CLAIMS

1. Use of a nucleic acid comprising the sequence RNNWCAAA, in which R is independently G or A, N is independently T, C, G or A and W is independently T or A, in the preparation of a medicament for the treatment or prevention of hepatitis B or cancer.

2. Use according to Claim 1, in which:

(a) N at position 3 is C, A or T, preferably A or T, more preferably T;

(b) N at position 2 is C;

(c) W at position 4 is T; or

(d) R at position 1 is A.

3. Use according to any preceding claim, in which the nucleic acid has the sequence ACATCAAA or ACTTCAAA.

4. Use according to any preceding claim, in which the cancer comprises breast cancer, preferably in which cancer cells are BRCA1 and/or BRCA2-deficient.

5. Use according to any preceding claim, in which the medicament further comprises a cytotoxic agent, such as selected from the group consisting of: (a) ionising radiation; (b) ABT-888 (Abbott), AG014699 (Pfizer), AZD2281 (olaparib, AstraZeneca), BSI-201 (Sanofi-Aventis), CEP-8983 / CEP-9722 (prodrug, Cephalon) and MK-4877 (Merck); and (c) temozolomide, platins, cyclophosphamide, N-Methyl-N'-Nitro-N-Nitrosoguanidine (MNNG), topoisomerase I poisons, topotecan, oxaliplatin, gemcitabine and carboplatin.

6. A method comprising exposing poly (ADP-ribose) polymerase to a nucleic acid set out in any of Claims 1 to 3, in which the poly ADP-ribosylation activity of poly (ADP-ribose) polymerase is reduced as a result of the exposure.

7. A method of:

(a) inhibiting hepatitis B virus (HBV) replication;

(b) reducing the ability of a cell to repair DNA damage, preferably in the presence of a cytotoxic agent as set out in Claim 5; or

(c) killing a cell such as a cancer cell, such as a breast cancer cell or a BRCA1 and BRCA2-deficient cancer cell;

the method comprising reducing the activity of poly (ADP-ribose) polymerase in or of the cell by a method according to Claim 6.

8. A nucleic acid capable of specifically binding to poly (ADP-ribose) polymerase and reducing its poly ADP-ribosylation activity, the nucleic acid comprising the sequence RNNWCAAA, in which R is G or A, N is independently T, C, G or A and W is T or A.

9. An isolated complex comprising poly (ADP-ribose) polymerase bound to a nucleic acid comprising the sequence RNNWCAAA, in which R is G or A, N is independently T, C, G or A and W is T or A, such as ACATCAAA or ACTTCAAA.

10. A pharmaceutical composition comprising a nucleic acid according to Claim 8 together with a pharmaceutically acceptable excipient, diluent or carrier.

11. A nucleic acid according to Claim 8 for use in a method of inhibiting hepatitis B virus (HBV) replication or in a method of enhancing the cytotoxicity of ionising radiation or a drug.

12. A method of identifying a molecule, such as suitable for use in the treatment or prevention of hepatitis B or cancer, the method comprising exposing poly (ADP-ribose) polymerase to a nucleic acid set out in any of Claims 1 to 3 in the presence of a candidate molecule and detecting a decrease in binding of nucleic acid to poly (ADP-ribose) polymerase compared to in the absence of the candidate molecule.

13. A method of identifying a molecule, such as suitable for use in the treatment or prevention of hepatitis B or cancer, the method comprising performing a method according to Claim 6 in the presence of a candidate molecule and detecting an increase in poly ADP-ribosylation activity of poly (ADP-ribose) polymerase compared to in the absence of the candidate molecule.

14. A method of treating an individual suffering or suspected to be suffering from hepatitis B virus infection, the method comprising administering a therapeutically effective amount of a nucleic acid according to Claim 8.

15. A method of treating an individual suffering or suspected to be suffering from cancer, the method comprising administering a therapeutically effective amount of a nucleic acid according to Claim 8, optionally together with a cytotoxic drug or exposure to ionising radiation.

CLAIMS

1. A method of reducing the activity of a poly (ADP-ribose) polymerase (PARP) polypeptide, the method comprising:

(a) providing a PARP-1 binding motif nucleic acid comprising a sequence RNNWCAAA, in which R is independently G or A, N is independently T, C, G or A and W is independently T or A;

(b) allowing the PARP-1 binding motif nucleic acid to bind to the poly (ADP-ribose) polymerase (PARP) polypeptide, thereby reducing PARP activity;

with the proviso that the PARP-1 binding motif nucleic acid does not comprise ribonucleic acid (RNA).

2. A method according to Claim 1, in which the PARP-1 binding motif nucleic acid comprises deoxyribonucleic acid (DNA).

3. A method according to Claim 1 or 2, in which:

(a) N at position 3 is C, A or T, preferably A or T, more preferably T;

(b) N at position 2 is C;

(c) W at position 4 is T; or

(d) R at position 1 is A.

4. A method according to Claim 1, 2 or 3, in which the nucleic acid has the sequence ACATCAAA or ACTTCAAA.

5. A method according to any preceding claim, in which the poly ADP-ribosylation activity of poly (ADP-ribose) polymerase is reduced.

6. Use of a PARP-1 binding motif nucleic acid having a sequence as set out in any preceding claim in the preparation of a medicament for treatment or prevention of hepatitis B or cancer.

7. Use according to Claim 6, in which the cancer comprises breast cancer, preferably in which cancer cells are BRCA1 and/or BRCA2-deficient.

8. Use according to Claim 6 or 7, in which the medicament further comprises a cytotoxic agent, such as selected from the group consisting of: (a) ionising radiation; (b) ABT-888 (Abbott), AG014699 (Pfizer), AZD2281 (olaparib, AstraZeneca), BSI-201 (Sanofi-Aventis), CEP-8983 / CEP-9722 (prodrug, Cephalon) and MK-4877 (Merck); and (c) temozolomide, platins, cyclophosphamide, N-Methyl-N'-Nitro-N-Nitrosoguanidine (MNNG), topoisomerase I poisons, topotecan, oxaliplatin, gemcitabine and carboplatin.

9. A method of:

(a) inhibiting hepatitis B virus (HBV) replication;

(b) reducing the ability of a cell to repair DNA damage, preferably in the presence of a cytotoxic agent as set out in Claim 8; or

(c) killing a cell such as a cancer cell, such as a breast cancer cell or a BRCA1 and BRCA2-deficient cancer cell;

the method comprising reducing the activity of poly (ADP-ribose) polymerase in or of the cell by a method according to any of Claims 1 to 5.

10. An isolated nucleic acid capable of specifically binding to poly (ADP-ribose) polymerase and reducing its poly ADP-ribosylation activity, the nucleic acid consisting of the sequence RNNWCAAA, in which R is G or A, N is independently T, C, G or A and W is T or A.

11. An isolated complex comprising poly (ADP-ribose) polymerase bound to a nucleic acid comprising the sequence RNNWCAAA, in which R is G or A, N is independently T, C, G or A and W is T or A, such as ACATCAAA or ACTTCAAA.

12. A pharmaceutical composition comprising a nucleic acid according to Claim 10 together with a pharmaceutically acceptable excipient, diluent or carrier, in which the pharmaceutical composition optionally further comprises a cytotoxic drug.

13. A nucleic acid according to Claim 10 for use in a method of inhibiting hepatitis B virus (HBV) replication or in a method of enhancing the cytotoxicity of ionising radiation or a drug.

14. Use of a nucleic acid according to Claim 10 in the preparation of a medicament for treatment of an individual suffering or suspected to be suffering from hepatitis B virus infection.

15. Use of a nucleic acid according to Claim 10 in the preparation of a medicament for treatment of an individual suffering or suspected to be suffering from cancer.

16. Use according to Claim 15, in which a therapeutically effective amount of the nucleic acid is administered to an individual suffering or suspected to be suffering from cancer, optionally together with cytotoxic drug and/or with exposure to ionising radiation.

17. A method of identifying a molecule, such as suitable for use in the treatment or prevention of hepatitis B or cancer, the method comprising exposing poly (ADP-ribose) polymerase to a nucleic acid set out in Claim 10 in the presence of a candidate molecule and detecting a decrease in binding of nucleic acid to poly (ADP-ribose) polymerase compared to in the absence of the candidate molecule.

18. A method of identifying a molecule, such as suitable for use in the treatment or prevention of hepatitis B or cancer, the method comprising performing a method according to Claim 17 in the presence of a candidate molecule and detecting an increase in poly ADP-ribosylation activity of poly (ADP-ribose) polymerase compared to in the absence of the candidate molecule.