. Angyal

14:00 A-004  NMR Studies on Oligosaccharide-Protein Complexes in the Weakly-Aligned State
Steve W. Homans, Hiroki Shimizu and Gary Thompson

ORAL COMMUNICATIONS

Chair: Stephen J. Angyal

14:30 A-008  Structural basis for chitin recognition by defense proteins: GlcNAc residues are bound in a multivalent fashion by extended binding sites in hevein domains

14:50 A-009  Structure of heparin-pentasaccharide complexed with plasma protein antithrombin III
Miloš Hricovíni, Marco Guerrini, Antonella Bisio, Giangiacomo Torri, Maurice Petitou and Benito Casu

15:10 A-010  NMR and SPR investigations of carbohydrate recognition by lectins
Thomas Weimar and Ralph Bukowski

Session B-I

INVITED LECTURE

Chair: András Lipták

14:00 B-004  New methods for the synthesis of O- and C-oligosaccharides
André Lubineau, Christine Le Narvor, Claudine Augé and Yves Canac

ORAL COMMUNICATIONS

Chair: András Lipták

14:30 B-013  Neoglycoconjugates from the synthetic hexasaccharide fragment of the O-PS of Vibrio cholerae O:1, serotype Ogawa, and the DT mutant CRM9
Pavol Kovác and Jian Zhang

14:50 B-014  Chemically synthesised neoglycoconjugates for the prevention of pneumococcal disease
Dirk J. Lefeber, Barry J. Bennaissa-Trouw, Harm Snippe, Johannis P. Kamerling, Johannes F.G. Vliegenthart

15:10 B-015  Lauryl thioglycosides as versatile intermediates for the synthesis of macrolidic glycolipids
Nobuo Sakairi, Jun-ichi Furukawa, Hideaki Matsui, and Norio Nishi

15:30 Coffee
Session B-II

INVITED LECTURE

Chair: Thisbe K. Lindhorst

14:00 B-005  
I-Azasugars: Isofagomines, azafagomines and why they are glycosidase inhibitors  
Mikael Bols, Steen U. Hansen, Anne Bülow, Xifu Liang, and Henrik H. Jensen

ORAL COMMUNICATIONS

Chair: Thisbe K. Lindhorst

14:30  B-036  
Spirocyclopropane Inhibitors as Tool for the Topological Characterisation of the Active Site of Glycosidases  
Christian Blüchel, Andrea Vasella

14:50  B-037  
Asymmetric Synthesis of Indolizidine Alkaloids by Ring-Rearrangement  
Huib Ovaa, Roland Stragies, Gijs A. van der Marel, Jacques H. van Boom and Siegfried Blechert

15:10  B-038  
Strategies of nature and synthesis for the hydrophilization of benzoxazinones by monosaccharides  
Dieter Sicker, Jens Andersch, Michael Kluge, Horst Wilde

Session C

INVITED LECTURE

Chair: James C. Paulson

14:00  C-003  
The catalytic mechanism of polysialyltransferases: a change in paradigm?  
Martina Mühlenhoff, Michaela Windfuhr, Arnd Manegold, Birgit Gotza, and Rita Gerardy-Schahn

ORAL COMMUNICATIONS

Chair: James C. Paulson

14:30  C-009  
Reduction of the expression of N-glycolylneuraminic acid in genetically engineered Chinese hamster ovary cells  
Stephane Chenu, Y. Malykh, A. Grégoire, A. Visvikis, L. Shaw, R. Schauer, A. Marc, J-L. Goergen

14:50  C-010  
Consequences of the loss of UDP-N-acetylglucosamine 2-epimerase/N-acetylmannosamine kinase, the key enzyme of sialic acid biosynthesis, in cells  
Stephan Hinderlich, Oliver T. Keppler, Markus Berger, Lars Mantey, Michael Pawlita, Werner Reutter

15:10  C-011  
A Novel Disorder Caused by Defective Biosynthesis of N-Linked Oligosaccharides Due to Glucosidase I Deficiency  

15:30  
Coffee
Session A

ORAL COMMUNICATIONS

Chair: Jens Duus

16:00  A-011  NMR experiments for the identification of the phytopathological properties in the exo-polysaccharide amylovoran.
André de Bruyn, Martine Maes, Kristine Orye, Roger Busson, Piet Herdevijn and Eric Messens.

16:20  A-012  Conformational analysis and lectin-carbohydrate binding study of the Sd determinant-containing tetrasaccharide and some synthetic mimics
José L. Jiménez Blanco, Paul J. Erbel, Simon Haseley, Bas R. Leeflang, Johannis P. Kamerling, Johannes F.G. Vliegenthart


Session B-I

ORAL COMMUNICATIONS

Chair: Jean-Marie Beau

16:00  B-016  Stereoselective Synthesis of Complex-type Glycan
Joachim Seifert, Matthias Lergenmüller and Yukishige Ito

16:20  B-017  Synthesis of higher-membered oligosaccharide fragments of the LPS of Shigella sonnei
István Bajza, Anikó Tóth, Tivadar Kontrohr, Vince Pozsgay, András Lipták

16:40  B-018  Conformationally restricted ceramide analogs
Thomas Kolter, Peter Sawatzki

17:00  End

18:00  Reception in the Rathaus (City Hall)
Session B-II

ORAL COMMUNICATIONS

Chair: Jan Hirsch

16:00 B-039 Naphthalene Disaccharide Fragments as Building Blocks for Angucycline Synthesis
Karsten Krohn and Christiane Bäuerlein

16:20 B-040 Bicyclic Amino Acids from Carbohydrates
Francesco Peri, Laura Cipolla, Enrico Caneva, Luca de Gioia and Francesco Nicotra

16:40 B-041 A new synthetic approach towards N-alkylated 2-epi-valienamines via palladium-catalyzed coupling reaction
Tony K. M. Shing and Stanton H. L. Kok

Session C

ORAL COMMUNICATIONS

Chair: Hakon Leffler

16:00 C-012 Structure of the glucan synthesising enzyme amylosucrase
Lars K. Skov, Osman Mirza, Anette Henriksen, Gabrielle Potocki de Montalk, Magali Remaud-Simeon, Patricia Sarcabal, René-Marc Willemot, Pierre Monsan, Michael Gajhede

16:20 C-013 Three-Dimensional Structures of a Barley β-Glucan Exohydrolase Complexed with an Oligosaccharide Substrate Analogue and a Mechanism-Based Inhibitor
Maria Hrmova, Jose N. Varghese, Ross de Gori, Hugues Driguez and Geoffrey B. Fincher

16:40 C-014 Identification of a Glycoprotein Receptor for LEC-6 Galectin from the Nematode C. elegans
Jun Hirabayashi, Fumiko Ogawa, Yoichiro Arata, and Ken-ichi Kasai

17:00 End

18:00 Reception in the Rathaus (City Hall)
**Plenary Session (B-I)**

### Plenary Lecture

Chair: Serge Pérez

9:00 A-003  *Animal lectins that mediate cell-cell recognition events*

**Kurt Drickamer**

### Session A

#### Invited Lecture

Chair: Jeremy P. Carver

9:45 A-005  *Conformational analysis of carbohydrates based on ensemble-average dynamic and geometric descriptors*

**Catherine Hervé du Penhoat**, Céline Monteiro, Pavla Petrova, Anne Imberty, Karim Mazeau, Patrice Pellerin, Catherine Renard, and Serge Pérez

### Oral Communications

Chair: Jeremy P. Carver

10:15 A-014  *Ab initio study of the catalytic mechanism of inverting N-acetylglucosaminyltransferases: Reaction pathways and transition states*

**Igor Tvaroska**, Isabelle André, and Jeremy P. Carver

10:35 A-015  *NMR and Molecular Dynamics Structural Studies on a Heparin Model Synthetic Hexasaccharide*

**Jesus Angulo**, **Pedro M. Nieto**, Jose L. de Paz, Manuel Martin-Lomas

### Session B-I

#### Invited Lecture

Chair: Robert V. Stick

9:45 B-006  *From Stereo-Specificity to Stereo-Diversity: Chemo-Enzymatic Approaches to Carbohydrate Synthesis*

**Wolf-Dieter Fessner**

### Oral Communications

Chair: Robert V. Stick

10:15 B-019  *Chemoenzymatic Synthesis of a Pentaantennary N-Glycan Icosasaccharide*

**Gislinde Gundel** and Carlo Unverzagt

10:35 B-020  *The Precise Chemoenzymatic Synthesis of $^{13}$C-Labeled Sialyloligosaccharide Analogue on an Intact Glycoprotein and its Conformational Analysis*

**Tatsuo Miyazaki**, Hajime Sato, Tohru Sakakibara, Yasuhiro Kajihara

10:55  Coffee
Session B-II

IVITED LECTURE

Chair: Paul Kosma

09:45 B-007 Synthesis and evaluation of sialylminetics as probes of carbohydrate–recognising proteins
Mark von Itzstein

ORAL COMMUNICATIONS

Chair: Paul Kosma

10:15 B-042 Novel One-Pot Syntheses of Divalent Carbohydrates using the Multicomponent Ugi Reaction
Helena Bradley and Paul V. Murphy

10:35 B-043 Convergent C-Glycoside Synthesis via the Ramberg-Backlund Reaction: Active Analogs of Antitumor Glucolipids and Galactoceramides
Guangli Yang, Richard W. Franck, Hoe-Sup Byun, Robert Bittman, Gilbert Arthur, and Pranati Samadder

Session C

IVITED LECTURE

Chair: Helmut Brade

09:45 C-004 Biosynthetic sorting of chondroitin sulfate and heparan sulfate: a novel β-GalNAc transferase and an α-GlcNAc transferase encoded by a member of the tumor suppressor EXT gene family
Kazuyuki Sugahara, Hiromi Shimakawa, Satomi Nadanaka, Fumitaka Goto, Jun-ichi Tamura, Klaus W. Neumann, Tomoya Ogawa, Hiroshi Kitagawa

ORAL COMMUNICATIONS

Chair: Helmut Brade

10:15 C-015 Structure, Function, and Mechanism of Hyaluronan Degrading Enzymes
Mark J. Jedrzejas

10:35 C-016 Assembly of composite P-selectin ligand on polymeric template
Nicolai V. Bovin, Nikolay E.Nifant’ev, Tatyana V.Pochechueva, Oxana E.Galanina, Michael I. Bird

10:55 Coffee
Session A

Chair: Harold J. Jennings

11:30 A-016 Hydrogen Bonding in Carbohydrates: the "Gauche Effect" Revisited
Karl Kirschner and Robert J. Woods

11:50 A-017 Elucidating the dynamics of carbohydrates from experimentally tested simulations
Andrew Almond, John K. Sheehan, Jens Ø. Duus

12:10 A-018 Molecular modeling of the interaction between heparin and chemokines
Aurélien Grosdidier, Hugues Lortat-Jacob and Anne Imberty

12:30 A-019 Comparison of disaccharide conformational energies with observed crystal structures
Alfred D. French, Anne-Marie Kelterer, Glenn P. Johnson, Michael K. Dowd

Session B-I

Chair: Carlo Unverzagt

11:30 B-021 Regio- and Enantioselective Galactosylation at the Primary Position of an Acyclic Amino Alcohol by Bovine β1,4-Galactosyltransferase
Yoshihiro Nishida, Hideaki Tamakoshi, Kazukiyo Kobayashi and Joachim Thiem

11:50 B-022 Chemoenzymatic Synthesis of Biotin-tagged UDP-α-D-galactose and UDP-N-acetyl-α-D-galactosamine for the Transfer by Glycosyltransferases

12:10 B-023 Synthesis of Biosynthetic Intermediates of Plant and Bacterial Saccharides
Werner Klaffke

12:30 B-024 Synthesis of GDP-D-Rhamnose from GDP-D-Mannose in Aneurinibacillus thermoaerophilus L420-91
Bernd Kneidinger, Michael Graninger, Paul Messner

12:50 Lunch
Session B-II

**ORAL COMMUNICATIONS**

Chair: Inge Lundt

11:30 B-044  *Synthesis of C-glycosylated neoglycoconjugates*
   **Bernhard Westermann**, Armin Walter

11:50 B-045  *Carbohydrate Carbocyclization by Zinc-Mediated Domino Reaction and Ring-Closing Metathesis*
   Lene Hyldtoft and **Robert Madsen**

12:10 B-046  *1-Naphthylmethyl, a New Benzyl-Type Protecting Group*
   **Péter Fügedi**, Zsuzsa Antal

12:30 B-047  *Iodine, a Unique and Novel Reagent in Glycosylation Chemistry*
   **K.P. Ravindranathan Kartha** and Robert A. Field

Session C

**ORAL COMMUNICATIONS**

Chair: Berit Smestad Paulsen

11:30 C-017  *Sialylated epitope for influenza virus present in human granulocytes*
   **Halina Miller-Podraza**, Lena Johansson, Petra Johansson and Mikhail Matrosovich

11:50 C-018  *Marine sponge cellular adhesion via carbohydrate self-recognition*
   **Simon R. Haseley**, Henricus J. Vermeer, Johannis P. Kamerling, Johannes F. G. Vliegenthart

12:10 C-019  *The cysteine-rich domain of the macrophage endocytosis receptor recognizes multiple classes of sulphated oligosaccharides*
   **Christine Leteux**, Michel C. Nussenzweig, Ineo Ishizuka, Ten Feizi

12:30 C-020  *The Asn-420-linked sugar chain in human epidermal growth factor receptor suppresses ligand-independent spontaneous oligomerization: Possible role of a specific sugar chain in controllable receptor activation*
   Takeo Tsuda, Yoshitaka Ikeda and **Naoyuki Taniguchi**

12:50 Lunch
Tuesday August 29

**Poster Session**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session I</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>All Posters with Odd Numbers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30</td>
<td>Coffee</td>
</tr>
</tbody>
</table>

**INVITED LECTURES**

**Session A**

Chair: Lennart Kenne

<table>
<thead>
<tr>
<th>Time</th>
<th>Session A</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:15</td>
<td>A-006</td>
</tr>
<tr>
<td></td>
<td>Molecular models of the association of (hemi-)celluloses with cellulose surfaces</td>
</tr>
<tr>
<td></td>
<td>Bas R. Leeflang, J. Albert van Kuik, Johannes F.G. Vliegenthart, Loes M.J. Kroon-Batenburg, Antonius B.M. Linssen, and Jan Kroon</td>
</tr>
</tbody>
</table>

**Session B-I**

Chair: Richard R. Schmidt

<table>
<thead>
<tr>
<th>Time</th>
<th>Session B-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:15</td>
<td>B-008</td>
</tr>
<tr>
<td></td>
<td>Chemical synthesis towards understanding the function of endotoxic entity of bacterial lipopolysaccharide</td>
</tr>
<tr>
<td></td>
<td>Shoichi Kusumoto, Koichi Fukase, Masato Oikawa, Yoshiyuki Fukase, Hiroaki Yoshizaki, Yasuo Suda</td>
</tr>
</tbody>
</table>

**Session B-II**

Chair: Roy Gigg

<table>
<thead>
<tr>
<th>Time</th>
<th>Session B-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:15</td>
<td>B-009</td>
</tr>
<tr>
<td></td>
<td>Studying carbohydrate-to-carbohydrate interactions with model systems</td>
</tr>
<tr>
<td></td>
<td>S. Penadés</td>
</tr>
</tbody>
</table>

**Session C**

Chair: Ernst Th. Rietschel

<table>
<thead>
<tr>
<th>Time</th>
<th>Session C</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:15</td>
<td>C-005</td>
</tr>
<tr>
<td></td>
<td>Cell surface selections for aberrant carbohydrate metabolism using unnatural substrates</td>
</tr>
<tr>
<td></td>
<td>Carolyn R. Bertozzi</td>
</tr>
</tbody>
</table>

**Plenary Session (B-I)**

Chair: Richard R. Schmidt

<table>
<thead>
<tr>
<th>Time</th>
<th>Plenary Session (B-I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:45</td>
<td>B-002</td>
</tr>
<tr>
<td></td>
<td>Synthesis of Carbohydrate-Based Antibiotics</td>
</tr>
<tr>
<td></td>
<td>Chi-Huey Wong</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>End</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Organ Concert in St. Katharinen</th>
</tr>
</thead>
</table>
### Plenary Session (B-I)

**Plenary Lecture**

Chair: Andrea T. Vasella

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>C-001</td>
<td>Functions of Glycosphingolipids at Membrane Surfaces- Pathogenesis of Neurodegenerative and Dermal Genetic Disorders</td>
<td>Konrad Sandhoff</td>
</tr>
</tbody>
</table>

### Session A

Chair: Göran Widmalm

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:45</td>
<td>A-020</td>
<td>X-ray structure determination and modelling of the cyclic tetrasaccharide cyclo[(\text{(\rightarrow)})(\alpha-D\text{-Glcp}(1\rightarrow3))-(\alpha-D\text{-Glcp}(1\rightarrow6))-(\alpha-D\text{-Glcp}(1\rightarrow3))-(\alpha-D\text{-Glcp}(1\rightarrow6))]</td>
<td>Gail M. Bradbrook, Katrin Gessler, Gregory L. Côté, Frank Momany, Peter Biely, Serge Pérez, Anne Imberty</td>
</tr>
<tr>
<td>10:05</td>
<td>A-021</td>
<td>Crystal structure of the sugar complexes of xylanase which utilizes a galactose-binding lectin domain to bind xylan</td>
<td>Zui Fujimoto, Atsushi Kuno, Satoshi Kaneko, Isao Kusakabe, and Hiroshi Mizuno</td>
</tr>
</tbody>
</table>

### Session B-I

Chair: Jacques Defaye

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:45</td>
<td>B-025</td>
<td>Chemoenzymatic syntheses of glycopeptides and evaluation of their functional changes</td>
<td>Katsumi Ajisaka, Mariko Miyasato, Andreas Naundorf, Aruto Yoshida, Kazuo Kobayashi, Makoto Takeuchi, Chikako Ito, Yasuko Fujita, and Syuich Oka</td>
</tr>
<tr>
<td>10:05</td>
<td>B-026</td>
<td>Use of selectively acylated glycosyl donors and acceptors in reactions catalyzed by glycosidases</td>
<td>Vladimír Kren, Lucie Hušáková, Lenka Weignerová, Zdenka Hunková, Marek Kuzma, Monica Casali, Sergio Riva</td>
</tr>
</tbody>
</table>

10:25 Coffee
Session B-II

ORAL COMMUNICATIONS

Chair: Bertil Samuelsson

9:45  B-048  The chemical synthesis of uridine diphosphate N-acetyl-β-L- and α-D-fucosamines, putative precursors in the biosynthesis of staphylococcal capsular polysaccharides  
  Petr A. Illarionov, Vladimir I. Torgov, Vladimir N. Shibaev

10:05  B-049  Acid-catalyzed methanolysis of some sugar nitronates  
  Božena Pribulová, Mária Petrušová, Erika Lattová, James N. BeMiller, Ladislav Petruš

Session C

ORAL COMMUNICATIONS

Chair: Ernst Heinz

9:45  C-021  Novel Methods in Peptide and Protein Glycosylation  
  Sarah J. Ward, Mark A. Robinson, Kevin P. Corbett, Michael A.T. Maughan, Justin Marston, Martin. P. Green, and Benjamin G. Davis

10:05  C-022  Metabolic engineering of cell surface glycoforms of Haemophilus ducreyi - biosynthetic pathways and mass spectrometric analysis  
  Birgit Schilling, Scarlett Goon, Sara P. Gaucher, Nicole M. Samuels, Julie A. Leary, Carolyn R. Bertozzi, Bradford W. Gibson

10:25  Coffee
Session A

**ORAL COMMUNICATIONS**

Chair: Otto Holst

11:00 A-022  *Sensitive fluorophore-tagging analytical method of heparin (Hep)/heparan sulfate (HS)-derived disaccharides generated by deaminative cleavage with nitrous acid*
  
  *Shuhei Yamada*, Momoyo Ueno, Yukihiro Okada, Junko Kishibe, and Kazuyuki Sugahara

11:20 A-023  *An Efficient Assay for Combinatorial Chemistry using NMR*
  
  *Hiroki Shimizu*, Gary Thompson, Steve Homans

11:40 A-024  *N-methylated Acetamidino-Groups: New Components in the Lipopolysaccharide (Endotoxin) of Legionella pneumophila serogroup 1*
  
  *Oliver Kooistra*, Edeltraud Lüneberg, Matthias Frosch, Ulrich Zähringer

12:00 A-025  *The structure of terminal groups of the polysaccharide chains of some LPS's*
  
  *Evguenii Vinogradov*, Malcolm Perry

Session B-I

**ORAL COMMUNICATIONS**

Chair: Subramaniam Sabesan

11:00 B-027  *Convenient chemo-enzymatic synthesis of the methyl pentuloses, 1-deoxy-D-ribulose and 1-deoxy-D-xylulose from 2-deoxy-D-glucose*
  
  *Friedrich Giffhorn*, Sabine Köpper, Alexander Huwig and Stephan Freimund

11:20 B-028  *Synthesis and Reaction of Telluronylglycosides as New Glycosyl Donors*
  
  *Kwan Soo Kim*, Song On An, Sang Soon Choi, Kyu Uk Han

11:40 B-029  *Efficient Synthesis of β-(1→4)-linked galacto-oligosaccharides*
  
  *Markus Oberthur*, Siegfried Peters, and Frieder W. Lichtenthaler

12:00 B-030  *New α-stereoselective sialylations by the neighboring group participation of thioethyl group at 1-position or trichloroacetamide group at 5-position*
  
  *Shigeomi Horito*, Yuichi Takahashi, Takashi Nemoto

12:20 Lunch

13:30 Excursions
## Session B-II

**ORAL COMMUNICATIONS**

Chair: Daniel Plusquellec

11:00 B-050  *Combinatorial Synthesis of Multivalent Cyclic Neoglycopeptides as Potential Lectin Ligands*
   Valentin Wittmann, Sonja Seeberger

11:20 B-051  *Towards Glycoproteines Synthesis - Solution and Solid Phase Catalytic O-Glycosylation of Peptides*
   Jan Ramza and Piotr Krzeczynski

11:40 B-052  *Polymer-assisted synthesis of glycoconjugates*
   Andreas Kirschning, Andreas Schönberger, Janis Jaunzems, Alexander Jung, and Martin Jesberger

12:00 B-053  *New methodology for oligosaccharide synthesis based on affinity separation*
   Koichi Fukase, San-qi Zhang, Yoshiyuki Fukase, Minoru Izumi, and Shoichi Kusumoto

## Session C

**ORAL COMMUNICATIONS**

Chair: Haralambos Parolis

11:00 C-023  *Characterization of Aspergillus niger family 3 β-glucosidase mechanism*
   Ira Marton, Ben-Ami Bravdo, Stephen G. Withers, Andrea Vasella and Oded Shoseyov

11:20 C-024  *Characterization of Conserved Inner-Core Lipopolysaccharide Epitopes in Neisseria meningitidis*

11:40 C-025  *Characterization of the Antibody Response against Lipopolysaccharide of Chlamydia*
   Sven Müller-Loennies, C. Roger MacKenzie, Helmut Brade, and Lore Brade

12:00 C-026  *Characterization of lipopolysaccharide-binding of spike H protein of bacteriophage φX174*
   Minoru Inagaki, Hirohito Wakashima, Akiyoshi Tanaka, Tomoko Kawaura, Ryoko Suzuki, Shuichi Karita, Shiro Nishikawa, and Naoki Kashimura

12:20 Lunch

13:30 Excursions
Plenary Session (B-I)

**PLENARY LECTURE**

Chair: Bruce Stone

9:00  D-001  *Starch-degrading Enzymes – Structure/Function Insights and Improvements by Protein Engineering*

  **Birte Svensson**

Session D-III (A)

**ORAL COMMUNICATIONS**

Chair: Horst Kunz

9:45  D-016  *Development of an Automated Oligosaccharide Synthesizer*

  **Peter H. Seeberger** and Obadiah J. Plante

10:15 D-017  *Solid-phase synthesis of N-glycoamino-acid building blocks and their use on continuous surface*

  Laurence Jobron, Sladana Grbic, **Gerd Hummel**

Session D-I (B-I)

**INVITED LECTURE**

Chair: Angela Savage

9:45  D-003  *An Access to Glycoconjugate Libraries through Multicomponent Reactions*

  **Oswald Lockhoff**

**ORAL COMMUNICATION**

Chair: Angela Savage

10:15 D-010  *Self-Assembled Morphology and Functional Control of 1-Aldosamide Bolaamphiphiles*

  **Mitsutoshi Masuda**, Volkmar Vill and Toshimi Shimizu

10:35 Coffee
Session D-II (B-II)

INVITED LECTURE

Chair: Beat Ernst

09:45 B-010  Synthesis of glycopeptides - Recognition by T cells in a model system and rheumatoid arthritis
Johan Broddefalk, Mikael Elofsson, Björn Holm, Petter Sjölin, and Jan Kihlberg

ORAL COMMUNICATION

Chair: Beat Ernst

10:15 D-005  Concentrated aqueous solutions of xanthan and sclerogluccan display intriguing rheology
David A. Brant and Hucheng Lee

Session D-IV (C)

INVITED LECTURE

Chair: Hans Peter Wessel

09:45 C-006  Studies on CM101 and its target receptor HP59 in pathoangiogenic dependent disease processes
Carl G. Hellerqvist

ORAL COMMUNICATION

Chair: Hans Peter Wessel

10:15 D-023  Effects of culture pH on production rates and glycosylation of murine monoclonal antibody R24
Sven E. Kemminer; H.S. Conradt, M. Nimtz, D. Šagi, J. Peter-Katalinic, J. Müthing

10:35 Coffee
Session D-III (A)

**ORAL COMMUNICATIONS**

Chair: Oscar Varela

11:00 D-018 *Solid-phase synthesis of glycopeptides on a silyl ether-based linker*

Yoshiaki Nakahara, Hironobu Hojo, Akira Ishii, Kazuhiko Nakamura, Yuko Nakahara, and Yukishige Ito

11:20 D-019 *Gluconolactone-based Saccharide Polymers*

Bernd Skeries, Anke Glümer, Klaus Buchholz

11:40 D-020 *Carbohydrate-based synthesis of the polar head of standard branched oligoglycerol surfactants*

Stephanie Cassel, Michel Lafosse and Patrick Rollin

12:00 D-021 *Hydrophilic imidazoles, pyrazoles, pyrazines, and pyridines from sugars*

Eckehard Cuny, Andreas Brust, Stephan Rapp, Frieder W. Lichtenthaler

---

Session D-I (B-I)

**ORAL COMMUNICATIONS**

Chair: Johannis P. Kamerling

11:00 D-011 *Development of a conjugate vaccine against meningococcal type A bacteria: Physicochemical characterisation of the saccharide-component*

Neil Ravenscroft, Giovanni Averani, Angela Bardotti, Antonella Bartoloni, Sandro D’Ascenzi, Aldo Giannozzi, Francesco Norelli, Daniela Proietti, Stefano Ricci, Paolo Costantino

11:20 D-012 *Scale-Up and Production of Zstat-Flu™ and other Carbohydrates for Diagnostic and Therapeutic Applications*

Om Srivastava, Geeta Srivastava, Rizk Hanna, Minghui Du, Wenyi Fu, Chang Chun Ling, Roberto Mendez, Darol Maunder, Aravind Liav, Craig Shimaskai

11:40 D-013 *Side reactions and byproduct formation in the system NMMO / cellulose (Lyocell process)*

Antje Potthast, Thomas Rosenau, Andreas Hofinger, Paul Kosma

12:00 D-014 *Vinyllogous Amides in Carbohydrate Chemistry*


12:20 Lunch
Session D-II (B-II)

**ORAL COMMUNICATIONS**

Chair: Richard H. Furneaux

11:00 D-006 *Elsinan Produced by Elsinoe Fungi; Fine Structure, Modification and Utilization*  
Akira Misaki, Y. Tsumuraya, Y. Ohe, and M. Kakuta

11:20 D-007 *Colloid-chemical properties of chitosan*  
Svetlana Yu. Bratskaya, M.V. Shamov, D.V. Chervonetskiy

11:40 D-008 *The Influence of Plasticiser on the Molecular Organisation in Dry Amylopectin*  
Peter H. Kruiskamp, A.L.M. Smits, J.J.G. van Soest, and J.F.G. Vliegenthart

12:00 D-009 *Canonical correlation analysis of FT-IR and GC of olive pulp cell wall polysaccharide extracts*  
António Barros, Ana Reis, Isabel Mafra, Susana Santos, Ivonne Delgadillo, Manuel A. Coimbra

Session D-IV (C)

**ORAL COMMUNICATIONS**

Chair: Roland Schauer

11:00 D-024 *Carbohydrate Analysis Methods for the Characterization of Recombinant Glycoproteins*  
Rolf Nuck, Martin Gohlke, Ulrich Mach, Martin Zimmermann-Kordmann, Detlef Grunow, Claudia Fieger, Barbara Volz, Rudolf Tauber and Werner Reutter

11:20 D-025 *Thermostabilization of the maltogenic α-amylase Novamyl using multiple rounds of directed evolution*  
Torben P. Frandsen, Joel R. Cherry, Michael H. Lamsa, Aubrey Jones, Alan Sloma, Brian Gorre-Clancy, and Allan Svendsen

11:40 D-026 *Heparins from K5 polysaccharide*  
Pasqua Oreste, G.Zoppetti, J.Chini, B.Febbruari, S.Miletti

12:00 D-027 *Augmentation of glycosylation in cells treated with glycoside primers*  
Maria Carmelita Z. Kasuya, Hideki Nakajima, Sadako Yamagata and Tatsuya Yamagata

12:20 Lunch
Thursday August 31

**Poster Session**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>POSTER SESSION II&lt;br&gt;All Posters with Even Numbers</td>
</tr>
<tr>
<td>15:30</td>
<td>Coffee</td>
</tr>
</tbody>
</table>

**Session D-III (A)**

**ORAL COMMUNICATION**

Chair: Arnold E. Stütz

16:15  D-022  *Sucrose – an Exceptional Molecule for Enzymatic Synthesis*
       Manfred Vogel

**Session D-I (B-I)**

**INVITED LECTURE**

Chair: Tomoya Ogawa

16:15  D-004  *Synthesis of spacered 3-O-sulfoglucuronyl lacto-N-neotetraose (HNK-1 pentasaccharide) and neoglycoconjugates thereof as instruments for glycobiology research*
       Nikolay E. Nifant’ev

**Session D-II (B-II)**

**ORAL COMMUNICATION**

Chair: Bengt Lindberg

16:15  D-015  *Combinatorial split synthesis libraries of glycopeptides. Identification of high affinity ligands for carbohydrate receptors*
       Morten Meldal, Koen Halkes, Phaedria St. Hilaire and Klaus Bock

**Session D-IV (C)**

**INVITED LECTURE**

Chair: Yasuo Inoue

16:15  C-007  *New approaches in the study of human sialidases*
       Guido Tettamanti, Eugenio Monti, Amelia Fiorilli and Bruno Venerando

**Plenary Session (B-I)**

**PLenary LECTURE**

Chair: Tomoya Ogawa

16:45  D-002  *Amino Acids Derived from Carbohydrates*
       George W.J. Fleet

17:30  End

19:30  Symposium Dinner at the Börse (Stock Exchange)
### Plenary Session (B-I)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>C-002</td>
<td><strong>N-linked protein glycosylation in the endoplasmic reticulum: from the model organism Saccharomyces cerevisiae to human diseases</strong></td>
<td>Markus Aebi</td>
</tr>
<tr>
<td>9:45</td>
<td>A-007</td>
<td><strong>Proteomics-based Strategies in Mass Spectrometry of Glycoproteins and Glycolipids</strong></td>
<td>Jasna Peter-Katalinic</td>
</tr>
<tr>
<td>10:15</td>
<td>A-026</td>
<td><strong>Structural Elucidation of Zwitterionic Sugar Cores from Glycosphingolipids by Nano-Electrospray Ionization-Ion Trap Mass Spectrometry</strong></td>
<td>Claudia H. Friedl, Günter Lochnit, Rudolf Geyer, Michael Karas and Ute Bahr</td>
</tr>
<tr>
<td>9:45</td>
<td>B-011</td>
<td><strong>New sulfated gangliosides: synthesis and novel biological functions</strong></td>
<td>Makoto Kiso</td>
</tr>
<tr>
<td>10:15</td>
<td>B-031</td>
<td><strong>Stereoselective synthesis of isosteric (1→6)-oligosaccharides by iterative Wittig olefination</strong></td>
<td>Alessandro Dondoni, Alberto Marra, Mamoru Mizuno</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Coffee</strong></td>
<td></td>
</tr>
</tbody>
</table>

---

**Session A**

**Chair:** Annamaria Naggi

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:45</td>
<td>A-007</td>
<td><strong>Proteomics-based Strategies in Mass Spectrometry of Glycoproteins and Glycolipids</strong></td>
<td>Jasna Peter-Katalinic</td>
</tr>
<tr>
<td>10:15</td>
<td>A-026</td>
<td><strong>Structural Elucidation of Zwitterionic Sugar Cores from Glycosphingolipids by Nano-Electrospray Ionization-Ion Trap Mass Spectrometry</strong></td>
<td>Claudia H. Friedl, Günter Lochnit, Rudolf Geyer, Michael Karas and Ute Bahr</td>
</tr>
</tbody>
</table>

**Session B-I**

**Chair:** Yves Chapleur

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presentation Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:45</td>
<td>B-011</td>
<td><strong>New sulfated gangliosides: synthesis and novel biological functions</strong></td>
<td>Makoto Kiso</td>
</tr>
<tr>
<td>10:15</td>
<td>B-031</td>
<td><strong>Stereoselective synthesis of isosteric (1→6)-oligosaccharides by iterative Wittig olefination</strong></td>
<td>Alessandro Dondoni, Alberto Marra, Mamoru Mizuno</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Coffee</strong></td>
<td></td>
</tr>
</tbody>
</table>
Session B-II

INVITED LECTURE

Chair: Manuel Martin-Lomas

9:45  B-012  Synthesis of a New Class of Glycosidase Inhibitors: Salacinol, its Stereoisomers, and Nitrogen and Selenium Analogues

B. Mario Pinto, Ahmad Ghavami, Blair D. Johnston

ORAL COMMUNICATION

Chair: Manuel Martin-Lomas

10:15  B-054  Glycopolymers as polymeric substrates for glycosyl transferases

Florence Sallas, Kuriko Yamada, Shin-Ichiro Nishimura

Session C

INVITED LECTURE

Chair: Soerge Kelm

9:45  C-008  Characterisation of new sialic acid binding receptors (Siglecs) on cells of the innate immune system

Paul R. Crocker

ORAL COMMUNICATION

Chair: Soerge Kelm

10:15  C-027  Absence of testicular seminolipid and renal galactosyl sulphatide in UDP-galactose: ceramide galactosyltransferase-deficient mice leads to arrest of spermatogenesis and compensatory increase of more polar sulfoglycolipids in renal tubules

Keiko Tadano-Aritomi, Hirokazu Fujimoto, Toshiyuki Hikita, Kunihiko Suzuki and Ineo Ishizuka

10:35  Coffee
Session A

**Oral Communications**

Chair: Per-Erik Jansson

11:00 A-027 *Structural Studies of CV-70 Polysaccharide*

*Adilma Scamparini*, Daniela Mariuzzo, Heloísa Fujihara, Ronaldo Jacobusi and Claire Vendruscolo

11:20 A-028 *A new model for the substitution pattern in the polymer chain of polysaccharide derivatives*

*Petra Mischnick*, Christian Hennig

11:40 A-029 *Sulfated galactans isolated from red seaweeds*

*Miguel D. Noseda*, Jean P. Cauduro, Marco A. Cardoso, Diogo R. B. Ducatti, Maria E. R. Duarte

12:00 A-030 *Synthesis of Conformationally Locked L-Iduronic Acid Derivatives: Direct Evidence for a Critical Role of the Skew-Boat $^2S_0$ Conformer in the Activation of Antithrombin by Heparin*

Sanjoy K. Das, Jean-Maurice Mallet, Jacques Esnault, Pierre-Alexandre Driguez, Philippe Duchaussoy, Philippe Sizun, Jean-Marc Herbert, Maurice Petitou, Pierre Sinaÿ

Session B-I

**Oral Communications**

Chair: Jean-Claude Jacquinet

11:00 B-032 *Stereoselective and Regioselective Synthesis of a Pentasaccharide related to Escherichia coli O : 25*

Rina Saksena, Sapna S. Srivastav, Naveen K. Khare and Anakshi Khare

11:20 B-033 *Chemical synthesis of $\beta$-D-GlcP$(2SO_4)$-(1→3)-D-GalpNAc$(6SO_4)$, the disaccharide repeating unit of shark cartilage chondroitin sulfate D, and of its methyl $\beta$-D-glycoside derivative*

*Nathalie Karst* and Jean-Claude Jacquinet

11:40 B-034 *Synthesis of phosphorylated and sulfated glycosyl serines that could be utilized as probes to study the biosynthesis of glycosaminoglycans*

*Jun-ichi Tamura*, Junko Nishihara

12:00 B-035 *A Novel $\beta$-Directing Fructofuranosyl Donor Concept. Stereospecific Synthesis of Sucrose*

*Stefan Oscarson* and Fernando Sehgelmeble
Session B-II

ORAL COMMUNICATIONS

Chair: Vince Pozsgay
11:00 B-055 A Novel and Efficient Synthesis of Dimeric Le Oligosaccharide on Polymeric Support
Geert-Jan Boons and Tong Zhu

11:20 B-056 Systematic synthesis of carbosilane dendrimers functionalized with the globotriaosyl moieties having neutralization potency for Verotoxins
Koji Matsuoka, Mikiko Terabatake, Kiyotaka Nishikawa, Yasuhiro Natori, Yasuaki Esumi, Daiyo Terunuma, and Hiroyoshi Kuzuhara

11:40 B-057 Oligosaccharide-Based Glycodendrimers
W. Bruce Turnbull, Anthony R. Pease and J. Fraser Stoddart

12:00 B-058 Multivalent Carbohydrate Ligands Based on Dendrimers
Ioannis Vrasidas, Rob M. J. Liskamp, Roland J. Pieters

Session C

ORAL COMMUNICATIONS

Chair: Elizabeth Hounsell
11:00 C-028 Characterization of GalCer expression factor-1 (GEF-1), which induces morphological changes and glycolipid expression in epithelial cells
Kiyoshi Ogura and Tadashi Tai

11:20 C-029 Human milk oligosaccharides inhibit the adhesion of Listeria monocytogenes, Escherichia coli, vibrio cholerae and salmonella fyris
Giovanni V. Coppa, S.Bruni, L.Zampini, T.Galeazzi, R.Capretti, B.Facinelli, O.Gabrielli

11:40 C-030 Molecular and functional analysis of lectin-like activating receptors of natural killer lymphocytes
Karel Bezuška, Jirí Pavlíček, Bruno Sopko, Petr Novák, Anna Fišerová, Miloslav Pospíšil, and Thisbe K. Lindhorst

12:00 C-031 Towards Carbohydrate-Based Catalytic Systems: An Alternative View on the Origin of Life
Timor Baasov, Yaakov Benenson, and Dmitry Solomon

Plenary Session (B-I)

PLENARY LECTURE

Chair: Per J. Garegg
12:20 B-003 The Chance to Discover Chance in Discovery
Robin J. Ferrier

13:05 Closing

13:20 Lunch
Poster Session I  

14:00 Tuesday, August 29

A-101 Structural studies of the O-specific polysaccharide of Citrobacter O1a,1b,1c containing an α-D-ribofuranosyl group
Nina A. Kocharova, George V. Zatonsky, Alexander S. Shashkov, Yuriy A. Knirel

A-103 Application of triflic acid solvolysis for isolation of complex monosaccharide derivatives from bacterial polysaccharides
Andrei V. Perepelov, Sof’ya N. Senchenkova, Alexander S. Shashkov, Yuriy A. Knirel, Antoni Rozalski, Maciej Cedzynski, Wieslaw Kaca

A-105 Elucidation of the structure of the O-specific polysaccharide of Hafnia alvei PCM 1189 using NMR spectroscopy and chemical methods
George V. Zatonsky, Nina A. Kocharova, Ewa Katzenellenbogen, Alexander S. Shashkov, Yuriy A. Knirel

A-107 O-Methylation in the O polysaccharide of Pseudomonas syringae pv. phaseolicola GSPB 1552
Evelina L. Zdorovenko, George V. Zatonsky, Vladimir Ovod, Nina A. Kocharova, Alexander S. Shashkov, Yuriy A. Knirel

A-109 FT-IR spectroscopy in detection of polysaccharides in foods
Jana Copíková, Andryi Synytsya, Marcela Cerná, Jitka Kaasová

A-111 Structural Diversity of Chitosan and Its Complexes
Kenji Okuyama, Keiichi Noguchi, Kozo Ogawa

A-113 Novel structural features in lipopolysaccharides from non-typeable strains of Haemophilus influenzae.
Anna-Karin Karlsson, Martin Månsson, Per-Henrik Hedman, Derek Hood, James C. Richards, E. Richard Moxon and Elke K. H. Schweda

A-115 Solution properties of PAMAM and lactosylated PAMAM dendrimers and their structural characteristics
E. V. Korneeva, N.Errington, S. E.Harding, R.Roy, and G. M.Pavlov

A-117 Comparison of the β, κ and γ-Carrageenans by using the Molecular Modelling and Molecular Dynamics Simulation
Kazuyoshi Ueda, John Brady

A-119 Characterization of native lipopolysaccharide by MALDI-TOF-MS
Buko Lindner, Werner Brabetz, Otto Holst

A-121 Conformation Analysis of Oligosaccharide in Antigen Analog from Mycobacterium Leprae
Akihiro Yamane, Tsuyosi Fujiwara, Toshifumi Yui, Koichi Fukase, Shoichi Kusumoto, Minoru Inagaki, Naoki Kashimura

A-123 Structure of the O-Specific Polysaccharide of Proteus myxofaciens
Anna N. Kondakova, Alexander S. Shashkov, Sof’ya N. Senchenkova, Yuriy A. Knirel, Krystyna Zych, Zygmunt Sidorszczyk

A-125 Advances in structure analysis of polysaccharide derivatives by ESI-MS
Wulff Niedner, Jürgen Heinrich, Petra Mischnick

A-127 Characterisation of the pseudomonas syringae pv. atrofaciens imm 948 lipopolysaccharide
Galina M. Zdorovenko, Alexander S. Shashkov, Evelina L. Zdorovenko, Nina A. Kocharova, Lyudmila M. Yakovleva, Yuriy A. Knirel, Klaus Rudolph
A-129  Structural Studies on Lemnan as Pectin from Lemna minor L.  
R.G.Ovodova, V.V. Golovchenko, A.S. Shashkov, and Yu.S. Ovodov

A-131  Generation of a Knowledge Base to Rapidly Explore the Conformational Space of N-Glycans  
Andreas Bohne, Claus-Wilhelm von der Lieth

A-133  Oligosaccharides display both rigidity and high flexibility in water as determined by molecular  
dynamics simulation and NMR experiments: Evidence of anti-φ and of anti-ψ torsions at the same  
glycosidic linkage  
Christer Höög, Clas Landersjö, and Göran Widmalm

A-135  Pyranosides as ligands of organo-titanium and -zirconium compounds  
Lars Jessen and Jürgen Heck

A-137  Hydrolysis and transglycosylation of hyaluronic acid oligomers by testicular hyaluronidase --  
relationship between enzyme action and oligomer size --  
Mitsuhiro Kinoshita, Akiko Okino, Yasuo Oda and Kauaki Kakehi

A-139  Conformational Analysis of Nucleotide Sugars  
Andreas Willecke, Sabine Köpper

A-141  Assignments of all protons in [3,13C]-NeuAc on a glycoprotein by a newly established HSQC-  
TOCSY-NOESY-TOCSY technique  
Tatsuo Miyazaki, Hajime Sato, Tohru Sakakibara, Yasuhiro Kajihara

A-143  Crystallization and preliminary X-ray analysis of the inulin fructotransferase (DFA III-producing)  
from Arthrobacter globiformis  
Mitsuru Momma, Zui Fujimoto, Kazutomo Haraguchi, Hiroshi Mizuno

A-145  Mutual separation of hinge-glycopeptide isomers bearing five GalNAc residues from normal  
human serum IgA1 by capillary electrophoresis  
Hitoo Iwase, Atsushi Tanaka, Yoshiyuki Hiki, Tohru Kokubo, Takashi Sano, Ikuko Ishii-  
Karakasa, Kazunori Toma, Yutaka Kobayashi, Kyoko Hotta

A-147  On the interdependence of proton-- and electron--donor capacities of hydroxyl -- containing  
molecules  
Igor S. Perelygin

A-149  Heparin Binding Glycoprotein from Squid Ovary  
Hidemitsu Uchisawa, Tetsushi Naraoka, Junji Ichita and Hajime Matsue

A-151  NMR Analysis of Tetrasaccharides from Asparagus  
Eri Fukushi, Shuich Onodera, Akira Yamamori, Norio Shiomi and Jun Kawabata

A-153  Conformational studies of human milk oligosaccharides using NMR residual dipolar couplings  
C. Allen Bush, Manuel Martin-Pastor

A-155  New Lupane Triterpene Glycoside from Scheffleropsis angkae  
Vadim V. Kachala, Aleksey S. Stolyarenko, Vladimir I. Grishkovets, Aleksander S. Shashkov

A-157  New Triterpene Glycosides from the Stems of Tetrapanax papyriferum  

A-159  Triterpene Glycosides from Fatsia japonica Fruits  
A-161 Characterization of immunomodulating polysaccharide fractions isolated from sage (Salvia officinalis L.) with and without ultrasound
Anna Ebringerová, Zdena Hromádková, Vera Hřibalová

A-163 Structural investigation of exopolysaccharides produced by different clinical isolates of Burkholderia cepacia
Paola Cescutti, Marco Bosco, Giuseppe Impallomeni, Silvia Skerlavaj, Jorge Leitão, João Richau, Isabel Sá-Correia, Paola Sist, Roberto Rizzo

A-165 Homology protein modeling of GnT V and ligand docking of natural substrates
Tibor Kozar, Mohan Rao, and Igor Tvaroska

A-167 A novel core oligosaccharide of Plesiomonas shigelloides devoid of phosphate residues.
Tomasz Niedziela, Jolanta Czaja, Wojciech Jachymek, Lennart Kenne and Czeslaw Lugowski

Renata A. Culak, Philip L. Poole and Shawn Doonan

A-171 Copper (II) binding onto various pyranoid and furanoid sugars in aqueous solutions as revealed by electron-spin resonance (ESR) techniques
Masaaki Ohara, Hitomi Sasaki

A-173 3D Structure of oligosaccharides including N-acetylamino group
Yasuko Ishizuka, Kenji Kanazawa, Tadashi Nemoto and Hiroshi Nakanishi

A-175 Structural and conformational analysis of the capsular polysaccharide of Streptococcus pneumoniae type 1 after chemical depolymerisation
Corné J.M. Stroop and C. Allen Bush

A-177 The application of glycoproteins degradation with LiBH₄/LiOH, leading to reduced O-glycopeptides, for structural analysis and localization of O-linked carbohydrate chains with the use of MALDI-MS
Nikolay P. Arbatsky, Leonid M. Likhosherstov, Vladimir N. Shibaev

A-179 Identification of glycoproteins in Mycobacterium avium
Regina Engel, Jordi Torrelles, Bin Wang, Patrick J. Brennan, Otto Holst

A-181 Conformational Investigation of Cytidine 5’-Monophosphate N-Acetylneuraminic Acid Using NMR Spectroscopy and Molecular Modelling
Fengyang Yan, Jean-Robert Brisson, James C. Richards, and Dennis M. Whitfield

A-184 Cellulase/Cellulose Interactions: Adsorption of cellulase components during the degradation of bacterial cellulose

A-185 Mapping the Binding of Carbohydrates to mAb GSLA-2 with NMR and SPR
Lars Herfurth, Beat Ernst, John L. Magnani, and Thomas Peters,

A-187 Aldopentose pyranosyl ring puckering with MM3
Michael K. Dowd, William M. Rockey, Alfred D. French, and Peter J. Reilly

A-189 Structural studies of hyaluronic acid using atomic force microscopy
Theresa Marie McIntire and David A. Brant

A-191 Effect of sun-drying in pear cell wall polysaccharide extracts analysed by FT-IR
Dulcineia Ferreira, António Barros, Ivonne Delgadillo, Manuel A. Coimbra
A-193  Host-guest complex formation in cyclotrikis-(1→6)-[α-D-glucopyranosyl-(1→4)-β-D-glucopyranosyl]
Paola Cescutti, Jean-Pierre Utille and Roberto Rizzo

A-195  Outer Product analysis for the determination of the degree of methylesterification of pectins in cell wall material extracts
António Barros, Isabel Mafra, Ana Reis, Ivonne Delgadillo, Douglas N. Rutledge, Manuel A. Coimbra

A-197  The overlapping exo-anomeric effects in the THP-O-THP analog of the alpha-L-glucopyranosyl-alpha-D-glucopyranoside: a comparison with sucrose and trehalose
Anne-Marie Kelterer, Alfred D. French, Glenn P. Johnson

A-199  Identification of New Inhibitors for E-Selectin by STD-NMR
Oliver Schuster and Bernd Meyer

A-201  On the cryoprotective role of disaccharides: spectroscopic investigations.
C. Branca, S. Magazù, F. Migliardo, P. Migliardo

A-203  3D-Structure of MUC1 Glycopeptides and their Binding Mode with the Monoclonal Antibody SM3 by NMR Spectroscopy
J. Dojahn, Heiko Möller, C. Dietel, N. Sertas, H. Paulsen, J. Tayler-Papadimitriou and B. Meyer

A-205  Chemical structure of the glycosphingolipid isolated from the gram-negative bacterium, Sphingomonas sp. MK346
Kazuyoshi Kawahara, Akiko Nakagawa, Chikako Sakabe, Noriko Sato

A-207  Free reducing oligosaccharides of gum acacia (Acacia senegal): aids for determination of complex side-chain structures in its polysaccharide
Cesar A. Tischer, Marcello Iacomini, Philip A.J. Gorin

A-209  Conformational Analysis Strategies for Complex Carbohydrates Based on Molecular Dynamics Simulations: Free Energy Landscapes, Kinetics and Solvation of the Undecasaccharide SBA
Martin Frank, William E. Hull, Claus-W. von der Lieth,

A-211  Structure of the O-specific polysaccharide of the marine bacterium Pseudoalteromonas haloplanktis ssp. tetraodonis type strain IAM 14160T

A-213  Intensely coloured glycosyl-azopyrazolone derivatives as labels for the analysis of glycans released by hydrazinolysis.
Warren Kett, Michael Batley, John Redmond.

A-215  Structural features of the lipopolysaccharides from Pseudomonas (Burkholderia) caryophylli.

A-217  Probing the role of water in carbohydrate-protein interactions
Geert-Jan Boons, Christopher Clarke

Ana M. Amado and Paulo J. A. Ribeiro-Claro

A-221  STD NMR Spectroscopy to Analyze Ligand Binding to a Human Mannose 6-Phosphate Transporter Protein for Lysosomal Enzymes
Paul, E., Mayer, M., Braulke, T., Meyer, B.
Enzymatic synthesis of biological active polysaccharides from laminaran and fucoidan
Tatiana Zvyagintseva, Nataliya Shevchenko, Tatiana Zaporozhets, Andrey Scobun, Irina Bakunina, Nataliya Besednova

Synthesis of analogues of 2’-azido-2’-deoxyuridine, known inhibitor of Ribonucleotide Diphosphate Reductase (RDPR).
Mélanie Etheve-Quelquejeu, Jean-Marc Valery

Conformational analysis of N-glycopeptides built up of α-helical peptides and sugar residues corresponding to N-glycans’ core-region.
Kristina Münnich and Christian Griesinger

Synthesis of oligosaccharide derivatives related to the O-antigen of Shigella dysenteriae type 3
Sujit Kumar Sarkar and Nirmolendu Roy

Short synthesis of 2-acetamido-4-amino-2,6,5-trideoxy-D-glucose and derivatives. Observations on SN2 Reactions at C-4 of 2-acetamido-D-glucopyranoside derivatives
Hong Liang and T. Bruce Grindley

Chemical synthesis of substrates in the Leishmania biosynthetic pathways
Irina A. Ivanova, Andrew J. Ross, Yury E. Tsvetkov and Andrei V. Nikolaev

Synthesis of New Cyclitols Influencing the Enzymes of the Phosphatidylinositol Pathway
István F. Pelyvás, Zoltán G. Tóth, Gyula Batta, György Vereb, Ferenc Sztaarcákai

Synthesis and conformational studies of unnatural pyrimidine nucleosides
Ferenc Sztaarcákai, Andrea Csorvási, András Horváth, Gyula Batta and Zoltán Dinya

Synthesis of β-D-GalpNAc(4SO₃)→(1→4)-L-IdopA(2SO₃), a disaccharide fragment of dermatan sulfate, and of its methyl α-L-glycoside derivative.
Nadine Barroca and Jean-Claude Jacquinet

Synthesis and spectra of substituted phenethyl 2-acetamido-2-deoxy-β-D-glucopyranoside
E. S. H. El Ashry and Y. El Kilany

Synthesis of 3,6-anhydro-1,3-dithio-D-glucofuranoses and -pyranoses.
János Kuszmann, Éva Bozó and Sándor Boros

Synthesis of a spacer-containing disaccharide fragment of Bordetella Pertussis lipopolysaccharide
Magnus Nilsson and Thomas Norberg

New derivatives of reducing oligosaccharides and their use in enzymatic reactions: Efficient synthesis of sialyl Lewis a and sialyl dimeric Lewis x glycoconjugates
Mattias Bårström, Mia Bengtsson, Ola Blixt, and Thomas Norberg

Synthesis and NMR-studies of cyclopeptides containing sugar amino acids
Matthias Stöckle, Elsa Locardi, Sibylle Gruner, Horst Kessler

Synthesis and biological evaluation of multivalent oligomannoside glycomimetics
Anupama Patel and Thisbe K. Lindhorst
B-137  *Synthesis of glycopeptide dendrons based on peptide coupling of a glucose-derived AB₂-building block*
   Kashinath Sadalapure, Thisbe K. Lindhorst

B-139  *Preparation of Nucleoside Analogues Derived from 2-Deoxy-4-thio-L-threo-pentofuranose*
   Jürgen Voss, Jörn Wirsching, Gunadi Adiwidjaja

B-141  *Synthesis of Bicyclic Pentofuranosides Containing Oxygen, Sulfur, Selenium and Tellurium in the Anhydrobridge*
   Jürgen Voss, Oliver Schulze, Gunadi Adiwidjaja

B-143  *From D-gluconolactone to L-gluconolactone and L-glucose*
   Thomas Stoklund and Inge Lundt

B-145  *Streptococcus pneumoniae type 14 oligosaccharide-conjugate vaccines*
   J.A.F. Joosten, D. Michalik, J.P. Kamerling, J.F.G. Vliegenthart

B-147  *Metal vinyl carbene O-glycosides in Michael addition and benzannulation reactions*
   Corinna Atalay, Erik Janes, Martin Nieger, Karl Heinz Dötz

B-149  *Short and efficient routes to stannylated glycals employing a direct metalation procedure*
   Christoph Jäkel and Karl Heinz Dötz

B-151  *Synthesis of 5,7-diacetamido-3,5,7,9-tetraoxynonulosonic acids, putative components of bacterial lipopolysaccharides*
   Yury E. Tsvetkov, Yuriy A. Knirel, Alexander S. Shashkov, Ulrich Zähringer

B-153  *Synthesis of two fluorescence-labeled lipotrisaccharides related to nodulation factors of Rhizobium NGR234*
   Nelli N. Malysheva, Alexander I. Zinin, Sergey Sedinkin, Vladimir I. Torgov, Vladimir N. Shibaev

B-155  *Synthesis of Selectively Methylated Trigalacturonates Related to Pectin*
   Mads H. Clausen, Malene Jørgensen, Jesper Thorsen, and Robert Madsen

B-157  *Facile Condroititol Syntheses via Ring-Closing Metathesis*
   Andreas L. Paulsen, Morten Jørgensen, and Robert Madsen

B-159  *Platinum and Palladium Catalyzed Ring-Opening of 1,2-Cyclopropanated Sugars*
   Jürgen Beyer, Philip R. Skaanderup, Robert Madsen

B-161  *Synthesis of Glycopeptides of the onefold, twofold, threefold and fourfold MUC1 tandem repeating unit up to 80 amino acids.*
   Nida Serttas, Hans Paulsen

B-163  *Regioselective Deprotection of Protected Sugar Lactones Leading to the Synthesis of L-Sugars*
   Chun-Hung Lin, Wen-Bin Yang, Yu-Ying Yang, Chin-Fen Teo, Sachindra S. Patil

B-165  *Synthesis of β-D-Arabinofuranosyl-1-Monophosphoryldecaprenol, A. Liav and P.J. Brennan*

B-167  *A blockwise assembly of regular branched mannooligosaccharides*
   Leon V. Backinowsky, Polina I. Abronina, Sergey A. Nepogodiev, Alexey A. Grachev, Alexander S. Shashkov, Nikolay K. Kochetkov

B-169  *In vitro biosynthesis of siaIylated and branched forms of the X₂ epitope (GalNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc) by mammalian glycosyltransferases*
   Suvi Toivonen, Olli Aitio, Ossi Renkonen
B-171  Diisobutylaluminium Promoted Regioselective De-O-benzylation of Perbenzylated Cyclodextrins: A Powerful New Strategy for the Preparation of Selectively Modified Cyclodextrins
Alan James Pearce and Pierre Sinaÿ

B-173  Chemical synthesis of two anomers of ADP-L- and D-glycero-D-manno-heptoses as substrates for bacterial heptosyltransferases.
Alla Zamyatina, Sabine Gronow, Clemens Oertelt, Michael Puchberger, Helmut Brade, Paul Kosma

B-175  Complementary synthetic methods for synthesizing epimeric Spiro α-chloroepoxides for the use of dichloromethyllithium
Ken-ichi Sato, Takao Sekiguchi, Toshiya Yamazaki, Katsuhiko Suzuki, Hiroyuki Hori, and Shoji Akai

B-177  Synthesis and antiviral testing of new acyclic C-nucleoside analogues
Karen Methling, Christiane Bürger, Heiderose Oberender and Klaus Peseke

B-179  Polymer-assisted solution phase synthesis of amide libraries based on carbohydrate scaffolds
Andreas Link, Abolfasl Golisade

B-181  Wild-Type and Mutant Retaining (1→3)-β-Glucan Endohydrolases from Barley Are Efficient Tools in the Synthesis of (1→3)-β-Linked Oligo- and Polysaccharides
Maria Hrmova, Simon J. Rutten, Jon K. Fairweather, Geoffrey B. Fincher, Hugues Driguez

B-183  TIPS-protected Glycosides as versatile building-blocks for the flexible synthesis of VSG-GPI-anchor fragments of Trypanosoma brucei.
R. Dettmann, T. Ziegler, M. Duszenko

B-185  Synthesis of acyclo-C-nucleoside analogues by ring transformations from 2-formyl-glycals
Alina Montero, Klaus Peseke, Ivo Rudloff

B-187  6-Deoxysugars as Building Blocks of Hybrid Macrolides: Chemo-enzymatic Synthesis of dTDP-activated Deoxysugars
S. Amann, C. Rupprath, G. Dräger, A. Kirschning, L. Elling

B-189  A novel Access to Nucleotide-activated Oligosaccharides by Enzymatic Synthesis

B-191  Solid-Phase Synthesis of Lipo-Chitin Oligosaccharide Analogues using a Backbone Amide Linker (BAL) Strategy
Mikkel B. Thygesen, Jakob F. Tolborg, Lars Petersen, Fanny Guillaumie and Knud J. Jensen

B-193  A New, Efficient Glycosylation Method for Oligosaccharide Synthesis under Neutral Conditions
Lars Petersen and Knud J. Jensen

B-195  Novel Saccharide and Diaminosaccharide Templates for Solid-Phase Combinatorial Chemistry
Udo Hünger, Christopher Kallus, Oliver Knöll, Thomas Maidhof, Horst Kunz

B-197  Monosaccharides as Chiral Five-Dimension-Diversity-Scaffolds
Till Opatz, Christopher Kallus, Tobias Wunberg, Wolfgang Schmidt, Stefan Henke and Horst Kunz

B-199  Synthesis of Galactosamine Derivatives via Intramolecular Inversion by the neighboring acyl groups
Yoichi Takeda, Shigeomi Horito
B-201  2-Oxo-D-gluconates as Versatile Carbohydrate Building Blocks
   
   Jens Andersch, Stephan Schmidt, Dieter Sicker, Horst Wilde

B-203  Synthesis and NMR spectroscopic investigation of Ca^{2+} binding carbohydrate clusters
   
   Christian Gege, Armin Geyer, Richard R. Schmidt

B-205  Benzyl-functionalised cycloSal-d4T Monophosphates
   
   J. Renze, M. Plath, C. Ducho, C. Meier

B-207  Novel Synthetic Route towards Analogues of AZT Monophosphate (AZTMP)
   
   H.C. Müller, C. Meier

B-209  Studies on the Potential of Cyclic Sulfites and Cyclic Sulfates in Synthesis and Modification of
   
   Nucleosides
   
   Silvia Riegler, Siegfried Schupper, Gertraud Hayn, Karl Dax

B-211  Efficient synthesis of neomycin b related aminoglycosides
   
   Yili Ding, Eric E. Swayze, Steven A. Hofstadler and Richard H. Griffey

B-213  Synthesis of linalyl glycosides
   
   Sabine Reicheneder and Carlo Unverzagt

B-215  Synthesis of highly potent diamino tryptase inhibitors for the treatment of asthma, based on 2,6-
   
   and 3,6-dihydroxy monosaccharides as templates
   
   Thomas J. Martin

B-217  Synthesis of sugar derivatives as novel combinatorial scaffolds in drug discovery
   
   Mattie Timmer, Gijs van der Marel, J.H. van Boom

B-219  Probing the GPI Biosynthesis of Trypanosoma brucei using Chemically Modified Analogues
   
   M. A. J. Ferguson, A. P. Dix, C. N. Borissow, and J. S. Brimacombe

B-221  Facile synthesis of 2-enitol derivatives having the unprecedented $^{5}H_{0}$ conformation and its some
   
   reactions
   
   Masaru Watanabe, Keishiro Hishinuma, Yasuhiro Kajihara, and Tohru Sakakibara

B-223  Synthesis of polyhydroxylated hexahydro-1H-cyclopent[e]isoxazoles by a stereoselective
   
   intramolecular oxime olefin cycloaddition: an approach to aminocyclopentitolos.
   
   Paul Dransfield, Stéphane Moutel, Michael Shipman

B-225  Synthesis of the heptasaccharide part of human chorionic gonadotrophin (hCG) $\alpha$-subunit
   
   János Hajkó, Andráš Lipták, Johannis P. Kamerling, and Johannes F. G. Vliegenthart

B-227  The synthesis of calixsugar having natural N-linked oligosaccharide
   
   Mamoru Mizuno, Alessandro Dondoni, Alberto Marra, Toshiyuki Inazu

B-229  Reductive samariation with catalytic nickel: apparent external trapping of anomeric radicals
   
   under steric control
   
   Nicolas Miquel, Gilles Doisneau, Jean-Marie Beau

B-231  Conjugate Addition of Azide to the $\alpha$, $\beta$-Unsaturated-d-lactones Derived from D-Glycals
   
   Tae Rim Lee, Goo Soo Lee, Hyun Woog Chung, Bong Young Chung

B-233  Synthesis and supramolecular assemblies of novel archaenal glycolipid analogues.
   
   Daniel Plusquellec, Thierry Benvegnu, Grégory Lecollinet, Vincent Ferrières
B-235  *Hetarylene aminopolyols. Towards a new type of oligosaccharide and peptide mimetics.*
   Antonio J. Moreno-Vargas, **José G. Fernández-Bolaños**, José Fuentes and Inmaculada Robina

B-237  *Synthesis of Vinyl α-D-Glucopyranosides from Glycosyl Acetals*
   Jocelyn Edathil, Joan Nguyen, Walter Boyko, and **Robert Giuliano**

B-239  *Synthesis of Trisaccharide Repeating Units of Campylobacter jejuni Serotype O:23 and O:36 O-antigen containing 6-d-D-Altrio-Hepp α(1→3) GlcNAcβ β(1→3) Galp α (1→O-)*

B-241  *Synthesis of Deoxygenated and C-Methyl-Branch-Hexose-6-Phosphates*
   **Stefan Natsch** and Werner Klaffke

B-243  *Synthesis of dinucleotide analogues with an unsaturated hydrocarbon chain as linker by metathesis*

B-245  *Isourea and oxazoline derivatives of selected monosaccharides*
   **Christian Sowa**, Ralf Miethchen

B-247  *Stereoselective synthesis of cyclooctanic mimetics of methyl-β-L-glucopyranoside*
   **Wei Wang**, Yongmin Zhang, Honghui Zhou, Pierre Sinaï

B-249  *2-Deoxy-2-amino- and 2-deoxy-2-azido containing oligosaccharide derivatives as new potential inhibitors of retaining β-glycanases*
   **Wim Nerinckx**, Kathleen Piens, Tom Desmet and Marc Claeyssens

B-251  *A Fluorometric Monitoring Method for the Solid-Phase Oligosaccharide Synthesis*
   Masashi Ohmae, Nobuhiko Furukawa, Ryoko Morita, Toshiyuki Inazu

B-253  *Synthesis of N–O-glycosides*
   Miklós Hornyák, Gyula Batta, Ferenc Sztaicskai

B-255  *Reaction of C-1 Substituted Glycals with Malonyl Radical*
   **Viktor Gyöllai**, Torsten Linker, László Somsák

B-257  *Convergent synthesis and NMR study of a tetra- and two pentasaccharides related to the Shigella flexneri serotype 5a O-antigen.*
   **Laurence Mulard**, Marie-Jeanne Clément, Muriel Delepierre

B-259  *Studies on Sialic Acid: Syntheses of 8- and 9-O-Sulfosialic Acid of 4-MU α-Glycosides and Their NMR Analysis*
   Kimio Furuhata, Noriko Sato, Katumi Ajisaka and Hiroaki Takayanagi

B-261  *Chemoenzymatic Synthesis of Aza-idulonic Acid and Other Iminocyclitol-Carboxylic Acids*
   Tetsuya Kajimoto, Tsuyoshi Miura, Toshiyuki Inazu

B-263  *Manipulation of sweetness of sugar derivatives*
   Takeshi Mitsumori, Takako Toriumi, Tomoya Machinami, Tetsuo Suami, and Leslie Hough

B-265  *Preparation of branched cyclodextrins having galactose or mannose on non-reducing ends in side chains and study of their interaction with lectins*
   Toshiko Tanimoto, Akiko Ikuta, Kyoko Koizumi, Takeomi Murata, Taichi Usui, Sumio Kitahata

B-267  *Unexpected transformation of aldose formazans into phenylazo-pyrazoles*
   **Virág Zsoldos-Mády**, István Pintér, Mária Kajtár-Peredy, Pál Sohár
B-269  Synthesis and Behaviors of Alkylidene-Linked Bisubstrate Analogues of Some Glycosyltransferases
Tsuyoshi Endo, Hiromichi Hasegawa, Yuko Kadota, Hideya Yuasa, Hironobu Hashimoto,
Takeshi Sato, Kiyoshi Furukawa, Akira Seko, Katsuko Yamashita, Keiko Sujino, and Monica Palic

B-271  A Carbohydrate Based Combinatorial Library Approach to the Discovery of New Antibacterial Agents
Karl Schafer, Giang Le Thanh, Darren M. Schliebs and Michael L. West

B-273  Open chain D-fructose and L-sorbose derivatives as useful intermediates
Josef Spreitz, Brigitte Eder, Friedrich K. (Fitz) Sprenger, Arnold E. Stütz, Andreas Tauss, Tanja M. Wrodnigg

B-275  New approaches to the total synthesis of Hagen’s Lactones
Hergen Köhne, Peter Köll

B-277  Syntheses of (-)-keto-conduritol, via ferrier rearrangement
Ivone Carvalho, E.B. Melo, Alan H. Haines

B-279  Modular synthesis of multivalent saccharide-branched cyclodextrins
I. Baussanne, J. M. Benito, C. Ortiz Mellet, J. M. García Fernández, J. Defaye

B-281  Enzymatical O-galactosylation of selected free and partially protected ketoses
Brigitte Eder, Peter Greimel, Inge Lundt, Friedrich K. (Fitz) Sprenger, Arnold E. Stütz, Andreas Tauss, Tanja M. Wrodnigg

B-283  D-Xylose (D-glucose) isomerase (EC 5.3.1.5) in sugar synthesis: Probing the enzymatic isomerisation of D-ribose
Herwig Häusler, Peter Greimel, Josef Spreitz, Arnold E. Stütz, Andreas Tauss, Hansjörg Weber

B-285  Unusual sugar tautomers: Synthetic approaches to new derivatives of aldo- and aldoseptanoses.
Andreas Tauss, Brigitte Eder, Peter Greimel, Friederich K. (Fitz) Sprenger, Josef Spreitz, Arnold E. Stütz

B-287  Stereoselective Synthesis of α-Glucosides and β-Mannosides via Temporary Molecular Tethering
Christopher Seward, Mahmoud Aloui, Ian Cumpstey, Antony Fairbanks, Alison Redgrave

B-289  Total synthesis of caryophyllose
Matteo Adinolfi, Gaspare Barone, Pasquale Festa, Luigi Guariniello, Alfonso Iadonisi, Lorenzo Mangoni

B-291  Synthesis of a modified oligosaccharidic fragment of the regular region of heparin
Rafael Ojeda, José Luis de Paz, Ricardo Lucas, José M. Lassaletta, Manuel Martín-Lomas, Niels Reichardt.

Florence Charbonnier, Soledad Penadés

B-295  Structural determination of lipopolisaccharide fraction from halomonas magadii
Cristina De Castro, William D. Grant, Susan Grant, Rosa Lanzetta, Antonio Molinaro, Michelangelo Parrilli.

B-297  Stereochemical Mode of Action of two α-Galactosidases from Talaromyces emersonii
Jimmy Muldoon, Patrick G. Murray, Angela V. Savage and Maria G. Tuohy
B-299  *Synthesis and Biological Testing of Immunoactive Aminosugar Derivatives*

**Pavel Krist**, Eva Herkommerová, Marek Kuzma, Karel Bezouška, Vladimír Kren

B-301  *Application of atomic force microscopy for the measurement of adhesion forces between carbohydrates.*


B-303  *Synthesis, Properties and anti-EBV Activity of a new Series of 3′-modified cycloSal-BVDUMP Promonucleotides*

**A. Lomp**, A. Meerbach, P. Wutzler, and C. Meier,


**Meredith Kubsch**, Shikai Zhao, Roland Stenutz, Yuping Zhu, Michael Vercillo, Anthony S. Serianni

B-307  *Synthesis of sialylmimetics as potential inhibitors of rotaviral infection*

Ashmath Fazli, Susan J. Bradley, **Milton J. Kiefel** Mark von Itzstein

B-309  *Chemical synthesis of ganglioside GAI tetrasaccharide*

**O. V. Baidina**, E. Y. Korchagina, N.V. Bovin

B-311  *Synthesis of N-β-D-galactofuranosyl-2-thion-imidazols and their evaluation as exo β-D-galactofuranosidase inhibitors.*

**Carla Marino**, Pal Herczegh and Rosa M. de Lederkremer

B-313  *A straightforward synthesis of a glycoside of D-epi-purpuroside C*

Christian Iriarte Capaccio, **Oscar Varela**

B-315  *Sulfation of Polysaccharides Using Transesterification of Monomethylsulfates*

**Ryo Takano**, Tomomi Nagai, Xin-Yan Xu, Xiaofeng Wu, Nguyen Tien Huy, Kaeko Kamei, Saburo Hara

B-317  *Synthesis of de-N-acetylsialyl Lewis X ganglioside*

**Masanori Yamaguchi**, Hideharu Ishida and Makoto Kiso

B-319  *Synthetic study of GalNAc-GD1a: Possible target molecules in Guillain-Barré Syndrome*

**Satoru Tanaka**, Naoki Sawada, Hideharu Ishida and Makoto Kiso

B-321  *Synthesis and MAG-ligand activity of the IIIβ sulfated and II' IIIβ bis-sulfated derivatives of GM1b*

**Hiromi Ito**, Hideharu Ishida, Brian E. Collins, Ronald L. Schnaar and Makoto Kiso

B-323  *Synthetic study of O-acetylated Sialyl Lewis X and Syalyl Lewis A*

**Shigeki Mori**, Hideharu Ishida, Makoto Kiso

B-325  *Carbon Chain Elongation In Furanosidic Derivatives*

**J. Albertino Figueiredo**, M. Isabel Ismael, Jorge M. Pinheiro, Amélia P. Rauter

B-327  *Enzymatic hydrolysis ofα-substituted acrylonitriles: a way to ulosonic acids*

**Ludmila Martínková**, Dominique Crestia, Colette Demuyck, Jean Bolte, Vera Prikrylová, Marek Kuzma, Mária Ovesná, Vladimír Kren

B-329  *A simple method for selective 1-O-deacetylation of fully acetylated sugars*

**Sergey S. Pertel**, Andrey L. Kadun, Elena S. Kakayan, Vasily Ya. Chirva

B-331  *A Novel Synthesis of D-Hexos-5-uloses by Epoxidation of Hex-5-eneopyranosides*

**Philomena M. Enright** and Paul V. Murphy
[2+2]Cycloaddition of chlorosulfonyl isocyanate to 3-O-allenyl sugar ethers

Screening for new and improved glycosynthases

Glycosyl Phosphates: Synthesis and Application to the Construction of Natural and Non-Natural Glycosidic Linkages
Obadiah J. Plante, Emma R. Palmacci and Peter H. Seeberger

Approaches Towards the Synthesis of Trisaccharide Analogues of Methyl β-Acarviosin
Jon K. Fairweather, Matthew J. McDonough, Robert V. Stick and D. Matthew G. Tilbrook

MPEG-supported Synthesis of Oligomannosides
Regine Blattner, Robin J. Ferrier, Richard H. Furneaux and Michael Ludewig

Syntheses of lactoside derivatives for the saccharide elongation by biosynthetic pathway
Kenichi Hatanaka, Masaki Kobayashi, Tatsuya Yamagata, and Toshinori Sato

Synthesis and Purification of UDP-GalNAc Analogues for the Study of Polypeptide-α-GalNAc-transferases
Patricia Busca, Rodolphe Pennanec, Michel Dreux, Véronique Piller, Friederich Piller, and Olivier R. Martina

Application of sugar allyltin derivatives in the synthesis of higher carbon sugars
Stanislaw Skora, Katarzyna Szewczyk and Slawomir Jarosz

Efficient synthesis of Kdo disaccharides
Jacek Mlynarski and Anna Banaszek

Synthesis of A new type polyglycopeptide: sequential glycopeptides bearing carbohydrates in a controlled distance.
Tetsuro Tsuda, and Shin-Ichiro Nishimura

Preparation and applications of immobilized glycosyltransferases in glycoconjugate synthesis
Kuriko Yamada, Takahiko Matsushita, Ayako Nakao, Susumu Nishiguchi

Efficient Synthesis of Cycloextrins by Using Molecular Clamp Method
Masahiro Wakao, Koichi Fukase, Shoichi Kusumoto

Oligonucleosides with a Nucleobase-Including Backbone: Force-field Calculations, and Syntheses of Uridine-derived Monomers and Oligomers
Simon Eppacher, Nathalie Solladié, Bruno Bernet, Andrea Vasella

Synthesis of a β1,2-mannopyranosyl tetrasaccharide found in the phosphomannan of Candida albicans in a form amenable to glyconjugate formation
Mark Nitz, Byron Purse and David R. Bundle

Divergent synthesis and biological activities of lipid A and analogs
Yoshiyuki Fukase, Koichi Fukase, Masato Oikawa, Yasuo Suda, Wen-Chi Liu, Masaya Hashimoto, Mikayo Kataoka, Noritsugu Imai, Keiko Iseki, Klaus Brandenburg, Ulrich Seydel, and Shoichi Kusumoto

1,2-Trans C-Glycosyl compounds from Anomeric Iodides
Nicolas Miquel, Gilles Doisneau, Jean-Marie Beau
**B-365**  
*DTPM as a Novel Protection for Amino Sugars II: Application for Glucosamine containing Oligosaccharides*  

**B-367**  
*Synthesis of the LEC14 Nonasaccharide*  
**Ingo Prahl** and Carlo Unverzagt

**B-369**  
*Facile glycosylation method for the synthesis of 2-acetamido-2-deoxy-glycoside using oxazoline donor*  
**Ichiro Matsuo**, Yuichi Yamamoto, Megumi Isomura, Yukio Ohshima, and Katsumi Ajisaka

**B-371**  
*Synthesis and Evaluation of C-Glycosyl Sugar α-Amino Acids as Glycosidase Inhibitors*  
**Frank Schweizer**, Toshiyuki Inazu

**B-373**  
*General Synthesis of Nojirimycin C-glycosides and Analogues from L-Sorbose*  
Géraldine Masson, **Philippe Compain**, Jérôme Blu and Olivier R. Martin

**B-375**  
*Behavior of aldehydo and keto sugar derivatives under conditions of enolization and elimination*  
**Derek Horton**, Olivier Marcq, and Jongjoo Lee

**B-377**  
*Sulfation of 4-O-substituted D-glucuronic acid derivatives*  
Natalia Salmaso, José Kovesky, Mariano J. L. Castro, **Alicia Fernández Cirelli**

**B-379**  
*A one-pot synthesis of novel N,N-dialkyl-S-glycosylsulfenamides*  
**David J. Owen**, Mark von Itzstein

**B-381**  
*Synthetic Approaches to Clinically Promising Anthracyclines Modified at the Sugar Moiety*  
Izabela Fokt, Marta Krawczyk, Teresa Przewloka, Grzegorz Grynkiewicz, and **Waldemar Priebe**

**B-383**  
*Synthesis of normoramyl acid carba analogue and its glycopeptide derivatives resistant to β-elimination splitting of the side chain*  
**Miroslav Ledvina**, Radka Pavelová, Anna Rohlenová, Jan Ježek and David Šaman

**B-387**  
*Glycosylations of scented alcohols*  
**Lars Kröger**, Joachim Thiem

**B-389**  
*Synthesis of a human milk oligosaccharides containing 6-Deoxy-6-fluoro-L-fucose*  
**Meinolf Braackhagen**, Christian Vogel

**B-391**  
*Synthesis of anellated pyranoses on the basis of a push-pull derivative of levoglucosenone*  
**Holger Feist**, Mario Gómez Andreu, Klaus Peseke

**B-393**  
*Preparation of β-D-glucopyranoside derivatives having a twist-boat conformation*  
Tohru Sakakibara, Miki Eguchi, Narihiro Kanawa, Kiotaka Suzuki, Youhei Shiratuchi, and Yasuhiro Kajihara

**B-395**  
*Enzymatic synthesis of a tetravalent Core 2 sialyl Lewis x glycopeptide that inhibits lymphocyte adhesion to rat lymph node high endothelial venules*  
Tero Satomaa, Sanna Toppila, Olli Aitto, Jari Helin, Nisse Kalkkinen, Minna Ekström, Heidi Salminen, Suvi Toivonen, Arthur L. DeVries, Risto Renkonen, Ossi Renkonen

**B-397**  
*Synthesis of a rhamnosylated bisdesmosidic dihydrodiosgenin glucoside as mimetic of a naturally occurring anti-tumor active saponin*  
**René Suhr**, Martina Lahnmann, Stefan Oscarson, Joachim Thiem

**B-399**  
*Polymer-Supported Solution Phase Synthesis of Oligosaccharides*  
**Dirk Schmidt**, Joachim Thiem
B-401 Enzymatic synthesis of Gal-β-(1→3)-GlcNAc derivatives utilising the β-galactosidase from bovine testes and the phosphorylase from Bifidobacterium bifidum
Erzsébet May, Joachim Thiem

B-403 Chemoselective Glycosylation by Adjusting the Reactivity of the Anomeric Leaving Group
Martina Lahmann, Stefan Oscarson

B-405 C-Glycosyl Mimetics of 2-O-(β-D-Mannopyranosyl)-D-glucose
Duy-Phong Pham-Huu, Mária Petrušová, James N. BeMiller, Ladislav Petruš, Peter Köll, Jürgen Kopf

B-407 Synthesis of meso-Diaminopimelic acid containing N-Acetylmuramyl-Oligopeptides
Niels Kubasch and Richard R. Schmidt

B-409 A Simple Synthesis of C-Glycosyl Ketene Dithioacetal from Common Aldoses
Yonas Gizaw, D.-P. Pham-Huu, L. Petrus, J.N. BeMiller

B-411 Mitsunobu Thiofunctionalization of Methyl 2,3-O-isopropylidene-β-D-ribofuranoside
Jitka Moravecová, Alena Kapustová, Patrick Rollin

B-413 Solid-Phase Synthesis of Human Milk Oligosaccharides using O-Glycosyl Trichloroacetimidates.
Fabien Roussel, Laurent Knerr, Matthias Grathwohl and Richard R. Schmidt,

B-415 Polymer Supported Chemo-Enzymatic Synthesis of Chitooligosaccharides by Using a Hydrolase
Masaya Fujita, Yoshinori Misawa, Miki Hasegawa, and Shin-ichiro Shoda

B-417 Preparation of specifically labelled DNA for Solid State MAS NMR applications
Niels Ouwerkerk, Jacques H. van Boom, Johan Lugtenburg, Jan Raap

B-419 Vinyloxy-alkoxides: A New Type of d-Reagents
P. Maier, H. Redlich, Dörthe Vortmeyer
C-101 Carbohydrate residues as prognostic markers in cutaneous malignant melanoma
Anka Thies, Ingrid Moll, Uwe Pfüller, Udo Schumacher

C-103 Anticoagulating activity from Persimmon stem
Yu Seon Sa, Choon-Soo Jeong, and Hye-Seon Choi

C-105 Bacterial polysaccharides as effective immunomodulators
Lyudmila Varbanets, Oksana Brovarskaya

C-107 Effects of $N$-glycosylation on the structure and the biological activities of eel calcitonin
Mizuka Tagashira, Hideki Iijima, Yukihiro Isogai, Masayuki Hori, Shinji Takamatsu, Yasuhisa Fujibayashi, Eiichi Yoshino, Katsuji Haneda, Toshiyuki Inazu, Kazunori Toma

C-109 Detection of high-mannose recognition protein in rat brain
Masaaki Toyota, Susumu Hirabayashi, Masahiko Ikekita

C-111 Comparison of binding specificities to yeast cells of rabbit mannan binding protein, S. marcescens pili and plant lectins having affinity for mannose
Yasuo Oda, Katsuyoshi Nakayama, Shota Mori, Changlin Zhou, Mitsuhiro Kinoshita and Kazuaki Kakehi

C-113 Cloning of novel lipid glucosyltransferase genes and generation of knockout yeasts deficient in sterol glucoside and glucosylceramide
Dirk Warnecke, Martina Leipelt, Ulrich Zähringer, Frank Mueller, and Ernst Heinz

C-115 Stabilization of human recombinant erythropoietin through interactions with the highly branched $N$-glycans
Haruki Yamaguchi, Teruko Toyoda, Tomokaz Itai, Kenneth H. Aoki, Tsutomu Arakawa

C-117 Synthesis and biology of new neooligosaccharides that bind to Tar-RNA
Andreas Kirschning, Guang-wu Chen

C-119 Chemical and serological analysis on the core region of Pseudomonas aeruginosa lipopolysaccharide
Patricia M. Sánchez Carballo, Lore Brade, Paul Kosma, Ulrich Zähringer

C-121 A galacturonosyltransferase involved in the pectin synthesis
Yoshimi Takeuchi, Yoichi Tsumuraya

C-123 Lectinochemical studies on the combining sites of the $Gal\beta 1$-specific galectin from chicken liver
(\textit{CG-16})
Albert M. Wu, Ming-Sung Tsai, Herbert Kaltner and Hans-J. Gabius

C-125 The Interrelationships and Dependencies of Phytoglycogen and Starch Biosyntheses
Stig R. Erlander

C-127 A bacterial exopolysaccharide endowed with anticoagulant properties: a new potential anticoagulant drug.
Sylvia Colliec Jouault, Lionel Chevolot, Andréé Bros, Corinne Sinquin, Jacqueline Ratiskol, Anne-Marie Fischerand Jean Guezeennec.

C-129 Ligand-binding properties of human annexin VI and its mutants
Michiru Ida, Reiko Ishitsuka, Kyoko Kojima-Aikawa, Hidekazu Takagi, Koji Kimata and Isamu Matsumoto
C-131 Enzymatic formation of GDP-d-Rhamnose as a key precursor for lipopolysaccharides of human and plant pathogenic pseudomonads
Michael Ramm, Matthias Hamburger

C-133 Design and Synthesis of Ganglioside GM1 Mimics
Anna Bernardi, Giorgio Colombo, Leonardo Manzoni, Sandro Sonnino, Donatella Potenza

C-135 Characterization of murine monoclonal antibodies specific for the O-antigenic determinants of Helicobacter pylori lipopolysaccharide
Eleonora Altman, Blair A. Harrison, Tomoko Hirama and Roger MacKenzie

C-137 Recognition of lipopolysaccharide receptor by spike G protein of bacteriophage φX174
Tomoko Kawaura, Minoru Inagaki, Shuichi Karita, Akiyoshi Tanaka, Shiro Nishikawa, and Naoki Kashimura

C-139 Analysis of gene expression in response to N-acetylchitoooligosaccharide elicitors in suspension-cultured rice cells.
Eiichi Minami, Dao-Yao He, Yoshiaki Yazaki, Katsuhiro Sakano, Ryouta Takai, Yoko Nishizawa, Hanae Kaku, Kosumi Yamada and Naoto Shibuya

C-141 Synthesis of biotinyl photoprobes containing Globo-N-tetraose and a Lewis-hexasaccharide
Jari Natunen, Petra Johansson, Hasse Karlsson, Jonas Ångström, Yasumaru Hatanaka, and Karl-Anders Karlsson

C-143 Cloning of the gene for N-acetylglucosamine 2-epimerase from Synechocystis sp.
Satoshi Koizumi, Kazuhiro Tabata, Tetsuo Endo, Akio Ozaki

C-145 The Detection and Characterisation of Alpha-1-acid glycoprotein (AGP) in Sputum
Rachel Bruce, John McGuire, John Watson, Robin Stevenson and Kevin D. Smith

C-147 Purification and characterization of human UDP-D-xyllose: proteoglycan core protein β-D-xylosyltransferase from JAR choriocarcinoma
Joachim Kuhn, Christian Götting, Thomas Brinkmann, Knut Kleesiek

C-149 Modulation of substrate binding mode by mutation of Met298 and Cys95 in barley α-amylase
Mori H, Bak-Jensen KS, Gottschalk TE, Jensen MT, Kramhøft B, Svensson B

C-151 The Use of Novel Selection and Evolution Methods to Develop Cellular Models for Human Disease Related to Defects in Sialic Acid Metabolism
Kevin J. Yarema, Scarlett Goon, Carolyn R. Bertozzi

C-153 Glycolipid-modified peptides: enhancement of absorption of an anti-tumour somatostatin analogue
John P. Malkinson, Lucia Lazorova, Per Artursson, György Keri, Istvan Toth

C-155 Heparin trisaccharide sequences separated by flexible nonsulfated residues prevent dimerization of Fibroblast Growth Factor-2 and inhibit angiogenesis
B. Casu, M. Guerrini, A. Naggi, M. Perez, G. Torri, D. Ribatti, P. Carminati, G. Giannini, S. Penco, C. Pisano, M. Rusnati, and M. Presta.

C-157 Digestability of Honeydew Honeys and Identification of Resistant Oligosaccharides
Dierk Martin, Manfred Vogel, Willi Kundel, Frank Rittig, Sylvia Uhl, Petra Vogt

C-159 Structure and immuno-specificity of the O-acetylated acidic O-specific polysaccharide of Proteus vulgaris O46
Agnieszka Torzewskaa, Antoni Rózalski, Andrei V. Perepelov, Sof’ya N. Senchenkowa, Aleksander S. Shashkov, Yuriy A. Knirel
Isolation and characterization of α-galactosidase from the thermophilic fungus Thermomyces lanuginosus
Vladimír Puchart, Mária Vršanská, Mahalingeshwara K. Bhat, Peter Biely

Preparation and characterization of adipic acid dihydrazide derivatives of glucans as matrixes for bioconjugates
Slavomír Bystrický, Eva Machová and Grigorij Kogan

Characterization and Alternate Splicing of Mucin (MUC) Genes in Female Reproductive Tissues and Carcinomas
Goverdhan P. Sachdev and Vidya Hebbar

Fluorinated β-1,4-Galactan Sulfate (LuPSF S1) as Angiogenesis Inhibitor
Dietrich H. Paper, Jutta Bürgermeister, Horst Vogl and Gerhard Franz

Recombinant expression of HE5/CD52, a major component of the human sperm glycokalyx
Olaf Nagel, Sabine Schröter, Christiane Kirchhoff

Antimicrobial antibiotic from grey series of Streptomyces sp., taxonomy, fermentation, isolation and biological activities against some soil borne diseases
Ali, Amal M. and Amany L Kansoh

Structure-function relationships of glucooligosaccharide elicitor that can induce defense responses in rice cells
Takeshi Yamaguchi, Yumiko Maehara, Osamu Kodama, Takashi Takahashi, Hiroshi Tanaka, Toru Amaya, Naoto Shibuya

Influence of the chemical structure of bacterial glycolipids on the formation of lytic complement pores
A. Wiese, P. Grünwald, and U. Seydel

Chemical Analysis of the Developmental Pattern of Polysialylation in Chicken Brain
Sadako Inoue, Vivian Wei-Chung Yang, Shu-Ling Lin, and Yasuo Inoue

Separation and characterization of β-galactocidase from Jack fruit (Artocarpus integrifolius)

Study of carbohydrate specificity of disease specific antibodies (IgM) induced in childhood Acute Lymphoblastic Leukemia (ALL) using various sialic acid analogues
Chitra Mandal, Santanu Pal, Brossmer Reinhard, Rainer Isecke, Petra Ihrig

A facile chemical synthesis of useful sialic acid analogues without protection and deprotection procedures
Reinhard Brossmer, Rainer Isecke, Michael Sommer, Ruth Kunze, Petra Ihrig, Jutta Müller

A Sialidase from Horse Liver was co-purified with β-Galactosidase and Carboxypeptidase A
Krishna Purnawkan Candra, Peter Roggentin, Lee Shaw and Roland Schauer

Purification and characterisation of the recombinant sialate pyruvate-lyase from pig kidney
Andrea Wächter, Christina Traving and Roland Schauer

Cloning and expression of the cDNA encoding CMP-N-acetylneuraminic acid hydroxylase from the starfish Asterias rubens
Ilka Martensen, Marcus Gollub, Roland Schauer and Lee Shaw
C-193  Purification and characterisation of the CMP-N-acetylneuraminic acid hydroxylase from the starfish Asterias rubens  
Marcus Gollub, Roland Schauer and Lee Shaw

C-195  Enzymatic modification of N-glycans attached to RNAse B for conformational studies with NMR  
Christian Plath and Thomas Peters

C-197  Comparative Functional Characterization in vitro of Heptosyltransferase I (WaaC) and II (WaaF) from E. coli  
Sabine Gronow, Werner Brabetz, Helmut Brade

C-199  L-Galactosyl and L-Fucosyltranferase Activity in Albumen Glands of Snails from the Family Helicidae  
M. Morita, A. Scheppokat, L. Bornaghi, J. Thiem and H. Bretting

C-201  Granulocyte polyglycosylceramides are potential E-selectin ligands  
R. Lümen, A. Werner, D. Vestweber, J. Müthing

C-203  YEA4 gene encodes an UDP-GlcNAc transporter in Saccharomyces cerevisiae required for chitin synthesis.  
Samir Kumar Roy, Yasunori Chiba, Makoto Takeuchi and Yoshifumi Jigami.

C-205  Inositol phosphate binding to Inositol-1,4,5-trisphosphate-3-kinase: investigation by mutagenesis studies and Saturation Transfer Difference NMR spectroscopy  
C. Deschermeier, M. Mayer, H. Möller and G.W. Mayr, B. Meyer

C-207  How is the Highly-Branched Polysaccharide Galactan Formed in the Albumen Glands of Snails?  
Holger Lütte, K. Stangier, Lars Kröger, Angela Scheppokat, Minoru Morita, Joachim Thiem and Hagen Bretting
D-101  Evaluation of Various GlycoWell™ Plates Signal-to-Noise Evaluations and Inhibition Experiments  
Bengt Magnusson, Ulf Wellmar, Göran Magnusson and Ulf J. Nilsson

D-103  Effect of recovery method and condition on the characteristics of regenerated chitosan  
Rong Hui Chen and Chang Shu Liu

D-105  Carboxymethyl α-D-glucopyranoside: preparation by hydrogen peroxide oxidation of palatinose and synthetic use towards glucosylated esters and amides.  
Stéphane Trombotto, Alain Bouchu, Gérard Descotes, Yves Queneau

D-107  The Production of Polysialic Acid by Fermentation  
Xiaobei Zhan, Li Zhu, Zhiyong Zhen, Wei Jia, Jianrong Wu

D-109  Sonolysis of Crawfish Chitosan: A Size Exclusion Chromatography Analysis  
F. Iglesias-Guerra, J.M. Vega-Pérez, M. Jover, and J. Bautista

D-111  Regulation of poly-N-acetyllactosamine formation in N-glycans of CHO cell-produced human interferon-γ  
Kazuhiro Fukuta, Reiko Abe, Tomoko Yokomatsu, Mineko Asanagi and Tadashi Makino

D-113  Gums Obtained from Bagasse and Filter Cake Mud with Alakline Hydrogen Peroxide  
Mary An Godshall, Earl J. Roberts and Ron Triche

D-115  Optimization of vinyl sugar synthesis catalyzed by protease  
Kitagawa Masaru, Raku Takao, Fan Hong, Tokiwa Yutaka

D-117  Regioselective synthesis of uridine-branched polymer catalyzed by enzymes  
Y. Tokiwa, H. Fan, T. Raku, M. Kitagawa

D-119  Cellulose Nanocrystals: Sticks to Strengthen Polymer Matrices  
William T. Winter, Maren Grunert, Deepanjan Bhattacharya, Shengbin Zhang, Arthur J. Stipanovic

D-121  Ferulates and diferulates as cross-links between polysaccharides and lignin in wild rice dietary fiber  
Mirko Bunzel, Ella Allerdings, John Ralph, Hans Steinhart

D-123  Preparation of immobilized β-D-galactosidase by use of polysiloxanes and porous glass as carrier materials.  
Katrin Hensen, Peter Grunwald

D-125  An NMR spectroscopic investigation of the Xylan from Nothogenia erinaceae and the products of its enzymic degradation  
Haralambos Parolis, Lesley Parolis, Patricia Ntarima, Marc Claeysens, Anders Broberg, Jens Duus

D-127  Evaluation of Biscuits Produced from Some Experimental Recipes  
S.M. Abd El Hady, R.M. El Saadany, H.Khalf and M.T. Ramadan

D-129  Isolation and characterization of chitosan from Aspergillus niger mycelial wastes of citric acid production  
Lubos Adamek, Milos Beran, Petr Molik

D-131  Synthesis of Oligosaccharides by Aid of Membrane Techniques  
D-133  A New Look at Carbohydrates as Organic Raw Materials: A key methodology leading to simple processes for the conversion of carbohydrates into building blocks
Kiyohiko Tajima

D-135  Molecular dynamics calculations on amylose fragments. I. Glass transition temperatures of maltodecaose at 1%, 5%, 10%, and 15.8% hydration.
Frank A. Momany and J. L. Willett

D-137  Kinetics and Mechanism of Oxidation Of Amylose by Permanganate Ion in Alkaline Solutions
Gamal Abdel-Wahab Ahmed

D-139  O to C-Glycoside Rearrangement to β-C-Aryl Glycosides: A Novel Approach to Carbohydrate Based Liquid Crystals
Sven Gerber, Gunnar Gesekus, Oliver Konrad, Volkmar Vill and Matthias Wulf

D-141  Synthesis and biophysical properties of glyco-glycero conjugates
Götz Milkereit, H. M. von Minden, M. Morr, V. Vill

D-143  Carbohydrates as starting materials for cholesteric liquid crystals, colors and reflectors
M. Paul, G. Gesekus, V. Vill, R. Parker, K. Kürschner, F. Prechtl, F. Meyer
Poster Session II

14:00 Thursday, August 31

A-100 Physicochemical analysis of lipid A fractions of lipopolysaccharide from Erwinia carotovora in relation to bioactivity
Satoshi Fukuoka, Klaus Brandenburg, Mareike Müller, Buko Lindner, Michel H. J. Koch, and Ulrich Seydel

A-102 Structure of the O-specific polysaccharide of Proteus mirabilis O41 containing one ribitol phosphate and two ethanolamine phosphate groups
Sof’ya N. Senchenkova, Andrei V. Perepelov, Alexander S. Shashkov, Yuriy A. Knirel, Maciej Cedzynski, Anna S. Swierzko, Andrzej Ziólkowski, Wieslaw Kaca, Per-Erik Jansson

A-104 Structure of the highly phosphorylated carbohydrate backbone of the lipopolysaccharide of Pseudomonas aeruginosa rough strain 2192

A-106 Structure of the O-specific polysaccharide of Proteus myxofaciens
Anna N. Kondakova, Alexander S. Shashkov, Sof’ya N. Senchenkova, Yuriy A. Knirel, Krystyna Zych, Zygmunt Sidorczyk

A-108 Structures of the O-specific polysaccharides of two non-classified strains of Proteus mirabilis
Filip V. Toukach, Nikolay P. Arbatsky, Alexander S. Shashkov, Yuriy A. Knirel, Krystyna Zych, Zygmunt Sidorczyk

A-110 C CP/MAS NMR spectroscopy in structural analysis of pectins
Andriy Synytsya, Jana Copíková and Jirí Brus

A-112 The O-specific polysaccharide of the marine bacterium “Alteromonas marinoglutinosa” NCIMB 1770
Nadezhda Komandrova, Svetlana Tomshich, Vladimir Isakov, Lyudmila Romanenko

A-114 Reversible order-disorder transitions of xanthan in water-cadoxen solutions
Yevlampieva N. P., and Pavlov G. M.

A-116 Molecular properties of hydroxypropylmethylcellulose in solution and in films

A-118 Structure of the O polysaccharide of Pseudomonas syringae pv. delphinii ICMP 529 (NCPPB 1879)
Vladimir Ovod, Evelina L. Zdorovenko, George V. Zatonsky, Nina A. Kocharova, Alexander S. Shashkov, Yuriy A. Knirel

A-120 Conformational analysis of neocarrabiose and its sulfated and/or pyruvylated derivatives using the MM3 force-field
Carlos A. Stortz, Alberto S.Cerezo

A-122 Elucidation of the Structure of the O-Specific Polysaccharide of Proteus vulgaris O39 Using NMR Spectroscopy and Triflic Acid Solvolysis
Alexander S. Shashkov, Anna N. Kondakova, Andrei V. Perepelov, Sof’ya N. Senchenkova, Yuriy A. Knirel, Beata Bartodziejska, Marianna Wykrota, Antoni Rozalski

A-124 Chemical Modification of Pectin and Analysis of the Products by H-NMR Spectroscopy
Christoph Rosenbohm, and Inge Lundt
A-126  Acid-catalyzed Hydrolysis and Lactonization of α2 8-Linked Oligosialic Acids
Shih-Hsiung Wu, Yi-Ping Yu, Mou-Chi Cheng, Heng-Ru Lin, Yow-Fu Tsai, Chun-Hung Lin

A-128  A new method for revealing of neokestose fragment in glucofructans of unusual neokestose type
Vakhhtang Barbakadze, Eteri Kemertelidze, Iraida Targamadze, Anatoly Usov

A-130  (1→4)-Linked β-xylan and amylose produced by the phycobiont isolated from the lichenized fungus
Ramalina celastri
Lucimara M. Cordeiro, Julio C. Ferreira; Philip A.J. Gorin, Marcello Iacomini

A-132  Studies on relationships between 3-dimensional structure and bioactivity of lipid A analogues
Masato Oikawa, Koichi Fukase, Yasuo Suda, Shoichi Kusumoto

A-134  Conformational analysis of a tetrasaccharide using residual dipolar couplings in dilute liquid
Crystalline media
Clas Landersjö, Christer Höög, Arnold Maliniak and Göran Widmalm

A-136  Capillary electrophoresis of α1-acid glycoprotein and its clinical application
Mitsuhiro Kinoshita, Daisuke Kawakami, Yasuo Oda and Kazuaki Kakehi

A-138  An extended carbohydrate binding site of galectin-3 explored by NMR and MD
Kimiko Umemoto and Hakon Leffler

A-140  Structure Investigations of Micellar Solutions of Glycolipids
R. Willumeit, V. Haramus, M. von Minden, V. Vill

A-142  Synthesis of CMP - deoxy - NeuAc derivatives and its activity toward sialyltransferase
Yasuhiro Kajihara, Daisuke Kamiyama, Tatsuo Miyazaki and Tohru Sakakibara

A-144  Homology and heterogeneity of milk oligosaccharides among three species of bear
Tadasu Urashima, Tadashi Nakamura, Tadao Saito, Naoko Maeda, Takeshi Komatsu, Toshio
Tsubota, Andrew Derocher, Oystein Wiig

A-146  Unique Properties of Multiple Galectins of the Nematode Caenorhabditis elegans.
Jun Hirabayashi, Ko Hayama, Ken-ichi Kasai

A-148  Structure of a viscous exopolysaccharide produced by Lactobacillus helveticus K16
Zhennai Yang, Mikael Staaf, Eine Huttunen, Göran Widmalm

A-150  Purification, characterization and cDNA cloning of alpha-galactosidase from rice
Osamu Kobayashi, Satoshi Kaneko, Hideyuki Kobayashi, Yoshikiyo Sakakibara, Isao Kusakabe

A-152  Characterisation of the substrate specificity of an arabinoxylan arabino5furanohydrolase from
Barley malt by nano-probe NMR.
Anders Broberg, Henrik Ferré, Karl Kristian Thomsen, Jens O. Duus

A-154  Effect of cellulose crystallinity and protein adsorption on the cellulose surface properties measured
By Inverse Gas Chromatography
Bastos, H., Mota, M., Gama, F.M.

A-156  New Noroleanane Triterpene Glycosides from Pseudopanax crassifolius
Vladimir I. Grishkovets, Vadim V. Kachala, Denis Yu. Murin, Nikolai N. Arnautov, Aleksander
S. Shashkov, Illarion I. Dovgiy

A-158  Minor and Predominant Triterpene Glycosides from the Roots of Hedera canariensis
Leonid A. Yakovishin, Vladimir I. Grishkovets, Alexander S. Shashkov, Svetlana Iksanova,
Vasiliy Ya. Chirva
A-160  Structure and activity of a (4-O-methyl-α-D-glucurono)-D-xylan from Mahonia aquifolium (Pursh) Nutt.
   Alžbeta Kardošová, Anna Malovíková, Gabriela Nosálová, Sona Franová

A-162  Structural studies of the O-specific polysaccharide of Vibrio cholerae O8 using solvolysis with triflic acid
   Per-Erik Jansson, Nina A. Kocharova, Andrei V. Perepelov, George V. Zatonsky, Alexander S. Shashkov, Yuriy A. Knirel, Andrej Weintraub

A-164  Agonistic and ‘antagonistic’ properties of hepta-acyl lipid A isolated from the LPS of Salmonella enterica sv. Minnesota rough mutant strain R595
   Holger Janusch, Buko Lindner, Artur J. Ulmer, Ulrich Zähringer

A-166  NMR Study on the Interaction Between Nucleosides and Saccharides
   Corine Sandström, Ianric Ivarsson, Somer Bekiroglu, Lennart Kenne

A-168  Synthesis and conformational studies by NMR of oligomers containing sugar amino acids
   Elsa Locardi, Matthias Stöckle, Sibylle Gruner, Horst Kessler

A-170  Isolation and characterisation of α-(1→3)-d-glucan from model yeast Schizosaccharomyces pombe
   Christian H. Grün, Frans Hochstenbach, Frans M. Klis, Johannis P. Kamerling, Johannes F.G. Vliegenthart

A-172  Analysis of unusual Conformations of 1,3,5,7-cis-Tetraoxadecal Methyl 4-O-methyl-β-D-glucopyranosyl-(1→4)-β-D-glucopyranoside
   Ian D. Mackie, Jürgen Röhrling, Robert O. Gould, Malcolm Walkinshaw, Antje Potthast, Thomas Rosenau, Paul Kosma

A-176  Hydroxymethyl group conformation in aldohexopyranosides: What can $^{13}$C-$^1$H and $^{13}$C-$^{13}$C J-couplings tell us?
   Roland Stenutz, Brian Hertz, I. Carmichael, Anthony S. Serianni

A-182  Crystal and Molecular Structure of Methyl 4-O-methyl-β-D-glucopyranosyl-(1→4)-β-D-glucopyranoside
   Ian D. Mackie, Jürgen Röhrling, Robert O. Gould, Malcolm Walkinshaw, Antje Potthast, Thomas Rosenau, Paul Kosma

A-184  $J_{CC}$ Across Glycosidic Linkages Exhibit a Valence Bond-Angle Dependence
   Francis Cloran, Ian Carmichael, Anthony S. Serianni
A-190  Deuterium Nuclear Spin-Lattice Relaxation Times and Quadrupolar Coupling Constants in Isotopically-Labeled Saccharides
Bidisha Bose-Basu, Jaroslav Zajicek, Gail Bondo, Shikai Zhao, Meredith Kubsch, Ian Carmichael, Anthony S. Serianni

A-192  Complex formation of large-ring cyclodextrins with iodine in aqueous solution as revealed by isothermal titration calorimetry
Shinichi Kitamura, Kazuya Nakatani, Kayo Imamura, Takeshi Takaha

A-194  ß-Araf is the C-5 terminal of the olive pulp pectic polysaccharide arabinan side chains
Susana Cardoso, Artur Silva, Manuel A. Coimbra

A-196  Phase Equilibria of Carbohydrates in Aqueous Solution
Stephen Cooke, Svava Ósk Jónsdóttir, Peter Westh

A-198  Structural studies of the Yokenella regensburgei core oligosaccharide
Wojciech Jachymek, Jolanta Czaja, Czeslaw Lugowski and Lennart Kenne

A-200  STD NMR: A Novel Method for Screening and Characterizing Saccharide Libraries
Moriz Mayer, Robert Meinecke, Jens Klein, Oliver Schuster, and Bernd Meyer,

A-202  Purification and structural elucidation of arabinoxylans from native and malted finger millet (Eleusine coracana, Indaf-15)
M.V.S.S.T. Subba Rao and G. Muralikrishna

A-204  Modulated DCS in starch gelatinisation studies
Moorthy, S.N. and Eliasson, A.C.

A-206  Efficient uptake of free sialic acids in eukaryotic cells
Cornelia Oetke, Stephan Hinderlich, Reinhard Brossmer, Werner Reutter, Michael Pawlita, Oliver T. Keppler

A-208  Do We Need Glycobioinformatics?
Claus-W. von der Lieth, Andreas Bohne

A-210  Towards realistic primary alcohol rotation in carbohydrate models
Kevin J. Naidoo, Michelle Kuttel

A-212  Finding of the mammalian-type glycosphingolipids lactosylceramide and globotriaosylceramide in the liver flukes Fasciola gigantica and Fasciola hepatica
Manfred Wuhrer, Clemens Berkefeld, Roger D. Dennis, Mohamed A. Idris, Rudolf Geyer

A-216  Structural features of lipopolysaccharides from virulent and low-virulent phases of Coxiella burnetii, the etiological agent of Q fever
Rudolf Toman, Peter Ftácek, Ahmed Hussein, Peter Palkovic

A-218  Isolation of sialylated oligosaccharide from immunostimulant oligosaccharide fraction of Donkey milk
Ramendra S. Rathore, Rina Saksena, Desh Deepak, Anakshi Khare

A-220  New Platinum(IV)-Carbohydrate Complexes with non-functionalized monosaccharides and their characterization based on H-H, C-H and C-C Spin-Spin Coupling Constants
Henrik Junicke, Anthony S. Serianni, Dirk Steinborn
<table>
<thead>
<tr>
<th>Poster Session II – B</th>
<th>20th ICS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B-100</strong> Attempts toward the synthesis of chitotetraose and chitohexaose using the DMM-methodology</td>
<td>M. R. E. Aly, E. I. Ibrahim, E. S. H. El Ashry and R. R. Schmidt</td>
</tr>
<tr>
<td><strong>B-102</strong> Syntheses of Dihydroxyphenylethyl Glycosides: Acteoside (Verbascoside), Conandroside and Plantamajoside</td>
<td>Toshinari Kawada, Ryuji Asano, Tomoyasu Sakuno</td>
</tr>
<tr>
<td><strong>B-104</strong> Amino C-allyl glycoside, a versatile intermediate for the synthesis of various amino C-glycosides and amino C-glycosyl nucleosides and nucleotides.</td>
<td>Juan Xie, Olivier Gaurat, Jean-Marc Valéry</td>
</tr>
<tr>
<td><strong>B-106</strong> Galactosylation of Thiol Group by β-Galactosidase</td>
<td>Hirofumi Nakano, Motohiro Shizuma, Taro Kiso, and Sumio Kitahata</td>
</tr>
<tr>
<td><strong>B-108</strong> Synthesis of C-linked disaccharides via olefin metathesis</td>
<td>Chun-Cheng Lin, Chang-Ching Lin, Gang-Ting Fan, Thangaiah Subramanian, Tzu-Sui Hus</td>
</tr>
<tr>
<td><strong>B-110</strong> Removal of Sterically Hindered Benzyl Groups</td>
<td>John G. Riley and T. Bruce Grindley</td>
</tr>
<tr>
<td><strong>B-112</strong> Synthesis of isosteric phosphono analogues of substrates of the Leishmania biosynthetic enzymes</td>
<td>Vladimir S. Borodkin and Andrei V. Nikolaev</td>
</tr>
<tr>
<td><strong>B-114</strong> An easy access to anomic glycosylamides and imides (Schiff bases) via acylation of trialkylphosphinimidates</td>
<td>L. Kovács, E. Ósz, V. Domokos, W. Holzer and Z. Györgydeák</td>
</tr>
<tr>
<td><strong>B-116</strong> Solid-phase synthesis of S-glycoamino-acid building blocks</td>
<td>Laurence Jobron, Gerd Hummel</td>
</tr>
<tr>
<td><strong>B-118</strong> Chemical syntheses of chondroitin 4- and 6-sulfate tetra- and hexasaccharides by transformation of the corresponding synthetic hyaluronic acid derived oligosaccharides</td>
<td>Jean-Claude Jacquinet</td>
</tr>
<tr>
<td><strong>B-120</strong> Functionalization of glucose for labeling with $^{99m}$Tc-tricarbonyl</td>
<td>Jeannine Petrig, Cécile Dumas, Roger Schibli, Roger Alberto, P. A. Schubiger</td>
</tr>
<tr>
<td><strong>B-124</strong> Acetals of the tetraseco-nucleoside 7-(1-deoxy-glycerol-1-yl)theophylline</td>
<td>E. S. H. El Ashry, N. Rashed, L. F. Awad, A. A. H. Abdel-Rahman and H. A. Rasheed</td>
</tr>
<tr>
<td><strong>B-126</strong> Synthesis of GDP-β-L-Fucose and Fucosyllactose by Recombinant Enzymes from bacterial Sources</td>
<td>Christoph Albermann, Udo Wehmeier and Wolfgang Piepersberg</td>
</tr>
<tr>
<td><strong>B-128</strong> Transformation of thioanhydro-hexitols into glycosyl chlorides of thiosugars</td>
<td>Éva Bozó, János Kuszmann</td>
</tr>
<tr>
<td><strong>B-130</strong> Intramolecular Glycosylation of asymmetrically tethered glycosides</td>
<td>Thomas Ziegler, Gregor Lemanski, Jürgen Hüttlen</td>
</tr>
<tr>
<td><strong>B-132</strong> Sugar Amino Acids: Synthesis and NMR-Structural Analysis of Linear and Cyclic Homooligomers</td>
<td>Sibylle Gruner, Elsa Locardi, Matthias Stöckle, Horst Kessler</td>
</tr>
</tbody>
</table>
Reactivity of isothiocyanato-functionalized saccharides
Mark Walter, Thisbe K. Lindhorst

Carbohydrate-Centered Glycoclusters
Michael Dubber, Thisbe K. Lindhorst

Synthesis of 4,6- and 1,5-Thiaanhydrohexopyranoses from D-Glucose and L-Sorbose
Kerstin Polchow, Jürgen Voss and Gunadi Adiwidjaja

Synthesis of New Nucleosides and Isonucleosides from Anhydrosugars
Jürgen Voss, Oliver Schulze, Jörn Wirsching, Gunadi Adiwidjaja

Aza-C-Nucleoside Inhibitors of Purine Nucleoside Phosphorylase
Gary B. Evans, Richard H. Fumexaux, Peter C. Tyler and Vern L. Schramm

Synthesis of Isoiminosugars via Aldol Condensation between 2-Deoxyaldonolactones and Aldehydes
Sussi Holstein Wagner, Steen Karsk Johansen, Inge Lundt

Sugar chromium carbenes: Application to diastereoselective isotopic labeling, C-glycosidation, benzannulation and synthesis of organometallic disaccharide analogues
Karl Heinz Dötz, Christoph Jäkel, Markus Klumpe, Erik Janes, Frank Otto

Organometallic disaccharide analogues bearing a vinylcarbene spacer
Erik Janes, Karl Heinz Dötz

Metal-labeled polyoxygenated chromanes via diastereoselective benzannulation of glucals
Frank Otto, Karl Heinz Dötz

Synthesis of six carbon-spacered Nod-factor fragments related to Rhizobium NGR234
Nelli N. Malysheva, Alexander I. Zinin, Vladimir I. Torgov, Vladimir N. Shibaev

Stereocontrolled β-D-Glycosylation by Cation π-Interaction
I. Neda, T. Siedentop

Easy route to carbohydrate enynes for metal-catalyzed carbocyclizations
Carina Storm Poulsen and Robert Madsen

Two-Step Wittig/Dihydroxylation Route to Higher Sugars
Morten Jørgensen and Robert Madsen

Free-radical techniques in synthesis of branched-chain sugar nucleosides: C-3’ substituted thymidine derivatives
Howard C. Lee, Kuangmin Chen, Zaeseng No, Derek Horton

Regioselectivity of Aziridine Ring Cleavage of Epimino Derivatives of 1,6-Anhydro-β-D-hexopyranoses with Nucleophiles
Jiri Kroutil, Tomas Trnka and Miloslav Cerny

The first report on solid-phase oligosaccharide synthesis using glycosynthases
Jakob F. Tolborg, Knud J. Jensen, Christoph Mayer, David L. Zechel, R. Antony J. Warren, Stephen G. Withers

Large ring crown acetals from cyclodextrins
Toshio Nakagawa, Stefan Immel, Hans-J. Lindner, and Frieder W. Lichtenthaler
B-168  Chemoenzymatic synthesis of oligosaccharide fragments of the capsular polysaccharide of
Streptococcus pneumoniae type 14
Dirk Michalik, Johannis P. Kamerling, Johannes F.G. Vliegenthart

B-170  Synthesis of conformationally locked carbohydrates: evidence of a synperiplanar electronic effect
Yves Blériot, Sabrina Guyenne, Fabrice Maquère and Pierre Sinaÿ

B-172  Synthetic study of peptidoglycan partial structures
Seiichi Inamura, Koichi Fukase, Shoichi Kusumoto

Galactose
Ken-ichi Sato, Shoji Akai, Hidenori Aoki, Toshiyuki Hiroshima, Mayumi Sakuma, and Yasuhiro
Suzuki

B-176  Stereo-controlled glycosylation using neighboring group participation of N-phenylcarbamoyl group

B-178  Protease catalysed esterification of carbohydrates in DMSO- and DMF-water mixtures
Pierre Potier, Alain Bouchu, Gérard Descotes, Yves Queneau

B-180  Synthesis of difluoro-C-glycosides from difluoroenoxyisilanes.
Hatice Berber, Thierry Brigaud, Olivier Lefebvre, Richard Plantier-Royon. Charles Portella

B-182  Mixed α/β Oligosaccharides: a New Class of Glycoside Hydrolase “by-pass” Inhibitors
Sébastien Fort, Annabelle Varrot, Martin Schülein, Sylvain Cottaz, Gideon J. Davies and Hugues
Driguez

B-184  Chemical synthesis of trisaccharide epitopes of excretory/secretory antigen of Toxocara canis
larvae
Hassan Abdel-Zahir Amer, Andreas Hofinger, Michael Puchberger, Rick M. Maizels, Paul
Kosma

B-186  Synthesis of anellated carbohydrates on the basis of push-pull derivatives of uloses and (–) quinic
acid
Lidcay Herrera, Reinaldo Molina, Klaus Peske

B-188  Synthesis of Sucrose Analogues with Recombinant Sucrose Synthase1 from Potato
U. Römer, L. Elling

B-190  Carboproteins: Protein models on carbohydrate templates
Jesper Brask, Sine M. Nielsen, Knud J. Jensen

B-192  Intramolecular glycosyl transfer under neutral conditions
Jane B. Laursen, Lars Petersen and Knud J. Jensen.

B-194  An allyl linker strategy for the solid-phase synthesis of glycosylated serglycin
Yuko Nakahara, Sumie Ando, Yukishige Ito, Hironobu Hojo, and Yoshiaki Nakahara

B-196  Synthesis of Tyrosine-Sulfate Containing Glycopeptides
Danuta Kowalczyk, Michael Schultz and Horst Kunz

B-198  Cyclopeptides carrying clustered and flexible sLe
Holger Herzner, Horst Kunz

B-200  Synthesis of stereoisomers of the strong glycosidase inhibitor 1-azagagamine.
Henrik Helligso Jensen, Mikael Bols
B-202  **Chemoenzymatic Synthesis of an Important Enantiomerically Pure Building Block for Mono- and Oligoazasugar**  
*Xifu Liang*, Anders Lohse, Mikael Bols

B-204  **Synthesis of oligomers of the repeating unit of Neisseria meningitidis type A capsular antigen.**  
Anatoli Chernyak, Stefan Oscarson, *Natalia Utkina*

B-206  **α-Hydroxybenzylphosphonate modified Oligonucleotides as potential new Antisense Pro-Oligonucleotides**  
*A. Hohlfeld*, R.P. Mauritz, C. Meier

B-208  **Studies on the Copper-catalyzed Reaction of Glycals with [N-(Arylsulfonyl)imino]phenyliodinanes**  
*Martin Albert*, Thomas Purkarthofer, Karl Dax

B-210  **Rearrangements in the Course of Nucleophilic Fluorination Reactions at C-2 of Glycopyranosides – Some New Parameters**  
*Thomas Purkarthofer*, Martin Albert, Karl Dax

B-212  **Synthesis of 4-deoxynovobiocin-related compounds**  
*Marjan Ješelnik*, Slovenko Polanc, and Marijan Koèevar

B-214  **1-Deoxy-D-Xylulose: Molybdate-CatalyzedRearrangement of a Branched-Chain Tetrose**  
*Shikai Zhao*, LatislavPetrus, Anthony S. Serianni

B-216  **Synthesis of C-glycosylated amino acids**  
*Armin Walter*, Bernhard Westermann

B-218  **Synthesis of a trisaccharide substituted hen egg lysozyme epitope**  
*Mickael Mogemark*, Petter Sjölin and Jan Kihlberg

B-220  **Synthesis of glycosylphosphatidylinositol substrate and substrate analogues for biosynthetic studies on trypanosoma brucei**  

B-222  **Synthesis of disaccharide fatty acid esters using immobilized Candida antarctica lipase**  
*Ninfa Rangel Pedersen*, Peter Degn, Reinhard Wimmer, Lars H. Pedersen

B-224  **Preparation of (2-naphthyl)methylene acetals of glycosides and their hydrogenolytic transformation into 2-naphthylmethyl (NAP) ethers**  
András Lipták, Anikó Borbás, *Zoltán Szabó*, Lóránt Jánossy and László Szilágyi

B-226  **Synthesis of bridged and double calixsugars**  
Alessandro Dondoni, *Xubo Hu*, Alberto Marra

B-228  **One Step β-Selective Glycosylation of N-Acetylglucosamine and Recombinant Chitooligosaccharides**  
Boris Vauzeilles, Bruno Dausse, Sara Palmier and *Jean-Marie Beau*

B-230  **Glycoside synthesis under the influence of a chiral promoter**  
Claire Spérandio, *Jean-Marc Duffault*, Jean-Marie Beau

B-232  **Generating the Thomsen Friedenreich antigen as a precursor for the core2- and core6 O-glycan structures –Reaction engineering of enzymatic oligosaccharide syntheses**  
B-234  Synthesis of allose-based glycos-δ-amino acids  
Maris Turks, Helmars Smits, Natalija Usachova, Erika Bizdena

B-236  Synthesis of 6-C-Sulfonamides and 6-C-Sulfonate Esters from Sugar Derivatives  
José M. Fernández-Bolaños, Victor Ulgar, Inés Maya, Immaculada Robina, José Fuentes

B-238  Acylated cyclodextrin derivatives as chiral selectors in HPLC  
Kolja Wihstutz, Tim Wilhelms, Wilfried A. König

B-240  Synthesis of oligosaccharide mimetics via cross coupling metathesis reaction  
T. Rinderknecht, W. Klaffke

B-242  Chemo-enzymatic synthesis of neoglycopeptide building blocks  
Delphine Ramos, Werner Klaffke

B-244  Chiral crown ethers based on pyranosides and alditols  
Franziska Faltin and Ralf Miethchen

B-246  Design, Synthesis and Biological Evaluation of β-D-Mannose Based Peptidomimetics  
Jürgen Boer, Horst Kessler

B-248  Synthesis of tetrahydroxyazepanes from chiro-inositol  
Andy Falshaw and Gavin Painter

B-250  Synthesis of Neoglycolipids Having Baioactive Glyco-linkage of Steroidal Glycosides.  
Tsuyoshi Ikeda, Hiroyuki Miyashita, Tetsuya Kajimoto, Toshihiro Nohara

B-252  Quantitative monitoring of the removal of a p-acetoxybenzyl group on a resin-supported carbohydrate.  
Akihiko Kameyama, Ole Hindsgaul

B-254  Simple synthesis of oxagranatane-type glycodisase inhibitors  
Attila Agócs, Pál Herczegh, Gyula Batta, Szilvia Jäger, László Kiss

B-256  One-pot synthesis of the globotetraose tetrasaccharide  
Sumita Bhattacharyya, Bengt Magnusson, Ulf Wellmar, Ulf J. Nilsson

B-258  Unsymmetrical Protection of α,α-Trehalose and Simple Synthesis of 2-O- and 3-O-D-Glucopyranosyl-α,α-Trehaloses  
Naohiko Morishima, Tadayoshi Katsumata, Koji Hara, Yoko Mori

B-260  Some hexopyranosides as useful stereocontrollers for diastereoselective carbon-carbon bond forming reactions  
Kiichiro Totani, Takayuki Nagatsu, Ryoosuke Munakata, Shuhei Yamaguchi, Ken-ichi Takao and Kin-ichi Tadano

B-262  Carbon-linked analogues of 2-amino-2-deoxy sugar and their application  
Tomoya Machinami, Yasuyuki Itaba, and Tetsuo Suami

B-264  Enzymatic synthesis of sulfated oligosaccharides utilizing β-D-galactosidase-catalyzed transglycosylation  
Takeomi Murata, Masaki Kosugi, and Taichi Usui

B-266  A solid phase approach to the synthesis of novel cyclic carbohydrates  
Cecilia H. Marzabadi and Jack Ferguson
20th ICS

Poster Session II  –  B

B-268  Acetoxyacetyl substituent of the sialic acid donor improve $\alpha$-stereoselectivity of glycosylation.
N.E. Byramova, L.-A. Simeoni, A.G. Dmitrenko, N.V. Bovin

B-270  Novel Universal Carbohydrate Building Blocks
John Papageorgiou, Laurent Bornaghi, Stephen Taylor, Latika Singh, Joachim Seifert and Gyula Dekany

B-272  Modifications at C-1 of the powerful D-glucosidase inhibitor 2,5-dideoxy-2,5-imino-D-mannitol.
Tanja M. Wrodnigg, Brigitte Eder, Herwig Häusler, Josef Spreitz, Friedrich K. (Fit) Sprenger, Arnold E. Stütz

B-274  Attempts to cleave a sugar-oxazolidinone-$\beta$-lactam bond
Diana Spille, Peter Köl

B-276  Olefin-metathesis-reaction as a new strategy for chain elongation of monosaccharides
Michael Lobbel, Peter Köll

B-278  Difructose dianhydrides in food products. Their stereoselective syntheses and analytical evaluation
J. M. Benito, M. Gómez García, C. Ortiz Mellet, V. Ratsimba, J. M. García Fernández, J. Defaye

B-280  Podant-like polythiourea-carbohydrate conjugates for multihydrogen-bonding complexation of dicarboxylate dianions and monosaccharides
J. M. Benito, M. Gómez García, C. Ortiz Mellet, J. M. García Fernández

B-282  The intramolecular reductive amination of aminodeoxy ketoses: Probing an “empirical rule” for its stereochemical outcome
Peter Greimel, Martin H. Fechter, Herfried Griengl, Josef Spreitz, Arnold E. Stütz, Andreas Tauss

B-284  Synthesis and selected inhibitory activities of novel 1-aminodeoxy derivatives of the powerful D-glucosidase inhibitor 2,5-dideoxy-2,5-amino-D-mannitol
Friedrich K. (Fit) Sprenger, Peter Greimel, Herwig Häusler, Arnold E. Stütz, Steven G. Withers, Tanja Wrodnigg

B-286  Synthesis of fluorescence labelled saccharides as tools for the study of Glucosidase II kinetics
Ian Cumpstey, Antony Fairbanks, Robert France, Terry Butters, Mark Wormald,

B-288  Stereoactive Synthesis of C-Glycosides via Tebbe Methylenation and Claisen Rearrangement
Himali Y. Godage and Antony J. Fairbanks

B-290  Use of the system NaBrO$_3$/Na$_2$S$_2$O$_4$. A convenient approach for the benzyl ether cleavage and the oxidative opening of benzylidenes.
Matteo Adinolfi, Gaspare Barone, Ugo Cacciapuoti, Luigi Guariniello, Alfonso Iadonisi, Lorenzo Mangoni

Alfonso, F.; Bonilla, J.B.; Cid, M.B.; Dumarçay, S.; Martín-Lomas M.

B-294  Synthesis And Biological Activity Of Heparin-Like Hexa- And Octasaccharides
José L. De Paz, Rafael Ojeda, Ricardo Lucas, José M. Lassaletta, M. Martín-Lomas.

B-296  Investigation of Hyaluronan as a Drug Delivery Vehicle in Breast Cancer
Jennifer C. Wilson, Tracey Brown, Gary Brownlee, Erin Hatherell and Robert Fraser

B-298  HPAE Chromatography: a quantitative approach to investigate the Mode of Action of Two Thermostable $\alpha$-Arabinofuranosidases
Kieran Nolan, William P. Duggan, Michelle M. Cuffe, Angela V. Savage and Maria G. Tuohy
B-300  Gold glyconanoparticles as biomimetic glycocalyx for studying carbohydrate interactions.

B-302  Solubilization and purification of a Putative Receptor Molecule for Oligochitin Elicitor from Plasma Membrane of Suspension Cultured Rice Cells
Hanae Kaku and Naoto Shibuya

B-304  Enzymatic modification of N-glycans attached to RNAse B for conformational studies with NMR
Christian Plath and Thomas Peters

Andrei Kornilov, Elena Pervushina, Nikolay Nifant’ev.

B-308  Simple synthesis of 2- and 3- substituted furylsugars
Katarzyna Szewczyk, Mateusz Mach and Sławomir Jarosz

Alejandro Chiocco, Carla Marino and Rosa M. de Lederkremer

B-312  Can the Stereochemical Outcome of Glycosylation Reactions be Controlled by the Conformational Preferences of the Glycosyl Donor?
Tomoo Nukada, Attila Berczes and Dennis M. Whitfield

B-314  Formation of chiral ligands and auxiliaries from Inositols
Ghislaine Cousins, Andy Falshaw, John O. Hoberg

B-316  The first and highly efficient synthesis of spacer armed O-glycan on glycam-1: the counter-receptor for L-selectin
Nobumasa Otsubo, Hideharu Ishida, Makoto Kiso

B-318  Total synthesis of 6,3' disialyl Lewis A antigen
Takayuki Ando, Hideharu Ishida, Makoto Kiso

Naoki Sawada, Tatsuki Komori, Jun-ichi Murase, Hideharu Ishida, Makoto Kiso

B-322  Synthesis of lipopolysaccharide of Campylobacter jejuni
Koji Hori, Naoki Sawada, Hideharu Ishida, Makoto Kiso

B-324  Introduction of a lactone ring in sugar derivatives
M. Isabel Ismael, J. Albertino Figueiredo, Jorge M. Pinheiro, Małgorzata M., Amélia P. Rauter

B-326  A Convenient Synthesis Of Idoheptulosan And L-Galactoctulose Via Mo(Vi) Catalyzed Carbon Skeleton Rearrangement
Zuzana Hricovíniová-Bíliková

B-328  Chemoenzymatic modulations of aminosugars-new bioactive molecules
J. Rauvolfová, M. Macková, P. Sedmera, K. Bezuška and V. Kren

B-330  Synthesis of anomeric butyl glycosides of N-acetylmuramyl-L-alanyl-D-isoglutaminyl-Nε-(deoxycholyl)-L-lysine methyl ester
Sergey S. Pertel, Andrey L. Kadun, Elena S. Kakayan, Vasily Ya. Chirva
Synthesis of the disaccharide related to xyloarabinans
Ján Hirsch, Miroslav Koóš, Pavol Kovác

Pyrazolidin-3-one analogs of α-lactam antibiotics
Irma Panfil, Marek Chmielewski

Efficient preparation of natural and synthetic galactosides with a recombinant β-1,4 galactosyltransferase-UDP-4’-gal epimerase fusion protein
Ola Blixt, Jillian Brown, Melissa J. Schur, Warren Wakarchuk and James C. Paulson

The Enantiospecific Synthesis of Two β-Glucosidase Inhibitors and a Novel Route to Isofagomine
Jon K. Fairweather, James M. Macdonald, Brian W. Skelton, Robert V. Stick, D. Matthew G. Tilbrook and Allan H. White

Synthesis and Biological Evaluation of an Artificial Glycoconjugate Polymer Carrying Gb₄ Tetrasaccharide Cluster
Hirofumi Dohi, Yoshihiro Nishida, Shin-ichiro Yokoyama, Hiroshi Mori, Kazukiyo Kobayashi

Synthesis of some thio linked analogues of 5’α-carbamaltoses and 5’α-carbamaltotriose as potential inhibitors for Glucoamilase
Farid M. Ibatullin, Leonid M. Firsov, Wolf-Dieter Fessner

New insight into the synthesis of glycosylamines
Cristiana Campa, Ivan Donati, Amedeo Vetere, Amelia Gamini, and Sergio Paoletti

Synthesis of the Glycopeptidolipid of Mycobacterium avium serovar 4: First Example of a Fully Synthetic C-Mycoside GPL
Thorsten Heidelberg, Olivier R. Martin

Synthesis of C-linked Lipoamino acid based Glycolipids
Robert A. Falconer and Istvan Toth

Synthesis of Sugar derivatives as Novel Combinatorial Scaffolds in Drug Discovery
Mattie Timmer, Gijs van der Marel, J.H. van Boom

Dina R. Ivanen, Konstantin A. Shabalin, Farid M. Ibatullin

The first total synthesis of Re lipopolysaccharide
Hiroaki Yoshizaki, Naohiro Fukuda, Kenjiro Sato, Masato Oikawa, Koichi Fukase, Shoichi Kusumoto

Oligodeoxynucleotides with a Nucleobase-Including Backbone: Force-field Calculations, Syntheses of Phosphoamidites for the Solid-phase Synthesis of Oligomers, and Their Incorporation Into 14mer DNA Duplexes
Werngard Czechtizky, Andrea Vasella

A Tailor-Assembly Synthesis of Oligosaccharides of the Type Ia Group B Streptococcus Capsular Polysaccharide and the Related Structures Carrying α,ω-Bivalent Sialyl Lewis
Wei Zou, JianJun Li, and Harold J. Jennings

Synthesis of O-Linked Glycopeptide Mimetics by Chemoselective Ligation
Lisa A. Marcaurelle and Carolyn R. Bertozzi
**B-362**  *Introduction in carbohydrate chemistry of novel thiofunctionalized hydrolysis-resistant cyclic acetals*
Florence Chéry, Sergio Cossu, Ottorino De Lucchi, **Patrick Rollin**

**B-364**  *Synthesis of C-glycosyl-aldehyde-hydrazone and their transformation to exo-glycals*
Marietta Tóth, László Somsák

**B-366**  *Synthesis of the LEC18-Nonasaccharide, an N-Glycan with a novel Core-Structure*
Ralf Schubert and Carlo Unverzagt

**B-368**  *Novel Pathways for the introduction of bisecting GlcNAc residues*
Harald Weiss and Carlo Unverzagt

**B-370**  *Functional roles of cytokines as lectins: Lectin activity of Interleukin-5*
Katsuko Yamashita, Keiko Fukushima, and Sayuri Hara-Kuge

**B-372**  *Saccharide libraries by cycloaddition reactions*
M. Wießler, B. Schmauser, Ch. Kliem, B. Sauerbrei

**B-374**  *Development of An Inverse Electron Demand Glycoconjugation Reaction of the Kahne Variety.*
Sungjo Choi, Debnath Bhuniya, **David B. Berkowitz**

**B-376**  *Regioselective and stereoselective transformations of sucrose*
Slawomir Jarosz and Mateusz Mach

**B-378**  *Combinatorial Synthesis of Layered Dendrimers*
Martin McWatt, Geert-Jan Boons

**B-380**  *Synthesis of Fragments of the Capsular Polysaccharide Antigen of Type V Group B Streptococcus.*
Alex H.C. Chang, Mingming Han, Dennis L. Kasper, Ying Wang

**B-382**  *Synthesis and Structural Characterization of N-Type Glycopeptides of the V3 loop of HIV-GP120*
Sonja Meyer, Axel Neffe, Jutta Tost, Harm Müller, Michael Schreiber and Bernd Meyer

**B-384**  *Synthesis of Novel Thymidine Dimers Containing N-Acetylaminino Linkage*
Fang-Chi Chien, **Te-Fang Yang**

**B-386**  *Novel saccharide imides and their photochemically transformation*
Christian Sund, Swantje Thiering, Joachim Thiem

**B-388**  *Synthesis of fragments of Rhamnogalacturonan I*
Birte Nolting, Christian Vogel

**B-390**  *An improved synthesis of glucuronic acid derivatives and evaluation of their use as β-selective donors in glycosylation reactions with heterocyclic acceptors.*
Anahit Davtyan, Christian Vogel, A. Avetisian

**B-392**  *Investigating the response of glycopeptide specific T cells by the use of synthetic deoxy-analogs of glycopeptides from type II collagen.*
Björn Holm, Johan Bäcklund, Rikard Holmdahl, Jan Kihlberg

**B-394**  *Synthesis of carbohydrate fatty acid esters by a thermostable esterase from Streptomyces thermoviolaceus TE208*
Qian Wang and Wolfgang Zimmermann

**B-396**  *Enzymatic synthesis of iso-globotriaose from partially protected lactose*
Lenka Weignerová, P. Sedmera, Z. Hunková, P. Halada, V. Kren, M. Casali and S. Riva
<table>
<thead>
<tr>
<th>B-398</th>
<th>New Approaches to Synthesis of HNK-1 Carbohydrate Epitope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Karin Gorziza and Joachim Thiem</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-400</td>
<td>Membrane-permaent Derivatives of Man-1-P via Phosphoramidite and H-Phosphonate Routes</td>
</tr>
<tr>
<td></td>
<td>Synke Rutschow, Joachim Thiem</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-402</td>
<td>Synthesis of branched chitoooligomers as ligands for the NKR-P1-protein</td>
</tr>
<tr>
<td></td>
<td>Dirk Mampe and Joachim Thiem</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-404</td>
<td>A New Route To Glycoproteins Using An „Expanded“ Genetic Code</td>
</tr>
<tr>
<td></td>
<td>Oliver Retz, Liyun Zhao, Felix Wieland, Richard R. Schmidt</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-406</td>
<td>Total Synthesis of the GPI-anchor of rat brain Thy-1</td>
</tr>
<tr>
<td></td>
<td>Klaus Pekari and Richard R. Schmidt</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-408</td>
<td>The Fmoc Group as Constituent of O-Glycosyl Trichloroacetimidates Application to Solid Phase Synthesis</td>
</tr>
<tr>
<td></td>
<td>Matthias Grathwohl, Fabien Roussel, Laurent Knerr and Richard R. Schmidt</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-410</td>
<td>Synthesis of Enantiomeric Aza-Sugars and Perspective Intercalators</td>
</tr>
<tr>
<td></td>
<td>Viatcheslav Fillitchev, Erik B. Pedersen</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-412</td>
<td>Solid-phase synthesis of a combinatorial oligosaccharide library for the identification of anti-infective carbohydrates</td>
</tr>
<tr>
<td></td>
<td>Wilm-Christian Haase, Rodrigo B. Andrade, Kerry R. Love, Peter H. Seeberger</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-414</td>
<td>Ring-Expansions of Cyclopropanated Carbohydrates</td>
</tr>
<tr>
<td></td>
<td>Rhys Batchelor, John O. Hoberg</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-416</td>
<td>New reagents for the labelling, isolation and identification of the nucleophiles of endo-glycanases</td>
</tr>
<tr>
<td></td>
<td>Spencer J. Williams, Omid Hekmat, Stephen G. Withers</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-418</td>
<td>A New Entry to Glycoside Synthesis via Open Chain Trimethylenedithioacetales of Carbohydrates</td>
</tr>
<tr>
<td></td>
<td>P. Arndt, A. Rabe, H. Redlich and Pär Winkelmann</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>B-420</td>
<td>Novel One-Pot Syntheses of Divalent Carbohydrates using the Multicomponent Ugi Reaction</td>
</tr>
<tr>
<td></td>
<td>Helena Bradley and Paul V. Murphy</td>
</tr>
</tbody>
</table>
C-100  Interaction of anionic polysaccharides with oligopyrrole macrocycles
Alla Synytsya, Vladimír Král, Andriy Synytsya, Jana Copíková and Karel Volka

C-102  Relationships between structure and function of starch branching enzymes from kidney bean (Phaseolus vulgaris L.)
Hirokazu Matsu, Shigeki Hamada, Koichi Nozaki, Yasushi Yoshimoto, Yasuhiro Takeda, and Hiroyuki Ito

C-104  Parallel Synthesis of Galectin Inhibitors
Pernilla Sörme, Yuning Qian, Hakon Leffler and Ulf J. Nilsson

C-106  Optimization of Alpha-Galactosidase Production in Streptomyces erythrus
Ali M. Elshafei; Mohamed S. Foda; Emam A. Mobde and Nadia H. Ali

C-108  Functional roles of cytokines as lectins: Lectin activity of Interleukin-5
Katsuko Yamashita, Keiko Fukushima, and Sayuri Hara-Kuge

C-110  Developmental changes in oligomannosidic glycoproteins in murine cerebrum
Naoko Hara, Masahiko Ikekita

C-112  Slow-Binding Inhibition of Glucosamine-6P Synthase by Phosphonate and Fluorophosphonate Analogues of Fructose-6P
A. Desir-Chassagne, M. Bose, D. Buniya, M-A. Badet-Denisot, D. Berkowitz & B. Badet

C-114  Lectin and proteoglycan histochemistry of Pacinian corpuscles in the cat mesentery

C-116  Saccharide binding activity of the protein envelope of sperm during the fertilization process
Libesda J., Tichá M., Zralý Z. Vežník Z.

C-118  Synthesis of xylosidase inhibitors and their enzymatic investigations using β-D-xylosidase from Aspergillus carbonarius
Tünde Kiss, Andrea Székely, László Somsák and László Kiss

C-120  Analysis of acceptor-specificities of β-1,4-galactosyltransferases I-VI
Takeshi Sato, Shanchun Guo, Kiyoshi Furukawa

C-122  Characterization of bio-active components from green algae

C-124  Properties of bio-active polysaccharide from bran-barley fermented by Rhizopus

C-126  Synthesis and Biochemical Investigation of carba-D-Fructofuranose
Mohindra Seepersaud, Toshiya Atsumi, Richard Bucala, Yousef Al-Abed

C-128  Self-associated sialoglycopeptide inhibitors of influenza virus to cell adhesion
A. Chinarev, A. Tuzikov, I. Demin, V. Oleynikov, S. Sychev, N. Matsko, Gambaryan, V. Kadykov N. Bovin

C-130  Glycosaminoglycan-recognition properties of plant lectins
Kaori Senda, Yumi Ogaki, Kyoko Kojima-Aikawa, Isamu Matsumoto

C-132  Influence of some carbohydrates on the biosynthesis and activity of fibrinolytic enzyme
Mohsen H.Selim and Motaza Saad
C-134  A novel concept for enzymatic degradation of native cellulose in Trichoderma viride
Gentaro Okada

C-136  Synthesis and biological studies of glycosyl dopamine derivatives as potential antiparkinsonian agents
Alfonso Fernández-Mayoralas, Caridad Fernández, Ofelia Nieto, Emilia Rivas, Gisela Montenegro, José Angel Fontenla, María L. de Ceballos

C-138  D-Erythrulose reductase and tetrameric carbonyl reductases have different substrate specificites, however are similar to each other on their structure.
Miki Maeda

C-140  Molecular Clonings of Three α-Glucosidase Isoenzyme Genes from Honeybee
Seiya Chiba, Mamoru Nishimoto, Haruhide Mori, Atsu Kimura

C-142  Metabolic fate of oligosaccharides from human milk

C-144  The Heterogeneity of Alpha-1-acid Glycoprotein (AGP) in the Plasma of Burns’ Patients
Deborah French, John Watson, C. Abbott, I. Taggart and Kevin D. Smith

C-146  Modification of cellulose by surfactant antiseptics and antimicrobial properties of cellulose-drugs complexes
Nina Kotelinkova, Evgeny Panarin, Timo Paakkari, Ritva Serimaa, Gerd Wegener, Elisabeth Windeisen

C-148  Simple oligosaccharide mimics as specific drug carriers targeting tumor associated lectins
B. Sauerbrei, E. Kim, R. Müller, M. Wießler, B. Schmauser

C-150  Enzyme Specificity and Inhibition of Barley Limit Dextrinase
Morten Tovborg Jensen, Lionel Greffe, Hugues Driguez, Birte Kramhøft, Birte Svensson

C-152  Generation of higher affinity mutants of a blood group A specific antibody and their characterization by surface plasmon resonance.
Roger MacKenzie, Rebecca To, Roula Webhi, Tomoko Hiram, Sonia Petenaude, Martin Young, Jean-Robert Brisson, Stephen Evans

C-154  Characterization of an N-acetylglucosamine-6-O-Sulfotransferase That is Restricted to High Endothelial Cells
Scarlett Goon and Carolyn R. Bertozzi

C-156  Dietary resistant starch and chronic inflammatory bowel diseases
Gisela Jacobasch, Detlef Schmiedl, Simone Florian, Undine Lehmann, Martin Kruschewski

C-158  Sugar chemistry without protecting groups: Regioselective addition of isocyanates to saccharides
Rainer Kohlstrung, Markwart Kunz, Ali R. Haji Begli, Frieder W. Lichtenthaler

C-160  Evidence for binding to 1,4-mannan main chain of α-galactosidase from Thermomyces lanuginosus operating on galactomannans
Vladimír Puchart, Mária Vršanská, Peter Biely

C-162  Diverse biological effects of yeast cell wall glucomannans
Jozef Šandula, Ludmila Slováková, Eva Machová, Grigorij Kogan

C-164  The connection between the immunosuppressive properties of Salmonella typhimurium lipopolysaccharide and virulence genes
Olga S. Molozhavaya, Elena V. Borisova, Viktor M. Bondarenko, Vadim A. Borisov
C-166  *The changes of the biological properties of Salmonella typhimurium lipopolysaccharide after redox treatment*
Elena V. Borisova, Olga S. Molozhavaya, Vadim A. Borisov

C-168  *Biochemical engineering of surface a2-8 polysialic acid for immuno-targeting tumor cells*
Harold J. Jennings, Zhongwu Guo, Tianmin Liu, Subash Sad, Qingling Yang

C-170  *Novel aspects of carboxymethylated β-1,3-glucan and LPS action on the phagocyte cell system*
Alftija Safina, Evgenij Vereschagin, Michael Dushkin, Yakov Schwartz

C-172  *Synthesis and evaluation of trimethylsilylated chitin as organosoluble precursor for efficient modification reactions*
Keisuke Kurita, Masaaki Hirakawa, Naoki Kodaira, Yasuhiro Nishiyama, and Manabu Harata

C-174  *The role of lipid A conformation in ion channel-mediated LPS signalling*
Ulrich Seydel, Rikard Blunck, Olaf Scheel, Klaus Brandenburg

C-176  *Effects of Lemna minor apiogalacturonan on phagocytes*
Sergey V. Popov, Galina Yu. Popova, Maria V. Tvorilova, Raisa G. Ovodova and Yury S. Ovodov

C-178  *Recent Studies on Unusual Structures Found in Fish Cortical Alveolar Glycoproteins Containing Extended Polyglactosamine, KDN and Sulfate*
Yasuo Inoue, Ming-Fang Tsai, Shu-Ling Lin, Kay-Hooi Khoo, Mariko Iwasaki, Shigeharu Kudo, and Sadako Inoue

C-180  *Treatment of experimental cancer by carbohydrates with high affinity to the c-type lectin lymphocyte receptor (NKR-P1).*
Miloslav Pospšíšil, Luca Vannucci, Anna Fišerová, Katherina Krausová, Ondrej Horváth, Karel Bezuňška, Vladimír Kren, Franco Mosca and Thisbe K. Lindhorst.

C-182  *Affinity Labelling of Glycosidase by Novel Mechanism-Based Inactivators, ω-Epoxyalkyl α-Glucosides*
Atsuo Kimura, Toshiyuki Nishio, Wataru Hakamada, Tadatake Oku, Gentaro OKada, and Seiya Chiba

C-184  *Structure and function relationship of membrane-bound lytic transglycosylase B from Pseudomonas aeruginosa PAO1*
Neil T. Blackburn, Anthony J. Clarke

C-186  *Some regulatory properties of enzymes involving in glucose-6-phosphate conversions*
A.V.Semenihina, L.V.Matasova, T.N.Popova, M.A.A.Pinheiro de Carvalho

C-188  *Microtiter plate based assay for siglec binding to sialic acids*
Marlies Rusch, Ulf Nilsson, Ulf Wellmar, Bengt-Goran Magnusson, Reinhard Brossmer, Soerge Kelm

C-190  *Characterization of enzymatic sialate-7(9)-O-acetyltransferase in human colonic tissue*
Yanqin Shen and Roland Schauer

C-192  *Enzymatic sialate-O-acetylation in bovine and equine submandibular glands*
Joe Tiralongo, Hiltrud Schmid, Renate Thun, Matthias Iwersen and Roland Schauer

C-194  *The interaction between cardiotoxins and differential heparin fragments*
Shao-Chen Lee, Chiung-Ho Liao, and Wen-Guey Wu
C-196 Molecular and biochemical analysis of three glycosyltransferases involved in the biosynthesis of the inner core region of Klebsiella pneumoniae lipopolysaccharide.
Christina Noah, Werner Brabetz, Sabine Gronow and Helmut Brade

C-198 3-Deoxy-D-manno-oct-2-ulosonic acid (Kdo) transferases (WaaA): Exceptional bacterial glycosyltransferases which exhibit mono- to tetrafunctionality
Werner Brabetz, Sven Müller-Loennies, Buko Lindner and Helmut Brade

C-200 Ganglioside-hydrolyzing specificity of a cytosol-derived sialidase from Chinese hamster ovary cells
M. Burg, J. Müthing

C-202 Involvement of gangliosides in selectin mediated adhesion of HL-60 to E-selectin transfected CHO-E cells
A. Werner, J. Müthing

C-204 Helix pomatia lectin (HPA) binding oligosaccharides in HT-29 colorectal cancer cells and a murine model of metastasis.
Miriam V. Dwek, Elizabeth Adam, Udo Schumacher, Anthony J. C. Leathem

C-206 Cleavage with phospholipase of the lipid anchor in the cell adhesion molecule, csA, from Dictyostelium discoideum
Motonobu Yoshida

C-208 Structure and specificity of the yeast ER Class I α1,2-mannosidase involved in N-glycan processing and ER quality control
P. Lynne Howell, François Vallée, Patrick Yip, Francesco Lipari, Barry Sleno, Pedro Romero, Annette Herscovies
D-100  Dextranucrase-like protein in Leuconostoc mesenteroides NRRL B-512F  
Kazumi Funane, Tadashi Ishii, Mayumi Matsushita, Hidenari Takahara, Kazuyuki Hori Kouichi Mizuno, Yoshiaki Kitamura, Mikihiho Kobayashi

D-102  Acetyl esterases for production of regioselectively substituted cellulose acetate  
Jürgen Puls, Clemens Altuner, Bodo Saake

D-104  Copper(II) Complex Formation with Saccharose in Alkaline Solutions  
Eugenijus Norkus, Algirdas Vaskelis, Rimantas Vaitkus, Jonas Reklaitis

D-106  Preparation of sucrose α-hydroxy- and α,β-dihydroxy-alkyl ethers in aqueous medium.  
Mathieu Danel, Juliette Gagnaire, Alain Bouchu, Gérard Descotes, Yves Queneau

D-108  Matrix assisted laser desorption ionization mass spectrometry of chito-oligosacarides obtained by enzymatic hydrolysis of crustacean chitosan  
J.M. Vega-Pérez, F. Iglesias-Guerra, M. Jover, and J. Bautista

D-110  Production of cured polysaccharide systems from chitin-cellulose-sodium hydroxide-epoxide blends under conditions of shear deformation  
Svetlana Rogovina, Galina Vikhoreva, Tatyana Akopova

D-112  Application of lectin-based adsorbents for the isolation of the Streptococcus pneumoniae strain 14 capsular polysaccharide.  

D-114  Orthogonally protected Glycosyl Donors  
F. Leßmann, U. Eilitz

D-116  Development of biofunctional polymers containing glucose branch  
Takao Raku, Yutaka Tokiwa

D-118  Synthesis and Hydrolysis of Nonsteroidal Anti-inflammatory Prodrugs of Ibuprofen and Indomethacin with p-Cyclodextrin and its Linked Polyethylene glycol  
Hassan Namazi, Ali Entezami, Saifali Bahrami

D-120  Controlling N-glycosylation of Recombinant Proteins in Plants  
Hans Bakker, Jos Molthoff, Dirk Bosch

D-122  Molecular recognition of carbohydrates by zeolites  
Christoph Buttersack, Klaus Buchholz

D-124  Influence of 6-O-acyl and ether groups on enzyme reaction using Aspergillus niger β-glucosidase  
Takeshi Nishimura, Ikuo Momohara, Mitsuro Ishihara

D-126  Electrochemical detection of linear and cyclic maltooligosaccharides by a gold electrode using a flow cell  
Helle Nielsen, Kim Lamberten Larsen, Lars Haastrup Pedersen

D-128  Bacterial alginate produced by Azotobacter vinelandii BTS 44 in pH-controlled batch fermentation  
Bahaa T. Shawky

D-130  Chemical and physical modification of xanthan gum polysaccharide  
S. Gabr, A. Hamed, H-El Saied and H. Heffnawy

D-132  Structure of heteroxylan from Eucalyptus globulus L. and its transformation during kraft delignification  
Anatoly A. Shatalov, Helena Pereira
D-134  Characterization of chitinase activity of *Streptomyces mutabilis*
Hanaa A. El-Shafei and **Nadia Abd El-Nasser**

D-136  Enzymatic production of cellobiose from sucrose
**Motomitsu Kitaoka** and Kiyoshi Hayashi

D-138  Sugar derivatives as powerful dopants for induced chiral nematic lyotropic liquid crystals
**Gaja Peters**, Hans Markus von Minden, Volkmar Vill, Martin Pape and Karl Hiltrop

D-140  Mesomorphic properties of long-chain alkyl glycosides

D-142  Phase behavior of membrane lipids and neoglycolipids
**H. M. von Minden**, **V. Vill**
SYMPOSIUM VENUE
ZOOLOGY

① = Registration
② = Session B-I (Thursday: D-I)
③ = Session B-II (Thursday: D-II)
④ = Session A (Thursday: D-III)
⑤ = Session C (Thursday: D-IV)
6 = Slide Preview Room
7 = Wardrobe
8 = WC
9 = Poster Session A+B
10 = Poster Session C+D
11 = Library
12 = PC Terminals
13 = Exhibition
14 = Entrance
15 = Social Room for Accompanying Persons
SYMPOSIUM VENUE
20th INTERNATIONAL CARBOHYDRATE SYMPOSIUM
ACKNOWLEDGEMENTS

The generous sponsor support of the following institutions, companies and individuals has allowed to facilitate the organization and is most gratefully acknowledged:

- Freie und Hansestadt Hamburg  
- Deutsche Forschungsgemeinschaft  
- Universität Hamburg  
- Beiersdorf AG  
- Bundesministerium für Bildung und Forschung  
- Fonds der Chemischen Industrie  
- Südzucker AG  
- Verein der Zuckerindustrie  
- Stiftungsfonds Unilever zur Förderung der Wissenschaft im Stifterverband für die Deutsche Wissenschaft  
- Elsevier Science Ltd  
- Milupa GmbH  
- Nordzucker AG  
- Shell AG  
- Novartis Pharma AG  
- CMS Chemicals Ltd/Dextra Laboratories Ltd  
- F. Hoffmann-LaRoche Ltd  
- Pfeifer & Langen  
- Springer-Verlag  
- Wacker AG  
- Bayer AG  
- Unilever Research  
- Merck KGaA  
- BASF AG  
- Aventis Pharma  
- Dow Deutschland Inc  
- Lucas Meyer GmbH  
- Schwartauer Werke GmbH  
- Wolff Walsrode AG  
- Hamburgische Landesbank  
- Dörner GmbH  
- Cognis AG  
- Creavis GmbH  
- Kröner GmbH