

**Figure 2S.** ProfileGrid showing the N- and C-terminal motifs of cluster III-A from PiT family members. The first 3 rows of the Profile Grid are a position ruler, a majority consensus, and a template sequence CysP from *Bacillus subtilis* (accession NP\_389441). The remaining rows tabulate the frequency of the amino acids (sorted by hydropathy) at each position of the alignment (no gaps are present on the motifs). Cells are color shaded according to the next frequency value: <10% (white), >10% (gray), >25% (yellow), >50% (orange), >70% (green), >90% (red). The number of sequences included in the alignment is 714. Position ruler numbering is the same used in Figure 4C. This figure was edited from the JProfileGrid program (Roca et al., BMC Bioinformatics 2008, 9:554).

### N-terminal motif Cluster III-A

Position		14	15	16	17	18	19	20	21	22	23	24	25	26	
Consensus			<b>N</b>	<b>I</b>	<b>G</b>	<b>G</b>	<b>S</b>		<b>T</b>	<b>G</b>	<b>A</b>	<b>A</b>	<b>M</b>	<b>G</b>	
NP 389441		M	N	I	G	A	S	G	A	A	A	S	M	G	
arg	R														<div>↑</div> <div>Hydropathy</div> <div>↑</div>
lys	K														
asp	D						1	1							
glu	E														
asn	N		26					1							
gln	Q														
his	H						2								
pro	P										5				
tyr	Y	2						2							
trp	W	3											3		
ser	S					2	24	9	1			9		1	
thr	T		3					4	19			2			
gly	G				30	16		13		17				29	
ala	A	1				12	3		10	13	15	17			
met	M	10		2									15		
cys	C														
phe	F	11											12		
leu	L	1													
val	V			1							8	2			
ile	I	1		27							2				

### C-terminal motif Cluster III-A

Position		178	179	180	181	182	183	184	185	186	187	188	189	190	
Consensus		<b>F</b>	<b>S</b>	<b>A</b>	<b>G</b>		<b>N</b>	<b>N</b>	<b>V</b>	<b>A</b>	<b>N</b>	<b>A</b>	<b>V</b>	<b>A</b>	
NP 389441		F	S	A	G	M	N	N	V	A	N	A	V	G	
arg	R														<div>↑</div> <div>Hydropathy</div> <div>↑</div>
lys	K														
asp	D							1							
glu	E														
asn	N						15	29			28				
gln	Q														
his	H						1								
pro	P									2					
tyr	Y	3													
trp	W														
ser	S		24	4		2	14		1	1	1	1		2	
thr	T		3			4							1		
gly	G				30					1				13	
ala	A		3	22		12			5	26		29	2	15	
met	M					12									
cys	C														
phe	F	27													
leu	L			2							1				
val	V								19				22		
ile	I			2					5				5		

Threshold	Color
0	White
0.1	Grey 25%
0.25	Yellow
0.5	Orange
0.7	Green
0.9	Red
Sequences:	714