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An inchworm unwinds

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In the 18 May *Nature*, Blanco and Kowalczykowski report on the motions of the RecBC DNA helicase, a protein that unwinds DNA strands during homologous recombination in *Escherichia coli*. The helicase needs a double-stranded blunt end to load onto DNA, but can then move along a single strand from 3' to 5'. A large gap in this strand causes the helicase to fall off. If the gap is shorter, however, the helicase leaps over the gap (*Nature* 2000, **405**:368-372). By varying the length of the initial double-stranded section and the subsequent single-stranded gap, the researchers show that the helicase moves in approximately 23-nucleotide steps from its point of loading. A helicase that initially traverses 31 nucleotides of double-stranded DNA, for example, can subsequently jump a gap up to a maximum of 15 nucleotides in length. Blanco and Kowalczykowski propose that the helicase domain catches up to the leading binding domain in multiple steps of 2-5 basepairs each.

References

1. *Nature*, [<http://www.nature.com/nature/>]
2. Helicases: a unifying structural theme?