

---

## EDITORIAL

---



Dear Reader

It has been both a great honour and a pleasure to help assemble this special issue of CHIMIA, which is dedicated to the general field of *Modified Oligonucleotides*. Comprising selected contributions from research laboratories throughout Switzerland, it highlights current activities aimed at the design, synthesis and investigation of analogues of the naturally occurring nucleic acids. Today's research in life sciences is unimaginable without the use of synthetically prepared oligonucleotides or their derivatives. Thus, they are routinely used as primers in PCR experiments, as molecular beacons or other kinds of

labelled probes for diagnostic purposes, as components of chips for genetic analysis or as agents for specific gene inhibition – to name but a few of the large variety of potential applications. More lately, they have also found use as elements for the construction of multidimensional architectures or for template-driven chemical synthesis. With the ever-increasing specialisation of the various branches of the life sciences, the demand for additional derivatives and novel modifications arises almost daily. To satisfy this demand in a timely manner, a sustained and robust research platform needs to be in place. The goal of the current issue is to convince you that Switzerland owns such a platform! In fact, our country also has a long and pioneering tradition in the area of nucleic acids research. It dates back to the late eighteen-sixties, when Friedrich Miescher – as a coworker of Hoppe-Seyler in Tübingen – was first to isolate DNA from white blood cells [1] and, after being named professor at the University of Basel, also from local salmon. A second crucial contribution was the development of a method for the preparation of highly pure DNA samples from calf thymus by Rudolf Signer at the University of Bern in the late nineteen-forties [2]. Those samples finally paved the way for the later X-ray analysis by Wilkins [3] and Franklin [4], which subsequently led to the correct formulation of the DNA structure by Watson and Crick [5]. It took nearly half a century until these contributions were followed-up by researchers at the ETH Zürich in the late nineteen-eighties. Most prominently, the synthesis and investigation of novel types of nucleic acid analogues was pursued by Eschenmoser and his coworkers. Parallel to the academic efforts, the use of modified oligonucleotides started to catch the interest of pharmaceutical companies in Basel. Together, these activities mark the beginning of a fruitful era of nucleic acids chemistry. They paved the way to today's astonishing diversity of research topics in the field throughout Switzerland, as represented in the present issue. I hope you will enjoy this issue highlighting contemporary activities in research and applications of *Modified Oligonucleotides*.

Prof. Dr. Robert Häner  
Department of Chemistry and Biochemistry  
University of Bern  
Freiestrasse 3  
CH-3012 Bern

- 
- [1] F. Miescher, *Hoppe-Seyler's medicinisch-chemische Untersuchungen* **1871**, 4, 441–460.  
[2] For a full appreciation of Rudolf Signer's contributions, see: M. Meili, *Chimia* **2003**, 57, 735–740.  
[3] M.H.F. Wilkins, A.R. Stokes, H.R. Wilson, *Nature* **1953**, 171, 738–740.  
[4] R.E. Franklin, R.G. Gosling, *Nature* **1953**, 171, 740–741.  
[5] J.D. Watson, F.H.C. Crick, *Nature* **1953**, 171, 737–738.

---

It is with great pleasure and appreciation that the Editorial Board of CHIMIA warmly thanks the coordinating guest editor Prof. Robert Häner acknowledging his enormous efforts, the broad and most interesting selection of authors and topics as well as the efficient realization of the present issue on *Modified Oligonucleotides*.