FAST1 is a small protein tag of 125 amino acids (14 kDa) engineered from the photoactive yellow protein (PYP) from Halorhodospira halophila. FAST1 can be fused to the N- or C-terminus of any protein of interest. FAST1 forms non-covalent and reversible fluorescent molecular assemblies with various “Fluorogens of the Twinkle Factory, enabling to fluorescently label FAST1-tagged proteins in vitro, in live cells and in multicellular organisms. FAST1 differs from FAST2 by a single mutation in position 107. FAST1 contains a Val (V107) at this position while FAST2 contains an Ile (I107).

FAST1 sequence

MEHVAFGSEDIENTLAKMDGGDLALFGAIQLDGDNILQYNAEAGDITGRDPKVIGKNFFKDVA
PGTDSPEFYKFGVEVSHVAVLSTMNFEWMIPTSRGPTKVHVMMKALSGDYSYVFKY

DNA sequence coding for FAST1

atggagctatgctgctcttgcttgcaagacatcagacacacacatctggtgcacactggtggattgtggtcttggc
gcaattctctcgtagtatgtagctgtagctgtagctgaagagacatcacagccagagatccaaacaggtgatt
ggggaagactctctcaagagattgctggacaggttgctcccagttttaggaaattacagagacagagctgaaggtggtgggattttacggcaaattcatggaaggctgtagcatcgcttagcggaacatc
tgacacaccatgttcgaatggtgataccgaacaacagcaggggaacacacaggtcaggtgtgcatagatgaagatggacagacagcccattccccgggtgaca
gctattgggcttttggaacaggttg