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Review

Single cell analysis: the new frontier in â€˜omicsâ€™

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Cellular heterogeneity that arises from stochastic expression of genes, proteins and metabolites is a fundamental principle of cell biology, but single cell analysis has been beyond the capability of â€˜omicsâ€™ technology. This is rapidly changing with the recent examples of single cell genomics, transcriptomics, proteomics and metabolomics. The rate of change is expected to accelerate owing to emerging technologies that range from micro/nanofluidics to microfabricated interfaces for mass spectrometry to third- and fourth-generation automated DNA sequencers. As described in this review, single cell analysis is the new frontier in omics, and single cell omics has the potential to transform systems biology through new discoveries derived from cellular heterogeneity.

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