

Preface

In popular media, chemists are often portrayed as characters aimlessly throwing together concoctions of random ingredients in the hope of spectacular discoveries. As exaggerated as this may appear, the grain of truth behind this image is that some prominent chemical processes have indeed been found by serendipity rather than through rational thought processes. However, even in these cases, a substantial intellectual contribution was made by the discovering scientists, who grasped the significance of their experimental results and readjusted the focus of their research activity.

I am convinced that it has meanwhile become the rule rather than the exception for the discovery of a chemical reaction to result from an intentional invention process with a clearly defined target. A prominent advocate of this rational approach to innovation was Sir Derek Barton, Nobel laureate of 1969, who in his essays made strong arguments in favor of this approach [1].

It was Manfred Reetz who had the idea for a book spotlighting the creative process associated with recent inventions of chemical reactions, and I felt honored to be entrusted with this project. With such a book, which would include contributions by some of the most creative minds in chemistry telling the stories of great discoveries, we hoped to spark renewed enthusiasm for reaction development among students and colleagues.

Our strategy for recruiting competent contributors consisted of scanning the top journals in chemistry for new reactions that present creative solutions to long-standing problems in organic chemistry. This survey revealed that some author names appear time and again in the context of such discoveries. This alone is an argument that chance plays only a limited role in the development of new synthetic transformations. When contacting potential contributors, we received an overwhelmingly positive response and won over 12 outstanding scientists from a broad range of backgrounds and experience as coauthors.

In this volume, we aim to give insights into our creative process and reveal which combination of design and serendipity was involved in the discovery of some of our favorite reactions. Each chapter provides short overviews of the context and

subsequent developments of their respective transformations. I am deeply grateful to all authors for sharing such delicate information with the chemical community. This required their strong personal involvement, since unlike review-style book chapters, it is clear that such personal accounts cannot be delegated to coworkers.

When we initiated this book project at the OMCOS-15 meeting in Glasgow 2009, I approached Keith Fagnou with the intention of winning him over as a first author or, hopefully, even as a coeditor, and we had a long and fruitful discussion about this project. Sadly, his untimely passing away prevented his further involvement. In my opinion, the chemical community has lost one of its finest researchers. It means a lot to me to dedicate this volume to his memory.

Keith Fagnou was born on June 27, 1971, in Saskatoon, Saskatchewan. He obtained a Bachelor of Education in his home town and briefly worked as a high school teacher. He then moved to the University of Toronto for his M.Sc. degree and joined the group of Mark Lautens for PhD research. In 2002, he started his independent academic career at the University of Ottawa. His inventive contributions to the rapidly emerging field of direct arylation reactions generated an enormous response, and he received numerous international awards. The University of Ottawa soon promoted him to become Research Chair in the Development of Novel Catalytic Transformations. I had the pleasure to attend several of his scientifically and didactically outstanding lectures, and shared stimulating discussions with him on arylation technology. Keith died on November 11, 2009, at the age of 38.

I am grateful to his former postdoctoral researcher, Dr. David Stuart, for accepting the task of writing Keith's chapter on the discovery and development of a palladium(II)-catalyzed oxidative cross-coupling of two unactivated arenes.

Keith's creative spirit and his pleasant character will forever remain engraved in our memory.

Lukas Gooßen

Reference

1. Barton DHR (1994) The invention of chemical reactions of relevance to the chemistry of natural products. *Pure Appl Chem* 66:1943–1954

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