

## RNA Types and Functions

### Messenger RNA (mRNA)

- Encodes protein information
- Short-lived in cells
- 5' cap and poly(A) tail
- Template for translation

### Transfer RNA (tRNA)

- Adapter molecule
- Brings amino acids to ribosome
- ~75-90 nucleotides
- Post-transcriptional modifications

### Small Regulatory RNAs

- miRNA: post-transcriptional silencing
- siRNA: gene knockdown
- ~20-25 nucleotides
- Therapeutic potential

### Long Non-coding RNAs

- >200 nucleotides
- Chromatin remodeling
- Transcription regulation
- Emerging therapeutic targets