

## Preface

This volume of the Springer book series *Communications in Computer and Information Science* contains the proceedings of WIVACE 2015: the 10th Italian Workshop on Artificial Life and Evolutionary Computation, held in Bari (Italy), during September 22–25, 2015. WIVACE was first held in 2007 in Sampieri (Ragusa), as the incorporation of two previously separately run workshops (WIVA and GSICE). After the success of the first edition, the workshop was organized every year with the aim of offering a forum where different disciplines could effectively meet. The spirit of this workshop is to promote communication among single research “niches” hopefully leading to surprising “crossover” and “spill over” effects.

Events like WIVACE are generally a good opportunity for new-generation or soon-to-be scientists to get in touch with new subjects in a more relaxed, informal, and (last but not least) less expensive environment than in large-scale international conferences.

Traditionally focused on evolutionary computation, complex systems, and artificial life, since the last two editions the WIVACE community has been opened to researchers coming from experimental fields such as systems chemistry and biology, origin of life, and chemical and biological smart networks.

In this respect, WIVACE 2015 was jointly organized with a COST Action CM1304 (Emergence and Evolution of Complex Chemical Systems) meeting. The theme of this meeting, “Biomimetic Compartmentalized Chemical Systems,” offered several intriguing topics to WIVACE participants and boosted the fertilization between theoretical and experimental approaches to complex dynamical systems. In fact, one of the scientific challenges nowadays is the creation of life from artificial chemical components. This means reproducing, at least, the basic aspects of life, such as the ability to reproduce, the compartmentalized nature, and the far-from-equilibrium character. Within the WIVACE community, experimental work has been harmonized in a well-established theoretical framework, which takes into account the complexity and intrinsic nonlinearity of life and can master and guide new experimental findings.

As editors, we wish to express gratitude to all the attendees of the conference and to the authors who spent time and effort to contribute to this volume. We also acknowledge the precious work of the reviewers and of the members of the Program Committee. Special thanks, finally, to the invited speakers for their very interesting and inspiring talks: Marco Dorigo from the Université Libre de Bruxelles, Belgium, Marco Gori, from the University of Siena, Italy, Ricard Solé, from the Universitat Pompeu Fabra, Barcelona, Spain, Kepa Ruiz-Mirazo, from the University of the Basque Country, Spain, Davide Scaramuzza, from the University of Zurich, Switzerland, Christodoulos Xinaris, from the research institute Mario Negri, Italy and Annette Taylor, from the University of Sheffield, UK.

The 18 papers presented were thoroughly reviewed and selected from 45 submissions. They cover the following topics: evolutionary computation, bioinspired algorithms, genetic algorithms, bioinformatics and computational biology, modelling and

simulation of artificial and biological systems, complex systems, synthetic and systems biology, and systems chemistry — and they represent the most interesting contributions to the 2015 edition of WIVACE.

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