Contents

527 Editorial: International, interdisciplinary, multi-level bioinformatics training and education
Maria Victoria Schneider and John R. Jungck

Papers

528 Best practices in bioinformatics training for life scientists
Allegra Via, Thomas Blicher, Erik Bongcam-Rudloff, Michelle D. Brazas, Cath Brooks, Aidan Budd, Javier De Las Rivas, Jacqueline Dreyer, Pedro E. Fernandez, Celina van Gelder, Joachim Jacob, Katrin E. Jenneke, Janelle Laveland, Federica Moran, Nicolo Mulder, Tommi Nyrönen, Katriina Patres, Maria Victoria Schneider and Teresa K. Attwood

538 The challenges of delivering bioinformatics training in the analysis of high-throughput data
Beatrice S. Covatiola and Gabriello Rudiceto

548 The NGS WikiBook: a dynamic collaborative online training effort with long-term sustainability
Jing-Woei Li, Dan Böck, Magnus Manske, Federica Manuel Giorgi, Nikolai Vyahhi, Brian Usadel, Bernardo J. Clavijo, Tung-Fang Chao, Nathalie Wang, Daniel Zerbino and Maria Victoria Schneider

556 Navigating the changing learning landscape: perspective from bioinformatics.ca
Michelle D. Brazas and B. F. Francis Ouellette

563 Next-generation sequencing: a challenge to meet the increasing demand for training workshops in Australia
Nathan S. Watson-Haigh, Catherine A. Shang, Matthias Haemel, Myro Kostadima, Renzo Leos, Nandini Deshpande, Konsta Dasangel, Xi Li, Annette McGrath, Sean McWilliams, Simon Michoowicz, Paula Moolhuysen, Steve Quenette, Jesico Nico De Leao Revota, Saniko Tyagi and Maria V. Schneider

575 Environmental bio-monitoring with high-throughput sequencing

589 Bioinformatics and Systems Biology: bridging the gap between heterogeneous student backgrounds
Sanne Abeln, Dwayne Molenaar, K. Anton Feenstra, Huub C. J. Hoefsloot, Dan Teunink and Jaap Heringa

599 Mathematics and evolutionary biology make bioinformatics education comprehensible
John R. Jungck and Anton E. Weisstein

610 A first course in computing with applications to biology
Yan Lebedinski Hadas and Eliot Bush

618 Teaching the bioinformatics of signaling networks: an integrated approach to facilitate multi-disciplinary learning
Tamás Karicsmész, Zsuzsanna A. Duna, Tibor Vellai and Peter Csermely

633 Pattern recognition in bioinformatics
Dick de Ridder, Jeroen de Ridder and Marcel J. T. Reinders

648 Integrating bioinformatics into senior high school: design principles and implications
Yoissh-Machluf and Anat Tarden

661 A review of Bioinformatics training applied to research in Molecular Medicine, Agriculture and Biodiversity in Costa Rica and Central America
Allan Orozco, Jessica Marera, Sergio Jimenez and Ricardo Baza