also refers to the antibody with internal designation ARH460-16-2. Accordingly, as used herein, chimeric versions of PTA-4621 may be referenced as "chPTA-4621" or "chARH460-16-2," and humanized versions of PTA-4621 may be referenced as "huPTA-4621" or "huARH460-16-2." One of skill in the art will immediately recognize from context whether the antibody or the hybridoma clone is referenced. The murine monoclonal anti-CD44 antibody PTA-4621 was discovered using the methodology for producing patient-specific anti-cancer antibodies taught in U.S. Patent 6,180,357. Using the process, mice were immunized with cells from both a patient's lung tumor biopsy and the NCI-H460 lung cancer cell line. The antibody is disclosed in US Patent 7,252,821 and the hybridoma cell line expressing the antibody was deposited with the American Type Culture Collection, 10801 University Blvd., Manassas, VA 20110-2209 on September 4, 2002, under accession number PTA-4621. This antibody has demonstrated significant anti-tumor effects in a number of pre-clinical xenograft models, including both preventative and established *in vivo* models of human breast cancer (as disclosed in US Patent 7,252,821), in liver cancer (as disclosed in US Patent ~~Application 11/786,165~~8,048,416) and in prostate cancer (as disclosed in US Patent 7,507,537). In addition, PTA-4621 treatment in combination with a chemotherapeutic drug (Cisplatin) demonstrated anti-tumor activity in an established *in vivo* prostate cancer model (*ibid*). Chimeric and humanized versions of the murine antibody PTA-4621/ARH460-16-2 are disclosed in US Patent ~~Application 11/807,887~~8,071,072.

The term "monoclonal antibody" as used herein refers to an antibody obtained from a population of substantially homogeneous antibodies, i.e., the individual antibodies comprising the population are identical except for possible naturally occurring mutations that may be present in minor amounts. Monoclonal antibodies are highly specific, being directed against a single antigenic site. Furthermore, in contrast to polyclonal antibody preparations which include different antibodies directed against different determinants (epitopes), each monoclonal antibody is directed against a single determinant on the antigen. In addition to their specificity, the monoclonal antibodies are advantageous in that they may be synthesized uncontaminated by other antibodies. The modifier "monoclonal" indicates the character of the antibody as being obtained from a substantially homogeneous population of antibodies, and is not to be construed as requiring production of the antibody by any particular method. For example, the monoclonal antibodies to be used in accordance with the present invention may be made by the hybridoma

## PATENT CLAIMS

1. Use of a monoclonal anti-CD44 antibody, or antigen binding fragment thereof, ~~in~~ for the manufacture of a medicament for the treatment of a head and neck squamous cell carcinoma (HNSCC) in a mammal, wherein said HNSCC is characterized by the expression of CD44, wherein said antibody comprises

(a) a $V_H$ CDR1 having the amino acid sequence of SEQ ID NO:3, a $V_H$ CDR2 having the amino acid sequence of SEQ ID NO:4, a $V_H$ CDR3 having the amino acid sequence of SEQ ID NO:5, a $V_L$ CDR1 having the amino acid sequence of SEQ ID NO:6, a $V_L$ CDR2 having the amino acid sequence of SEQ ID NO:7 and a $V_L$ CDR3 having the amino acid sequence of SEQ ID NO:8;

or

(b) a $V_H$ domain having an amino acid sequence that is at least 85% identical to the $V_H$ domain having the amino acid sequence of SEQ ID NO:9 or SEQ NO:10 and a $V_L$ domain having an amino acid sequence that is at least 85% identical to the $V_L$ domain having the amino acid sequence of SEQ ID NO:11;

and wherein said antibody competes for binding to CD44 with the antibody produced by the hybridoma deposited with the ATCC with Accession number PTA-4621.

~~2. A monoclonal anti-CD44 antibody, or antigen binding fragment thereof, for use in the treatment of a head and neck squamous cell carcinoma (HNSCC) in a mammal, wherein said HNSCC is characterized by the expression of CD44.~~

~~3~~2. The use of claim 1 ~~or the antibody or fragment of claim 2~~, wherein said anti-CD44 antibody is a chimeric version of the monoclonal antibody produced by the hybridoma deposited with the ATCC with accession number PTA-4621.

~~4~~3. The use of claim 1 ~~or the antibody or fragment of claim 2~~, wherein said anti-CD44 antibody is a humanized version of the monoclonal antibody produced by the hybridoma deposited with the ATCC with accession number PTA-4621.

~~5. The use of claim 1, 3 or 4 or the antibody or fragment of claim 2, 3 or 4 wherein said anti-CD44 antibody comprises one or more of a $V_H$ CDR1 having the amino acid sequence of SEQ ID NO:3, a $V_H$ CDR2 having the amino acid sequence of SEQ ID NO:4, a $V_H$ CDR3 having the amino acid sequence of SEQ ID NO:5, a $V_L$ CDR1 having the amino acid sequence of SEQ ID NO:6, a $V_L$ CDR2 having the amino acid sequence of SEQ ID NO:7 and a $V_L$ CDR3 having the amino acid sequence of SEQ ID NO:8.~~

~~6~~4. The use of claim 1~~, 3~~ or ~~5~~2, ~~or the antibody or fragment of claim 2, 3 or 5,~~ wherein said anti-CD44 antibody comprises a $V_H$ domain having the amino acid sequence of SEQ ID NO:1.

~~7~~5. The use of claim 1, ~~3, 5~~2 or ~~6~~4, ~~or the antibody or fragment of claim 2, 3, 5 or 6,~~ wherein said anti-CD44 antibody comprises a $V_L$ domain having the amino acid sequence of SEQ ID NO:2.

~~8. The use of claim 1 or 5 or the antibody or fragment of claim 2 or 5, wherein said anti-CD44 antibody is a humanized antibody.~~

~~9~~6. The use~~, antibody or fragment~~ of claim ~~8~~1 or 3, wherein said ~~humanized~~ anti-CD44 antibody comprise a $V_H$ domain having the amino acid sequence of SEQ ID NO:9 or SEQ ID NO:10.

~~10~~7. The use~~, antibody or fragment~~ of claim ~~8 or 9~~1, 3 or 6, wherein said ~~humanized~~ anti-CD44 antibody comprises a $V_L$ domain having the amino acid sequence of SEQ ID NO:11.

~~11. The use of any one of claims 1 and 3 to 10 or the antibody or fragment of any one of claims 2 to 10, wherein said antibody competes for binding with the antibody produced by the hybridoma deposited with the ATCC with Accession number PTA-4621.~~

~~12~~8. The use of any one of claims 1~~-7 and 3-11 or the antibody or fragment of any one of claims 2-11~~, wherein said antibody or fragment is conjugated to a therapeutic or reporter moiety or to hematogenous cells.

~~13~~9. The use~~, antibody or fragment~~ of claim ~~12~~8, wherein said therapeutic moiety is a cytotoxic moiety, an enzyme, a cytokine, or an interferon.

~~14~~10. The use~~, antibody or fragment~~ of claim ~~12~~8, wherein said therapeutic or reporter moiety is a radioactive isotope or radionuclide.

~~15~~11. Use of a humanized anti-CD44 antibody, or antigen binding fragment thereof, ~~in~~ for the manufacture of a medicament for the treatment of a head and neck squamous cell carcinoma (HNSCC) in a human, wherein said HNSCC is characterized by the expression of CD44 and wherein said humanized antibody comprises a $V_H$ domain having the amino acid sequence of SEQ ID NO:9 and a $V_L$ domain having the amino acid sequence of SEQ ID NO:11, or comprises a $V_H$ domain having the amino acid sequence of SEQ ID NO:10 and a $V_L$ domain having the amino acid sequence of SEQ ID NO:11.

16. A humanized anti-CD44 antibody, or antigen-binding fragment thereof, for use in the treatment of a head and neck squamous cell carcinoma (HNSCC) in a human, wherein said HNSCC is characterized by the expression of CD44 and wherein said humanized antibody comprises a $V_H$ domain having the amino acid sequence of SEQ ID NO:9 and a $V_L$ domain having the amino acid sequence of SEQ ID NO:11, or comprises a $V_H$ domain having the amino acid sequence of SEQ ID NO:10 and a $V_L$ domain having the amino acid sequence of SEQ ID NO:11.

17. A kit for detecting the presence of HNSCC in a sample, wherein said HNSCC is characterized by the expression of an antigen which specifically binds to the monoclonal antibody produced by the hybridoma deposited with the ATCC as accession number PTA-4621, the kit comprising

(1) the monoclonal antibody produced by the hybridoma deposited with the ATCC as accession number PTA_4621;

(2) an antibody that competes for binding with the monoclonal antibody produced by the hybridoma deposited with the ATCC as accession number PTA_4621;

(3) an antibody comprising one or more of a $V_H$ CDR1 having the amino acid sequence of SEQ ID NO:3, a $V_H$ CDR2 having the amino acid sequence of SEQ ID NO:4, a $V_H$ CDR3 having the amino acid sequence of SEQ ID NO:5, a $V_L$ CDR1 having the amino acid sequence of SEQ ID NO:6, a $V_L$ CDR2 having the amino acid sequence of SEQ ID NO:7 and a $V_L$ CDR3 having the amino acid sequence of SEQ ID NO:8; or

(4) an antigen binding fragment of the antibody of (1), (2) or (3).