



**Preliminary Scientific PROGRAM**

**22<sup>nd</sup> Symposium on Glycosaminoglycans**

**Glycosaminoglycans and new anticoagulants – anticoagulant and  
non-anticoagulant effects**

**September 18<sup>th</sup> – 20<sup>th</sup>, 2014**

**Organizers:**

**Job Harenberg**

Clinical Pharmacology, Medical Faculty Mannheim  
University of Heidelberg

**Giangiaco<sup>mo</sup> Torri**

„G. Ronzoni“ Institute for Chemical and Biochemical Research,  
Milan

Welcome to Villa Vigoni 2014

As for the past editions, the 22<sup>nd</sup> Glycosaminoglycan Symposium will take place in Villa Vigoni (Lovenno, Lake Como). Eminent specialists from all over the world are invited to contribute to discussion of topics of actual or emerging interest in the field of chemistry, biochemistry, biology, pharmacology, and clinical applications of heparin and other glycosaminoglycans. Both basic and applied aspects will be covered and discussed, with about twenty percent of participants being associated with industrial companies. Participation in the symposium (only by invitation) is limited to a maximum of 70 participants.

This year, the topics selected for discussions include: approaches to establish structure-activity relationships with special emphasis on inflammation and cancer, low molecular weight heparins and heparin oligosaccharides, enzymes for biosynthetic editing of, reintroduction of bovine heparins and analytical tools for, glycosaminoglycans, biotechnological heparins and heparan sulfates, proteoglycans in health and disease, and clinical pharmacology assessment of heparins and non-GAG antithrombotic agents.

Keynote speakers will outline the state-of-the art in each field and present novel results. A sufficient time will be allotted to in-depth discussion. The informal, workshop-like character of the symposia and the pleasant surroundings of the villa traditionally stimulate also after-session interactions among participants.

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**Main topics****Malignancy**

Glycosaminoglycans, heparins, low- and very low- molecular-weight heparins, synthetic oligosaccharides, new antithrombotic drugs, thrombin inhibitors and cancer.

**Inflammation**

Interactions with growth factors, heparanase, and other proteins overexpressed in inflammation.

**Characterization of glycosaminoglycans**

Anticoagulant assays, nuclear magnetic resonance, mass spectrometry, capillary electrophoresis, new enzymatic approaches, new biological assays, heparin contaminants, standardization and harmonization of methods.

**Scientific board**

Giangiaco­mo Torri, Job Harenberg, Roland Krämer, Ram Sasisekharan, Benito Casu

**Scientific Secretary**

Annamaria Naggi

**Thursday, September 18<sup>th</sup>, 2014, afternoon**

<b>14.30-14.40</b>	<p><b>J. Harenberg</b> , Mannheim and <b>G. Torri</b>, Milan: Welcome address</p> <p><b>SYNTHETIC GLYCOSAMINOGLYCANS</b></p> <p>Moderator: <b>R. Sasisekharan</b></p>
<b>14.40-15.10</b>	<p><b>J. Liu</b>, Chapel Hill, NC Chemoenzymatic synthesis of heparin, what is next</p>
<b>15.10-15.30</b>	<p><b>M. Petitou</b>, Paris Heparanase inhibitors (tentative)</p>
<b>15.30-15.50</b>	<p><b>M. Poli</b>, Non anticoagulant heparins for the inhibition of hepcidin in vitro and in vivo.</p>
<b>15.50-16.10</b>	<p><b>Discussion</b></p>
<b>16.20-16.40</b>	<p><b>Coffee and Tea</b></p>
<p><b>STRUCTURAL FEATURES AND INTERACTION OF GLYCANS</b></p> <p>Moderator: <b>M. Petitou</b></p>	
<b>16.40-17.00</b>	<p><b>Z. Shriver</b>, Boston Heparan Sulfate in Dengue Infection</p>
<b>17.00-17.20</b>	<p><b>R. Sasisekharan</b>, Boston GAGs/stem cells</p>
<b>17.20-17.40</b>	<p><b>S. Alban, A.-K. Schönfeld, I. Liewert</b>, Kiel SDF-1/CXCXR4-axis as potential target for sulfated glycans</p>
<b>17.40-18.00</b>	<p><b>E.A. Yates</b>, Liverpool Methods for the study of protein-GAG interactions in solution</p>
<b>18.00 -18.20</b>	<p><b>Discussion</b></p>

**Friday, September 19<sup>th</sup> 2014, morning**

	<p><b>HEPARIN AND HEPARAN SULFATE</b></p> <p>Moderator: <b>U. Lindahl</b></p>
9.00-9.20	<p><b>L. Kjellén</b>, Uppsala Heparan sulfate biosynthesis: What controls the sulfation patterns?</p>
9.20-9.40	<p><b>B. Mulloy</b>, London Heparin binding to the BMP antagonist gremlin</p>
9.40-10.00	<p><b>J.-P. Li</b>, Uppsala Implications of heparan sulfate and heparanase in neuroinflammation (tentative)</p>
10.00-10.20	<p><b>I. Vlodavsky</b>, Haifa Impact of host heparanase on tumour growth and metastasis</p>
10.20-10.40	<p><b>Discussion</b></p>
10.40-11.00	<p><b>Coffee and Tea</b></p>
	<p><b>GLYCOSAMINOGLYANS AND HEPARANASE</b></p> <p>Moderator: <b>J. Gallagher</b></p>
11.00-11.20	<p><b>G. Bendas</b>, Bonn Impact of latent heparanase on tumor cell adhesion and potential interference by heparin</p>
11.20-11.40	<p><b>G. Giannini</b>, Pomezia (Roma) Around heparanase inhibitors: Challenges and Perspectives from a Medicinal Chemistry Point of View.</p>
11.40-12.00	<p><b>R. Sanderson</b>, Birmingham, Alabama, US Heparanase in tumor chemoresistance</p>
12.00- 12.20	<p><b>S. K. Kumar</b>, Münster Functional interplay of heparanase and syndecan-1 in colon cancer stem cells.</p>
12.20-13.30	<p><b>Discussion</b></p>

**Friday, September 19<sup>th</sup> 2014, afternoon**

	<p><b>HEPARIN AND OTHER GLYCOSAMINOGLYCANS IN MALIGNANCY</b></p> <p>Moderator: <b>C. Kirchmaier</b></p>
14.30-14,50	<p><b>M. Schlesinger</b>, Bonn How heparin affects the chemoresistance of ovarian cancer cells</p>
14.50-15.10	<p><b>S. Grässle</b>, Mannheim Role of heparins in cancer-associated thrombosis promoted by extracellular DNA-VWF network formation.</p>
15.10-15.30	<p><b>M. Götte</b>, Münster Role of the heparan sulfate sulfotransferase HS2ST1 in breast cancer invasiveness</p>
15.30-15.50	<p><b>L. Borsig</b>, Zurich High GAG-affinity chemokine decoy affects metastasis.</p>
15.50-16.10	<p><b>Discussion</b></p>
16.10-16.30	<p><b>Coffee and Tea</b></p>
	<p><b>NEW ANTITHROMBOTICS</b></p> <p>Moderator: <b>A. Stemberger</b></p>
16.30-16.50	<p><b>V. Laux</b>, Wuppertal Strategies for reversal of new antithrombotics (tentative)</p>
16.50-17.10	<p><b>A. Jouppila</b>, Hus, Finland Mast cell derived heparin proteoglycans as a model for antithrombotics</p>
17.10-17.30	<p><b>G. Nowak, M. Lopez</b>, Jena and Caracas: Heparins and platelets:-the never ending story.</p>
17.30-17.50	<p><b>P. Mourier</b>, Paris Isolation of a pure octadecasaccharide with antithrombin activity from an ultra-low-molecular-weight heparin</p>
17.50-18.10	<p><b>Discussion</b></p>

**Saturday, September 21<sup>st</sup> 2013, morning**

	<p><b>DETECTION AND CHARATCTERIZATION OF GLYCOSAMINOGLYCANS</b> <b>1<sup>st</sup></b></p> <p>Moderator <b>S. Alban</b></p>
8.45-9.05	<p><b>R. Krämer</b>, Heidelberg Fluorescent quenching technique to determine heparins in various matrices (tentative)</p>
9.05-9.25	<p><b>M. Guerrini</b>, Milan Structural differentiation among innovator and generic enoxaparins using NMR spectroscopy and chemometrics.</p>
9.25-9.45	<p><b>J. Fareed</b>, Chicago Biological comparison of commercial enoxaparins</p>
9.45-10.05	<p><b>C. Viskov</b>, Paris Characterization of LMW heparins by CTA-SAX HPLC</p>
10.05-10.25	<p><b>Coffee and Tea</b></p>
	<p><b>DETECTION AND CHARATCTERIZATION OF GLYCOSAMINOGLYCANS</b> <b>2<sup>nd</sup></b></p> <p>Moderator <b>J. Fareed</b></p>
10.25-10.45	<p><b>A. Naggi</b>, Milan Characterization of beef mucosal heparins</p>
10.45-11.05	<p><b>D. Keire</b>, FDA, Silver Spring A Proposal for Re-introduction of Bovine Heparin to the Heparin Supply Chain</p>
	<p><b>Round table discussion on session I and II</b> Moderators: <b>J. Harenberg, B. Mulloy, G Torri</b></p>
11.05-12.05	<p><b>Introduction B. Mulloy. Day session speakers and audience.</b></p>
12.05-12.15	<p><b>Closing remarks: G. Torri / J. Harenberg</b></p>

## **General Information**

### **Thursday, September 18<sup>th</sup>, 2014**

12.30 -14.00: Lunch in Villa Vigoni  
20.00 Dinner in Villa Vigoni

### **Friday, September 19<sup>th</sup>, 2014**

8.00 - 9.00: Breakfast  
13.00 -14.00: Lunch in Villa Vigoni  
20.00 Dinner in Villa Vigoni

### **Saturday, September 20<sup>th</sup>, 2014**

8.00 - 9.00: Breakfast  
12.30 - 13.30: Lunch in Villa Vigoni

### **Location of the Symposium:**

"Villa Vigoni e.V."  
Via Giulio Vigoni 1  
Lovenno di Menaggio  
I-22017 Menaggio (Como)

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