



DNA

BRCA1-BARD1

H4K20

DNA (DSB) DNA
DSB HR NHEJ
H4K20(H4K20me0) DNA
HR
BRCA1-BARD1 H4K20me0 HR
CDK S HR
) () DSB HR
2 H4K20me0 H4K20me0

DNA

DNA
DNA
NCC³
SILAC-MS () ATM kinase
DNA DNA
HR