Rfam ID	Family Name	Primary Organisms	Functional Category	Key Features
RF00001	5S rRNA	All domains of life	Structural Role	Essential for ribosome stability; part of the large ribosomal subunit.
RF00005	tRNA	All domains of life	Translational Machinery	Adaptor for protein synthesis; cloverleaf structure links mRNA to amino acids.
RF00162	SAM Riboswitch	Bacteria	Metabolic Regulation	Binds SAM to regulate methionine and biosynthesis genes.
RF01704	Glutamine-II Riboswitch	Cyanobacteria, bacteriophages	Nitrogen Regulation	Senses glutamine to regulate nitrogen metabolism.
RF01734	Fluoride Riboswitch	Bacteria	Ion Detoxification	Binds fluoride ions to control detoxification genes.
RF01739	Glutamine Riboswitch	Bacteria	Nitrogen Regulation	Modulates nitrogen metabolism genes.
RF02035	Cobalamin Riboswitch	Bacteria	Metabolic Regulation	Responds to vitamin B12 derivatives to regulate transport.
RF02957	EFASI RNA Motif	Bacteria	Unknown	Conserved structure found in intergenic regions.
RF03000	LOOT RNA Motif	Bacteria	Unknown	Conserved RNA motif, possibly regulatory.
RF03054	Xanthine Riboswitch	Bacteria	Metabolic Regulation	Regulates purine metabolism by binding xanthine.
RF03135	L4-Archaeoglobi Ribosomal Leader	Archaea (Archaeoglobi)	Ribosomal Protein Regulation	Regulates ribosomal protein synthesis.

Table 1: Rfam Families Tested As Primary Data