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EDITORIAL

DNA melting

Ralf Blossey
Institut de Recherche Interdisciplinaire CNRS, France

DNA melting is an old topic: the fact that the dissociation of the DNA double-strand is a thermodynamic equilibrium phase transition dates back to the mid-1950s [1, 2]. There have been periods of intense interest in the topic throughout the years, in particular in the 1960s in the context of the theory of phase transitions. The development still continues. On the theory side, models of quite different character have been developed (the Poland–Scheraga model, Peyrard–Bishop–Dauxois model, etc) to study the equilibrium transition and also its dynamics. Recent advances both in biology and the nanosciences have added new twists to this field, warranting a special issue on the topic.

The papers collected in this issue can roughly be grouped into three main topics:

- the DNA denaturation transition—the reader will find papers on this topic that address issues that are still unresolved, like the physics of denaturation bubbles and the dynamics of DNA melting, and also model improvements and new experimental findings;
- applications of DNA melting to biology, relating melting signatures to biologically relevant, sequence-dependent features of DNA;
- artificial DNA constructs and single-molecule methods to study DNA denaturation.

The collected papers give a broad view of the field at the forefront of the newest research. I hope they will also convince the uninitiated reader that important questions are being addressed which might even provide unexpected answers relevant to biology.

References

[1] Thomas R 1953 *Bull. Soc. Chim. Biol.* **35** 609
[2] Thomas R 1954 *Biochim. Biophys. Acta* **14** 23

