

Editorial



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Dedication: Christian Lexer (1971–2019)


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This thematic issue is dedicated to Christian Lexer, who through his career greatly advanced our knowledge of evolutionary biology, with a particular focus on speciation and reproductive isolation. His life ended suddenly and far too early, and we will miss him dearly as a friend and as a colleague. In this dedication, we offer our personal thoughts that illustrate Christian's contributions to science, through research collaboration and individual relationships.

The main theme of Christian's research was speciation genetics. He was particularly fascinated by hybridization in natural populations and investigated the genetic basis of barriers to gene flow. Christian pursued these and other research topics using an exceptionally wide array of plant species from all over the world, covering most large groups of vascular plants. His study species included, among others, spruce (*Picea*), oaks (*Quercus*), palms (*Geonoma*), poplars (*Populus*) and willows (*Salix*),ampions (*Silene*), sandworts (*Arenaria*), legumes (*Medicago*), sunflowers (*Helianthus*), ragworts (*Senecio*) and bromeliads (pineapple family). Recurrent topics in Christian's research were, apart from hybridization, the evolutionary genetics of island populations and of populations in extreme habitats such as deserts, salt marshes and high altitudes. This led him to venture into the associated field of ecology, where he enthusiastically adopted laborious field methods. Christian's core expertise, however, was genetics. Throughout his very productive career he quickly adopted emerging methods in population genetics and genomics, from microsatellites to whole-genome sequencing. He frequently engaged in the development of new analytical

methods and in scrutinizing the promises and pitfalls of emerging techniques. Many of the careful analyses that Christian published with his team and collaborators are prime examples of clear reasoning and will have a lasting impact on the field.

Christian grew up in Villach in Eastern Austria and studied botany, genetics and forestry at the University of Salzburg. He completed his PhD (1999) at the University of Vienna on forest genetics, using microsatellite DNA to make linkage maps and infer parentage in oaks. Perhaps already during this time he developed a fascination for hybrids, and he went on to study hybrid speciation and the ecological genetics of speciation in sunflowers during a postdoctoral stay in the Rieseberg lab at Indiana University, Bloomington, USA. This period resulted not only in some of Christian's most important publications but also in many long-lasting friendships and collaborations. Life was easy and sweet in Bloomington, where Christian also met his wife, Dr Thelma Barabà, with whom he collaborated on many projects. Thereafter, Christian and Thelma moved to the Royal Botanic Gardens, Kew, where Christian worked in the Jodrell Laboratory as a population geneticist. In 2004, he obtained his first major funding to use admixture mapping to characterize the genetic architecture of isolation in poplars, which continued as a major component of his work throughout his career. Further study systems were added through collaborations, often involving people Christian had met during his time in Bloomington. Christian brought to Kew strong expertise in genetics and helped many colleagues advance their research into new territory. He was a key collaborator in Savolainen's initial research on sympatric speciation in Lord Howe Island palms, but also co-authored many papers with others in the Jodrell Laboratory across a range of topics. This was a buzzing time in Christian's career, digging deeper into key themes on hybridization while expanding into new research questions and study systems. Despite being so busy, Christian always found time to socialize after work with colleagues, when many new research ideas were undoubtedly developed at the local pub. Christian's great sense of humour was memorable and enchanted many pub sessions, talking science but also reinventing the world!

After 5 years at Kew, Christian was recruited as a faculty member by the University of Fribourg in Switzerland, where he started his own research group, still maintaining and developing collaborations and friendships. In Fribourg, Christian and Thelma welcomed twin sons to their world and as new parents enjoyed taking their boys to the playground or on walks in the forest near their house. In his very active laboratory, Christian contributed to the rapid changes in laboratory methods for population genomics and pursued studies of reproductive isolation in poplars, while participating in large collaborative studies of ecological genomics and phylogenomics of bromeliads and palms in Central and South America. In 2016, Christian took on a professorship in his home country of Austria at the University of Vienna, which included major leadership and teaching responsibilities in addition to his research. He continued to pursue his major projects on poplars, bromeliads and palms, while pushing more into the analysis of whole genomes. A key focus of Christian's at the University of Vienna was further developing his long-term model system in *Populus alba* and *Populus tremula* (and their hybrids), which has contributed much to the field of speciation genomics. His longer-term vision was to embed this system in the larger context of contemporary and historical gene flow among various Eurasian *Populus* species. In late

2019, he was waiting for reviews and a funding decision on his first Austrian Science Fund proposal, when he died suddenly. Christian's on-going projects strove to ask the tough questions and pioneer the implementation of integrated methods in ecological genomics. His latest proposal was no different, combining an almost dizzying array of tools from common gardens, manipulative plant-herbivore feeding experiments, metabolomics and whole-genome sequencing on a large scale. Combining such diverse tools to address integrated problems in evolutionary ecology and genetics was one of the key strengths of his research.

We remember Christian not only as an excellent researcher but also as a talented supervisor, mentor and friend. He was very hard-working and had a goal-oriented and pragmatic way of approaching topics and manuscripts. He did not rush other people, even when he was keenly aware of deadlines and milestones toward longer-term goals. Instead, he allowed them to develop their ideas and understanding. Christian had a gentle, friendly manner and could be very funny in an absurd way. Regardless of the topic, Christian often was a good listener who was curious about other people's thoughts and experiences. He enjoyed life when given a chance, as well as scientific and philosophical discussions. Through the years, he supervised and mentored many graduate students and postdoctoral researchers. His encouragement and focused intellectual input contributed to successful grant applications, and to securing postdoctoral positions and long-term, fulfilling employment of early career researchers. Many former group members and collaborators at various career stages have experienced how Christian facilitated their careers by allowing them to take space or suggesting them for different assignments. Christian's pragmatism allowed him to recognize and enjoy how his research collaborators could contribute to answering his projects' questions, which initially required giving up some autonomy. In drafts of several of his manuscripts related to *Populus* hybrids, he explored the possibility of stabilized hybrids in the Danube flood plain, which may or may not be homoploid hybrid species, and would concede to co-authors or reviewers the limits to our knowledge of their isolation. It was a great pleasure to know parts of Christian's mind through the deliberative processes of co-authorship and research planning. Nonetheless, research can be ripe with potential conflicts, slights and oversights, and things did not always develop ideally. However, Christian was able to respond to critique and potential conflict remarkably well and to engage in controversial discussion without ever getting antagonized. This also made him a person to turn to for advice in difficult situations of all sorts. We believe that these aspects of Christian's personality allowed him to maintain many long-term friendships and collaborations in a rather competitive research field.

Through his several moves among institutions and between countries, over the passage of time, and despite his steadily growing professional responsibilities, he maintained collaborative and personal relationships that could have readily faded into memories. Even if there was not a manuscript or proposal to discuss, around the New Year, it was common to hear from Christian with a note of appreciation and a kind message about his hopes for the year to come. We will miss hearing from and working with Christian, and we know his absence will be felt by many of his contemporary scientists. Moreover, we will search for *Populus* hybrid species in Christian's honour and we will be pleased if he was correct all along.