



## Komisja d/s Współdziałania Nauk Chemiczno-Biologiczno-Medycznych przy Łódzkim Oddziale PAN

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Łódź, dnia 10 maja.2018 r.

Szanowni Państwo!

Dnia 23 maja br. gościem Oddziału Łódzkiego Polskiej Akademii Nauk i Centrum Badań Molekularnych i Makromolekularnych PAN będzie **Prof. Peter Seeberger**, Director at the Max-Planck Institute for Colloids and Interfaces, Potsdam, Germany i Professor at the Free University of Berlin.

Serdecznie zapraszam do wzięcia udziału w posiedzeniu Komisji ds. Współdziałania Nauk Chemiczno-Biologiczno-Medycznych przy Łódzkim Oddziale PAN, podczas którego

**Prof. PETER SEEBERGER**

wygłosi wykład pt.:

### **Preventing and Fighting Infectious Disease: Carbohydrate Vaccines Made by Automated Glycan Assembly and Continuous Flow Synthesis of Malaria Drugs**

Profesor P. Seeberger jako pierwszy w świecie opracował automatyczną syntezę oligosacharydów (wykorzystując m.in. reakcję zbadaną przez Prof. Aleksandrę Skowrońską z CBMM PAN w Łodzi) i z sukcesem rozwija chemię i biologię tej klasy biopolimerów.

Posiedzenie odbędzie się dnia **23 maja 2018 r. (środa) o godz. 15:30** w Centrum Badań Molekularnych i Makromolekularnych PAN w Łodzi, ul. H. Sienkiewicza 112, sala 09 (parter, budynek A). Dostępny jest parking zewnętrzny przy Instytucie.

Serdecznie zapraszam Państwa do wysłuchania wykładu. Jednocześnie uprzejmie proszę o rozpropagowanie niniejszej informacji wśród młodszych pracowników naukowych i studentów.

Z poważaniem,

**Prof. dr hab. Barbara Nawrot**  
Przewodnicząca Komisji

# Preventing and Fighting Infectious Disease: Carbohydrate Vaccines Made by Automated Glycan Assembly and Continuous Flow Synthesis of Malaria Drugs

Peter H. Seeberger

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Most pathogens including bacteria, fungi, viruses and protozoa carry unique glycans on their surface. Currently, several vaccines against bacteria are marketed very successfully. Since many pathogens cannot be cultured and the isolation of pure oligosaccharides is extremely difficult, synthetic oligosaccharide antigens provide now a viable alternative. The automated synthesis platform,<sup>1,2</sup> has been commercialized.<sup>3,4</sup> The quality control of synthetic oligosaccharides by ion mobility mass spectrometry (IM-MS) is fast and extremely sensitive.<sup>5</sup> Currently, the laboratory is pursuing the development of several semi- and fully synthetic carbohydrate vaccines against severe bacterial infections, including multi-resistant hospital acquired infections.<sup>5,6</sup> In addition to their function as antigens, synthetic oligosaccharides serve as tools to create monoclonal antibodies, and to establish glycan microarrays to map vaccine epitopes.<sup>7</sup> Diagnostic and preventive approaches against a host of bacteria, fungi, and parasites are being pursued.

In recent years continuous flow systems have become increasingly interesting to practitioners of synthetic chemistry. Described is the use of continuous flow systems to produce drug substances and other chemicals via multi step reactions including continuous purification.<sup>8</sup> The anti-malaria drug artemisinin and its derivatives as well as other life-saving drugs are used as examples.<sup>8-10</sup>

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9. Levesque, F.; Seeberger, P.H. **Angew. Chem. Int. Ed.** 2012, 51, 1706; Triemer, S.; et al.; **Angew. Chem. Int. Ed.** 2018, 57, in press.
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and Interfaces, Potsdam,

and completed a PhD in  
an-Kettering Cancer Center  
am at MIT where he was  
tenure. After six years as  
h he assumed positions as  
tsdam and Professor at the  
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from the US (e.g. Arthur C.

Cope Young Scholar Award, Horace B. Isbell Award, Claude S. Hudson Award from the American Chemical Society), Germany (e.g. Körber Prize for European Sciences, Wissenschaftspreis des Stifterverbandes), Holland (Havinga Medal), Israel (Honorary Lifetime Member Israel Chemical Society), Japan (Yoshimasa Hirata Gold Medal), Switzerland ("The 100 Most Important Swiss") and international organizations (Whistler Award 2012, Int. Carboh. Soc.). In 2013 he was elected to the Berlin-Brandenburg Academy of Sciences.

Peter H. Seeberger greatly supports the idea of open access publishing as the Editor-in-Chief of the Beilstein Journal of Organic Chemistry and serves on the editorial advisory boards of many other journals.

Through his work in the area of neglected diseases, Peter Seeberger has become involved in philanthropic causes. He is a co-founder of the Tesfa-Ilg "Hope for Africa" Foundation that aims at improving health care in Ethiopia that recently helped to build a bed-net factory and established an IT training center.

The research in the Seeberger laboratory has given rise to seven successful companies in the USA, Switzerland and Germany.