# Pioneering round of initiation complex formation triggers ultimate steps of rRNA maturation in *Escherichia coli*

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Ribosome biogenesis, a complex multistep process, results in correct folding of rRNAs, incorporation of >50 ribosomal proteins, and their maturation. Deficiencies in ribosome biogenesis may result in varied faults in translation of mRNAs causing cellular toxicities, and ribosomopathies in higher organisms. How cells ensure quality control in ribosome biogenesis for the fidelity of its complex function remains unclear. Using *Escherichia coli*, we show that initiator tRNA (i-tRNA), specifically the evolutionarily conserved three consecutive GC base pairs in its anticodon stem play a crucial role in ribosome maturation. Deficiencies in cellular contents of i-tRNA confer cold sensitivity and result in accumulation of ribosomes with immature 3' and 5' ends of the 16S rRNA. Overexpression of i-tRNA in various strains rescues biogenesis defects. Participation of i-tRNA in the first round of initiation complex formation licenses the final steps of ribosome maturation by signaling RNases to trim the terminal extensions of immature 16S rRNA.