Supplementary File for the submission “An amphipathic helix facilitates the membrane binding properties of BFSP1 and its caspase-generated C-terminal domain.” by Jarrin et al.

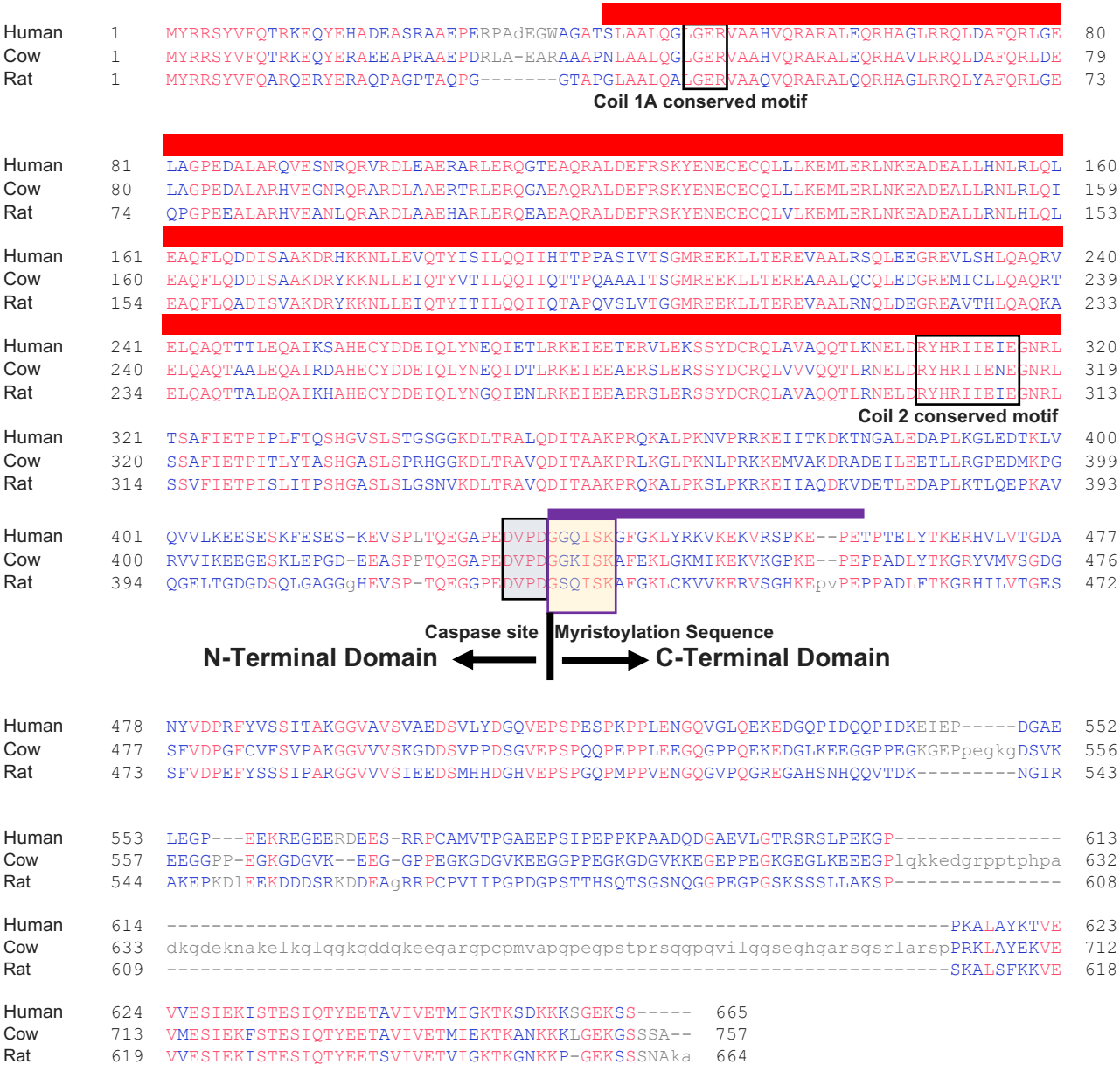
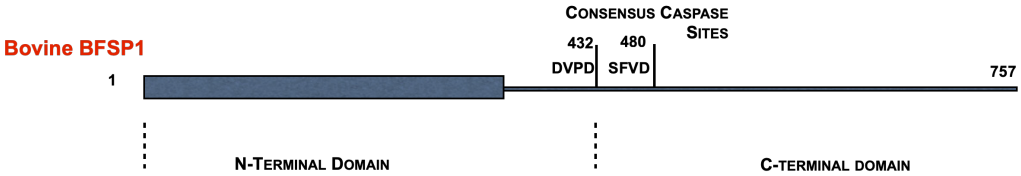


Figure S1: Alignment of BFSP1 protein sequences.

A

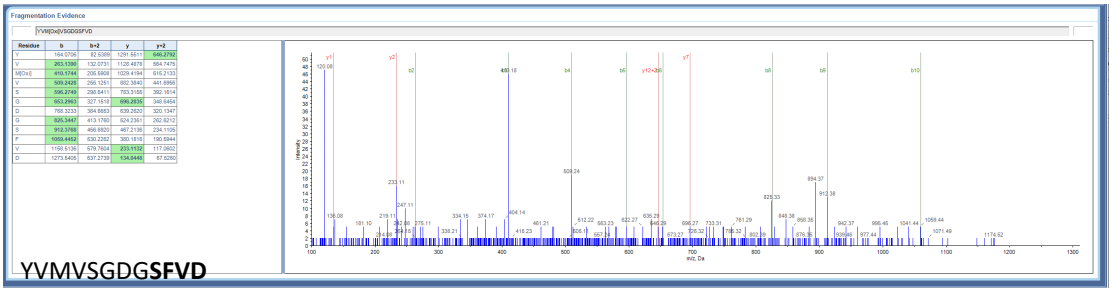
Species	GraBCas PREDICTION (Responsible Caspase)	CasCleave 2.0 PREDICTION	CONSENSUS
Human	DVPD (2, 3, 7, 8) IEPD (1, 2, 4, 5, 8) EERD (2, 4, 6, 8, 9)	DVPD EKED IEPD EERD ADQD	**DVPD** **IEPD** **EERD**
Bovine	DVPD (2, 3, 7, 8) SFVD (7)	DVPD SFVD EKED DKGD	**DVPD** **SFVD**
Rat	DVPD (1, 2, 4, 5, 8) SFVD (7) IEED (4, 5, 8, 9) EEKD (8)	DVPD IEED MHHD	**DVPD**

B



C

YVMVSGDG**SFVD**PGFCVFSVPAK



Supplementary Figure S2. Identification of a second Caspase Cleavage Site (SVFD) in bovine BFSP1

Supplementary Figure S2: Identification of a second Caspase Cleavage Site (SVFD) in bovine BFSP1.

A) Identification and conservation of potential caspase recognition sites in the C-terminal sequences distal to the myristoylation sequence in human and bovine BFSP1 using GrabCas [55] and CasCleave 2 [56].
B) Schematic comparing the predicted human and bovine caspase cleavage sites and the proteomic strategy to identify the bovine BFSP1 434 and 480 sites.
C) Identification of a second caspase cleavage site in the C-terminal sequences of bovine BFSP1 at residue 480. Bovine lens membranes from the lens cortex were subjected to trypsin cleavage, removal of SDS and then MS-MS identification of the peptides eluted in ReX-Buffer 4 [52]. The search focused on tryptic peptides lacking a C-terminal arginine or lysine. The analysis identified a new caspase site at residues 477-480 (SFVD) in bovine BFSP1.

Helix type: alpha

Full sequence:

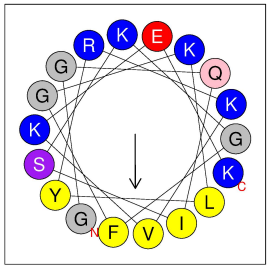
MYRRSYVFQTRKEQYEHADEASRAAEPERPADEGWAGATSLAALQGLGERVAAHVQRARALEQRHAGLRRQLDAFQRLGE
LAGPEDALARQVESNRQRVRDLEAERARLERQGTEAQRALDEFRSKYENECECQLLLKEMLERLNKEADEALLHNLRLQL
EAQFLQDDISAAKDRHKKNLLEVQTYISILQQIIHTTPPASIVTSGMREEKLLTEREVAALRSQLEEGREVLSHLQAQRV
ELQAQTTTLEQAIKSAHECYDDEIQLYNEQIETLRKEIEETERVLEKSSYDCRQLAVAQQTLKNELDRYHRIIEIEGNRL
TSAFIETPIPLFTQSHGVSLSTGSGGKDLTRALQDITAAKPRQKALPKNVPRRKEIITKDKTNGALEDAPLKGLEDTKLV
QVVLKEESESKFESESKEVSPLTQEGAPEDVPDGGQISKGFGKLYRKVKEKVRSPKEPETPTELYTKERHVLVTGDANYV
DPRFYVSSITAKGGVAVSVAEDSVLYDGQVEPSPESPKPPLENGQVGLQEKEDGQPIDQQPIDKEIEPDGAELEGPEEKR
EGEERDEESRRPCAMVTPGAEEPSIPEPPKPAADQDGAEVLGTRSRSLPEKGPPKALAYKTVEVVESIEKISTESIQTYE
ETAVIVETMIGKTKSDKKKSGEKSS

Sequence length: 665 a.a.

Analysis window: 18 a.a.

$_{434}$**GGQISKGFGKLYRKVKEK**$_{451}$

Click to enlarge



Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.034	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.539	GLN 1, SER 1, GLY 4	TYR 1, PHE 1,
Net charge z	**Charged residues**	**Special residues**
5	LYS 5, ARG 1, GLU 1,	CYS 0, PRO 0
	Hydrophobic face : L I V F G Y	

Go to screening | Manual mutation | GA mutation

$_{435}$**GQISKGFGKLYRKVKEKV**$_{452}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.102	12 / 66.67	6 / 33.33

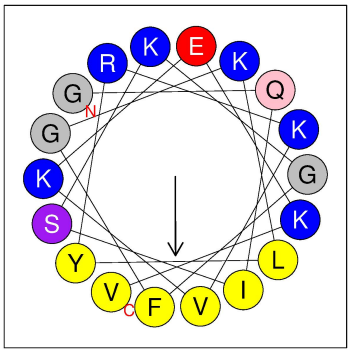
Supplementary Figure S3: Output from the HeliQuest analysis for the human BFSP1 sequence spanning residues 434-665.

Hydrophobic moment <μH>
0.598
Net charge z
5

Uncharged residues + GLY
GLN 1, SER 1, GLY 3
Charged residues
LYS 5, ARG 1, GLU 1,
Hydrophobic face : L I V F V Y

Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{436}$**QISKGFGKLYRKVKEKVR**$_{453}$

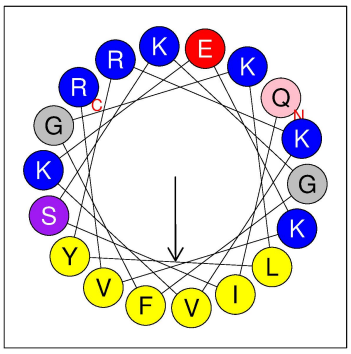
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.046
Hydrophobic moment <μH>
0.634
Net charge z
6

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
GLN 1, SER 1, GLY 2
Charged residues
LYS 5, ARG 2, GLU 1,
Hydrophobic face : L I V F V Y

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{437}$**ISKGFGKLYRKVKEKVRS**$_{454}$

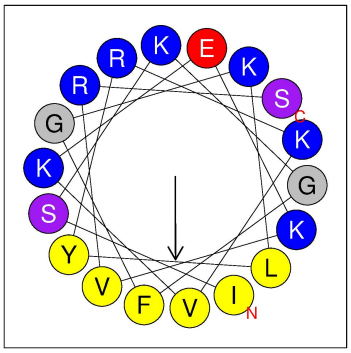
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.056
Hydrophobic moment <μH>
0.628
Net charge z
6

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 2, GLY 2
Charged residues
LYS 5, ARG 2, GLU 1,
Hydrophobic face : L I V F V Y

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{438}$**SKGFGKLYRKVKEKVRSP**$_{455}$

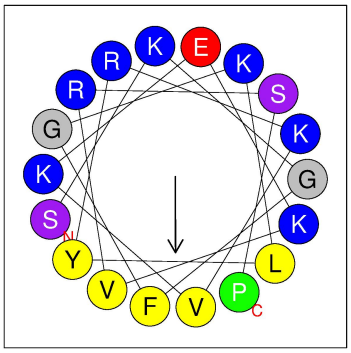
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.004
Hydrophobic moment <μH>
0.575
Net charge z
6

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 2, GLY 2
Charged residues
LYS 5, ARG 2, GLU 1,
Hydrophobic face : L P V F V Y

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{439}$**KGFGKLYRKVKEKVRSPK**$_{456}$

Click to enlarge

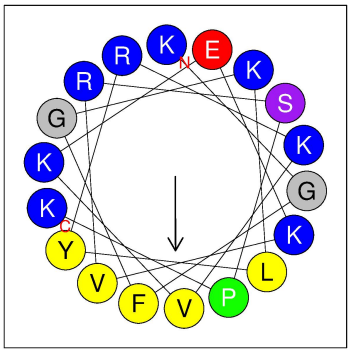
Physico-chemical properties
Hydrophobicity <H>
-0.057

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.560	SER 1, GLY 2	TYR 1, PHE 1,
Net charge z	**Charged residues**	**Special residues**
7	LYS 6, ARG 2, GLU 1,	CYS 0, PRO 1
	Hydrophobic face : L P V F V Y	

Go to screening | Manual mutation | GA mutation

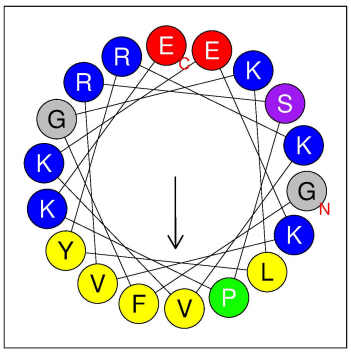


$_{440}$**GFGKLYRKVKEKVRSPKE**$_{457}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.038	12 / 66.67	6 / 33.33
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.541	SER 1, GLY 2	TYR 1, PHE 1,
Net charge z	**Charged residues**	**Special residues**
5	LYS 5, ARG 2, GLU 2,	CYS 0, PRO 1
	Hydrophobic face : L P V F V Y	

Go to screening | Manual mutation | GA mutation

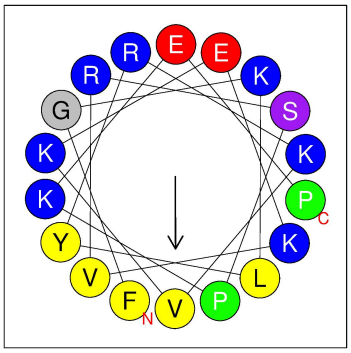


$_{441}$**FGKLYRKVKEKVRSPKEP**$_{458}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.002	11 / 61.11	7 / 38.89
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.547	SER 1, GLY 1	TYR 1, PHE 1,
Net charge z	**Charged residues**	**Special residues**
5	LYS 5, ARG 2, GLU 2,	CYS 0, PRO 2
	Hydrophobic face : L P V F V Y	

Go to screening | Manual mutation | GA mutation

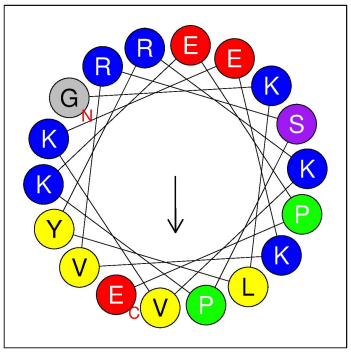


$_{442}$**GKLYRKVKEKVRSPKEPE**$_{459}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.133	12 / 66.67	6 / 33.33
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.423	SER 1, GLY 1	TYR 1,
Net charge z	**Charged residues**	**Special residues**
4	LYS 5, ARG 2, GLU 3,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



$_{443}$**KLYRKVKEKVRSPKEPET**$_{460}$

Click to enlarge

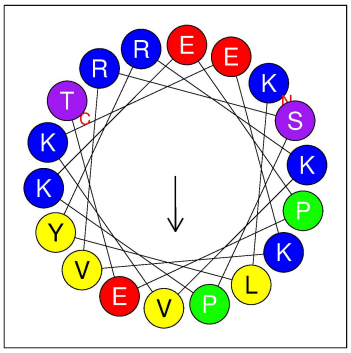
Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.118	12 / 66.67	6 / 33.33

Hydrophobic moment <μH>
0.414
Net charge z
4

Uncharged residues + GLY
SER 1, THR 1, GLY 0
Charged residues
LYS 5, ARG 2, GLU 3,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{444}$**LYRKVKEKVRSPKEPETP**$_{461}$

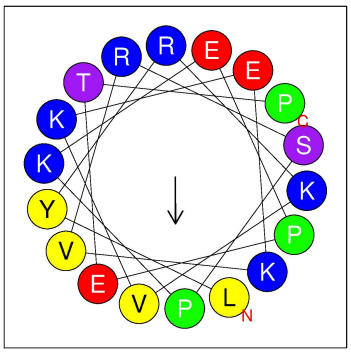
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.023
Hydrophobic moment <μH>
0.353
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 1, THR 1, GLY 0
Charged residues
LYS 4, ARG 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{445}$**YRKVKEKVRSPKEPETPT**$_{462}$

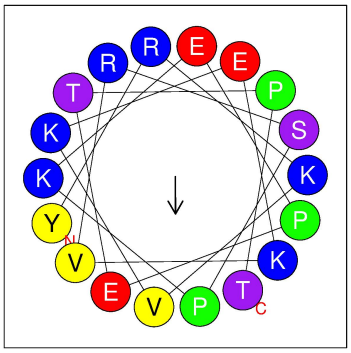
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.103
Hydrophobic moment <μH>
0.282
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 2, GLY 0
Charged residues
LYS 4, ARG 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{446}$**RKVKEKVRSPKEPETPTE**$_{463}$

Click to enlarge

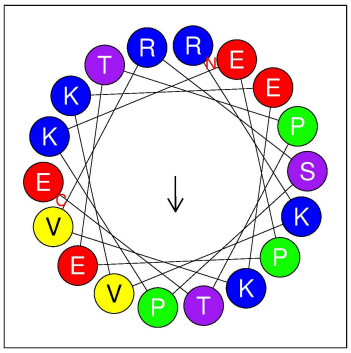
Physico-chemical properties
Hydrophobicity <H>
-0.192
Hydrophobic moment <μH>
0.264
Net charge z
2

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
SER 1, THR 2, GLY 0
Charged residues
LYS 4, ARG 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{447}$**KVKEKVRSPKEPETPTEL**$_{464}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.042

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

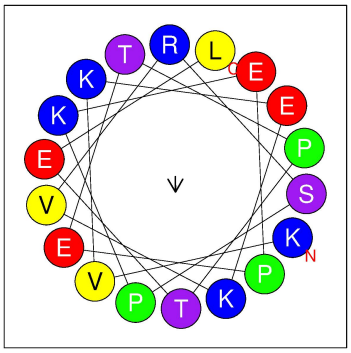
Hydrophobic moment <μH>
0.117
Net charge z
1

Uncharged residues + GLY
SER 1, THR 2, GLY 0
Charged residues
LYS 4, ARG 1, GLU 4,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{448}$**VKEKVRSPKEPETPTELY**$_{465}$

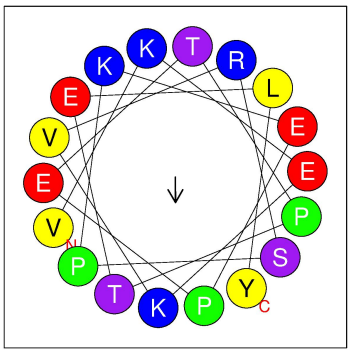
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.067
Hydrophobic moment <μH>
0.193
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 1, THR 2, GLY 0
Charged residues
LYS 3, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{449}$**KEKVRSPKEPETPTELYT**$_{466}$

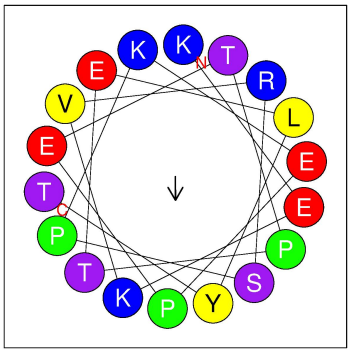
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.013
Hydrophobic moment <μH>
0.179
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 0
Charged residues
LYS 3, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{450}$**EKVRSPKEPETPTELYTK**$_{467}$

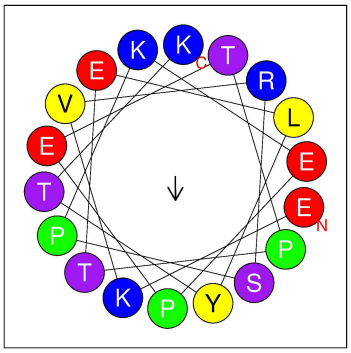
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.013
Hydrophobic moment <μH>
0.179
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 0
Charged residues
LYS 3, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{451}$**KVRSPKEPETPTELYTKE**$_{468}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.013

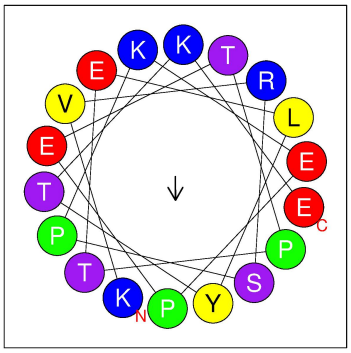
Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

Hydrophobic moment <μH>
0.179
Net charge z
0

Uncharged residues + GLY
SER 1, THR 3, GLY 0
Charged residues
LYS 3, ARG 1, GLU 4,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



Go to screening | Manual mutation | GA mutation

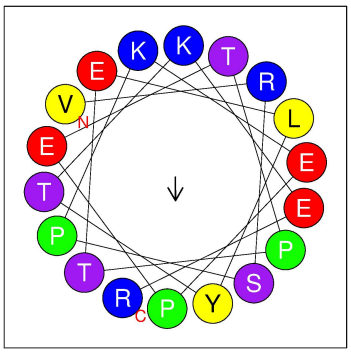
$_{452}$**VRSPKEPETPTELYTKER**$_{469}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.012
Hydrophobic moment <μH>
0.178
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 0
Charged residues
LYS 2, ARG 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



Go to screening | Manual mutation | GA mutation

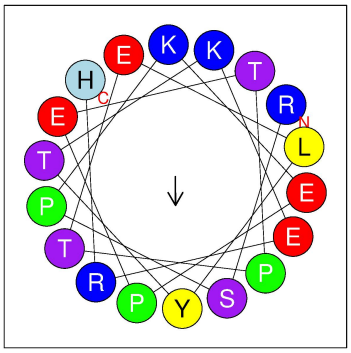
$_{453}$**RSPKEPETPTELYTKERH**$_{470}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.048
Hydrophobic moment <μH>
0.217
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
HIS 1, SER 1, THR 3, GLY 0
Charged residues
LYS 2, ARG 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



Go to screening | Manual mutation | GA mutation

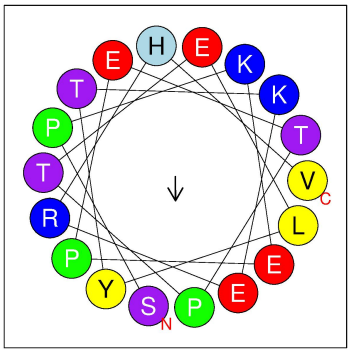
$_{454}$**SPKEPETPTELYTKERHV**$_{471}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.076
Hydrophobic moment <μH>
0.182
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
HIS 1, SER 1, THR 3, GLY 0
Charged residues
LYS 2, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



Go to screening | Manual mutation | GA mutation

$_{455}$**PKEPETPTELYTKERHVL**$_{472}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.172

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

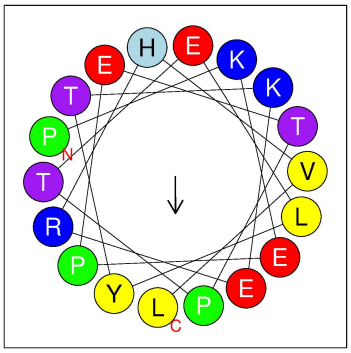
Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

Hydrophobic moment <μH>
0.278
Net charge z
-1

Uncharged residues + GLY
HIS 1, THR 3, GLY 0
Charged residues
LYS 2, ARG 1, GLU 4,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{456}$**KEPETPTELYTKERHVLV**$_{473}$

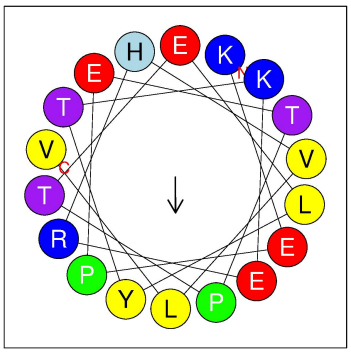
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.200
Hydrophobic moment <μH>
0.271
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 3, GLY 0
Charged residues
LYS 2, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{457}$**EPETPTELYTKERHVLVT**$_{474}$

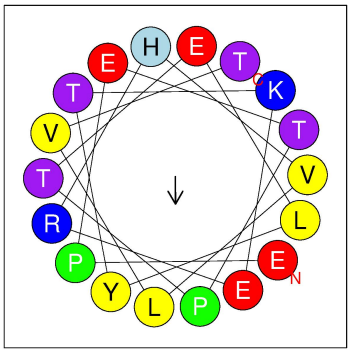
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.269
Hydrophobic moment <μH>
0.208
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 4, GLY 0
Charged residues
LYS 1, ARG 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{458}$**PETPTELYTKERHVLVTG**$_{475}$

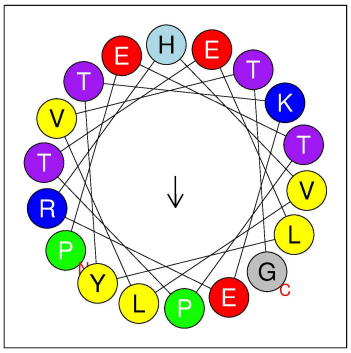
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.305
Hydrophobic moment <μH>
0.232
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 4, GLY 1
Charged residues
LYS 1, ARG 1, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{459}$**ETPTELYTKERHVLVTGD**$_{476}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.222

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

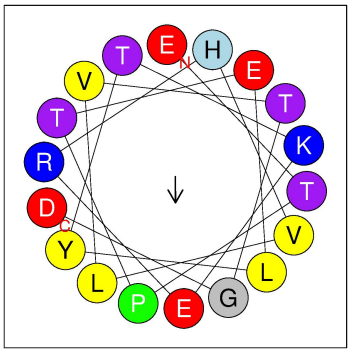
Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

Hydrophobic moment <μH>
0.198
Net charge z
-2

Uncharged residues + GLY
HIS 1, THR 4, GLY 1
Charged residues
LYS 1, ARG 1, GLU 3, ASP 1,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{460}$**TPTELYTKERHVLVTGDA**$_{477}$

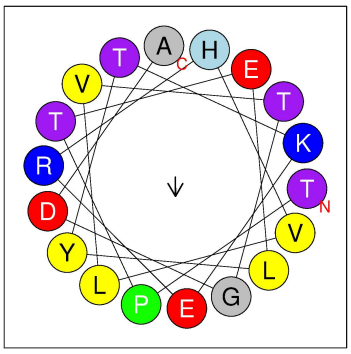
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.275
Hydrophobic moment <μH>
0.145
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 4, GLY 1
Charged residues
LYS 1, ARG 1, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{461}$**PTELYTKERHVLVTGDAN**$_{478}$

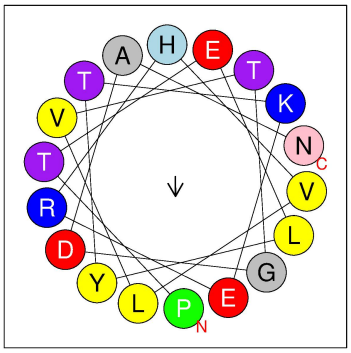
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.227
Hydrophobic moment <μH>
0.149
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 3, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{462}$**TELYTKERHVLVTGDANY**$_{479}$

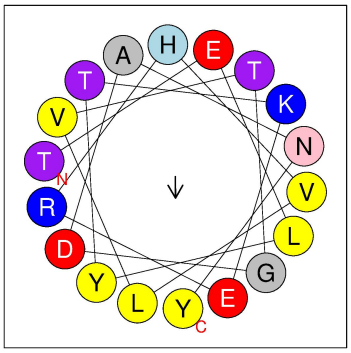
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.241
Hydrophobic moment <μH>
0.162
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 3, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 2,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{463}$**ELYTKERHVLVTGDANYV**$_{480}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.294

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

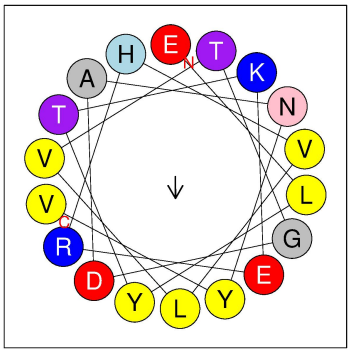
Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>
0.165
Net charge z
-1

Uncharged residues + GLY
HIS 1, THR 2, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, GLU 2, ASP 1,
Hydrophobic face : none

Aromatic residues
TYR 2,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{464}$**LYTKERHVLVTGDANYVD**$_{481}$

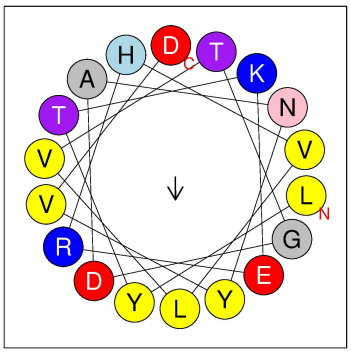
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.287
Hydrophobic moment <μH>
0.172
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
HIS 1, THR 2, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 2,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{465}$**YTKERHVLVTGDANYVDP**$_{482}$

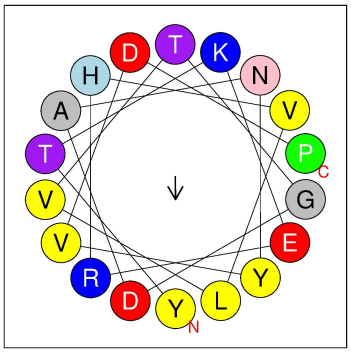
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.232
Hydrophobic moment <μH>
0.173
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
HIS 1, THR 2, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 2,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{466}$**TKERHVLVTGDANYVDPR**$_{483}$

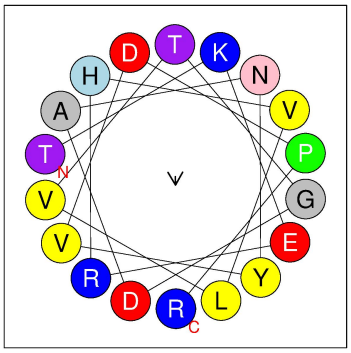
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.123
Hydrophobic moment <μH>
0.064
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
HIS 1, THR 2, ASN 1, GLY 1
Charged residues
LYS 1, ARG 2, GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{467}$**KERHVLVTGDANYVDPRF**$_{484}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.208

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

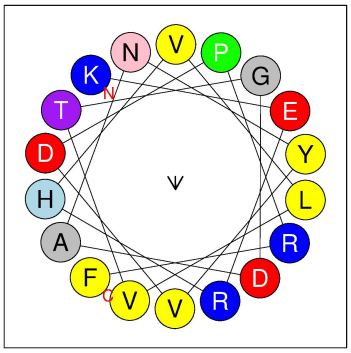
Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>
0.097
Net charge z
0

Uncharged residues + GLY
HIS 1, THR 1, ASN 1, GLY 1
Charged residues
LYS 1, ARG 2, GLU 1, ASP 2,
Hydrophobic face : none

Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{468}$**ERHVLVTGDANYVDPRFY**$_{485}$

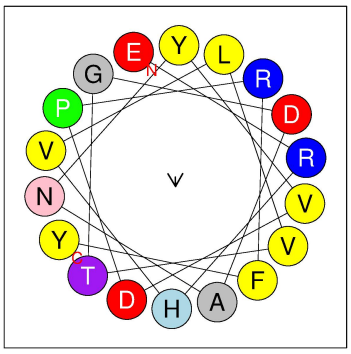
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.316
Hydrophobic moment <μH>
0.071
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
HIS 1, THR 1, ASN 1, GLY 1
Charged residues
ARG 2, GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{469}$**RHVLVTGDANYVDPRFYV**$_{486}$

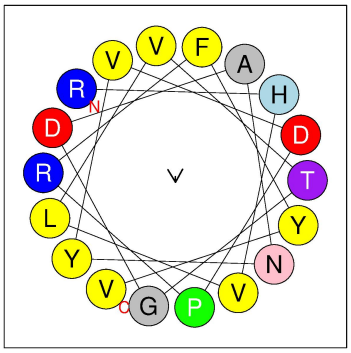
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.419
Hydrophobic moment <μH>
0.043
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
HIS 1, THR 1, ASN 1, GLY 1
Charged residues
ARG 2, ASP 2,
Hydrophobic face : V P G V Y L

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{470}$**HVLVTGDANYVDPRFYVS**$_{487}$

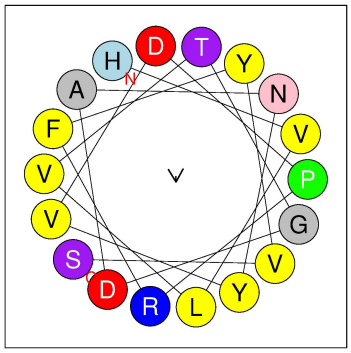
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.473
Hydrophobic moment <μH>
0.041
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
HIS 1, SER 1, THR 1, ASN 1, GLY 1
Charged residues
ARG 1, ASP 2,
Hydrophobic face : V P G V Y L

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{471}$**VLVTGDANYVDPRFYVSS**$_{488}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.464

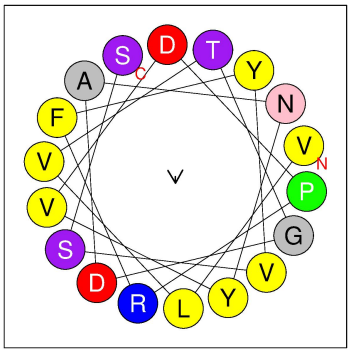
Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.049
Net charge z
-1

Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 1
Charged residues
ARG 1, ASP 2,
Hydrophobic face : V P G V Y L

Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

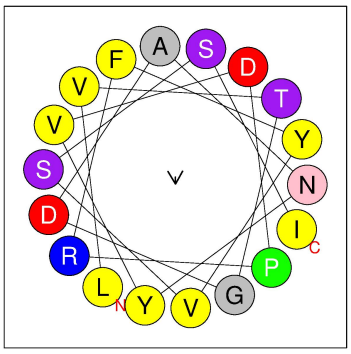
$_{472}$**LVTGDANYVDPRFYVSSI**$_{489}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.496
Hydrophobic moment <μH>
0.052
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 1
Charged residues
ARG 1, ASP 2,
Hydrophobic face : I P G V Y L

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

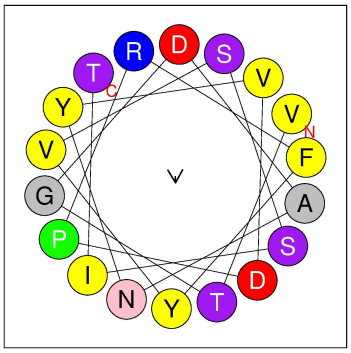
$_{473}$**VTGDANYVDPRFYVSSIT**$_{490}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.416
Hydrophobic moment <μH>
0.046
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 2, ASN 1, GLY 1
Charged residues
ARG 1, ASP 2,
Hydrophobic face : I P G V Y

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

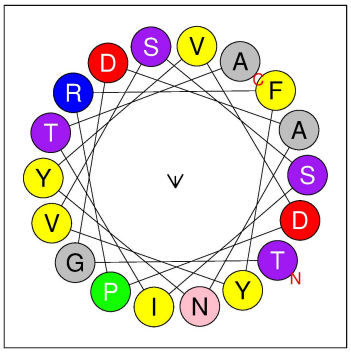
$_{474}$**TGDANYVDPRFYVSSITA**$_{491}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.366
Hydrophobic moment <μH>
0.083
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 2, ASN 1, GLY 1
Charged residues
ARG 1, ASP 2,
Hydrophobic face : I P G V Y

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

$_{475}$**GDANYVDPRFYVSSITAK**$_{492}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.296

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00

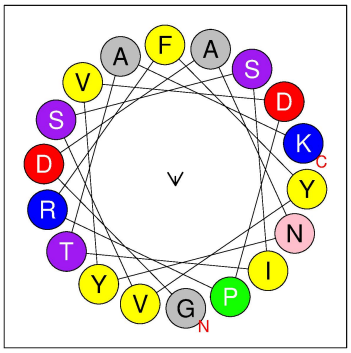
Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00

Hydrophobic moment <μH>
0.066
Net charge z
0

Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, ASP 2,
Hydrophobic face : I P G V Y

Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{476}$**DANYVDPRFYVSSITAKG**$_{493}$

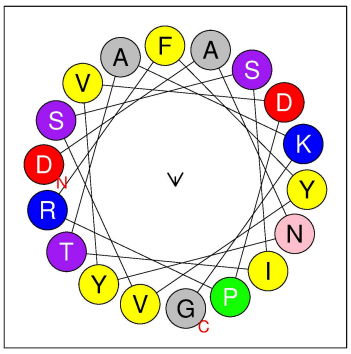
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.296
Hydrophobic moment <μH>
0.066
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 1
Charged residues
LYS 1, ARG 1, ASP 2,
Hydrophobic face : I P G V Y

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{477}$**ANYVDPRFYVSSITAKGG**$_{494}$

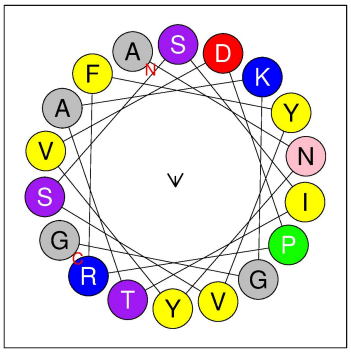
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.339
Hydrophobic moment <μH>
0.076
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 2
Charged residues
LYS 1, ARG 1, ASP 1,
Hydrophobic face : I P G V Y

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{478}$**NYVDPRFYVSSITAKGGV**$_{495}$

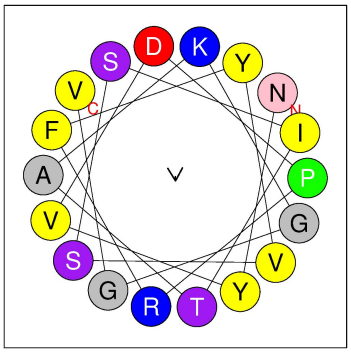
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.389
Hydrophobic moment <μH>
0.032
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 1, ASN 1, GLY 2
Charged residues
LYS 1, ARG 1, ASP 1,
Hydrophobic face : I P G V Y

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{479}$**YVDPRFYVSSITAKGGVA**$_{496}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.440

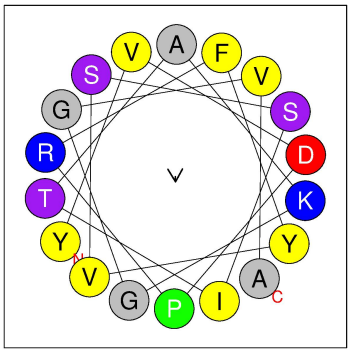
Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.039
Net charge z
1

Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 1, ARG 1, ASP 1,
Hydrophobic face : Y A I P G V Y

Aromatic residues
TYR 2, PHE 1,
Special residues
CYS 0, PRO 1



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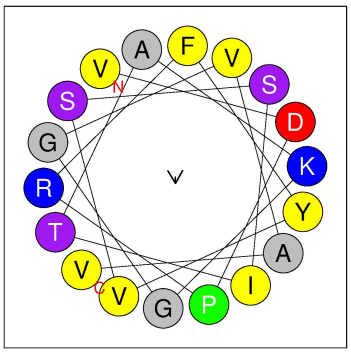
$_{480}$**VDPRFYVSSITAKGGVAV**$_{497}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.454
Hydrophobic moment <μH>
0.048
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 1, ARG 1, ASP 1,
Hydrophobic face : Y A I P G V V

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

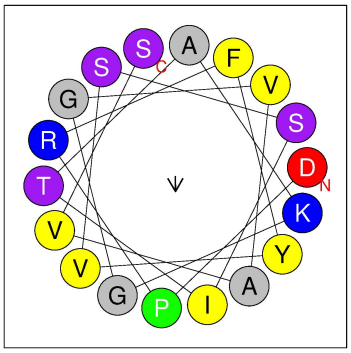
$_{481}$**DPRFYVSSITAKGGVAVS**$_{498}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.384
Hydrophobic moment <μH>
0.113
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 3, THR 1, GLY 2
Charged residues
LYS 1, ARG 1, ASP 1,
Hydrophobic face : Y A I P G V V

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

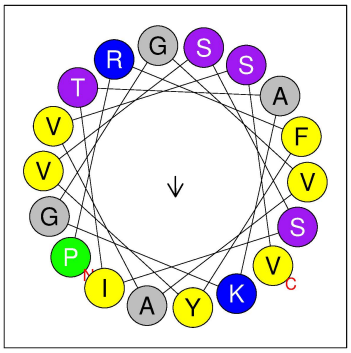
$_{482}$**PRFYVSSITAKGGVAVSV**$_{499}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.495
Hydrophobic moment <μH>
0.152
Net charge z
2

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 3, THR 1, GLY 2
Charged residues
LYS 1, ARG 1,
Hydrophobic face : Y A I P G V V

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 1



Go to screening | Manual mutation | GA mutation

$_{483}$**RFYVSSITAKGGVAVSVA**$_{500}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.472

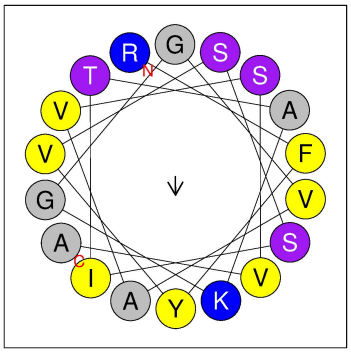
Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.140
Net charge z
2

Uncharged residues + GLY
SER 3, THR 1, GLY 2
Charged residues
LYS 1, ARG 1,
Hydrophobic face : Y A I A G V V

Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

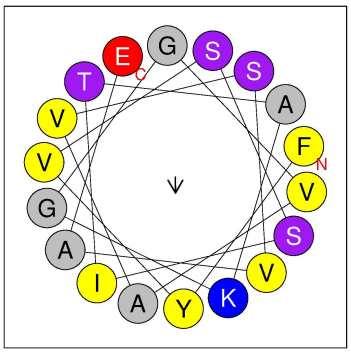
$_{484}$**FYVSSITAKGGVAVSVAE**$_{501}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.493
Hydrophobic moment <μH>
0.120
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 3, THR 1, GLY 2
Charged residues
LYS 1, GLU 1,
Hydrophobic face : Y A I A G V V

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1, PHE 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

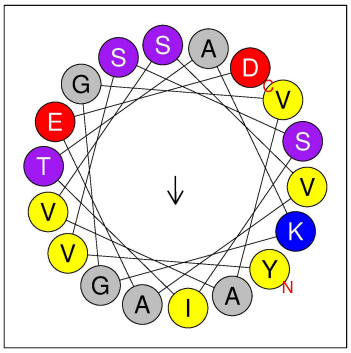
$_{485}$**YVSSITAKGGVAVSVAED**$_{502}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.351
Hydrophobic moment <μH>
0.207
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 3, THR 1, GLY 2
Charged residues
LYS 1, GLU 1, ASP 1,
Hydrophobic face : Y A I A G V V

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

$_{486}$**VSSITAKGGVAVSVAEDS**$_{503}$

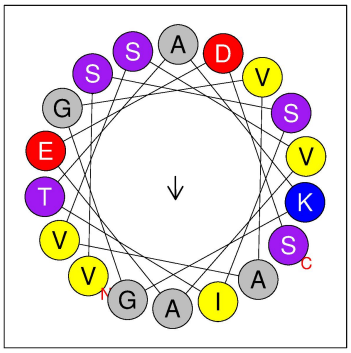
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.295
Hydrophobic moment <μH>
0.172
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 4, THR 1, GLY 2
Charged residues
LYS 1, GLU 1, ASP 1,
Hydrophobic face : A I A G V V

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues

Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

$_{487}$**SSITAKGGVAVSVAEDSV**$_{504}$

Click to enlarge

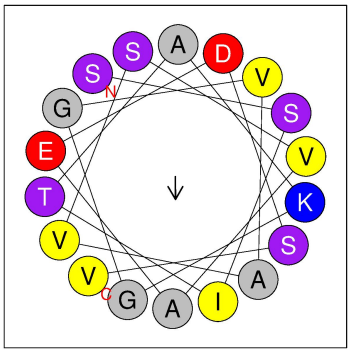
Physico-chemical properties
Hydrophobicity <H>
0.295

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.172	SER 4, THR 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-1	LYS 1, GLU 1, ASP 1,	CYS 0, PRO 0
	Hydrophobic face : A I A G V V	

Go to screening | Manual mutation | GA mutation

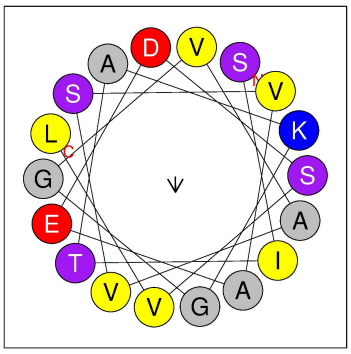


$_{488}$**SITAKGGVAVSVAEDSVL**$_{505}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.392	9 / 50.00	9 / 50.00
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.114	SER 3, THR 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-1	LYS 1, GLU 1, ASP 1,	CYS 0, PRO 0
	Hydrophobic face : A I A G V V	

Go to screening | Manual mutation | GA mutation

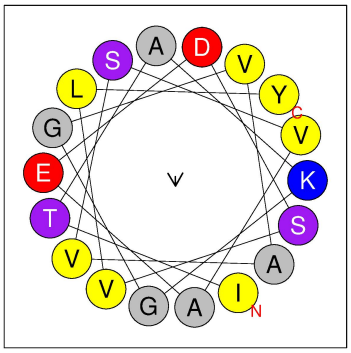


$_{489}$**ITAKGGVAVSVAEDSVLY**$_{506}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.447	8 / 44.44	10 / 55.56
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.071	SER 2, THR 1, GLY 2	TYR 1,
Net charge z	**Charged residues**	**Special residues**
-1	LYS 1, GLU 1, ASP 1,	CYS 0, PRO 0
	Hydrophobic face : A I A G V V	

Go to screening | Manual mutation | GA mutation

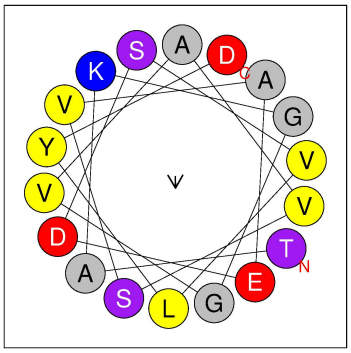


$_{490}$**TAKGGVAVSVAEDSVLYD**$_{507}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.304	9 / 50.00	9 / 50.00
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.087	SER 2, THR 1, GLY 2	TYR 1,
Net charge z	**Charged residues**	**Special residues**
-2	LYS 1, GLU 1, ASP 2,	CYS 0, PRO 0
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



$_{491}$**AKGGVAVSVAEDSVLYDG**$_{508}$

Click to enlarge

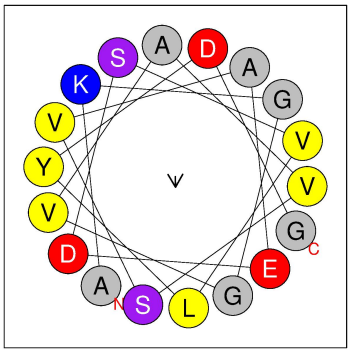
Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.290	9 / 50.00	9 / 50.00

Hydrophobic moment <μH>
0.080
Net charge z
-2

Uncharged residues + GLY
SER 2, GLY 3
Charged residues
LYS 1, GLU 1, ASP 2,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{492}$**KGGVAVSVAEDSVLYDGQ**$_{509}$

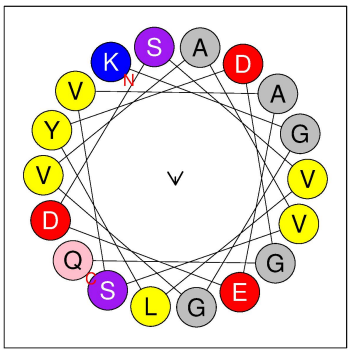
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.261
Hydrophobic moment <μH>
0.058
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 2, GLY 3
Charged residues
LYS 1, GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{493}$**GGVAVSVAEDSVLYDGQV**$_{510}$

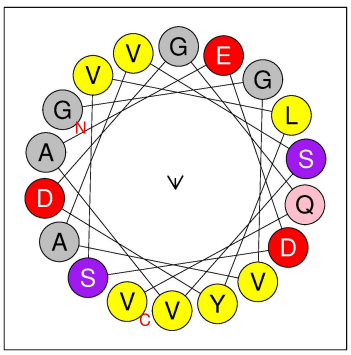
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.383
Hydrophobic moment <μH>
0.077
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 2, GLY 3
Charged residues
GLU 1, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{494}$**GVAVSVAEDSVLYDGQVE**$_{511}$

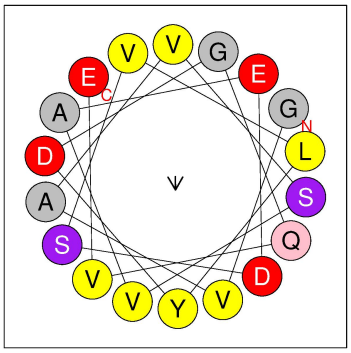
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.348
Hydrophobic moment <μH>
0.101
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 2, GLY 2
Charged residues
GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{495}$**VAVSVAEDSVLYDGQVEP**$_{512}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.388

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

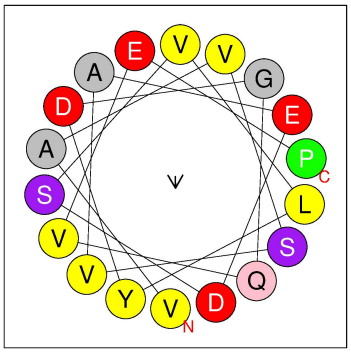
Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.087
Net charge z
-4

Uncharged residues + GLY
GLN 1, SER 2, GLY 1
Charged residues
GLU 2, ASP 2,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{496}$**AVSVAEDSVLYDGQVEPS**$_{513}$

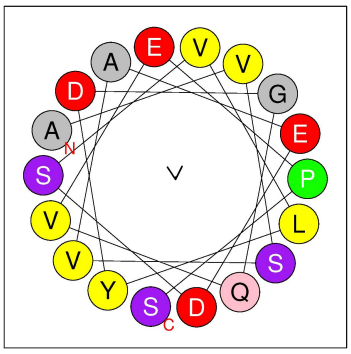
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.318
Hydrophobic moment <μH>
0.017
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{497}$**VSVAEDSVLYDGQVEPSP**$_{514}$

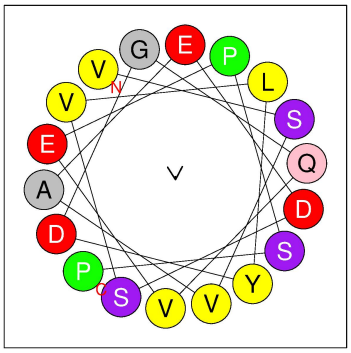
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.341
Hydrophobic moment <μH>
0.023
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{498}$**SVAEDSVLYDGQVEPSPE**$_{515}$

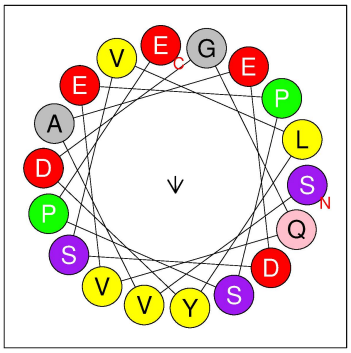
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.237
Hydrophobic moment <μH>
0.123
Net charge z
-5

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{499}$**VAEDSVLYDGQVEPSPES**$_{516}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.237

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

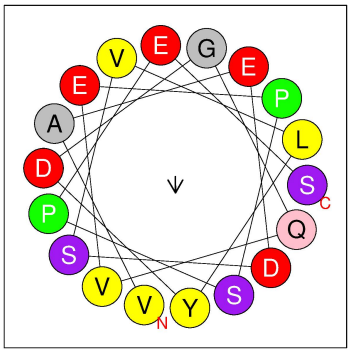
Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>
0.123
Net charge z
-5

Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
GLU 3, ASP 2,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{500}$**AEDSVLYDGQVEPSPESP**$_{517}$

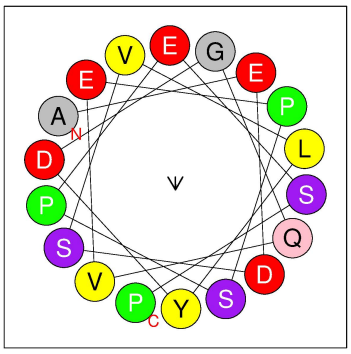
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.209
Hydrophobic moment <μH>
0.096
Net charge z
-5

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{501}$**EDSVLYDGQVEPSPESPK**$_{518}$

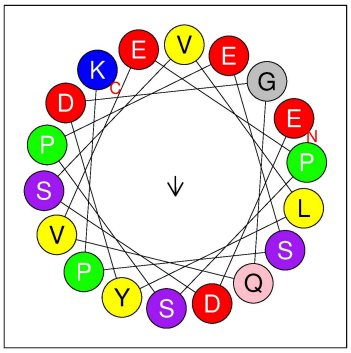
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.137
Hydrophobic moment <μH>
0.145
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{502}$**DSVLYDGQVEPSPESPKP**$_{519}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.213
Hydrophobic moment <μH>
0.130
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
LYS 1, GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 4

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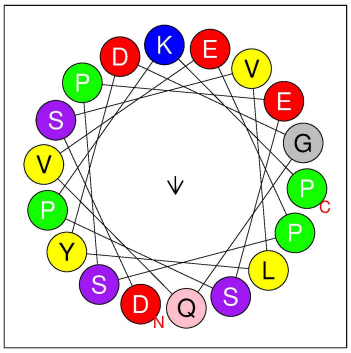


$_{503}$**SVLYDGQVEPSPESPKPP**$_{520}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.296

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00

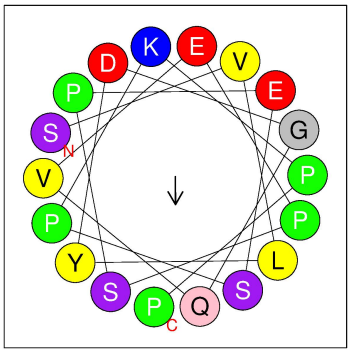
Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00

Hydrophobic moment <μH>
0.211
Net charge z
-2

Uncharged residues + GLY
GLN 1, SER 3, GLY 1
Charged residues
LYS 1, GLU 2, ASP 1,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{504}$**VLYDGQVEPSPESPKPPL**$_{521}$

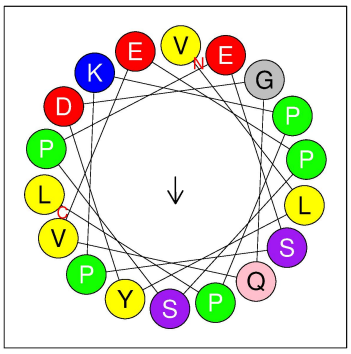
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.392
Hydrophobic moment <μH>
0.201
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
GLN 1, SER 2, GLY 1
Charged residues
LYS 1, GLU 2, ASP 1,
Hydrophobic face : Y P V L P

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{505}$**LYDGQVEPSPESPKPPLE**$_{522}$

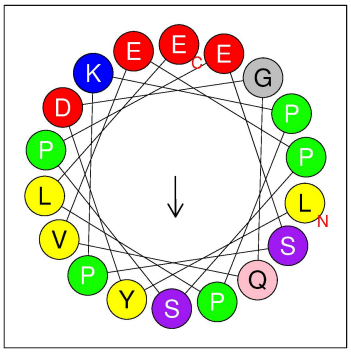
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.289
Hydrophobic moment <μH>
0.304
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 2, GLY 1
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : Y P V L P

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{506}$**YDGQVEPSPESPKPPLEN**$_{523}$

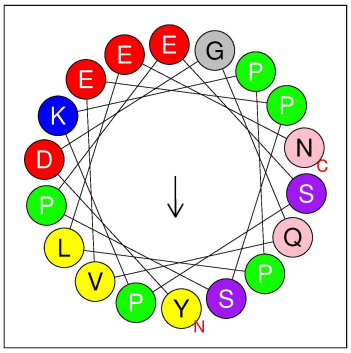
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.161
Hydrophobic moment <μH>
0.306
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 2, ASN 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : Y P V L P

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{507}$**DGQVEPSPESPKPPLENG**$_{524}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.108

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

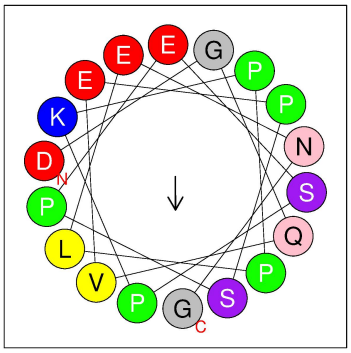
Hydrophobic moment <μH>
0.252
Net charge z
-3

Uncharged residues + GLY
GLN 1, SER 2, ASN 1, GLY 2
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{508}$**GQVEPSPESPKPPLENGQ**$_{525}$

Click to enlarge

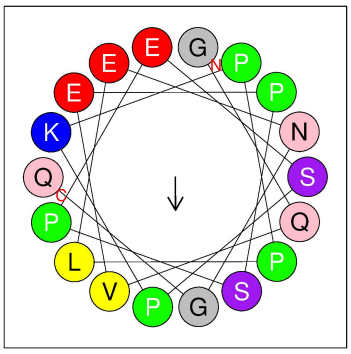
Physico-chemical properties
Hydrophobicity <H>
0.138
Hydrophobic moment <μH>
0.251
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 2, SER 2, ASN 1, GLY 2
Charged residues
LYS 1, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{509}$**QVEPSPESPKPPLENGQV**$_{526}$

Click to enlarge

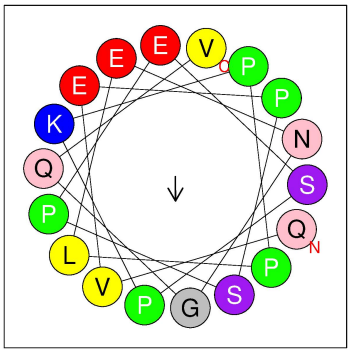
Physico-chemical properties
Hydrophobicity <H>
0.206
Hydrophobic moment <μH>
0.184
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 2, SER 2, ASN 1, GLY 1
Charged residues
LYS 1, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{510}$**VEPSPESPKPPLENGQVG**$_{527}$

Click to enlarge

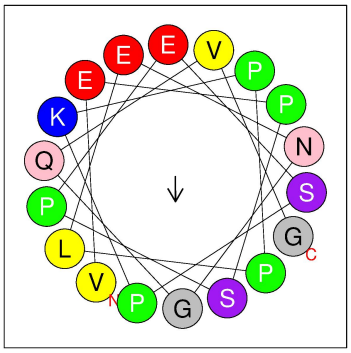
Physico-chemical properties
Hydrophobicity <H>
0.218
Hydrophobic moment <μH>
0.189
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 2, ASN 1, GLY 2
Charged residues
LYS 1, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{511}$**EPSPESPKPPLENGQVGL**$_{528}$

Click to enlarge

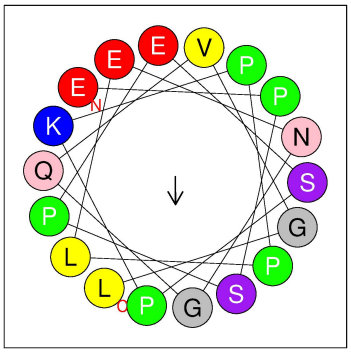
Physico-chemical properties
Hydrophobicity <H>
0.245

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.211	GLN 1, SER 2, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 1, GLU 3,	CYS 0, PRO 5
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

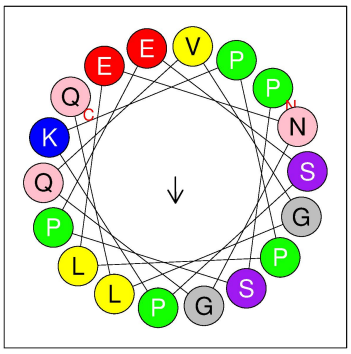


$_{512}$**PSPESPKPPLENGQVGLQ**$_{529}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.268	10 / 55.56	8 / 44.44
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.196	GLN 2, SER 2, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-1	LYS 1, GLU 2,	CYS 0, PRO 5
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

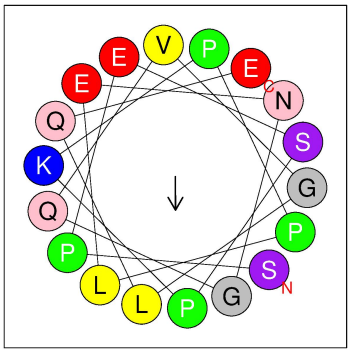


$_{513}$**SPESPKPPLENGQVGLQE**$_{530}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.193	11 / 61.11	7 / 38.89
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.254	GLN 2, SER 2, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 1, GLU 3,	CYS 0, PRO 4
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

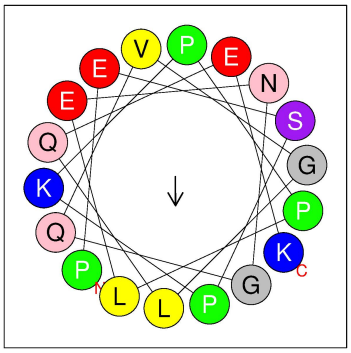


$_{514}$**PESPKPPLENGQVGLQEK**$_{531}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.140	11 / 61.11	7 / 38.89
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.220	GLN 2, SER 1, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-1	LYS 2, GLU 3,	CYS 0, PRO 4
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



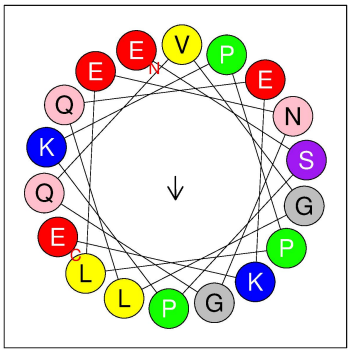
$_{515}$**ESPKPPLENGQVGLQEKE**$_{532}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.064	12 / 66.67	6 / 33.33

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.175	GLN 2, SER 1, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 2, GLU 4,	CYS 0, PRO 3
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

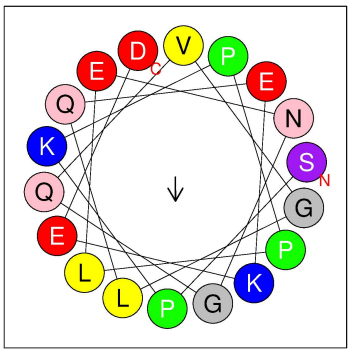


$_{516}$**SPKPPLENGQVGLQEKED**$_{533}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.057	12 / 66.67	6 / 33.33
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.181	GLN 2, SER 1, ASN 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 2, GLU 3, ASP 1,	CYS 0, PRO 3
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

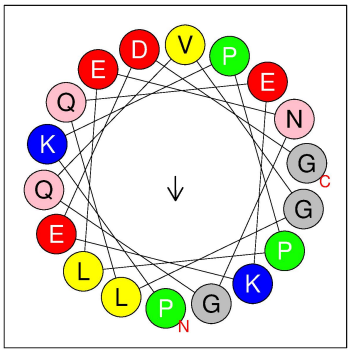


$_{517}$**PKPPLENGQVGLQEKEDG**$_{534}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.059	12 / 66.67	6 / 33.33
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.181	GLN 2, ASN 1, GLY 3	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 2, GLU 3, ASP 1,	CYS 0, PRO 3
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

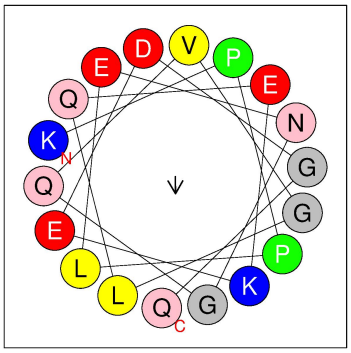


$_{518}$**KPPLENGQVGLQEKEDGQ**$_{535}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.007	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.129	GLN 3, ASN 1, GLY 3	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 2, GLU 3, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



$_{519}$**PPLENGQVGLQEKEDGQP**$_{536}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.102	12 / 66.67	6 / 33.33

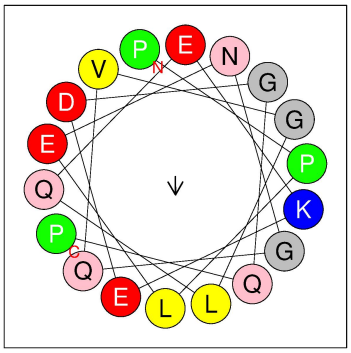
Hydrophobic moment <μH>
0.138
Net charge z
-3

Uncharged residues + GLY
GLN 3, ASN 1, GLY 3
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{520}$**PLENGQVGLQEKEDGQPI**$_{537}$

Click to enlarge

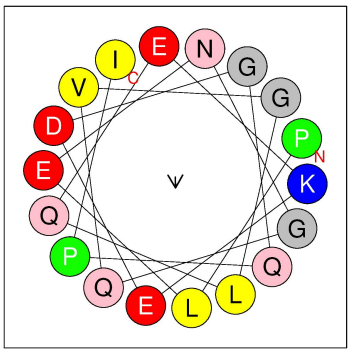
Physico-chemical properties
Hydrophobicity <H>
0.162
Hydrophobic moment <μH>
0.082
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
GLN 3, ASN 1, GLY 3
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{521}$**LENGQVGLQEKEDGQPID**$_{538}$

Click to enlarge

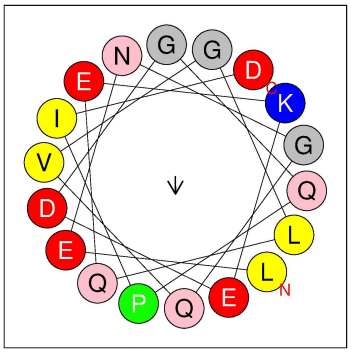
Physico-chemical properties
Hydrophobicity <H>
0.079
Hydrophobic moment <μH>
0.132
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
GLN 3, ASN 1, GLY 3
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues

Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{522}$**ENGQVGLQEKEDGQPIDQ**$_{539}$

Click to enlarge

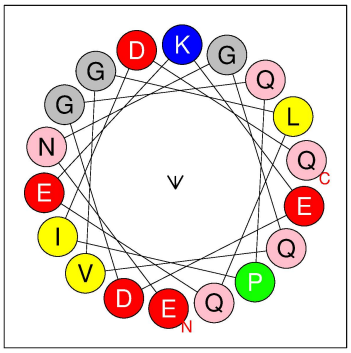
Physico-chemical properties
Hydrophobicity <H>
-0.027
Hydrophobic moment <μH>
0.092
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
14 / 77.78
Uncharged residues + GLY
GLN 4, ASN 1, GLY 3
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
4 / 22.22
Aromatic residues

Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{523}$**NGQVGLQEKEDGQPIDQQ**$_{540}$

Click to enlarge

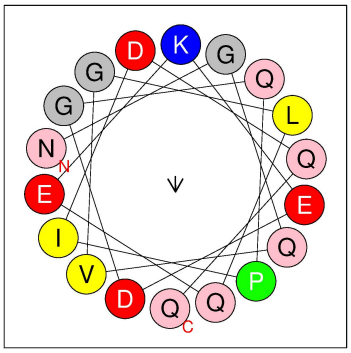
Physico-chemical properties
Hydrophobicity <H>
-0.004

Polar residues + GLY
Polar residues + GLY (n / %)
14 / 77.78

Nonpolar residues
Nonpolar residues (n / %)
4 / 22.22

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.116 | GLN 5, ASN 1, GLY 3 |
Net charge z | **Charged residues** | **Special residues**
-3 | LYS 1, GLU 2, ASP 2, | CYS 0, PRO 1
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

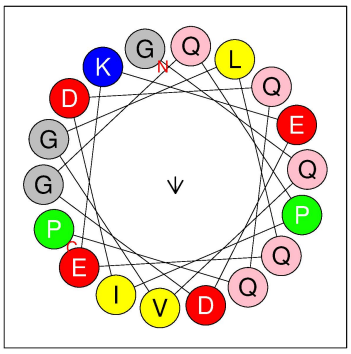


$_{524}$**GQVGLQEKEDGQPIDQQP**$_{541}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.069 | 13 / 72.22 | 5 / 27.78
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.123 | GLN 5, GLY 3 |
Net charge z | **Charged residues** | **Special residues**
-3 | LYS 1, GLU 2, ASP 2, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

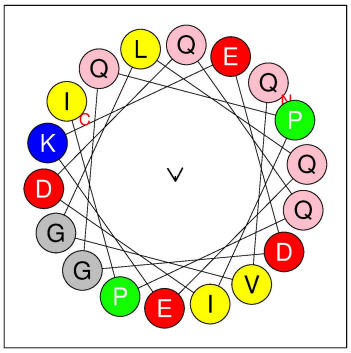


$_{525}$**QVGLQEKEDGQPIDQQPI**$_{542}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.169 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.034 | GLN 5, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-3 | LYS 1, GLU 2, ASP 2, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

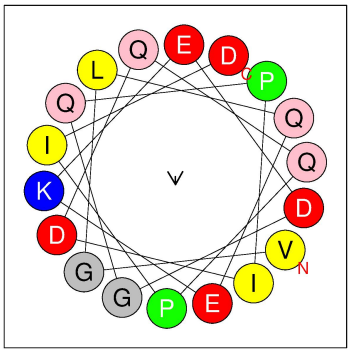


$_{526}$**VGLQEKEDGQPIDQQPID**$_{543}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.139 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.060 | GLN 4, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-4 | LYS 1, GLU 2, ASP 3, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



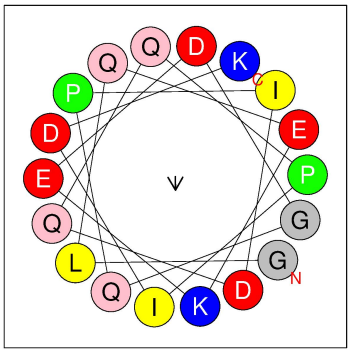
$_{527}$**GLQEKEDGQPIDQQPIDK**$_{544}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.016 | 13 / 72.22 | 5 / 27.78

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.102	GLN 4, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-3	LYS 2, GLU 2, ASP 3,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

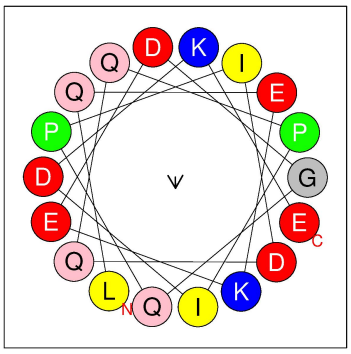


$_{528}$**LQEKEDGQPIDQQPIDKE**$_{545}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.019	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.085	GLN 4, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-4	LYS 2, GLU 3, ASP 3,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

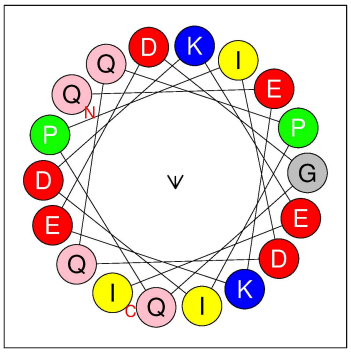


$_{529}$**QEKEDGQPIDQQPIDKEI**$_{546}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.014	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.089	GLN 4, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-4	LYS 2, GLU 3, ASP 3,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

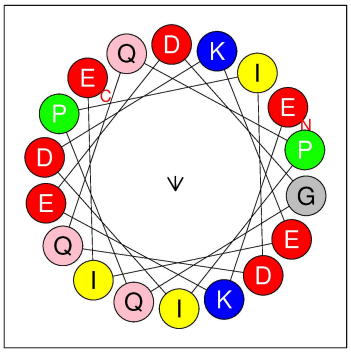


$_{530}$**EKEDGQPIDQQPIDKEIE**$_{547}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.037	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.105	GLN 3, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-5	LYS 2, GLU 4, ASP 3,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



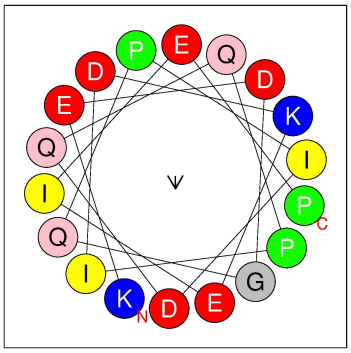
$_{531}$**KEDGQPIDQQPIDKEIEP**$_{548}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
0.038	12 / 66.67	6 / 33.33

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.092 | GLN 3, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-4 | LYS 2, GLU 3, ASP 3, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

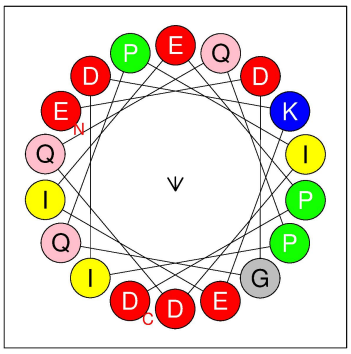


$_{532}$**EDGQPIDQQPIDKEIEPD**$_{549}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.051 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.103 | GLN 3, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-6 | LYS 1, GLU 3, ASP 4, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

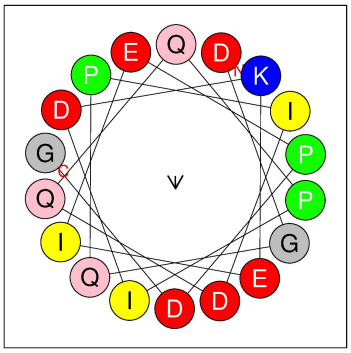


$_{533}$**DGQPIDQQPIDKEIEPDG**$_{550}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.086 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.091 | GLN 3, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-5 | LYS 1, GLU 2, ASP 4, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

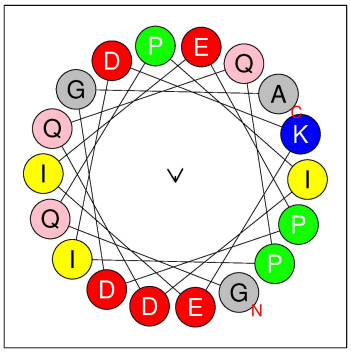


$_{534}$**GQPIDQQPIDKEIEPDGA**$_{551}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.146 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.040 | GLN 3, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-4 | LYS 1, GLU 2, ASP 3, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



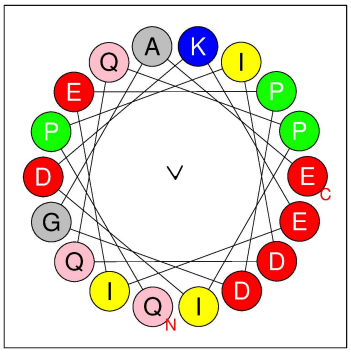
$_{535}$**QPIDQQPIDKEIEPDGAE**$_{552}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.111 | 11 / 61.11 | 7 / 38.89

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.019 | GLN 3, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-5 | LYS 1, GLU 3, ASP 3, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

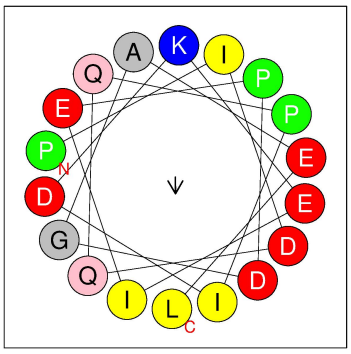


$_{536}$**PIDQQPIDKEIEPDGAEL**$_{553}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.217 | 10 / 55.56 | 8 / 44.44
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.126 | GLN 2, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-5 | LYS 1, GLU 3, ASP 3, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

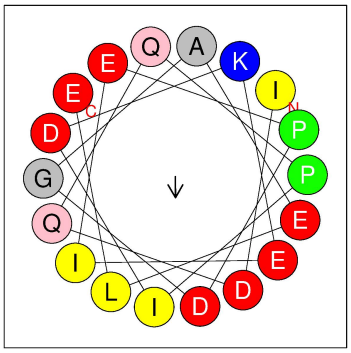


$_{537}$**IDQQPIDKEIEPDGAELE**$_{554}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.142 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.159 | GLN 2, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-6 | LYS 1, GLU 4, ASP 3, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

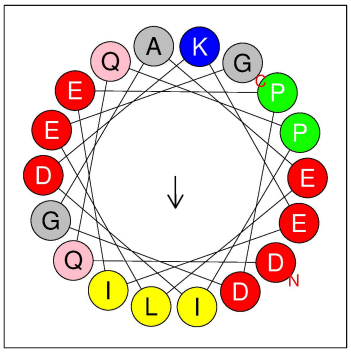


$_{538}$**DQQPIDKEIEPDGAELEG**$_{555}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.042 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.237 | GLN 2, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-6 | LYS 1, GLU 4, ASP 3, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



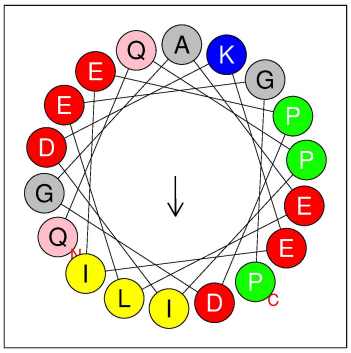
$_{539}$**QQPIDKEIEPDGAELEGP**$_{556}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.124 | 11 / 61.11 | 7 / 38.89

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.298 | GLN 2, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-5 | LYS 1, GLU 4, ASP 2, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

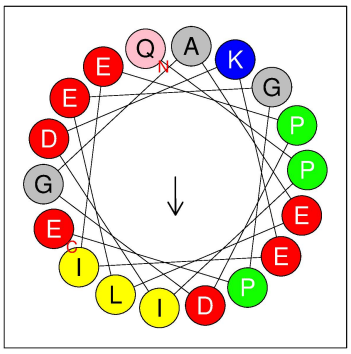


$_{540}$**QPIDKEIEPDGAELEGPE**$_{557}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.101 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.288 | GLN 1, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-6 | LYS 1, GLU 5, ASP 2, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

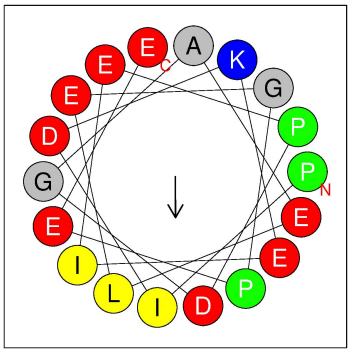


$_{541}$**PIDKEIEPDGAELEGPEE**$_{558}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.078 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.310 | GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-7 | LYS 1, GLU 6, ASP 2, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

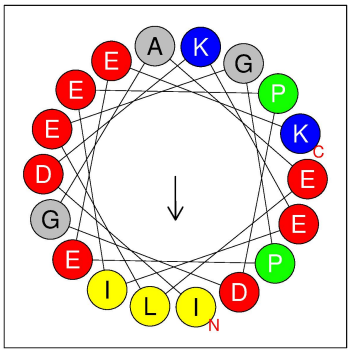


$_{542}$**IDKEIEPDGAELEGPEEK**$_{559}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
-0.017 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.328 | GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-6 | LYS 2, GLU 6, ASP 2, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



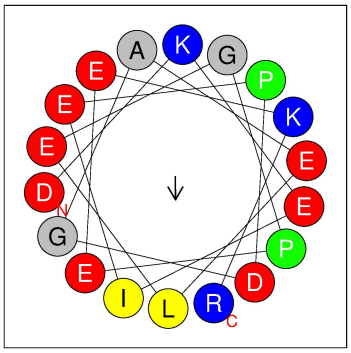
$_{543}$**DKEIEPDGAELEGPEEKR**$_{560}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
-0.173 | 13 / 72.22 | 5 / 27.78

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.175	GLY 2	
Net charge z	**Charged residues**	**Special residues**
-5	LYS 2, ARG 1, GLU 6, ASP 2,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

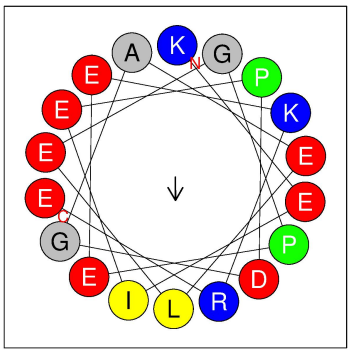


$_{544}$**KEIEPDGAELEGPEEKRE**$_{561}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.166	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.176	GLY 2	
Net charge z	**Charged residues**	**Special residues**
-5	LYS 2, ARG 1, GLU 7, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

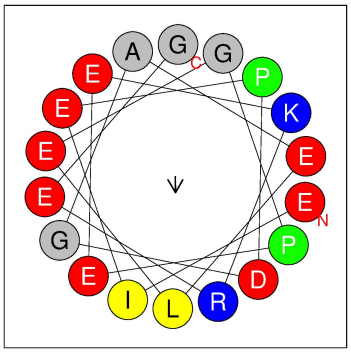


$_{545}$**EIEPDGAELEGPEEKREG**$_{562}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.111	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.121	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-6	LYS 1, ARG 1, GLU 7, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

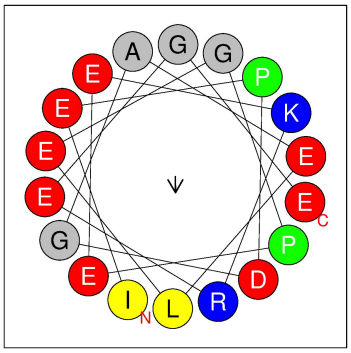


$_{546}$**IEPDGAELEGPEEKREGE**$_{563}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.111	13 / 72.22	5 / 27.78
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.121	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-6	LYS 1, ARG 1, GLU 7, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



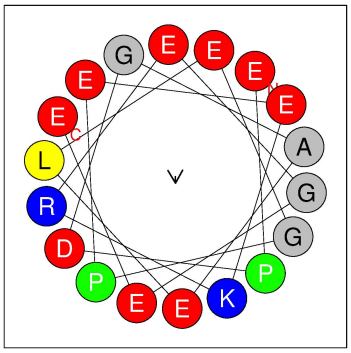
$_{547}$**EPDGAELEGPEEKREGEE**$_{564}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.247	14 / 77.78	4 / 22.22

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.049	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-7	LYS 1, ARG 1, GLU 8, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

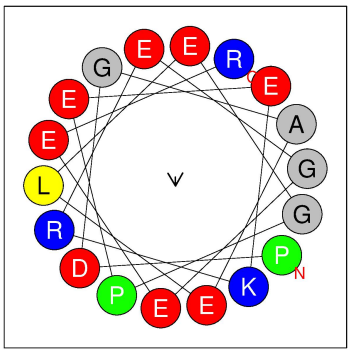


$_{548}$**PDGAELEGPEEKREGEER**$_{565}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.267	14 / 77.78	4 / 22.22
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.067	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-5	LYS 1, ARG 2, GLU 7, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

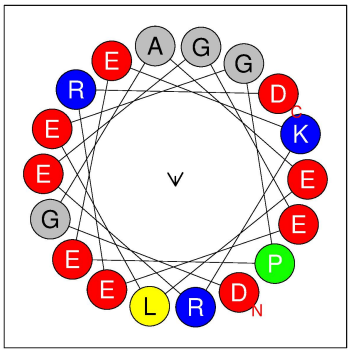


$_{549}$**DGAELEGPEEKREGEERD**$_{566}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.350	15 / 83.33	3 / 16.67
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.069	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-6	LYS 1, ARG 2, GLU 7, ASP 2,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

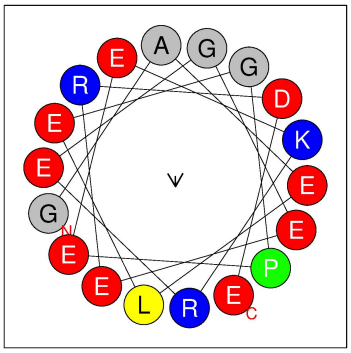


$_{550}$**GAELEGPEEKREGEERDE**$_{567}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.343	15 / 83.33	3 / 16.67
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.075	GLY 3	
Net charge z	**Charged residues**	**Special residues**
-6	LYS 1, ARG 2, GLU 8, ASP 1,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



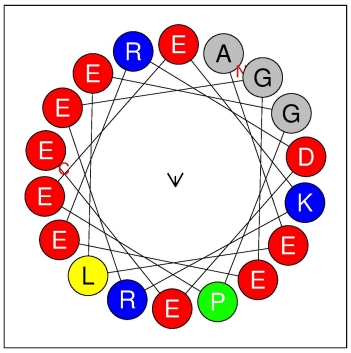
$_{551}$**AELEGPEEKREGEERDEE**$_{568}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.378	15 / 83.33	3 / 16.67

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.074	GLY 2	
Net charge z	**Charged residues**	**Special residues**
-7	LYS 1, ARG 2, GLU 9, ASP 1,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

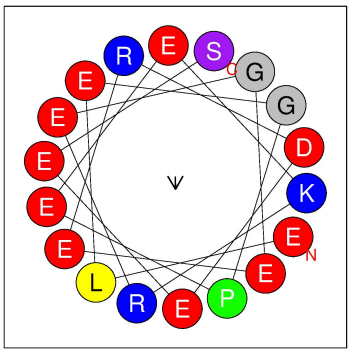


$_{552}$**ELEGPEEKREGEERDEES**$_{569}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.398	16 / 88.89	2 / 11.11
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.092	SER 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-7	LYS 1, ARG 2, GLU 9, ASP 1,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

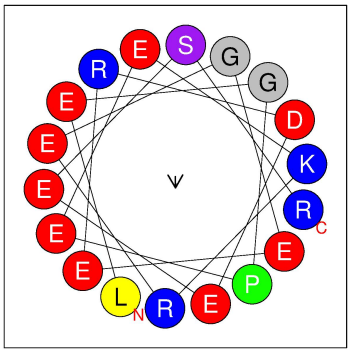


$_{553}$**LEGPEEKREGEERDEESR**$_{570}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.418	16 / 88.89	2 / 11.11
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.085	SER 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-5	LYS 1, ARG 3, GLU 8, ASP 1,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

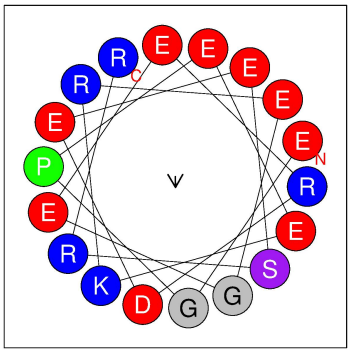


$_{554}$**EGPEEKREGEERDEESRR**$_{571}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.569	17 / 94.44	1 / 5.56
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.081	SER 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-4	LYS 1, ARG 4, GLU 8, ASP 1,	CYS 0, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



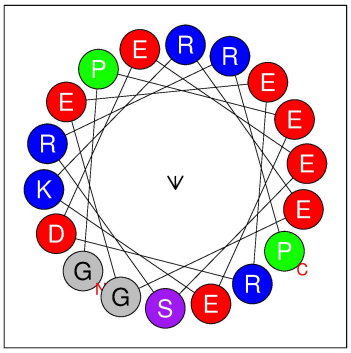
$_{555}$**GPEEKREGEERDEESRRP**$_{572}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.493	16 / 88.89	2 / 11.11

Hydrophobic moment <μH>	Uncharged residues + GLY	Aromatic residues
0.095	SER 1, GLY 2	
Net charge z	**Charged residues**	**Special residues**
-3	LYS 1, ARG 4, GLU 7, ASP 1,	CYS 0, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

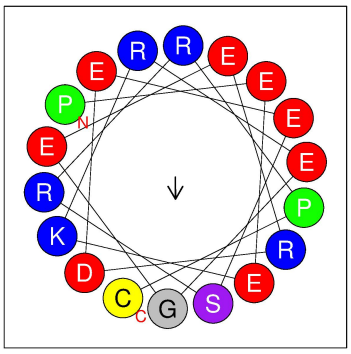


$_{556}$**PEEKREGEERDEESRRPC**$_{573}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.408	15 / 83.33	3 / 16.67
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.167	SER 1, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-3	LYS 1, ARG 4, GLU 7, ASP 1,	CYS 1, PRO 2
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

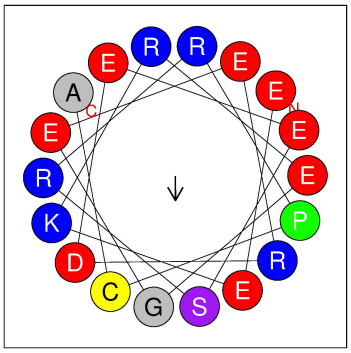


$_{557}$**EEKREGEERDEESRRPCA**$_{574}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.431	15 / 83.33	3 / 16.67
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.181	SER 1, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-3	LYS 1, ARG 4, GLU 7, ASP 1,	CYS 1, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation

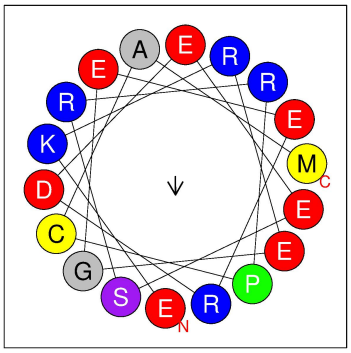


$_{558}$**EKREGEERDEESRRPCAM**$_{575}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.327	14 / 77.78	4 / 22.22
Hydrophobic moment <μH>	**Uncharged residues + GLY**	**Aromatic residues**
0.138	SER 1, GLY 1	
Net charge z	**Charged residues**	**Special residues**
-2	LYS 1, ARG 4, GLU 6, ASP 1,	CYS 1, PRO 1
	Hydrophobic face : none	

Go to screening | Manual mutation | GA mutation



$_{559}$**KREGEERDEESRRPCAMV**$_{576}$

Click to enlarge

Physico-chemical properties	Polar residues + GLY	Nonpolar residues
Hydrophobicity <H>	**Polar residues + GLY (n / %)**	**Nonpolar residues (n / %)**
-0.223	13 / 72.22	5 / 27.78

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

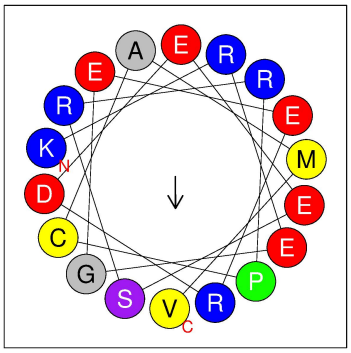
0.241 | SER 1, GLY 1 |

Net charge z | **Charged residues** | **Special residues**

-1 | LYS 1, ARG 4, GLU 5, ASP 1, | CYS 1, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{560}$**REGEEERDEESRRPCAMVT**$_{577}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

-0.154 | 13 / 72.22 | 5 / 27.78

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

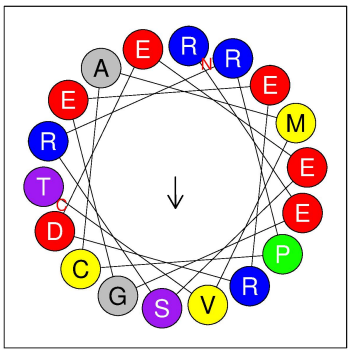
0.236 | SER 1, THR 1, GLY 1 |

Net charge z | **Charged residues** | **Special residues**

-2 | ARG 4, GLU 5, ASP 1, | CYS 1, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{561}$**EGEERDEESRRPCAMVTP**$_{578}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

-0.058 | 12 / 66.67 | 6 / 33.33

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

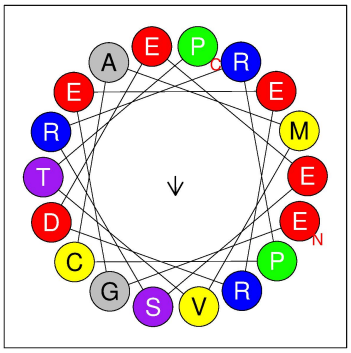
0.141 | SER 1, THR 1, GLY 1 |

Net charge z | **Charged residues** | **Special residues**

-3 | ARG 3, GLU 5, ASP 1, | CYS 1, PRO 2

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{562}$**GEERDEESRRPCAMVTPG**$_{579}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

-0.022 | 12 / 66.67 | 6 / 33.33

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

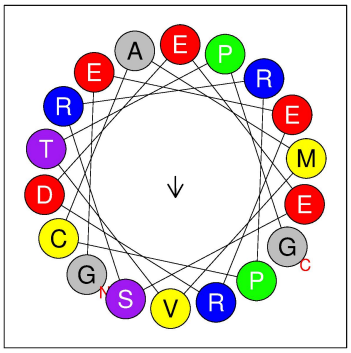
0.156 | SER 1, THR 1, GLY 2 |

Net charge z | **Charged residues** | **Special residues**

-2 | ARG 3, GLU 4, ASP 1, | CYS 1, PRO 2

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{563}$**EERDEESRRPCAMVTPGA**$_{580}$

Click to enlarge

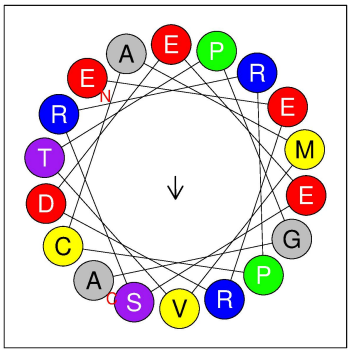
Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

-0.005 | 11 / 61.11 | 7 / 38.89

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.170 | SER 1, THR 1, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-2 | ARG 3, GLU 4, ASP 1, | CYS 1, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

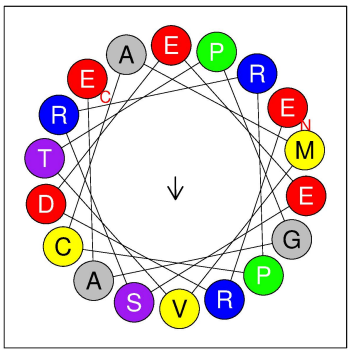


$_{564}$**ERDEESRRPCAMVTPGAE**$_{581}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
-0.005 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.170 | SER 1, THR 1, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-2 | ARG 3, GLU 4, ASP 1, | CYS 1, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

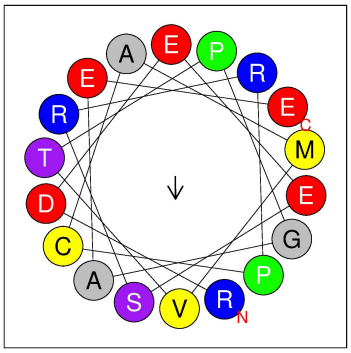


$_{565}$**RDEESRRPCAMVTPGAEE**$_{582}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
-0.005 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.170 | SER 1, THR 1, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-2 | ARG 3, GLU 4, ASP 1, | CYS 1, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

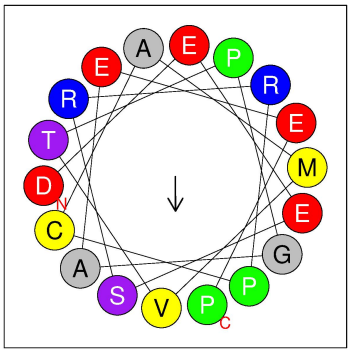


$_{566}$**DEESRRPCAMVTPGAEEP**$_{583}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.091 | 10 / 55.56 | 8 / 44.44
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.261 | SER 1, THR 1, GLY 1 |
Net charge z | **Charged residues** | **Special residues**
-3 | ARG 2, GLU 4, ASP 1, | CYS 1, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{567}$**EESRRPCAMVTPGAEEPS**$_{584}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.132 | 10 / 55.56 | 8 / 44.44

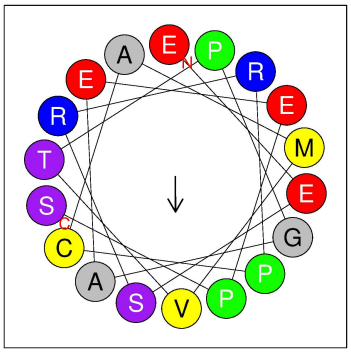
Hydrophobic moment <μH>
0.267
Net charge z
-2

Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
ARG 2, GLU 4,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 1, PRO 3

Go to screening | Manual mutation | GA mutation



$_{568}$**ESRRPCAMVTPGAEEPSI**$_{585}$

Click to enlarge

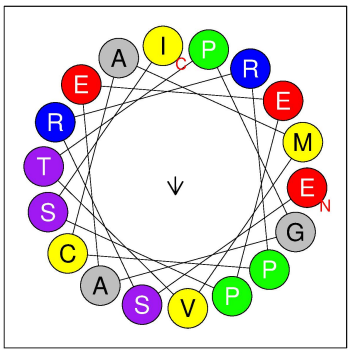
Physico-chemical properties
Hydrophobicity <H>
0.267
Hydrophobic moment <μH>
0.132
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
ARG 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues

Special residues
CYS 1, PRO 3

Go to screening | Manual mutation | GA mutation



$_{569}$**SRRPCAMVTPGAEEPSIP**$_{586}$

Click to enlarge

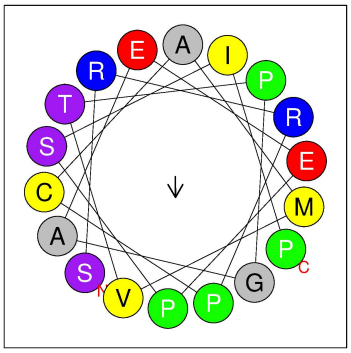
Physico-chemical properties
Hydrophobicity <H>
0.343
Hydrophobic moment <μH>
0.157
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
ARG 2, GLU 2,
Hydrophobic face : M P G P P V

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 1, PRO 4

Go to screening | Manual mutation | GA mutation



$_{570}$**RRPCAMVTPGAEEPSIPE**$_{587}$

Click to enlarge

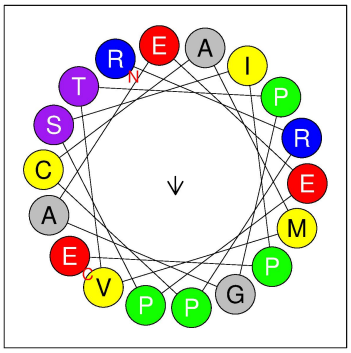
Physico-chemical properties
Hydrophobicity <H>
0.309
Hydrophobic moment <μH>
0.135
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
ARG 2, GLU 3,
Hydrophobic face : M P G P P V

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 1, PRO 4

Go to screening | Manual mutation | GA mutation



$_{571}$**RPCAMVTPGAEEPSIPEP**$_{588}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.406

Polar residues + GLY
Polar residues + GLY (n / %)
7 / 38.89

Nonpolar residues
Nonpolar residues (n / %)
11 / 61.11

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

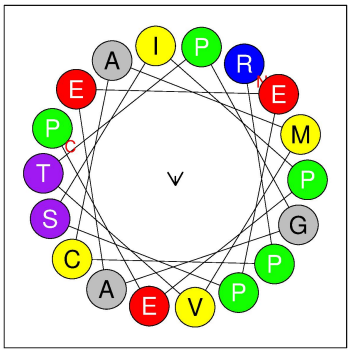
0.066 | SER 1, THR 1, GLY 1

Net charge z | **Charged residues** | **Special residues**

-2 | ARG 1, GLU 3, | CYS 1, PRO 5

Hydrophobic face : M P G P P V

Go to screening | Manual mutation | GA mutation



$_{572}$**PCAMVTPGAEEPSIPEPP**$_{589}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.502 | 6 / 33.33 | 12 / 66.67

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

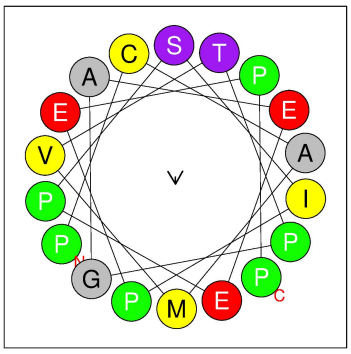
0.053 | SER 1, THR 1, GLY 1

Net charge z | **Charged residues** | **Special residues**

-3 | GLU 3, | CYS 1, PRO 6

Hydrophobic face : M P G P P V

Go to screening | Manual mutation | GA mutation



$_{573}$**CAMVTPGAEEPSIPEPPK**$_{590}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.407 | 7 / 38.89 | 11 / 61.11

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

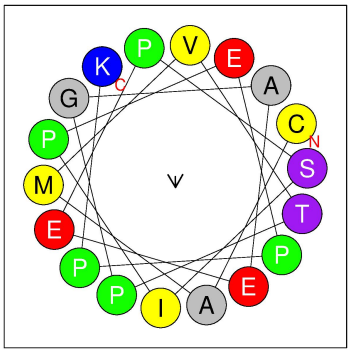
0.082 | SER 1, THR 1, GLY 1

Net charge z | **Charged residues** | **Special residues**

-2 | LYS 1, GLU 3, | CYS 1, PRO 5

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{574}$**AMVTPGAEEPSIPEPPKP**$_{591}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.361 | 7 / 38.89 | 11 / 61.11

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

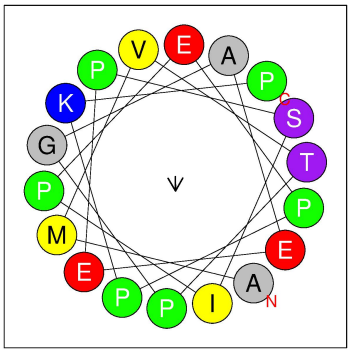
0.109 | SER 1, THR 1, GLY 1

Net charge z | **Charged residues** | **Special residues**

-2 | LYS 1, GLU 3, | CYS 0, PRO 6

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{575}$**MVTPGAEEPSIPEPPKPA**$_{592}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.361 | 7 / 38.89 | 11 / 61.11

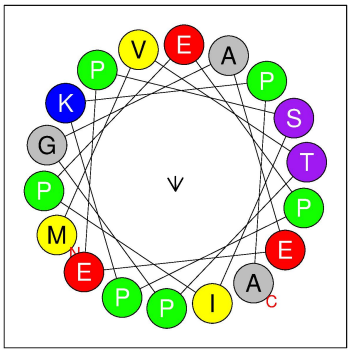
Hydrophobic moment <μH>
0.109
Net charge z
-2

Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 1, GLU 3,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 6

Go to screening | Manual mutation | GA mutation



$_{576}$**VTPGAEEPSIPEPPKPAA**$_{593}$

Click to enlarge

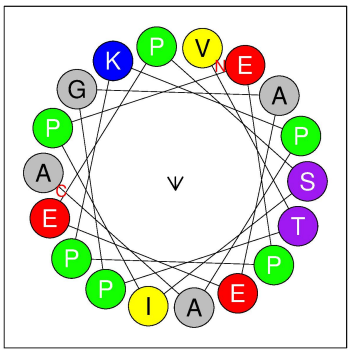
Physico-chemical properties
Hydrophobicity <H>
0.310
Hydrophobic moment <μH>
0.097
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
7 / 38.89
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 1, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
11 / 61.11
Aromatic residues

Special residues
CYS 0, PRO 6

Go to screening | Manual mutation | GA mutation



$_{577}$**TPGAEEPSIPEPPKPAAD**$_{594}$

Click to enlarge

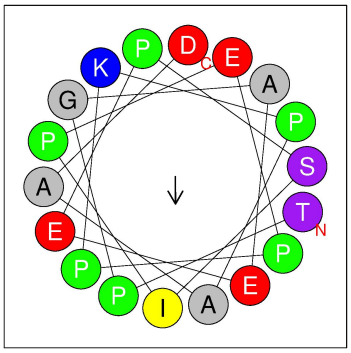
Physico-chemical properties
Hydrophobicity <H>
0.199
Hydrophobic moment <μH>
0.207
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 0, PRO 6

Go to screening | Manual mutation | GA mutation



$_{578}$**PGAEEPSIPEPPKPAADQ**$_{595}$

Click to enlarge

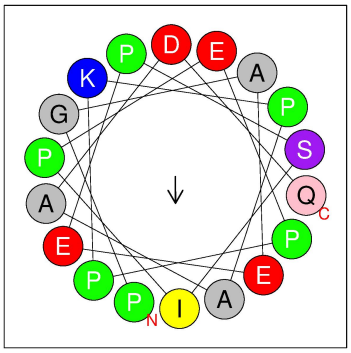
Physico-chemical properties
Hydrophobicity <H>
0.173
Hydrophobic moment <μH>
0.201
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 0, PRO 6

Go to screening | Manual mutation | GA mutation



$_{579}$**GAEEPSIPEPPKPAADQD**$_{596}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.090

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00

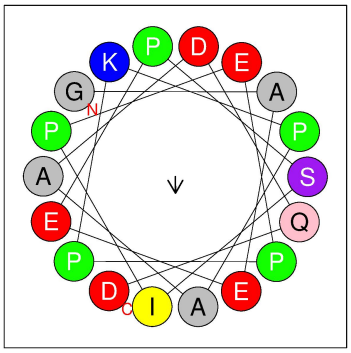
Hydrophobic moment <μH>
0.125
Net charge z
-4

Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{580}$**AEEPSIPEPPKPAADQDG**$_{597}$

Click to enlarge

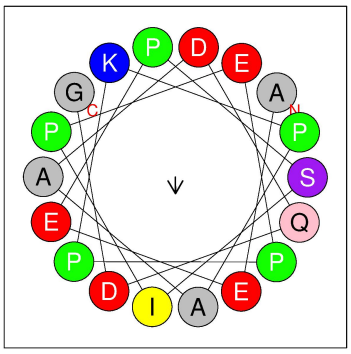
Physico-chemical properties
Hydrophobicity <H>
0.090
Hydrophobic moment <μH>
0.125
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{581}$**EEPSIPEPPKPAADQDGA**$_{598}$

Click to enlarge

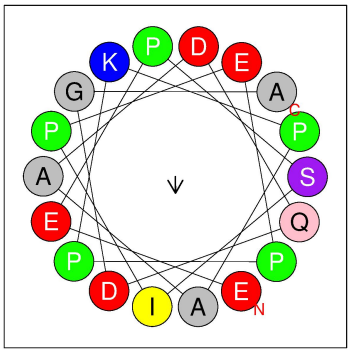
Physico-chemical properties
Hydrophobicity <H>
0.090
Hydrophobic moment <μH>
0.125
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{582}$**EPSIPEPPKPAADQDGAE**$_{599}$

Click to enlarge

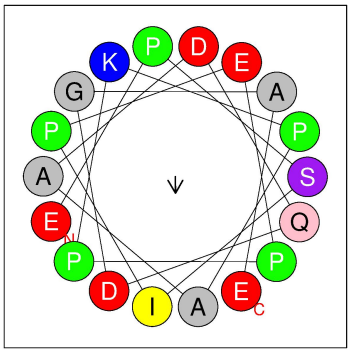
Physico-chemical properties
Hydrophobicity <H>
0.090
Hydrophobic moment <μH>
0.125
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 3, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{583}$**PSIPEPPKPAADQDGAEV**$_{600}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.193

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

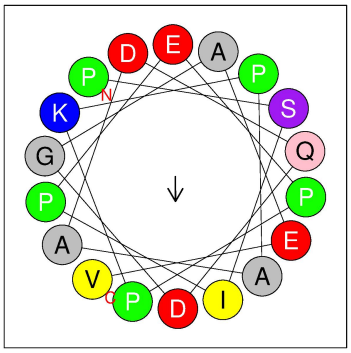
Hydrophobic moment <μH>
0.188
Net charge z
-3

Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 2, ASP 2,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 5

Go to screening | Manual mutation | GA mutation



$_{584}$**SIPEPPKPAADQDGAEVL**$_{601}$

Click to enlarge

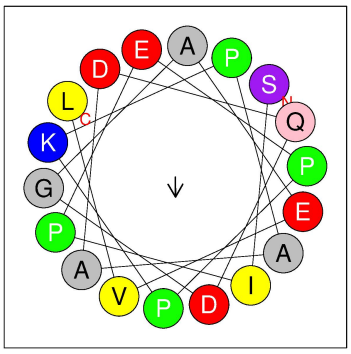
Physico-chemical properties
Hydrophobicity <H>
0.248
Hydrophobic moment <μH>
0.151
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
GLN 1, SER 1, GLY 1
Charged residues
LYS 1, GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 0, PRO 4

Go to screening | Manual mutation | GA mutation



$_{585}$**IPEPPKPAADQDGAEVLG**$_{602}$

Click to enlarge

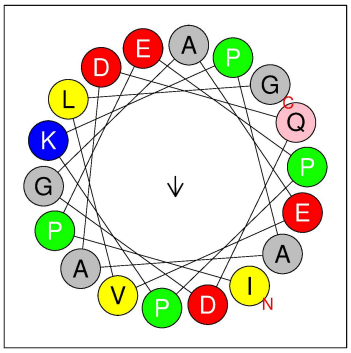
Physico-chemical properties
Hydrophobicity <H>
0.250
Hydrophobic moment <μH>
0.149
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
GLN 1, GLY 2
Charged residues
LYS 1, GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues

Special residues
CYS 0, PRO 4

Go to screening | Manual mutation | GA mutation



$_{586}$**PEPPKPAADQDGAEVLGT**$_{603}$

Click to enlarge

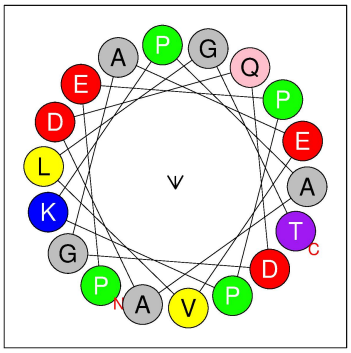
Physico-chemical properties
Hydrophobicity <H>
0.164
Hydrophobic moment <μH>
0.092
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
GLN 1, THR 1, GLY 2
Charged residues
LYS 1, GLU 2, ASP 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues

Special residues
CYS 0, PRO 4

Go to screening | Manual mutation | GA mutation



$_{587}$**EPPKPAADQDGAEVLGTR**$_{604}$

Click to enlarge

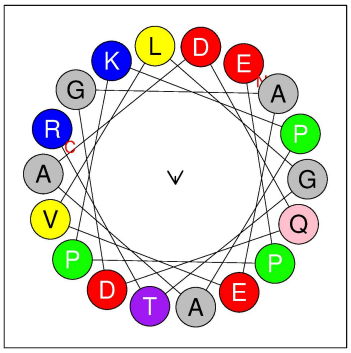
Physico-chemical properties
Hydrophobicity <H>
0.068

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.056 | GLN 1, THR 1, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-2 | LYS 1, ARG 1, GLU 2, ASP 2, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

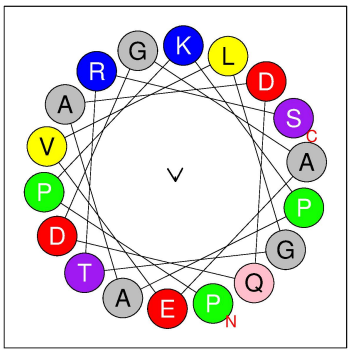


$_{588}$**PPKPAADQDGAEVLGTRS**$_{605}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.102 | 10 / 55.56 | 8 / 44.44
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.032 | GLN 1, SER 1, THR 1, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
-1 | LYS 1, ARG 1, GLU 1, ASP 2, | CYS 0, PRO 3
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

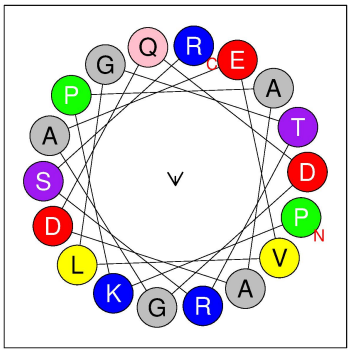


$_{589}$**PKPAADQDGAEVLGTRSR**$_{606}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.006 | 11 / 61.11 | 7 / 38.89
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.066 | GLN 1, SER 1, THR 1, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
0 | LYS 1, ARG 2, GLU 1, ASP 2, | CYS 0, PRO 2
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation

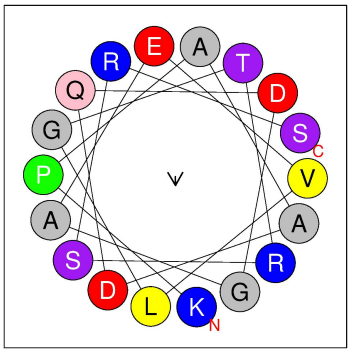


$_{590}$**KPAADQDGAEVLGTRSRS**$_{607}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
-0.037 | 12 / 66.67 | 6 / 33.33
Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**
0.066 | GLN 1, SER 2, THR 1, GLY 2 |
Net charge z | **Charged residues** | **Special residues**
0 | LYS 1, ARG 2, GLU 1, ASP 2, | CYS 0, PRO 1
Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{591}$**PAADQDGAEVLGTRSRSL**$_{608}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**
Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**
0.113 | 11 / 61.11 | 7 / 38.89

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

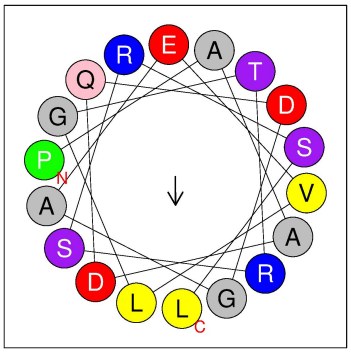
0.215 | GLN 1, SER 2, THR 1, GLY 2 |

Net charge z | **Charged residues** | **Special residues**

-1 | ARG 2, GLU 1, ASP 2, | CYS 0, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{592}$**AADQDGAEVLGTRSRSLP**$_{609}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.113 | 11 / 61.11 | 7 / 38.89

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

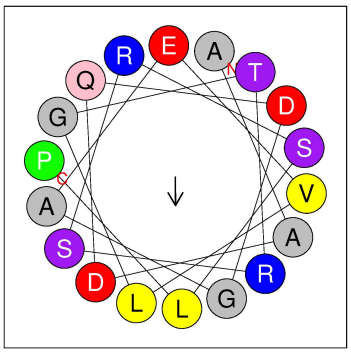
0.215 | GLN 1, SER 2, THR 1, GLY 2 |

Net charge z | **Charged residues** | **Special residues**

-1 | ARG 2, GLU 1, ASP 2, | CYS 0, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{593}$**ADQDGAEVLGTRSRSLPE**$_{610}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.060 | 12 / 66.67 | 6 / 33.33

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

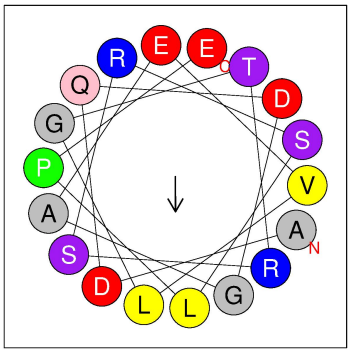
0.266 | GLN 1, SER 2, THR 1, GLY 2 |

Net charge z | **Charged residues** | **Special residues**

-2 | ARG 2, GLU 2, ASP 2, | CYS 0, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{594}$**DQDGAEVLGTRSRSLPEK**$_{611}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

-0.012 | 13 / 72.22 | 5 / 27.78

Hydrophobic moment <μH> | **Uncharged residues + GLY** | **Aromatic residues**

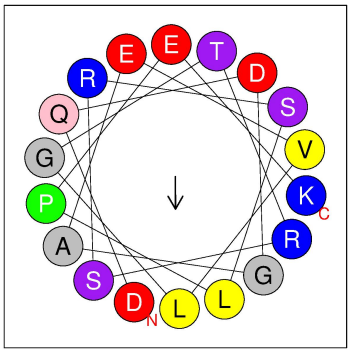
0.246 | GLN 1, SER 2, THR 1, GLY 2 |

Net charge z | **Charged residues** | **Special residues**

-1 | LYS 1, ARG 2, GLU 2, ASP 2, | CYS 0, PRO 1

Hydrophobic face : none

Go to screening | Manual mutation | GA mutation



$_{595}$**QDGAEVLGTRSRSLPEKG**$_{612}$

Click to enlarge

Physico-chemical properties | **Polar residues + GLY** | **Nonpolar residues**

Hydrophobicity <H> | **Polar residues + GLY (n / %)** | **Nonpolar residues (n / %)**

0.031 | 13 / 72.22 | 5 / 27.78

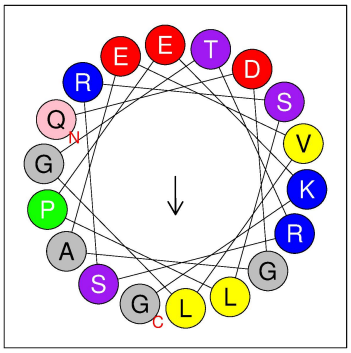
Hydrophobic moment <μH>
0.287
Net charge z
0

Uncharged residues + GLY
GLN 1, SER 2, THR 1, GLY 3
Charged residues
LYS 1, ARG 2, GLU 2, ASP 1,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 1

Go to screening | Manual mutation | GA mutation



$_{596}$**DGAEVLGTRSRSLPEKGP**$_{613}$

Click to enlarge

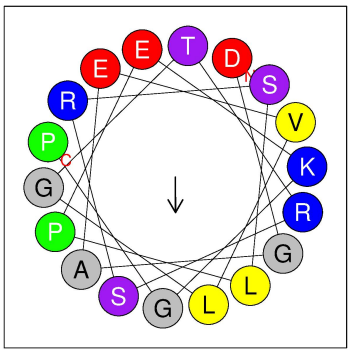
Physico-chemical properties
Hydrophobicity <H>
0.083
Hydrophobic moment <μH>
0.269
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 2, THR 1, GLY 3
Charged residues
LYS 1, ARG 2, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{597}$**GAEVLGTRSRSLPEKGPP**$_{614}$

Click to enlarge

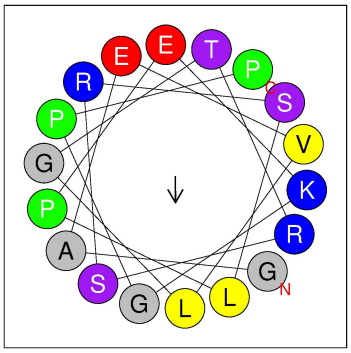
Physico-chemical properties
Hydrophobicity <H>
0.166
Hydrophobic moment <μH>
0.197
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 2, THR 1, GLY 3
Charged residues
LYS 1, ARG 2, GLU 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{598}$**AEVLGTRSRSLPEKGPPK**$_{615}$

Click to enlarge

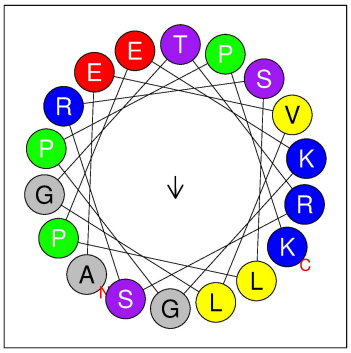
Physico-chemical properties
Hydrophobicity <H>
0.111
Hydrophobic moment <μH>
0.162
Net charge z
2

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 2, ARG 2, GLU 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{599}$**EVLGTRSRSLPEKGPPKA**$_{616}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.111

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

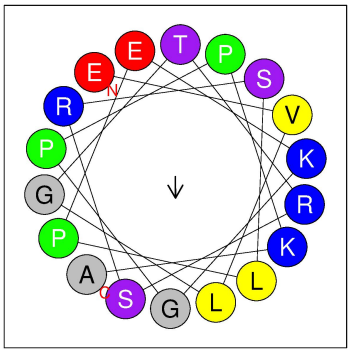
Hydrophobic moment <μH>
0.162
Net charge z
2

Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 2, ARG 2, GLU 2,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{600}$**VLGTRSRSLPEKGPPKAL**$_{617}$

Click to enlarge

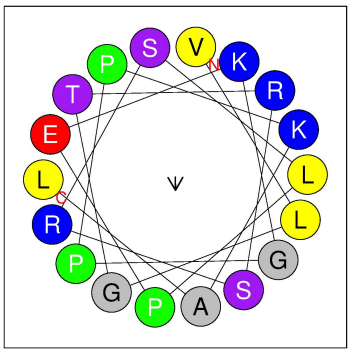
Physico-chemical properties
Hydrophobicity <H>
0.241
Hydrophobic moment <μH>
0.099
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 2, ARG 2, GLU 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{601}$**LGTRSRSLPEKGPPKALA**$_{618}$

Click to enlarge

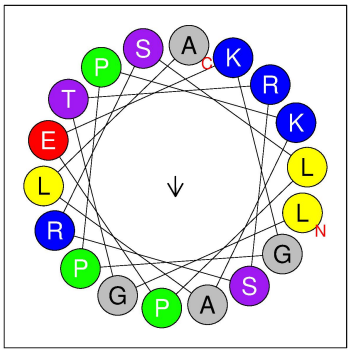
Physico-chemical properties
Hydrophobicity <H>
0.190
Hydrophobic moment <μH>
0.150
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 2, ARG 2, GLU 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues

Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{602}$**GTRSRSLPEKGPPKALAY**$_{619}$

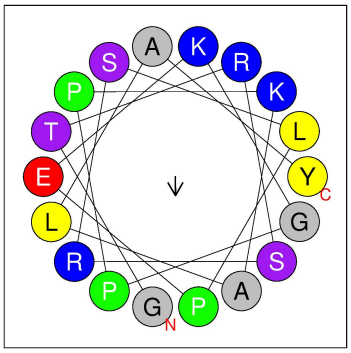
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.149
Hydrophobic moment <μH>
0.144
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 2, THR 1, GLY 2
Charged residues
LYS 2, ARG 2, GLU 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{603}$**TRSRSLPEKGPPKALAYK**$_{620}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.094

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>
0.090
Net charge z
4

Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
LYS 3, ARG 2, GLU 1,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

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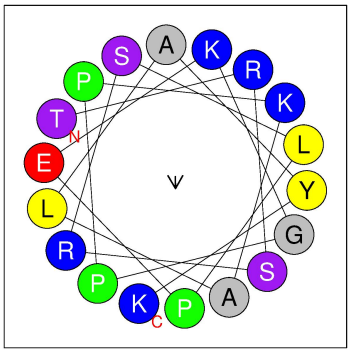


$_{604}$**RSRSLPEKGPPKALAYKT**$_{621}$

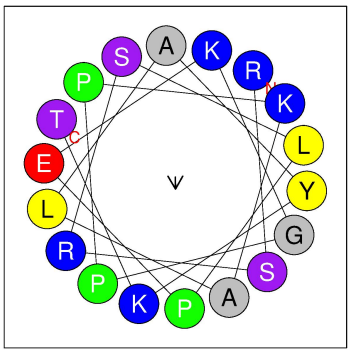
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.094
Hydrophobic moment <μH>
0.090
Net charge z
4

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
LYS 3, ARG 2, GLU 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{605}$**SRSLPEKGPPKALAYKTV**$_{622}$

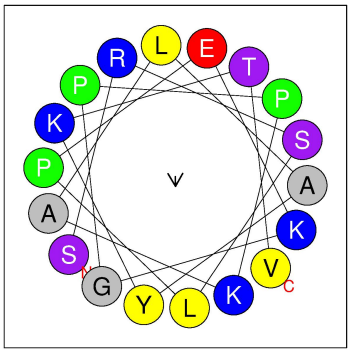
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.218
Hydrophobic moment <μH>
0.074
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 1, GLY 1
Charged residues
LYS 3, ARG 1, GLU 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{606}$**RSLPEKGPPKALAYKTVE**$_{623}$

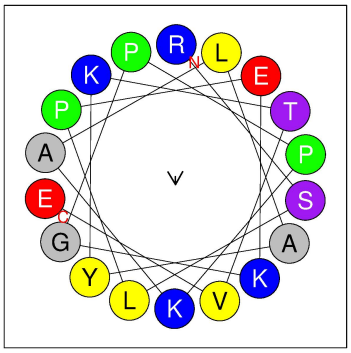
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.184
Hydrophobic moment <μH>
0.060
Net charge z
2

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 3, ARG 1, GLU 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3

Go to screening | Manual mutation | GA mutation



$_{607}$**SLPEKGPPKALAYKTVEV**$_{624}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.308

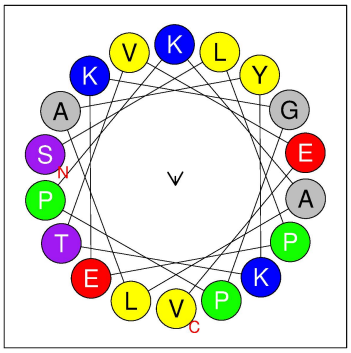
Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.064
Net charge z
1

Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 3, GLU 2,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



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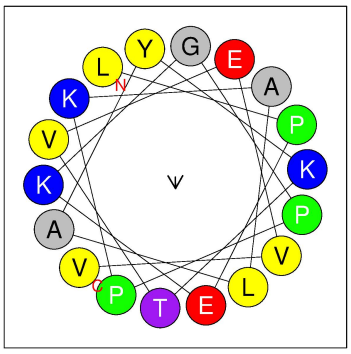
$_{608}$**LPEKGPPKALAYKTVEVV**$_{625}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.378
Hydrophobic moment <μH>
0.086
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
7 / 38.89
Uncharged residues + GLY
THR 1, GLY 1
Charged residues
LYS 3, GLU 2,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
11 / 61.11
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



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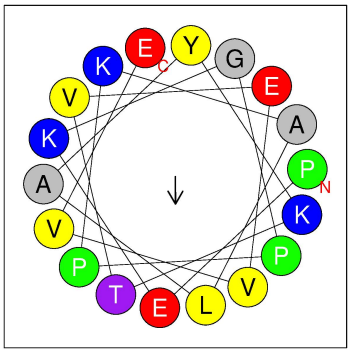
$_{609}$**PEKGPPKALAYKTVEVVE**$_{626}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.248
Hydrophobic moment <μH>
0.208
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
THR 1, GLY 1
Charged residues
LYS 3, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 3



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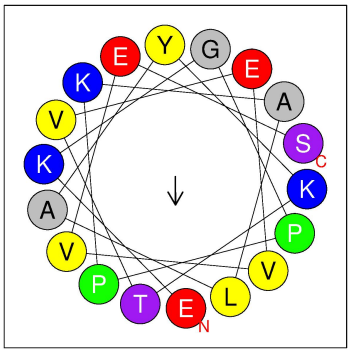
$_{610}$**EKGPPKALAYKTVEVVES**$_{627}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.206
Hydrophobic moment <μH>
0.214
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 3, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2



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$_{611}$**KGPPKALAYKTVEVVESI**$_{628}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.342

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44

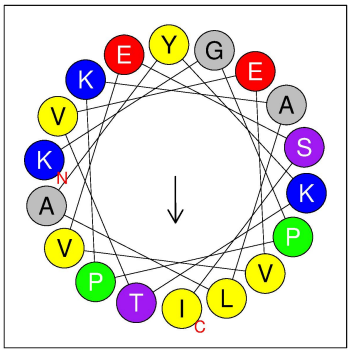
Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56

Hydrophobic moment <μH>
0.350
Net charge z
1

Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 3, GLU 2,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{612}$**GPPKALAYKTVEVVESIE**$_{629}$

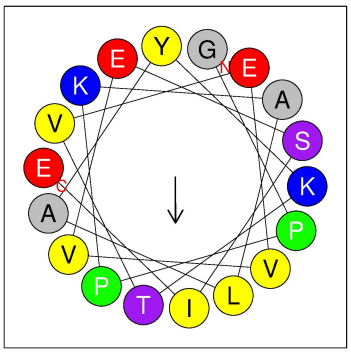
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.361
Hydrophobic moment <μH>
0.348
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 1, THR 1, GLY 1
Charged residues
LYS 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{613}$**PPKALAYKTVEVVESIEK**$_{630}$

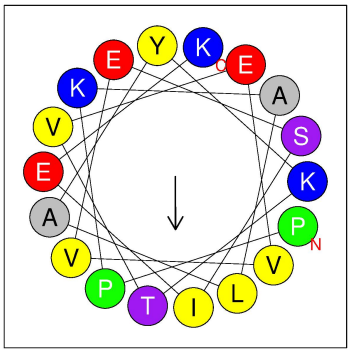
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.306
Hydrophobic moment <μH>
0.401
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 1, THR 1, GLY 0
Charged residues
LYS 3, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 2

Go to screening | Manual mutation | GA mutation



$_{614}$**PKALAYKTVEVVESIEKI**$_{631}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.366
Hydrophobic moment <μH>
0.427
Net charge z
0

Polar residues + GLY
Polar residues + GLY (n / %)
8 / 44.44
Uncharged residues + GLY
SER 1, THR 1, GLY 0
Charged residues
LYS 3, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
10 / 55.56
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 1

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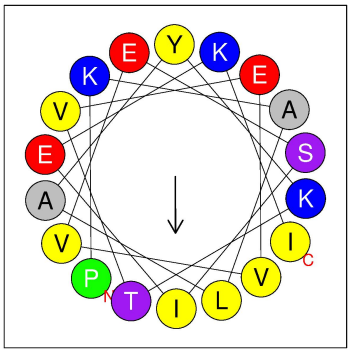


$_{615}$**KALAYKTVEVVESIEKIS**$_{632}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.324

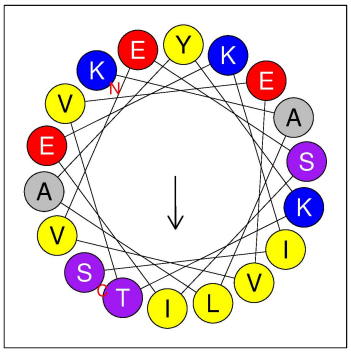
Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00

Hydrophobic moment <μH>
0.396
Net charge z
0

Uncharged residues + GLY
SER 2, THR 1, GLY 0
Charged residues
LYS 3, GLU 3,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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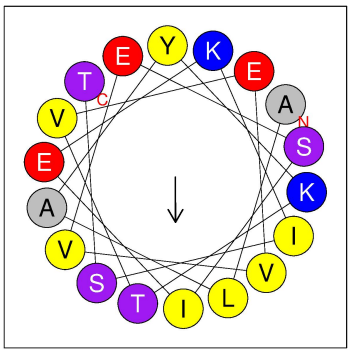
$_{616}$**ALAYKTVEVVESIEKIST**$_{633}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.393
Hydrophobic moment <μH>
0.342
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
9 / 50.00
Uncharged residues + GLY
SER 2, THR 2, GLY 0
Charged residues
LYS 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
9 / 50.00
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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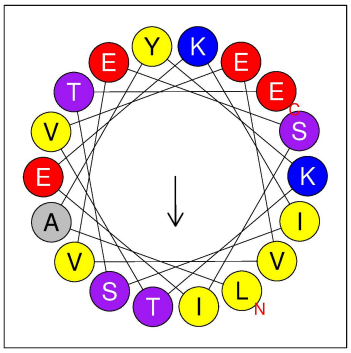
$_{617}$**LAYKTVEVVESIEKISTE**$_{634}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.341
Hydrophobic moment <μH>
0.374
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
SER 2, THR 2, GLY 0
Charged residues
LYS 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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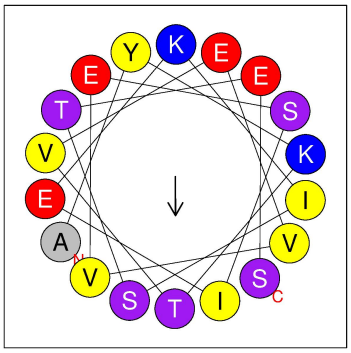
$_{618}$**AYKTVEVVESIEKISTES**$_{635}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.244
Hydrophobic moment <μH>
0.295
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 3, THR 2, GLY 0
Charged residues
LYS 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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$_{619}$**YKTVEVVESIEKISTESI**$_{636}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.327

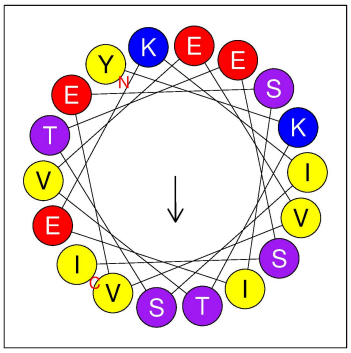
Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

Hydrophobic moment <μH>
0.343
Net charge z
-2

Uncharged residues + GLY
SER 3, THR 2, GLY 0
Charged residues
LYS 2, GLU 4,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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$_{620}$**KTVEVVESIEKISTESIQ**$_{637}$

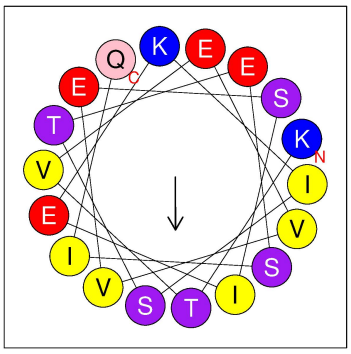
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.261
Hydrophobic moment <μH>
0.401
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
GLN 1, SER 3, THR 2, GLY 0
Charged residues
LYS 2, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 0



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$_{621}$**TVEVVESIEKISTESIQT**$_{638}$

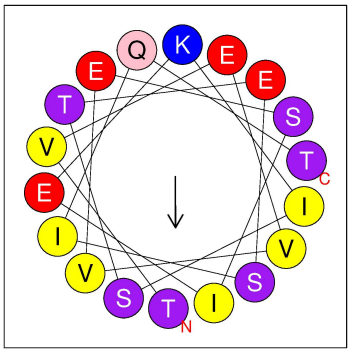
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.331
Hydrophobic moment <μH>
0.386
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
GLN 1, SER 3, THR 3, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 0



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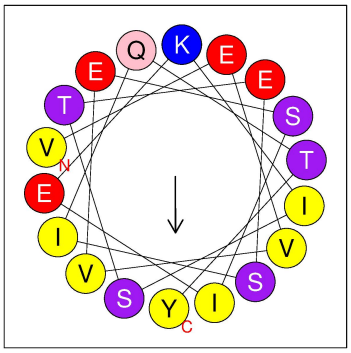
$_{622}$**VEVVESIEKISTESIQTY**$_{639}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.369
Hydrophobic moment <μH>
0.425
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 3, THR 2, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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$_{623}$**EVVESIEKISTESIQTYE**$_{640}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.266

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

Hydrophobic moment <μH>
0.459
Net charge z
-4

Uncharged residues + GLY
GLN 1, SER 3, THR 2, GLY 0
Charged residues
LYS 1, GLU 5,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

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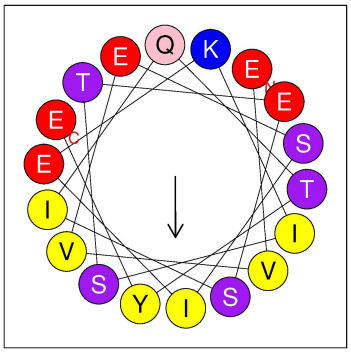

$_{624}$**VVESIEKISTESIQTYEE**$_{641}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.266
Hydrophobic moment <μH>
0.459
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
GLN 1, SER 3, THR 2, GLY 0
Charged residues
LYS 1, GLU 5,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

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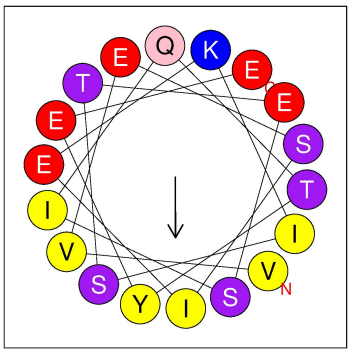

$_{625}$**VESIEKISTESIQTYEET**$_{642}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.213
Hydrophobic moment <μH>
0.423
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
GLN 1, SER 3, THR 3, GLY 0
Charged residues
LYS 1, GLU 5,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

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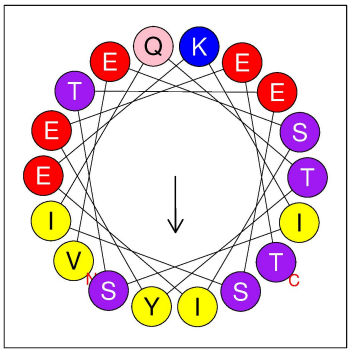


$_{626}$**ESIEKISTESIQTYEETA**$_{643}$

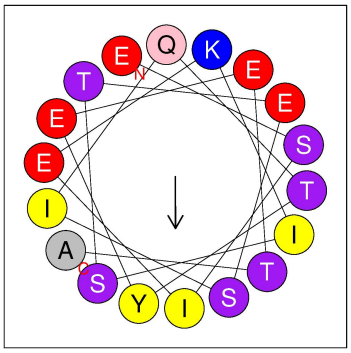
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.162
Hydrophobic moment <μH>
0.392
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
GLN 1, SER 3, THR 3, GLY 0
Charged residues
LYS 1, GLU 5,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{627}$**SIEKISTESIQTYEETAV**$_{644}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.266

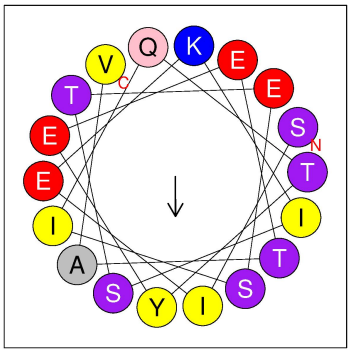
Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

Hydrophobic moment <μH>
0.301
Net charge z
-3

Uncharged residues + GLY
GLN 1, SER 3, THR 3, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



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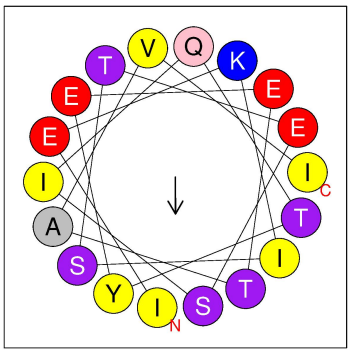
$_{628}$**IEKISTESIQTYEETAVI**$_{645}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.368
Hydrophobic moment <μH>
0.279
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 2, THR 3, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

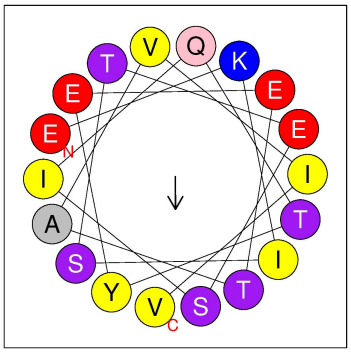
$_{629}$**EKISTESIQTYEETAVIV**$_{646}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.336
Hydrophobic moment <μH>
0.247
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 2, THR 3, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

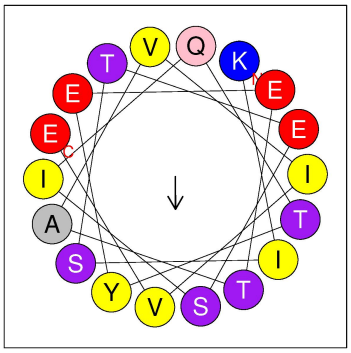
$_{630}$**KISTESIQTYEETAVIVE**$_{647}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.336
Hydrophobic moment <μH>
0.247
Net charge z
-3

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 2, THR 3, GLY 0
Charged residues
LYS 1, GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

$_{631}$**ISTESIQTYEETAVIVET**$_{648}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.405

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

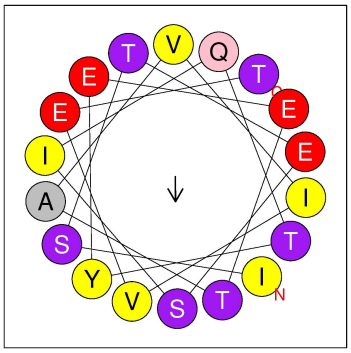
Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

Hydrophobic moment <μH>
0.190
Net charge z
-4

Uncharged residues + GLY
GLN 1, SER 2, THR 4, GLY 0
Charged residues
GLU 4,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{632}$**STESIQTYEETAVIVETM**$_{649}$

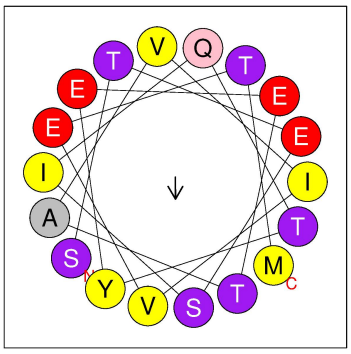
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.373
Hydrophobic moment <μH>
0.167
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, SER 2, THR 4, GLY 0
Charged residues
GLU 4,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{633}$**TESIQTYEETAVIVETMI**$_{650}$

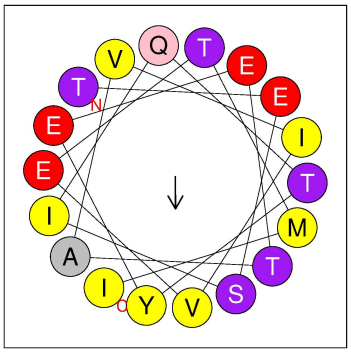
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.476
Hydrophobic moment <μH>
0.244
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 1, THR 4, GLY 0
Charged residues
GLU 4,
Hydrophobic face : V Y I A I

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{634}$**ESIQTYEETAVIVETMIG**$_{651}$

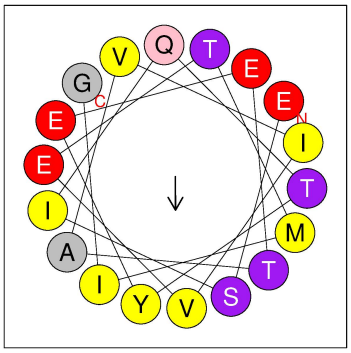
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.461
Hydrophobic moment <μH>
0.254
Net charge z
-4

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, SER 1, THR 3, GLY 1
Charged residues
GLU 4,
Hydrophobic face : V Y I A I

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{635}$**SIQTYEETAVIVETMIGK**$_{652}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.442

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56

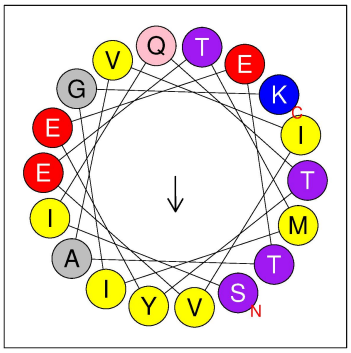
Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44

Hydrophobic moment <μH>
0.265
Net charge z
-2

Uncharged residues + GLY
GLN 1, SER 1, THR 3, GLY 1
Charged residues
LYS 1, GLU 3,
Hydrophobic face : V Y I A I

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{636}$**IQTYEETAVIVETMIGKT**$_{653}$

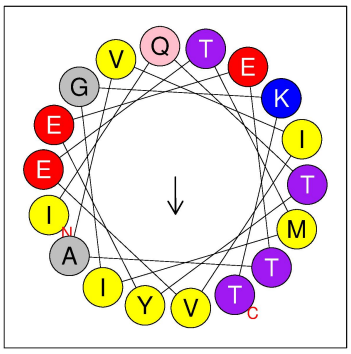
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.458
Hydrophobic moment <μH>
0.280
Net charge z
-2

Polar residues + GLY
Polar residues + GLY (n / %)
10 / 55.56
Uncharged residues + GLY
GLN 1, THR 4, GLY 1
Charged residues
LYS 1, GLU 3,
Hydrophobic face : V Y I A I

Nonpolar residues
Nonpolar residues (n / %)
8 / 44.44
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{637}$**QTYEETAVIVETMIGKTK**$_{654}$

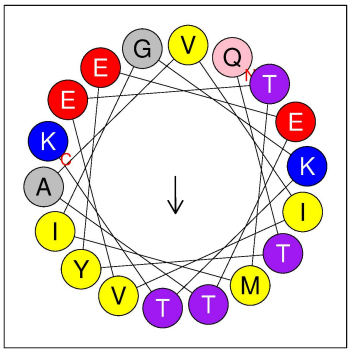
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.303
Hydrophobic moment <μH>
0.278
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
GLN 1, THR 4, GLY 1
Charged residues
LYS 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{638}$**TYEETAVIVETMIGKTKS**$_{655}$

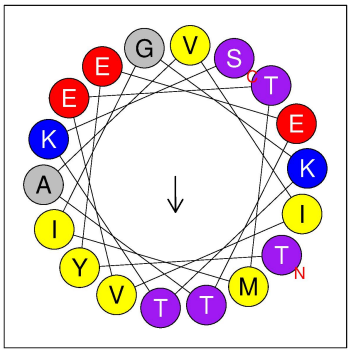
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.313
Hydrophobic moment <μH>
0.269
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11
Uncharged residues + GLY
SER 1, THR 4, GLY 1
Charged residues
LYS 2, GLU 3,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89
Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{639}$**YEETAVIVETMIGKTKSD**$_{656}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.256

Polar residues + GLY
Polar residues + GLY (n / %)
11 / 61.11

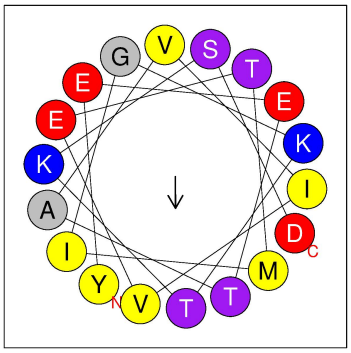
Nonpolar residues
Nonpolar residues (n / %)
7 / 38.89

Hydrophobic moment <μH>
0.240
Net charge z
-2

Uncharged residues + GLY
SER 1, THR 3, GLY 1
Charged residues
LYS 2, GLU 3, ASP 1,
Hydrophobic face : none

Aromatic residues
TYR 1,
Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{640}$**EETAVIVETMIGKTKSDK**$_{657}$

Click to enlarge

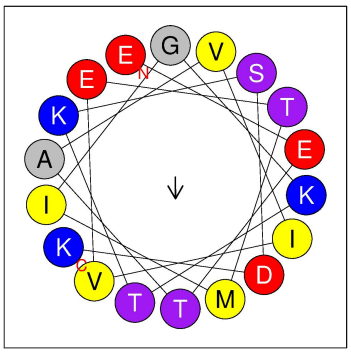
Physico-chemical properties
Hydrophobicity <H>
0.148
Hydrophobic moment <μH>
0.164
Net charge z
-1

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 1
Charged residues
LYS 3, GLU 3, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{641}$**ETAVIVETMIGKTKSDKK**$_{658}$

Click to enlarge

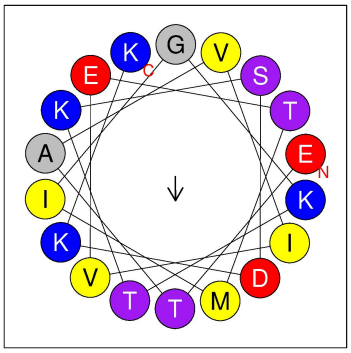
Physico-chemical properties
Hydrophobicity <H>
0.128
Hydrophobic moment <μH>
0.182
Net charge z
1

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 1
Charged residues
LYS 4, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{642}$**TAVIVETMIGKTKSDKKK**$_{659}$

Click to enlarge

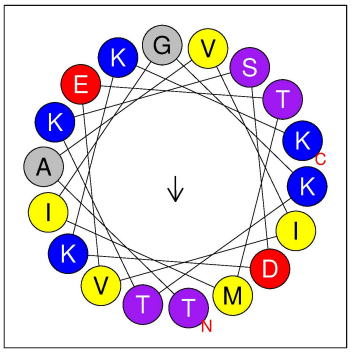
Physico-chemical properties
Hydrophobicity <H>
0.109
Hydrophobic moment <μH>
0.186
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67
Uncharged residues + GLY
SER 1, THR 3, GLY 1
Charged residues
LYS 5, GLU 1, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{643}$**AVIVETMIGKTKSDKKKS**$_{660}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
0.092

Polar residues + GLY
Polar residues + GLY (n / %)
12 / 66.67

Nonpolar residues
Nonpolar residues (n / %)
6 / 33.33

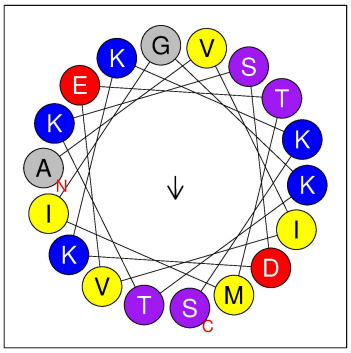
Hydrophobic moment <μH>
0.170
Net charge z
3

Uncharged residues + GLY
SER 2, THR 2, GLY 1
Charged residues
LYS 5, GLU 1, ASP 1,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{644}$**VIVETMIGKTKSDKKKSG**$_{661}$

Click to enlarge

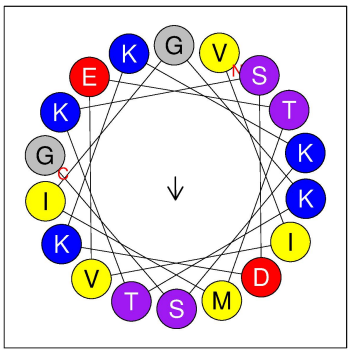
Physico-chemical properties
Hydrophobicity <H>
0.075
Hydrophobic moment <μH>
0.172
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
13 / 72.22
Uncharged residues + GLY
SER 2, THR 2, GLY 2
Charged residues
LYS 5, GLU 1, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
5 / 27.78
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{645}$**IVETMIGKTKSDKKKSGE**$_{662}$

Click to enlarge

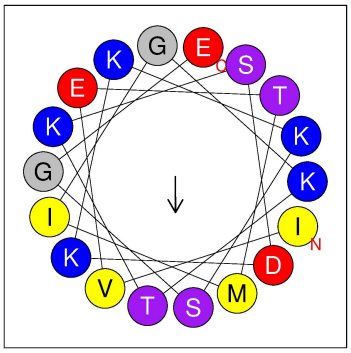
Physico-chemical properties
Hydrophobicity <H>
-0.028
Hydrophobic moment <μH>
0.271
Net charge z
2

Polar residues + GLY
Polar residues + GLY (n / %)
14 / 77.78
Uncharged residues + GLY
SER 2, THR 2, GLY 2
Charged residues
LYS 5, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
4 / 22.22
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{646}$**VETMIGKTKSDKKKSGEK**$_{663}$

Click to enlarge

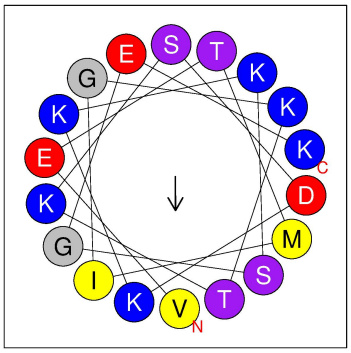
Physico-chemical properties
Hydrophobicity <H>
-0.183
Hydrophobic moment <μH>
0.257
Net charge z
3

Polar residues + GLY
Polar residues + GLY (n / %)
15 / 83.33
Uncharged residues + GLY
SER 2, THR 2, GLY 2
Charged residues
LYS 6, GLU 2, ASP 1,
Hydrophobic face : none

Nonpolar residues
Nonpolar residues (n / %)
3 / 16.67
Aromatic residues

Special residues
CYS 0, PRO 0

Go to screening | Manual mutation | GA mutation



$_{647}$**ETMIGKTKSDKKKSGEKS**$_{664}$

Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.253

Polar residues + GLY
Polar residues + GLY (n / %)
16 / 88.89

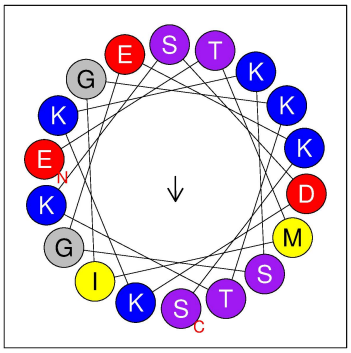
Nonpolar residues
Nonpolar residues (n / %)
2 / 11.11

Hydrophobic moment <μH>
0.187
Net charge z
3

Uncharged residues + GLY
SER 3, THR 2, GLY 2
Charged residues
LYS 6, GLU 2, ASP 1,
Hydrophobic face : none

Aromatic residues

Special residues
CYS 0, PRO 0



Go to screening | Manual mutation | GA mutation

$_{648}$**TMIGKTKSDKKKSGEKSS**$_{665}$

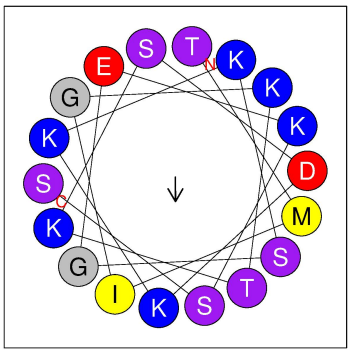
Click to enlarge

Physico-chemical properties
Hydrophobicity <H>
-0.220
Hydrophobic moment <μH>
0.185
Net charge z
4

Polar residues + GLY
Polar residues + GLY (n / %)
16 / 88.89
Uncharged residues + GLY
SER 4, THR 2, GLY 2
Charged residues
LYS 6, GLU 1, ASP 1,
Hydrophobic face : none

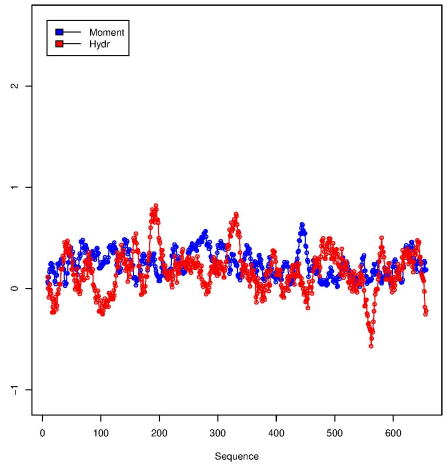
Nonpolar residues
Nonpolar residues (n / %)
2 / 11.11
Aromatic residues

Special residues
CYS 0, PRO 0

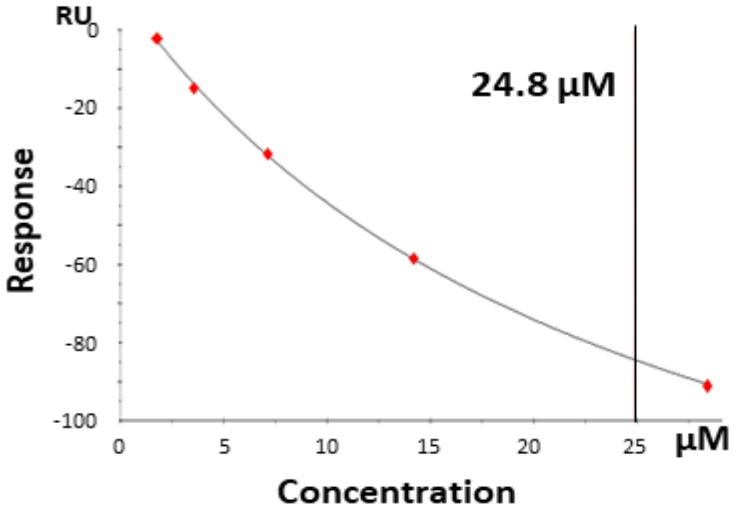


Go to screening | Manual mutation | GA mutation

Hydrophobicity and Hydrophobic moment



Data file (in txt format): Data.txt



Supplementary Figure S4: Affinity of recombinant human CRYAB for bovine lens lipids as measured by SPR.

Recombinant human CRYAB was assessed for its affinity to the same L1 chip coated with lipids prepared from bovine lens membranes. An affinity of 22.83µM was measured.