First Position (5′ end)	Second Position								Third Position (3′ end)
		U		C		A		G		
	U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U
		UUC		UCC		UAC		UGC		C
		UUA	Leu	UCA		UAA	*Stop*	UGA	*Stop*	A
		UUG		UCG		UAG	*Stop*	UGG	Trp	G
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U
		CUC		CCC		CAC		CGC		C
		CUA		CCA		CAA	Gln	CGA		A
		CUG		CCG		CAG		CGG		G
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U
		AUC		ACC		AAC		AGC		C
		AUA		ACA		AAA	Lys	AGA	Arg	A
		AUG	Met	ACG		AAG		AGG		G
	G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U
		GUC		GCC		GAC		GGC		C
		GUA		GCA		GAA	Glu	GGA		A
		GUG		GCG		GAG		GGG		G

The Single-Letter Amino Acid Code

- **G** - Glycine (Gly)
- **P** - Proline (Pro)
- **A** - Alanine (Ala)
- **V** - Valine (Val)
- **L** - Leucine (Leu)
- **I** - Isoleucine (Ile)
- **M** - Methionine (Met)
- **C** - Cysteine (Cys)
- **F** - Phenylalanine (Phe)
- **Y** - Tyrosine (Tyr)
- **W** - Tryptophan (Trp)
- **H** - Histidine (His)
- **K** - Lysine (Lys)
- **R** - Arginine (Arg)
- **Q** - Glutamine (Gln)
- **N** - Asparagine (Asn)
- **E** - Glutamic Acid (Glu)
- **D** - Aspartic Acid (Asp)
- **S** - Serine (Ser)
- **T** - Threonine (Thr)

http://nobelprize.org/nobel_prizes/medicine/laureates/1978/smith-autobio.html

HAMSMITH

catgcgatgagcatgattacccat

http://nobelprize.org/nobel_prizes/medicine/laureates/1978/smith-autobio.html

HAMSMITH

cCtgcgatgagcatgattacccat

http://nobelprize.org/nobel_prizes/medicine/laureates/1978/smith-autobio.html

PAMSMITH

cCtgcgatgagcatgattacccat

http://en.wikipedia.org/wiki/Pamela_Colman_Smith

PAMSMITH

cCtgcgatgagcatgattacccat

Which Codons to Use?

Which Codons to Use?

First Position (5′ end)	Second Position								Third Position (3′ end)
		U		C		A		G		
	U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U
		UUC		UCC		UAC		UGC		C
		UUA	Leu	UCA		UAA	*Stop*	UGA	*Stop*	A
		UUG		UCG		UAG	*Stop*	UGG	Trp	G
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U
		CUC		CCC		CAC		CGC		C
		CUA		CCA		CAA	Gln	CGA		A
		CUG		CCG		CAG		CGG		G
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U
		AUC		ACC		AAC		AGC		C
		AUA		ACA		AAA	Lys	AGA	Arg	A
		AUG	Met	ACG		AAG		AGG		G
	G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U
		GUC		GCC		GAC		GGC		C
		GUA		GCA		GAA	Glu	GGA		A
		GUG		GCG		GAG		GGG		G

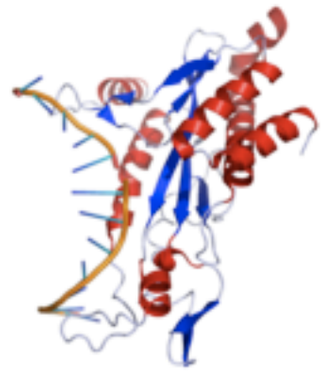
EcoRI

From Wikipedia, the free encyclopedia

***Eco*RI** (pronounced "eco R one") is a nuclease enzyme isolated from certain strains of *E. coli*, and is part of the restriction modification system.

In molecular biology, it is a commonly used restriction enzyme. It creates sticky ends with 5' end overhangs. The nucleic acid sequence where the enzyme cuts is GIAATTC, which is a palindrome as the complementary sequence is CTTAAIG.

*Eco*RI recognition site


EcoRI crystal structure

Structure

[edit]

Primary Structure

[edit]

EcoRI contains the PD..D/EXK motif within its active site like many restriction endonucleases. It is typically used in Isolation and restriction of bacterial plasmid DNA. In EcoRI this motif consists of residues P90, D91, E111, A112, K113(2).

Has This Code Been Designed (or, Optimized)?

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		UUC		UCC		UAC		UGC		C
		UUA	Leu	UCA		UAA	*Stop*	UGA	*Stop*	A
		UUG		UCG		UAG	*Stop*	UGG	Trp	G
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U
		CUC		CCC		CAC		CGC		C
		CUA		CCA		CAA	Gln	CGA		A
		CUG		CCG		CAG		CGG		G
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U
		AUC		ACC		AAC		AGC		C
		AUA		ACA		AAA	Lys	AGA	Arg	A
		AUG	Met	ACG		AAG		AGG		G
	G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U
		GUC		GCC		GAC		GGC		C
		GUA		GCA		GAA	Glu	GGA		A
		GUG		GCG		GAG		GGG		G

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		U		C		A		G		
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		UUC		UCC		UAC		UGC		C
		UUA	Leu	UCA		UAA	*Stop*	UGA	*Stop*	A
		UUG		UCG		UAG	*Stop*	UGG	Trp	G
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U
		CUC		CCC		CAC		CGC		C
		CUA		CCA		CAA	Gln	CGA		A
		CUG		CCG		CAG		CGG		G
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U
		AUC		ACC		AAC		AGC		C
		AUA		ACA		AAA	Lys	AGA	Arg	A
		AUG	Met	ACG		AAG		AGG		G
	G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U
		GUC		GCC		GAC		GGC		C
		GUA		GCA		GAA	Glu	GGA		A
		GUG		GCG		GAG		GGG		G