

The nucleotide sequence of *leuA* from *Salmonella typhimurium*

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The *leuABCD* operon of *Salmonella typhimurium* encodes enzymes involved in the conversion of α -ketoisovalerate to leucine (1). *leuA* encodes α -isopropylmalate synthase (EC 4.1.3.12) (2, 3), an enzyme composed of four identical subunits (4). Below is shown the nucleotide sequence of *leuA*, together with the deduced amino acid sequence of the longest open reading frame. The known sequence of 10 amino acids at the N terminus (5) and the known C-terminal valine (6) are correctly predicted by the nucleotide sequence. The predicted size of the *leuA* polypeptide (522 amino acids, 57,574 daltons) is similar to experimentally-obtained values (55,600, ref. 7; 52,000, ref. 8).

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M	S	Q	Q	V	I	I	F	D	T	T	L	R	D	G	E	Q	A	L	Q	A	S	L	S	A	75
ATG	AGC	CAG	CAA	GTC	ATT	ATT	TTT	GAT	ACG	ACC	TTA	CGC	GAC	GGC	GAA	CAA	GCG	TTA	CAG	GCC	AGC	CTG	AGC	GCG	
K	E	K	L	Q	I	A	L	A	L	E	R	M	G	V	D	V	M	E	V	G	F	P	V	S	
AAA	GAG	AAG	CTG	CAG	ATT	GCC	CTG	GCC	CTT	GAG	CGC	ATG	GGT	GTT	GAT	GTC	ATG	GAA	GTA	GGC	TTC	CCG	GTC	TCT	150
S	P	G	D	F	E	S	V	Q	T	I	A	R	T	I	K	N	S	R	V	C	A	L	A	R	
TCT	CCG	GGT	GAT	TTT	GAA	TCC	GTC	CAA	ACC	ATC	GCC	CGC	ACC	ATT	AAA	AAC	AGC	CGC	GTT	TGC	GCC	CTG	GCG	CGT	225
C	V	E	K	D	I	D	V	A	A	Q	A	L	K	V	A	D	A	F	R	I	H	T	F	I	
TGT	GTA	GAA	AAA	GAC	ATC	GAC	GTC	GCG	GCA	CAG	GCG	CTG	AAG	GTC	GCC	GAC	GCG	TTT	CGC	ATC	CAT	ACT	TTT	ATC	300
A	T	S	P	M	H	I	A	T	K	L	R	R	T	L	D	E	V	I	E	R	A	V	Y	M	
GCC	ACC	TCG	CCA	ATG	CAC	ATC	GCC	ACC	AAG	CTG	CGA	CGC	ACG	CTG	GAT	GAG	GTT	ATC	GAA	CGC	GCG	GTA	TAC	ATG	375
V	K	R	A	R	N	Y	T	D	D	V	E	F	S	C	E	D	A	G	R	T	P	V	D	D	
GTT	AAG	CGG	GCG	CGT	AAT	TAC	ACT	GAT	GAC	GTA	GAG	TTC	TCC	TGC	GAA	GAT	GCT	GGC	CGG	ACG	CCT	GTT	GAC	GAT	450
L	A	R	V	V	E	A	A	I	N	A	G	A	R	T	I	N	I	P	D	T	V	G	Y	T	
CTG	GCG	CGC	GTG	GTG	GAA	GCC	GCT	ATA	AAC	GCC	GGC	GCG	AGA	ACC	ATT	AAT	ATT	CCC	GAT	ACC	GTG	GGC	TAT	ACC	525
M	P	F	E	F	A	G	I	I	S	G	L	Y	E	R	V	P	N	I	D	K	A	I	I	S	
ATG	CCG	TTT	GAG	TTT	GCG	GGA	ATC	ATT	TCC	GGC	CTG	TAT	GAA	CGT	GTC	CCC	AAT	ATC	GAC	AAA	GCT	ATC	ATC	TCC	600
V	H	T	H	D	D	L	G	I	A	V	G	N	S	L	A	A	V	H	A	G	A	R	Q	V	
GTT	CAT	ACC	CAC	GAC	GAT	TTA	GGG	ATA	GCA	GTA	GGC	AAC	TCG	CTG	GCG	GCA	GTA	CAT	GCG	GGC	GCG	CGT	CAG	GTT	675
E	G	A	M	N	G	I	G	E	R	A	G	N	C	A	L	E	E	V	I	M	A	I	K	V	
GAA	GGC	GCG	ATG	AAC	GGT	ATC	GGA	GAA	CGT	GCC	GGT	AAC	TGC	GCA	CTG	GAA	GAA	GTG	ATC	ATG	GCG	ATT	AAA	GTG	750
R	K	D	I	M	N	V	H	T	N	I	N	H	H	E	T	G	A	P	A	R	P	S	V	Q	
CGC	AAA	GAC	ATC	ATG	AAC	GTA	CAC	ACC	AAC	ATC	AAT	CAC	CAC	GAA	ACT	GGC	GCA	CCA	GCC	AGA	CCG	TCA	GTC	CAG	825
I	C	N	I	A	D	P	S	Q	Q	S	D	C	R	Q	R	R	F	R	H	S	S	G	I	H	
ATC	TGT	AAC	ATT	GCC	GAT	CCC	AGC	CAA	CAA	AGC	GAT	TGT	CGG	CAG	CGG	CGC	TTT	CGC	CAC	TCT	TCC	GGC	ATC	CAC	900
Q	D	G	V	L	K	N	R	E	N	Y	E	I	M	T	P	E	S	I	G	S	E	P	D	T	
CAG	GAT	GGC	GTC	CTC	AAG	AAC	CGC	GAA	AAC	TAT	GAA	ATC	ATG	ACG	CCA	GAG	TCC	ATC	GGT	TCT	GAA	CCA	GAT	ACA	975
A	E	P	D	L	P	L	W	P	C	R	R	E	T	S	H	G	R	D	G	L	Q	G	H	R	
GCT	GAA	CCT	GAC	CTC	CGC	CTC	TGG	CCG	TGC	CGC	CGT	GAA	ACA	TGC	CAT	GGA	AGA	GAT	GGG	TTA	CAA	GGA	CAC	AGA	1050
L	Q	H	G	P	P	V	R	R	V	P	E	A	G	D	K	K	G	Q	V	F	D	Y	D	L	
CTA	CAA	CAT	GGA	CCA	CCT	GTA	CGA	CGC	GTT	CCT	GAA	GCT	GGC	GAC	AAA	AAA	GGC	CAG	GTG	TTT	GAC	TAT	GAC	CTG	1125
E	A	L	A	F	I	N	K	Q	Q	E	E	P	E	H	F	R	L	D	Y	F	S	V	Q	S	
GAA	GCG	CTG	GCG	TTT	ATT	AAT	AAA	CAG	CAA	GAA	GAA	CCA	GAG	CAT	TTC	CGT	CTG	GAT	TAC	TTT	AGC	GTG	CAG	TCC	1200
G	S	S	D	I	A	T	A	S	V	K	L	A	C	G	E	E	I	K	A	E	A	A	N	G	
GGC	TCC	AGC	GAT	ATC	GCC	ACC	GCT	TCC	GTG	AAG	CTG	GCC	TGT	GGT	GAA	GAG	ATC	AAG	GCC	GAA	GCG	GAC	AAC	GGC	1275
N	G	P	V	D	A	I	Y	Q	A	I	N	R	I	T	G	Y	D	V	E	L	V	K	Y	D	
AAC	GGT	CCG	GTC	GAC	GCC	ATC	TAT	CAG	GCG	ATT	AAC	CGC	ATC	ACT	GGC	TAC	GAC	GTT	GAG	TTG	GTT	AAA	TAC	GAC	1350
L	N	A	K	G	R	A	R	R	A	G	S	G	R	Y	R	R	E	P	S	M	S	P	L	P	
CTG	AAC	GCC	AAA	GGC	AGG	GCA	AGA	CGC	GCT	GGG	TCA	GGT	CGA	TAT	CGT	CGT	GAA	CCA	TCA	TGG	TCG	TCG	CTT	CCA	1425
R	R	G	L	A	T	D	I	V	E	S	S	A	K	A	M	V	H	V	L	N	N	I	W	R	
CGG	CGC	GGG	CTG	GCG	ACG	GAT	ATC	GTC	GAA	TCC	TCC	GCC	AAA	GCG	ATG	GTG	CAC	GTA	CTG	AAC	AAT	ATC	TGG	CGC	1500
A	A	E	V	E	K	E	L	Q	R	K	A	Q	N	K	E	N	N	K	E	T	V	*			
GCC	GCC	GAA	GTT	GAA	AAA	GAA	TTG	CAA	CGC	AAA	GCT	CAA	AAT	AAA	GAG	AAC	AAC	AAG	GAA	ACC	GTG	TAA			1569

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