Technology: Cell-penetrating anti-DNA antibodies and uses thereof inhibit DNA repair

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Abstract: Antibodies that penetrate cell nuclei and inhibit DNA repair or interfere with DNA metabolism are provided for treatment of cancer (both directly and by sensitizing cancer cells to DNA-damaging treatments) or inhibiting or preventing viral infection, proliferation or metabolism. The method involves treating cells with a composition containing cell-penetrating anti-DNA antibodies or derivatives thereof, alone or in combination with treatment that induces DNA damage such as DNA-damaging chemotherapy or radiation. The impact of the cell-penetrating anti-DNA antibodies or derivatives thereof is potentiated in cancer cells that are deficient in DNA repair, and the cell-penetrating anti-DNA antibodies or derivatives thereof are synthetically lethal to cancer cells with DNA repair deficiencies.