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Location of *gyrA* on the Physical Map of the *Escherichia coli* Chromosome

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Three oligonucleotide probes with sequences corresponding to either the coding sequence or the complementary sequence of *gyrA* (6, 7) at nucleotide positions 295, 343, and 524 were synthesized. These oligomers were separately labeled at their 5′ ends with ^{32}P and hybridized to phage DNA prepared from the λ miniset phages 371 through 377 (4). Each of the three probes hybridized only to E13A5 (phage 376). pAW012, which contains an *Eco*RV genomic fragment containing the *gyrA* gene (7), hybridized to 4F12 (phage 375) as well as to E13A5. The pAW012 *Bam*HI-*Hin*dIII fragment, which contains only the first 692 nucleotides for the *gyrA* gene (6, 7), did not hybridize to 4F12. The *gyrA* gene contains restriction sites for *Hin*dIII, *Kpn*I, *Pst*I, and *Pvu*II but none for the other four enzymes used for defining sites in the recombinant phage collection (4). This combined information identifies the *Hin*dIII site at nucleotide 692 of *gyrA* with the leftmost *Hin*dIII site of the E13A5 insert. The fact that the oligonucleotides hybridized with this phage, whereas pAW012 also hybridized to phage strain 4F12, places the *gyrA* gene, map position 48.3 min (1), at coordinate 2350 (5) immediately to the left of *ubiG* and with an orientation the same as that of *ubiG* (2) but opposite that of the *atoDAB* (3) operon at coordinate 2334 (Fig. 1). There was no inconsistency in terms of restriction sites, and the sizes of cloned genes were in good agreement with the restriction map (4, 5).

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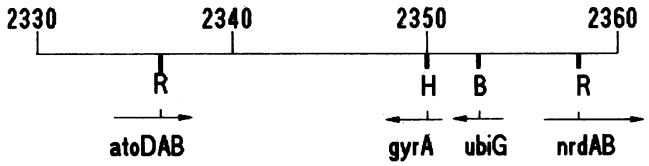

FIG. 1. Organization of the region encompassing coordinates 2330 to 2350 of the *Escherichia coli* chromosome. The coordinates of *atoDAB*, *gyrA*, *ubiG*, and *nrdAB* at *Bam*HI (B), *Eco*RI (R), and *Hin*dIII (H) sites are 2336.5, 2350, 2352.6, and 2357.68, respectively, on the basis of the corrected restriction map (5).

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