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BSI Standards Publication

Biotechnology - Massively parallel sequencing

Part 1: Nucleic acid and library preparation

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CP 401 • Ch. de Blandonnet 8
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Foreword

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Introduction

Massively parallel sequencing (MPS) is a high throughput analytical technology for nucleic acid sequencing. MPS methods can process thousands to billions of nucleotide sequence reads simultaneously in a single run, allowing whole genomes, transcriptomes and specific nucleic acid targets from different organisms to be analysed in a relatively short time.

MPS is used in many life science disciplines permitting determination and high throughput analysis of millions of nucleotide bases. The biological variability of deoxyribonucleic and ribonucleic acid polymers from living organisms provides challenges in accurately determining their sequences. The quality of sequence determination by MPS depends on many factors including, but not limited to, sample quality, library preparation, and sequencing data quality.

The quality of nucleic acids and libraries prepared for MPS is critical to obtaining high quality sequence data. Controlling the upstream processing steps of MPS and evaluating nucleic acid samples and libraries for their suitability for sequencing significantly improves MPS results, downstream analyses and ultimately conclusions dependent upon the MPS data.

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