

# 27<sup>th</sup> Symposium on Glycosaminoglycans

September 19<sup>th</sup> – 21<sup>st</sup>, 2019



## Organizers:

Roland Krämer, Job Harenberg  
University of Heidelberg, Germany

Giangiaco Torri, Annamaria Naggi  
"G. Ronzoni" Institute for Chemical and Biochemical Research,  
Milan, Italy

## Under the patronage of:

**DFG** Deutsche  
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## **Welcome to Villa Vigoni 2019!**

As in the past twenty-six editions, the 27<sup>th</sup> Glycosaminoglycan Symposium will take place in Villa Vigoni (Lovenno, Lake Como). Eminent specialists from all over the world are invited to discuss both current and emerging topics of interest in the fields of chemistry, biochemistry, biology, pharmacology, and in the clinical applications of heparin and other glycosaminoglycans. Both basic and applied aspects will be covered and discussed, with around thirty percent of participants being associated with industrial companies. Participation in the symposium (only by invitation) is limited to a maximum of 75 participants.

The subjects of interest include biosynthesis, structural characterization and protein interactions, biological functions and clinical aspects including anti-inflammatory and anti-tumor activity. A session dedicated to pharmaceutical and regulatory aspects of heparin and heparin related drugs has also been introduced.

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

Job Harenberg

Giangiaco Torri

### **Scientific board**

Giangiaco Torri, Job Harenberg, Roland Krämer, Ram Sasisekharan, Annamaria Naggi, Marco Guerrini, Gerd Bendas, Martin Götte.

### **Scientific Secretary**

Antonella Bisio

## Thursday, September 19<sup>th</sup> 2019

13:00 - 14.00 **Lunch in Villa Vigoni**

14.30 - 14.40 **Welcome address, Job Harenberg and Giangiacomo Torri**

### **PROGRESS ON GLYCOSAMINOGLYCAN RESEARCH**

Moderator: **Job Harenberg**

14.40 - 15.00 **Jeffrey Esko**, San Diego  
Genome-wide analysis of heparan sulfate assembly.

15.00 - 15.20 **Denis Barritault**, Créteil  
How the Regenerating Agents (RGTA), mimetics of heparan sulfate, open a new branch in regenerative medicine: a translational medicine saga from bench to patient.

15.20 - 15.40 **John Whitelock**, Sydney  
Recent development on bioengineered heparin

15.40 - 16.00 **Jin-ping Li**, Uppsala  
The importance of Iduronic acid in the biological activities of heparan sulfate.

16.00 - 16.20 **Discussion**

16.20 - 16.40 **Coffee and tea**

### **PROGRESS ON GLYCOSAMINOGLYCAN RESEARCH**

Moderator: **John Gallagher**

16.40 - 17.00 **C.S. Venkatesan**, Hyderabad  
The synthesis and angiostatic activities of conjugates of curcumin with glycosaminoglycans.

17.00- 17.20 **Giangiacomo Torri**, Milan  
Structural requirements of heparin of different origin for high affinity binding with antithrombin.

17.20 - 17.40 **Walter Jeske**, Chicago  
Porcine mucosal heparin shortage crisis! What are the options?

17.40 - 18.00 Discussion

20.00 **Dinner in Villa Vigoni**

**Friday, September 20<sup>th</sup> 2019**

## **PROGRESS ON ANTICOAGULANTS AND ANTITHROMBOTICS**

Moderator: **Axel Stemberger**

- 9.00 - 9.20 **Vito Ferro**, Brisbane  
Heparin mimetics via RAFT polymerization: novel anticoagulants for biomedical applications
- 9.20 - 9.40 **Job Harenberg**, Heidelberg  
New rapid, sensitive and specific methods to test for direct oral anticoagulants.
- 9.40 - 10.00 **Volker Laux**, Wuppertal  
DIC in sepsis can be attenuated by dual inhibitors of coagulation factors Xa and IIa.
- 10.00 - 10.20 **Susanne Alban**, Kiel  
Modulation of contact system by sulfated glycans.
- 10.20 - 10.40 **Discussion**
- 10.40 - 11.00 **Coffee and tea**

## **GLYCOSAMINOGLYCANS: PHARMACEUTICAL AND REGULATORY ASPECTS**

Moderator: **Roland Krämer**

- 11.00 - 11.20 **Walter Jeske**, Chicago  
The re-introduction of bovine heparin! What are the facts?
- 11.20 - 11.40 **Elaine Gray**, London  
A Potency Standard for Bovine Heparin?
- 11.40 - 12.00 **Carlo Pini**, Rome  
Role of Official Medicines Control Laboratories (OMCL) in assessing quality of biologicals.
- 12.00 – 12.20 **Discussion**
- 12.30 - 13.30 **Lunch in Villa Vigoni**

**Friday, September 20<sup>th</sup> 2019**

**HEPARIN AND OTHER GLYCOSAMINOGLYCANS IN MALIGNANCY**

Moderator: **Carl Kirchmaier**

- 14.30 - 14.50 **Renato V. Iozzo**, Philadelphia  
Autophagic degradation of HAS2: a novel mechanism to regulate angiogenesis.
- 14.50 - 15.10 **Israel Vlodavsky**, Haifa  
Opposing functions of heparanase-1 and heparanase-2 in cancer progression.
- 15.10 - 15.30 **Gerd Bendas**, Bonn  
Heparin - A novel perspective and role in immune oncological approaches?
- 15.30 - 15.50 **Discussion**
- 15.50 - 16.10 **Coffee and tea**

**HEPARIN AND OTHER GLYCOSAMINOGLYCANS IN MALIGNANCY**

Moderator: **Götz Nowak**

- 16.10 - 16.30 **Ariane De Agostini**, Geneva  
Sulfated glycans modulate HS turnover and biological activities in endometrial carcinoma and in Sanfilippo syndrome.
- 16.30 - 16.50 **Martin Götte**, Münster  
The heparan sulfate proteoglycan syndecan-1 is a novel regulator of radiation sensitivity in breast cancer.
- 16.50 - 17.10 **Discussion**
- 20.00 **Dinner in Villa Vigoni**

**Saturday, September 21<sup>st</sup> 2019**

## **GLYCOSAMINOGLYCAN INTERACTIONS**

Moderator: **Marco Guerrini**

- 9.00 - 9.20 **Marion Kusche-Gullberg**, Bergen  
Downregulation of *Ext1* reduces FGF-beta 1 expression levels in fibroblasts.
- 9.20 - 9.40 **Dominique Manikowski**, Münster  
Electrostatic heparan sulfate interactions constrain the Hedgehog morphogen gradient during development.
- 9.40 - 10.00 **Chiara Bongio**, Milan  
GAGs-coated iron oxide nanoparticles for theranostic applications.
- 10.00 - 10.20 **Discussion**
- 10.20 - 10.40 **Coffee and tea**

## **NEW ANALYTICAL APPROACHES**

Moderator: **Giangiaco Torri**

- 10.40 - 11.00 **David Keire**, St. Louis  
Reduction of bovine spongiform encephalopathy agent infectivity by heparin processing.
- 11.00 - 11.20 **Elena Urso**, Milan  
Heparanase-based strategy for detecting structural peculiarities of heparin-like oligosaccharides.
- 11.20 - 11.40 **Barbara Mulloy**, London  
Molecular weights of LMW heparin products: how have we measured them in the past and how will we measure them in the future?
- 11.40 - 12.00 **Discussion**
- 12.00 - 12.10 **Closing remarks: G. Torri and J. Harenberg**
- 12.30 - 13.30 **Lunch in Villa Vigoni**

## Location of the Symposium

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

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