

August 1st, 2013

Final Report

**The 17th European Carbohydrate Symposium (EUROCARB17) held on
July 7-11, Tel-Aviv, Israel**

Written by Prof. Timor Baasov, Chair of the Symposium

The European Carbohydrate Symposia was established by the European Carbohydrate Organization (ECO) in 1981, and since then has been hosted across many European cities. EuroCarb17 was a special occasion, since the conference was held, ***For the First Time in Israel***, which made us, the Israel scientific community, very honored and proud. The Symposium was co-organized by the Technion-Israel Institute of Technology and the Israel Chemical Society, and held during July 7-11 in David Intercontinental Hotel, Tel-Aviv. The main topics of the Symposium included: (a) glycochemistry and biochemistry, (b) methods for carbohydrate structural analysis, (c) glycobiology, (d) glycomedicine and (e) glycobiotechnology.

The scientific program included 10 Plenary and 29 Invited Keynote Lectures by an acclaimed international faculty, as well as 136 contributed oral presentations and two poster sessions. Two prestigious awards were awarded during the Opening Session of the symposium, July 7. The *Emil Fisher Carbohydrate Award*, the premier award of the ECO, was awarded to Prof. Antoni Planas, of the University of Ramon Llull, Barcelona, Spain for his outstanding accomplishments in the glycosciences. The second award, the *Carbohydrate Research Award for Creativity in Carbohydrate Chemistry*, was established in 2001 by the Editors and Publisher of *Carbohydrate Research*. The *2013 Carbohydrate Research Award* was awarded to Prof. Xi Chen of the University of California-Davis. The awardees were also the first speakers of the Symposium and delivered the plenary lectures.



Over **350** participants from **33** different countries took active part in the symposium. Over 160 posters in all six topics of the conference have been presented on Monday (July 8) and Tuesday (July 9) in two separate poster sessions. Special committees examined the poster sessions to choose the best posters in four major topics of the conference. At the closing ceremony, Thursday, July 11, the four winners were awarded poster prizes with certificate and cash money, 500 Euros (each). Among them was Hugo Aragunde Pazos, Spain, who received the prize sponsored by the ESF (see copy left).

In addition, following six young participants that presented either oral or poster contributions received the reimbursement of 250 Euros each (total of 1,500 Euros): S.V. Tsygankova (Russia), N.R. Khasbiullina (Russia), I. M. Ryzhov (Russia), Ksenia Egorova (Russia), Fhernanda Smiderle (Brazil), Omar Boutureira (Spain). Following are the reports, in a chronological manner that each awardee sent us according to the ESF rules as part of their acknowledgement.

*(1) **S.V. Tsygankova**, Laboratory of Carbohydrates, Shemyakin and Ovchinnikov
Institute of Bioorganic Chemistry, Russian Academy of Sciences.*

1. Purpose of my visit was participation in scientific conference “Eurocarb 17” (July 7-11, Tel-Aviv).
2. During the visit I made poster presentation of my work in the field of glycobiology (Self-assembling glycopeptides, July 9 2013, Poster Session 2).
3. For me, the conference was held interesting from the point of view of acquiring new knowledge in the field of carbohydrate chemistry, biology and medicine. I especially liked the plenary lectures Antony Planasa of Spain and Cristina Nativi from Italy. Unfortunately I managed to get on some reports that came in parallel sessions. In addition to presentations, there were two interesting poster sessions in which I participated. I have been presented at the conference poster “self-assembling glycopeptides”, interested in it, gave me valuable advice.
4. No future collaboration with host institute is planned.
5. No publications are projected resulting from the conference.
6. I want to thank organizing committee for possibility to visit Tel-Aviv and present my work. The conference was held in a friendly atmosphere, I talked with many interesting people and visited interesting tours in Tel-Aviv and Jerusalem.

*(2) **N.R. Khasbiullina**, Laboratory of Carbohydrates, Shemyakin and Ovchinnikov
Institute of Bioorganic Chemistry, Russian Academy of Sciences.*

1. Main purpose of my visit was participating in 17th European Carbohydrate Symposium Eurocarb (July 7-11, Tel-Aviv).
2. During the visit I made oral presentation of my work in the field of glycobiology and glycomedicine (The origin of natural anti-glycan antibodies: first 12 months of life , July 8 2013, Session 6).
3. Main results of this visit are introduction of my work and discussion with famous and the most experienced scientist right after presentation and during all meetings. I'm sure it is very helpful for next strategy of my research. I have learnt about recent findings in different fields of glycoscience and discovered some new approaches. Invited lectures of Paula Videira, Vered Padler-Karavani, Uri Lesmes and Cristina Nativi were most significant for me.
4. No future collaboration with host institute is planned at present moment, but I hope I will keep in touch with people who I've met in this symposium.
5. No publications are projected resulting from the conference.
6. I want to thank organizing committee for possibility to visit Tel-Aviv and to present my work, which is not only mine, but of our entire Carbohydrate laboratory, and also for friendly reception and great atmosphere during the conference.

(3) *I. M. Ryzhov, Laboratory of Carbohydrates, Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry, Russian Academy of Sciences.*

1. Main purpose of my visit was participating in scientific conference Eurocarb 17 (July 7-11, Tel-Aviv).
2. During the visit I made oral presentation of my work in the field of carbohydrate synthesis (Block synthesis of A and B tetrasaccharides (types 1–6) related to human ABO blood group system and pentasaccharides A Lewis B and B Lewis B, July 9 2013, Session 13).
3. Main results of the visit are comments on my work, which I received after presentation, and following discussion with well-known scientists in the area of carbohydrate chemistry and glycobiology. I have also learnt about recent advances in different fields of glycoscience and discovered some new chemical methods and approaches, which will be useful in my future research. Invited lectures of Carlo Uverzagt and Paul Murphy were most significant for me.
4. No future collaboration with host institute is planned.
5. No publications are projected resulting from the conference.
6. I want to thank organizing committee for possibility to visit Tel-Aviv and present my work, and also for kind and friendly reception and atmosphere during the conference.

(4) *Ksenia Egorova, Laboratory of metal-complex and nano-scale catalysts, N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Moscow, Russia*

1. Purpose of the visit: To present my work, that is, PLANT AND FUNGAL CARBOHYDRATE STRUCTURE DATABASE, to scientists working on carbohydrates, to know which carbohydrate data are demanded by glycobiologists and glycochemists, and to share contacts with the view of possible future collaboration.
2. Description of the work carried out during the visit: I presented my work as a poster and visited lectures on glycobiology. structure and molecular recognition, glycoinformatics, glycomedicine, and carbohydrate-protein interactions.
3. Description of the main results obtained: Besides broadening my mind, I discussed the ways people used our database and which data they expected to find in a carbohydrate structural database; a possible collaboration was discussed with Dr. Claney Pereira (Max Planck Institute of Colloids and Interfaces, Potsdam, Germany).
4. Future collaboration with host institution (if applicable): not applicable.
5. Projected publications/articles resulting or to result from the grant (ESF must be acknowledged in publications resulting from the grantee's work in relation with the grant): A paper for the special issue of Carbohydrate Research will be written.
6. Other comments (if any): none.

(5) *Fhernanda Smiderle, Federal University of Parana - Curitiba, Brazil.*

1. Purpose of the visit: The visit to Israel was aimed to attend the 17th European Carbohydrate Symposium that was held in Tel-Aviv, on July 7-11, 2013.

2. Description of the work carried out during the visit: The Symposium offered to the participants a wide range of plenary and parallel lectures given by renowned scientists from different countries, totalizing approximately 20 hours. The lectures approached topics on the carbohydrate chemistry field, including carbohydrate synthesis, chemical glycobiology, structural

analysis, glycomedicine, enzymatic degradation, among others. Besides, the Symposium promoted poster sessions, where I presented a poster entitled: ISOLATION, CHARACTERIZATION, AND IMMUNOMODULATORY EVALUATION OF A BRANCHED GALACTOMANNAN OF THE MEDICINAL MUSHROOM *CORDYCEPS MILITARIS*.

3. Description of the main results obtained: The Symposium schedule and organization (Get-Together Reception, Poster Sessions, Parallel Lectures) promoted a good environment to interact with a great number of participants. I was able to meet, talk, and exchange knowledge with a lot of scientists working on the same field. Moreover, during my poster presentation, I received a lot of scientists and we could discuss about my work and also exchange information, protocols and conclusions. Some of the scientists that I have met in this Symposium suggested to keep contact and collaborate in future studies. The lectures provided me information about other topics that can be useful to my studies.

4. Future collaboration with host institution (if applicable): My participation at EuroCarb17 provided me an excellent experience on how to show my results, and how to improve my studies. Taking EuroCarb Symposium as "host institution", I intend to participate in the next Symposiums, considering that I had a great amount of information, knowledge and scientific contacts that will improve my work and myself as a scientist.

5. Projected publications/articles resulting or to result from the grant (ESF must be acknowledged in publications resulting from the grantee's work in relation with the grant): The results of the poster presented in the Symposium will be improved and submitted for publication, which will surely acknowledge ESF. Besides, the publications that may come out from future collaborations made at EuroCarb17 will also acknowledge ESF.

6. Other comments (if any): The grant provided by ESF helped me to participate on this event and encouraged me to participate in the next events.

(6) **Omar Boutureira, Departament de Química Analítica i Química Orgànica, Universitat Rovira i Virgili, C/Marcel·lí Domingo s/n, 43007 Tarragona, Spain.**

It is my pleasure to highlight the support received from the European Science Foundation (ESF Travelling Grant) that helped to partially finance travelling expenses to myself, Dr. Omar Boutureira, a current Marie Curie Career Integration and Juan de la Cierva fellow at the Universitat Rovira i Virgili, Tarragona, Spain during the past EuroCarb17 Symposium held in Tel-Aviv, Israel (7-11 July). This initiative enabled the attendance and the presentation of my research work (see abstract below) as well as the discussion of some interesting scientific topics

with a number of research fellows that will certainly improve my research activities in the near future.

Oral Presentation Title: Chemical Approaches to Well-defined Fluoroglycoproteins

Omar Boutureira^{1,2} and Benjamin G. Davis²

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In recent years chemical site-selective protein modification has emerged as a powerful method to access and study homogeneous post-translational modified proteins. We have developed a number of methodologies based on a tag-and-modify protein modification strategy that provide a unique opportunity to introduce a fluorine atom at a single designated amino acid residue [1]. Herein we describe the development of complementary methods that allow the preparation of well-defined synthetic fluorinated glycoproteins and importantly [¹⁸F]-radiolabelled glycoproteins. These methods exploit (a) the copper-catalyzed Huisgen cycloaddition reaction that requires the incorporation of homopropargyl glycine ‘tag’ into proteins prior to modification with a bespoke sugar reagent, (b) the thiol disulfide or diselenide exchange reaction with natural cysteine and finally (c) the conjugate addition of fluoroglycosyl thiols to dehydroalanine (directly accessible from Cys) that allow the straightforward introduction of [¹⁸F]FDG, the most extensively used positron emission topography (PET) radiotracer in nuclear medicine, into proteins without the need for any protecting group chemistry. Finally, Endo A-catalyzed elongation of these fluoroglycoproteins allows access to homogeneous, complex glycoproteins proving that different unnatural linkages and sugar configurations can be tolerated [2]. This strategy allows the preparation of complex fluorinated glycoproteins in two steps with no need to manipulate either the protein or the complex glycan for F incorporation.

[1] (a) Boutureira, O.; Bernardes, G. J. L.; Fernández-González, M.; Anthony, D. C.; Davis, B. G. *Angew. Chem. Int. Ed.* **2012**, *51*, 1432. (b) Boutureira, O.; Bernardes, G. J. L.; D’Hooge, F.; Davis, B. G. *Chem. Commun.* **2011**, *47*, 10010. (c) Boutureira, O.; D’Hooge, F.; Fernández-González, M.; Bernardes, G. J. L.; Sánchez-Navarro, M.; Koeppe, J. R.; Davis, B. G. *Chem. Commun.* **2010**, *46*, 8142.

[2] Fernández-González, M.; Boutureira, O.; Bernardes, G. J. L.; Chalker, J. M.; Young, M. A.; Errey, J. C.; Davis, B. G. *Chem. Sci.* **2010**, *1*, 709.

I hope that my comments have given you an adequate illustration of my activities during the EuroCarb17 Symposium.

Acknowledgements

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Sincerely,



Professor Timor Baasov

Chair of Eurocarb17