METHODS AND COMPOSITIONS FOR RNA-DIRECTED TARGET DNA MODIFICATION AND FOR RNA-DIRECTED MODULATION OF TRANSCRIPTION

ABSTRACT

The present disclosure provides a DNA-targeting RNA that comprises a targeting sequence and, together with a modifying polypeptide, provides for site-specific modification of a target DNA and/or a polypeptide associated with the target DNA. The present disclosure further provides site-specific modifying polypeptides. The present disclosure further provides methods of site-specific modification of a target DNA and/or a polypeptide associated with the target DNA The present disclosure provides methods of modulating transcription of a target nucleic acid in a target cell, generally involving contacting the target nucleic acid with an enzymatically inactive Cas9 polypeptide and a DNA-targeting RNA. Kits and compositions for carrying out the methods are also provided. The present disclosure provides genetically modified cells that produce Cas9; and Cas9 transgenic non-human multicellular organisms.

[No Figure]