

Sequence comparison of mammalian beta-tubulins

Protein Alignment for Human β -Tubulins (v1.1 2011-08-24)

		1	50
Beta-I	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLDRISVY	
NP_821133-HsTUBB1	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLDRISVY	
pig6903-contig-translation	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLDRISVY	
Beta-III	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPSGNYVGDSDLQLERISVY	
NP_006077-HsTUBB3	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPSGNYVGDSDLQLERISVY	
Beta-II	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGSYHGDSDLQLERINVY	
NP_001060-HsTUBB2A	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGSYHGDSDLQLERINVY	
NP_001003900-BtTUBB	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGSYHGDSDLQLERINVY	
NP_821080-HsTUBB2B	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGSYHGDSDLQLERINVY	
NP_001029869-BtBetaIV	(1)	MREIVHLQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(1)	MREIVHLQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
Beta-IVb	(1)	MREIVHLQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
NP_001029835-BtBetaII	(1)	MREIVHLQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
NP_006079-HsTUBB4B	(1)	MREIVHLQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
Consensus	(1)	MREIVHIQAGQCGNQIGAKFWEVISDEHGIDPTGTYHGDSDLQLERINVY	
		51	100
Beta-I	(51)	YNEATGGKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_821133-HsTUBB1	(51)	YNEATGGKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
pig6903-contig-translation	(51)	YNEATGGKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
Beta-III	(51)	YNEASSHKYVPRAILVDLEPGTMDSVRSGAFGHLFRPDNFI FGQSGAGNN	
NP_006077-HsTUBB3	(51)	YNEASSHKYVPRAILVDLEPGTMDSVRSGAFGHLFRPDNFI FGQSGAGNN	
Beta-II	(51)	YNEAAGNKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_001060-HsTUBB2A	(51)	YNEAAGNKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_001003900-BtTUBB	(51)	YNEATGNKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_821080-HsTUBB2B	(51)	YNEATGNKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_001029869-BtBetaIV	(51)	YNEATGGNYVPRAVLDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(51)	YNEATGGNYVPRAVLDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
Beta-IVb	(51)	YNEATGGKYVPRAVLDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_001029835-BtBetaII	(51)	YNEATGGKYVPRAVLDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
NP_006079-HsTUBB4B	(51)	YNEATGGKYVPRAVLDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	
Consensus	(51)	YNEATGGKYVPRAILVDLEPGTMDSVRSGPFGQIFRPDNFVFGQSGAGNN	

Sequence comparison of mammalian beta-tubulins

		101	150
Beta-I	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_821133-HsTUBB1	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
pig6903-contig-translation	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
Beta-III	(101)	WAKGHYTEGAELVDSVLDVVRKECENCDCCLQGFQLTHSLGGGTGSGMGTL	
NP_006077-HsTUBB3	(101)	WAKGHYTEGAELVDSVLDVVRKECENCDCCLQGFQLTHSLGGGTGSGMGTL	
Beta-II	(101)	WAKGHYTEGAELVDSVLDVVRKESESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_001060-HsTUBB2A	(101)	WAKGHYTEGAELVDSVLDVVRKESESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_001003900-BtTUBB	(101)	WAKGHYTEGAELVDSVLDVVRKESESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_821080-HsTUBB2B	(101)	WAKGHYTEGAELVDSVLDVVRKESESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_001029869-BtBetaIV	(101)	WAKGHYTEGAELVDAVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(101)	WAKGHYTEGAELVDAVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
Beta-IVb	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_001029835-BtBetaII	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
NP_006079-HsTUBB4B	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
Consensus	(101)	WAKGHYTEGAELVDSVLDVVRKEAESCDCLQGFQLTHSLGGGTGSGMGTL	
		151	200
Beta-I	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_821133-HsTUBB1	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
pig6903-contig-translation	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
Beta-III	(151)	LISKVREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSIHQLVENTDETY	
NP_006077-HsTUBB3	(151)	LISKVREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSIHQLVENTDETY	
Beta-II	(151)	LISKIREEYPDRIMNTFSVMPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_001060-HsTUBB2A	(151)	LISKIREEYPDRIMNTFSVMPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_001003900-BtTUBB	(151)	LISKIREEYPDRIMNTFSVMPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_821080-HsTUBB2B	(151)	LISKIREEYPDRIMNTFSVMPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_001029869-BtBetaIV	(151)	LISKIREEF PDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(151)	LISKIREEF PDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
Beta-IVb	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_001029835-BtBetaII	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
NP_006079-HsTUBB4B	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	
Consensus	(151)	LISKIREEYPDRIMNTFSVVPSPKVS DTVVEPYNATLSVHQLVENTDETY	

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		201	250
Beta-I	(201)	CIDNEALYDICFRTLRLTTPTYGDLNHLVSGTMECVTTCLRFPGQLNADL	
NP_821133-HsTUBB1	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
pig6903-contig-translation	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
Beta-III	(201)	CIDNEALYDICFRTLKLATPTYGDLNHLVSATMSGVTTSLRFPGQLNADL	
NP_006077-HsTUBB3	(201)	CIDNEALYDICFRTLKLATPTYGDLNHLVSATMSGVTTSLRFPGQLNADL	
Beta-II	(201)	SIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_001060-HsTUBB2A	(201)	SIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_001003900-BtTUBB	(201)	SIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_821080-HsTUBB2B	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_001029869-BtBetaIV	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
Beta-IVb	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_001029835-BtBetaII	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
NP_006079-HsTUBB4B	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
Consensus	(201)	CIDNEALYDICFRTLKLTTPTYGDLNHLVSATMSGVTTCLRFPGQLNADL	
		251	300
Beta-I	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPDLTQQVFDKNMM	
NP_821133-HsTUBB1	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQVFDKNMM	
pig6903-contig-translation	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQVFDKNMM	
Beta-III	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
NP_006077-HsTUBB3	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
Beta-II	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFD SKNMM	
NP_001060-HsTUBB2A	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFD SKNMM	
NP_001003900-BtTUBB	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFD SKNMM	
NP_821080-HsTUBB2B	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFD SKNMM	
NP_001029869-BtBetaIV	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
pig17213-contig-translation	(1)	-----	
NP_006078-HsTUBB4	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
Beta-IVb	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
NP_001029835-BtBetaII	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
NP_006079-HsTUBB4B	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	
Consensus	(251)	RKLAVNMVFPRLHFFMPGFAPLTSRGSQQYRALTVPELTQQMFDKNMM	

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		301		350
Beta-I	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_821133-HsTUBB1	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
pig6903-contig-translation	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
Beta-III	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLAIQSKNSYFVEWIPNNVK		
NP_006077-HsTUBB3	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLAIQSKNSYFVEWIPNNVK		
Beta-II	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_001060-HsTUBB2A	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_001003900-BtTUBB	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_821080-HsTUBB2B	(301)	AACDPRHGRYLTVAATVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_001029869-BtBetaIV	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLSVQSKNSYFVEWIPNNVK		
pig17213-contig-translation	(1)	-----		
NP_006078-HsTUBB4	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLSVQSKNSYFVEWIPNNVK		
Beta-IVb	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_001029835-BtBetaII	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
NP_006079-HsTUBB4B	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
Consensus	(301)	AACDPRHGRYLTVAAVFRGRMSMKEVDEQMLNVQNKNSYFVEWIPNNVK		
		351		400
Beta-I	(351)	TAVCDIPRGLKMAVTFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_821133-HsTUBB1	(351)	TAVCDIPRGLKMAVTFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
pig6903-contig-translation	(351)	TAVCDIPRGLKMAVTFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
Beta-III	(351)	VAVCDIPRGLKMSSTFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_006077-HsTUBB3	(351)	VAVCDIPRGLKMSSTFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
Beta-II	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_001060-HsTUBB2A	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_001003900-BtTUBB	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_821080-HsTUBB2B	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_001029869-BtBetaIV	(351)	TAVCDIPRGLKMAATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
pig17213-contig-translation	(1)	-----PRGLKMAATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_006078-HsTUBB4	(351)	TAVCDIPRGLKMAATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
Beta-IVb	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_001029835-BtBetaII	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
NP_006079-HsTUBB4B	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		
Consensus	(351)	TAVCDIPRGLKMSATFIGNSTAIQELFKRISEQFTAMFRRKAFLHWYTG		

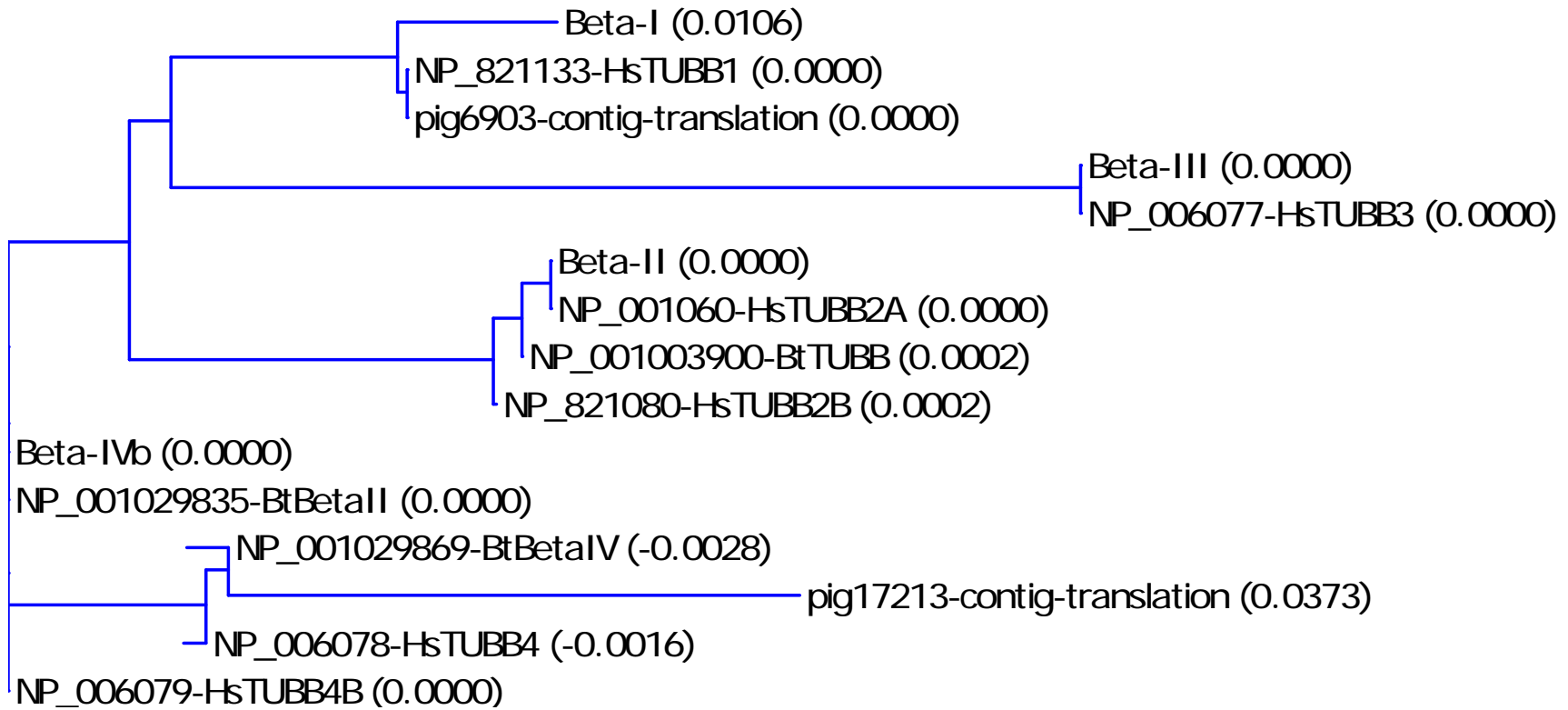


Sequence comparison of mammalian beta-tubulins

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                                401                                450
Beta-I (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEEDFGEEAEEEA-----
NP_821133-HsTUBB1 (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEEDFGEEAEEEA-----
pig6903-contig-translation (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEEDFGEEAEEEA-----
Beta-III (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEMYEDDEESEAQGPK
NP_006077-HsTUBB3 (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEMYEDDEESEAQGPK
Beta-II (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATADEQGEFEEEGEDEA-----
NP_001060-HsTUBB2A (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATADEQGEFEEEGEDEA-----
NP_001003900-BtTUBB (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATADEQGEFEEEGEDEA-----
NP_821080-HsTUBB2B (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATADEQGEFEEEGEDEA-----
NP_001029869-BtBetaIV (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEE-GEFEEAEEEA-----
pig17213-contig-translation (44) EGMDEMEFTEAESNMNDRGSEYQQYQDATAEE-GEFEEAEEEA-----
NP_006078-HsTUBB4 (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEE-GEFEEAEEEA-----
Beta-IVb (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEFEEAEEEA-----
NP_001029835-BtBetaII (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEFEEAEEEA-----
NP_006079-HsTUBB4B (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEFEEAEEEA-----
Consensus (401) EGMDEMEFTEAESNMNDLVSEYQQYQDATAEEEGEFEEAEEEA A
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Amino Acid Identity Analysis Amongst β -Tubulin Proteins

	Beta-I	NP_821133- HsTUBB1	pig6903- contig- translation	Beta-III	NP_006077- HsTUBB3	Beta-II	NP_001060- HsTUBB2A	NP_001003- 900-BtTUBB	NP_821080- HsTUBB2B	NP_0010298- 69-BtBetaIV	pig17213- contig- translation	NP_006078- HsTUBB4	Beta-IVb	NP_0010298- 35-BtBetaII	NP_006079- HsTUBB4B
Beta-I															
NP_821133- HsTUBB1		99	99	91	91	94	94	94	94	95	91	95	96	96	96
pig6903- contig- translation		100	100	92	92	95	95	95	95	97	91	97	98	98	98
Beta-III					100	91	91	91	92	92	87	92	93	93	93
NP_006077- HsTUBB3						91	91	91	92	92	87	92	93	93	93
Beta-II							100	100	100	95	91	95	96	96	96
NP_001060- HsTUBB2A								100	100	95	91	95	96	96	96
NP_001003900- BtTUBB									100	95	91	95	97	97	97
NP_821080- HsTUBB2B										96	91	96	97	97	97
NP_001029869- BtBetaIV											96	100	99	99	99
pig17213- contig- translation												96	95	95	95
NP_006078- HsTUBB4													99	99	99
Beta-IVb														100	100
NP_001029835- BtBetaII															100
NP_006079- HsTUBB4B															

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Protein Similarity Amongst β -Tubulin Proteins

	Beta-I NP_821133- HsTUBB1	pig6903- contig- translatio n 100	Beta-III NP_006077- HsTUBB3	Beta-II NP_001060- HsTUBB2A	NP_001003- 900- BtTUBB	NP_821080- HsTUBB2B	NP_001029- 869- BtBetaIV	pig17213- contig- translatio n 92	NP_006078- HsTUBB4	Beta-IVb NP_00102983- 5-BtBetaII	NP_006079- HsTUBB4B
Beta-I NP_821133- HsTUBB1	99	99	96	96	97	97	98	98	98	98	98
pig6903- contig- translatio n 100		100	96	96	98	98	98	92	99	99	99
Beta-III NP_006077- HsTUBB3			100	97	97	97	97	91	96	96	96
Beta-II NP_001060- HsTUBB2A				97	97	100	100	94	98	99	99
NP_00100390- 0-BtTUBB					100	100	100	94	98	99	99
NP_821080- HsTUBB2B						100	100	94	98	99	99
NP_00102986- 9-BtBetaIV								94	99	99	99
pig17213- contig- translatio n 92								96	100	100	100
NP_006078- HsTUBB4									96	96	96
Beta-IVb NP_00102983- 5-BtBetaII										100	100
NP_006079- HsTUBB4B											100