33. An *in vitro* method of inhibiting proliferation of a CD33-positive cell, the method comprising exposing the cell to the immunoconjugate of any one of claims 16 to 27 under conditions permissive for binding of the immunoconjugate to CD33 on the surface of the cell, thereby inhibiting proliferation of the cell.

34. The method of claim 33, wherein the cell is an AML cancer cell.

35. The antibody of any one of claims 1 to 11 conjugated to a label.

36. The antibody of claim 35, wherein the label is a positron emitter.

37. The antibody of claim 36, wherein the positron emitter is ^{89}Zr.

38. A method of detecting human CD33 in a biological sample comprising contacting the biological sample with the anti-CD33 antibody of any one of claims 1 to 11 under conditions permissive for binding of the anti-CD33 antibody to a naturally occurring human CD33, and detecting whether a complex is formed between the anti-CD33 antibody and a naturally occurring human CD33 in the biological sample.

39. The method of claim 38, wherein the anti-CD33 antibody is an antibody as in claim 10 or claim 11.

40. The method of claim 39, wherein the biological sample is a AML endometrial cancer sample.

41. The antibody of any one of claims 35 to 37 for detecting a CD33-positive cancer in a subject having or suspected of having a CD33-positive cancer.

42. The antibody of claim 41, wherein the antibody is an antibody of claim 10 or claim 11 conjugated to a label.