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(54) **Title**: ANTI-EFNA4 ANTIBODY-DRUG CONJUGATES

(57) **Abstract**: The present invention provides EFNA4 antibody-drug conjugates and their use in detection, prophylaxis, and therapy of EFNA4 associated disorders. An EFNA4 antibody-drug conjugate of the invention is generally of the formula: Ab-(L-D), wherein Ab is an antibody, or antigen-binding fragment thereof, that binds to EFNA4, or an EFNA4- binding fragment thereof; and L-D is a linker-drug moiety, wherein L is a linker, and D is a drug, preferably a calicheamicin. The Ab of the disclosed antibody-drug conjugate can be any EFNA4-binding antibody. In some aspects of the invention, the Ab is a chimeric, CDR-grafted, humanized, or a recombinant human antibody, or EFNA4- binding fragment thereof. In some aspects of the invention, the Ab is an internalizing antibody and/or a neutralizing antibody.