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## Review

# Contribution of DNA repair mechanisms to determining chemotherapy response in high-grade glioma

Jonathon F. Parkinson<sup>a, b, c, ✉</sup>, Helen T. Wheeler<sup>c</sup> and Kerrie L. McDonald<sup>a</sup>

<sup>a</sup>Cancer Genetics Group, Kolling Institute of Medical Research, Royal North Shore Hospital, St Leonards, New South Wales 2065, Australia

<sup>b</sup>Department of Neurosurgery, Royal North Shore Hospital, St Leonards, New South Wales, Australia

<sup>c</sup>Northern Cancer Institute, Royal North Shore Hospital, St Leonards, New South Wales, Australia

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## Abstract

Despite the existence of a well described, succinct pathological grading system for glioma, the behaviour between individual patients varies widely. In addition, predictors of response in glioblastoma multiforme are lacking. The majority of chemotherapeutic agents currently employed exert their effect on DNA. As our understanding of DNA repair mechanisms improves and predictive markers are elucidated, this may allow treating clinicians to individualise treatment based on molecular markers. This review examines important DNA repair mechanisms and their application to glioblastoma multiforme. By improving understanding of these mechanisms, and particularly the variations that occur between tumours and individuals, it may be possible to adapt treatment to maximise effectiveness and minimise toxicity.

**Keywords:** Glioma; DNA repair; MGMT; Mismatch repair; Topoisomerase; Base excision repair; Antineoplastic agents

Corresponding author. Tel.: +61 2 99267176; fax: +61 2 99268484.

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