

Separation of genomic DNA from plasmid DNA by selective renaturation with immobilized metal affinity capture.

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In contrast to proteins, many nucleic acids can undergo reversible modification of their conformations, and this flexibility can be used to facilitate purification. Selective renaturation with capture is a novel method of removing contaminating genomic DNA from plasmid samples. Plasmid DNA quickly renatures after thermal denaturation and cooling (or alkaline denaturation followed by neutralization), whereas genomic DNA remains locally denatured after rapid cooling in mismatch-stabilizing high ionic strength buffer. Partially denatured genomic DNA can be selectively bound to a metal chelate affinity adsorbent through exposed purine bases, while double-stranded renatured plasmid DNA is not bound. Using this method we have readily achieved 1,000,000-fold clearance of 71 wt % contaminating *E. coli* genomic DNA from plasmid samples.

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