

27th Symposium on Glycosaminoglycans

September 19th – 21st, 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
Forschungsgemeinschaft

Welcome to Villa Vigoni 2019!

As in the past twenty-six editions, the 27th Glycosaminoglycan Symposium will take place in Villa Vigoni (Lovenò, 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

Giangiacoòo Torri

Scientific board

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

Scientific Secretary

Antonella Bisio

Thursday, September 19th 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 20th 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 20th 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**, Geneve
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 21st 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
Loveno di Menaggio
I-22017 Menaggio (Como)

Tel.: +39-0344/361232
Fax: +39-0344/361247
E-mail: reception@villavigoni.eu
Internet: www.villavigoni.eu

Organisers

Dr. G. Torri & Dr. A Naggi
Istituto di Ricerche Chimiche
e Biochimiche "G. Ronzoni"
Via G. Colombo, 81
I-20133 Milano
Italy
Tel: +39/02-70641624
Fax: +39/02-70641634

Prof. em. Dr. med. J. Harenberg
Medical Faculty Mannheim
University of Heidelberg
Maybachstrasse 14
D-68169 Mannheim
Germany
Tel: +49/621-3839623
Fax: +49/621-3839622

Prof. R. Krämer
Inst of Inorganic Chemistry
Ruprecht-Karls
University of Heidelberg
Im Neuenheimer Feld 270
69120 Heidelberg
Germany
Tel: +49 (0)6221-548438
Fax: +49 (0)6221-548599

E-mail: torri@ronzoni.it
naggi@ronzoni.it
Internet: www.ronzoni.it

E-mail: job.harenberg@medma.uni-heidelberg.de
E-mail: harenberg-j@t-online.de
E-mail: Roland.Kraemer@urz.uni-heidelberg.de

Scientific Secretary

Dr. Antonella Bisio
Istituto di Ricerche Chimiche e Biochimiche "G. Ronzoni"
Via G. Colombo, 81
I-20133 Milano
Italy

Tel: +39/02-70641630
Fax: +39/02-70641634
E-mail: bisio@ronzoni.it

Sponsors

Bioiberica, S.A., Barcelona, Spain
Carmeda AB, Uppsala, Sweden
Chemi, Milan, Italy
Deutsche Forschungsgemeinschaft, Bonn, Germany
Iduron Ltd, Alderly Edge, Cheshire, UK
Laboratori Derivati Organici (LDO), Trino Vercellese (VC), Italy
Opocrin SpA, Corlo di Formigine (MO), Italy
Scientific Protein Laboratories LLC, Waunakee (WI), USA