

Editorial

On the Shoulders of Giants

The nucleotide analysis of the *Populus* sp. (poplar) genome is almost complete and ready for publication. Brazilian agriculture ministry researchers have apparently completed the analysis of the coffee genome, but will not release the results for 2 years. Hence the poplar report will be the first tree genome to be made public in the huge genomics effort that seems to be accelerating to speeds that few of us could imagine even 5 years ago. The late Francis Crick and his colleague James Watson made many statements that the discovery of the structure of DNA would have revolutionary effects on genetics, life science and indeed on science as a whole. Thomas Kuhn argued that the Watson and Crick paper changed the fundamental paradigm (an increasingly mis-used term) in which biological research would operate. I suspect that even the ebullient and optimistic Crick would be impressed that he and Watson had indeed understated the impact of their discovery made 50 years ago.

It seems that the rush to pursue cutting edge research is increasingly leaving the historical record behind. Famous researchers occasionally find themselves embarrassed to discover that their new and exciting discoveries were reported by others years and occasionally decades before. Given the considerable effort at the University of British Columbia to contribute to the genome projects for poplar and other tree species, we have a valuable opportunity to publish Quentin Cronk's commentary on Dode's 1905 seemingly neglected work about poplar systematics. Dode was writing over 100 years ago, and our understanding of heterophylly (progressive leaf variation during plant development) in poplar and other taxa has progressed since he did his work. It is certain that the difficult and complex task of discovering the biological functions of the thousands of genes in a poplar will depend heavily on the rigorous review and analysis of the old records that some modern researchers

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relegate to irrelevance on grounds that they are ‘just’ out-of-date natural history.

The UBC Botanical Garden and Centre for Plant Research has a poplar clone library with complete and precise records of each clone’s origin. Linking the genetic discoveries to the ecological, morphological and even biochemical features of each clone will be a major contribution to the interpretation and functional assignments of poplar DNA sequences. The complexity of any genome should be giving all researchers cause for caution in declaring the discovery of “the gene for...”, and poplar is no exception. The future is very exciting not only for poplar researchers but for all who would seek to use the powerful tools of genomics to move us towards understanding gene functions. Every tree that is planted for future commercial use will spend many years growing under the hazards of biotic and abiotic challenges. The long-term success of reforestation can only benefit from the marriage between the enormous power of modern technology and the humble use and understanding of work and observations by the great naturalists in whose steps we follow. Once again we return to Isaac Newton’s reminder that modern researchers stand on the shoulders of the giants who went before.