

**Supplementary Table I.** Amino acid composition of BFP degenerate codon library

<b>Position</b>	<b>61</b>	<b>64</b>	<b>145</b>	<b>148</b>	<b>150</b>	<b>163</b>	<b>165</b>	<b>167</b>	<b>203</b>	<b>205</b>	<b>220</b>	<b>224</b>
<b>wtBFP</b>	<b>Val</b>	<b>Phe</b>	<b>Phe</b>	<b>His</b>	<b>Val</b>	<b>Val</b>	<b>Phe</b>	<b>Ile</b>	<b>Thr</b>	<b>Ser</b>	<b>Leu</b>	<b>Val</b>
	<b>GTC</b>	<b>TTT</b>	<b>TTT</b>	<b>CAC</b>	<b>GTT</b>	<b>GTT</b>	<b>TTC</b>	<b>ATT</b>	<b>ACT</b>	<b>TCT</b>	<b>TTG</b>	<b>GTT</b>
<b>Design</b>	<b>DYA</b>	<b>TTK</b>	<b>KBC</b>	<b>CAC</b>	<b>DTA</b>	<b>RYG</b>	<b>TWC</b>	<b>ATK</b>	<b>RSC</b>	<b>KCA</b>	<b>MTG</b>	<b>RBG</b>
	Ala	Leu	Ala	His	Ile	Ala	Phe	Ile	Ala	Ala	Leu	Ala
	Ile	Phe	Cys		Leu	Met	Tyr	Met	Gly	Ser	Met	Arg
	Leu		Gly		Val	Thr			Ser			Gly
	Ser		Phe		Val				Thr			Met
	Thr		Ser									Thr
	Val		Val									Val

IUPAC nomenclature for degenerate codons is as follows: B(CGT), D(AGT), K(GT), R(AG), S(CG), W(AT), Y(CT), M(AC)