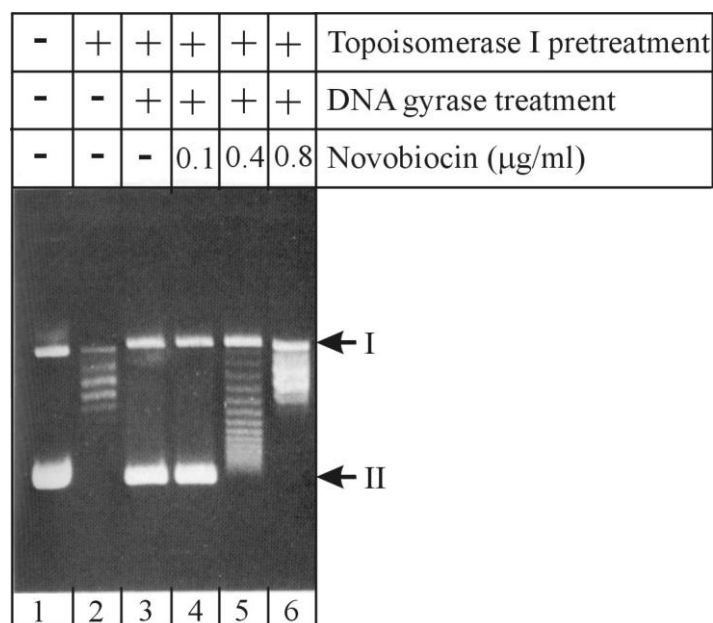


# THE TERTIARY STRUCTURE OF A PLASMID

**Terms to be familiar with before you start to analyze the figure**

*plasmid \* topoisomerases \* plasmid isolation \* agarose gel electrophoresis \* ethidium bromide staining \* tertiary structure of DNA*

**The figure**



The effect of topoisomerase I, DNA gyrase and the antibiotic novobiocin on the plasmid pBR322 was studied in this experiment. Equal amounts of the plasmid were left untreated (sample 1) or incubated with topoisomerase I (samples 2-6). The latter samples were phenol-extracted, ethanol-precipitated and then incubated with the enzyme DNA gyrase (samples 3-6) in the absence (sample 3) or presence of increasing concentrations of novobiocin (samples 4-6). After incubation, samples were fractionated by agarose gel electrophoresis and the gel was stained with ethidium bromide.

Study the figure and answer the following questions!

1. What kind of DNA is present in bands I and II?
2. What are the bands that appear between bands I and II?
3. What is the effect of topo I?
4. What is the effect of DNA gyrase?
5. What is the effect of novobiocin?

## The source of the figure

Thiara, A.S., Cundliffe, E., (1988) Cloning and characterization of a DNA gyrase B gene from *Streptomyces sphaeroides* that confers resistance to novobiocin. The EMBO J. 7, 2255-2259.

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