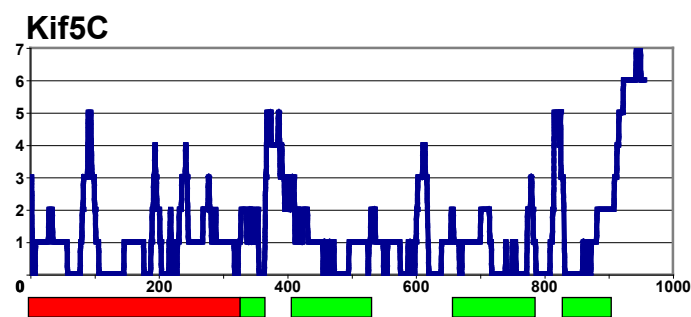
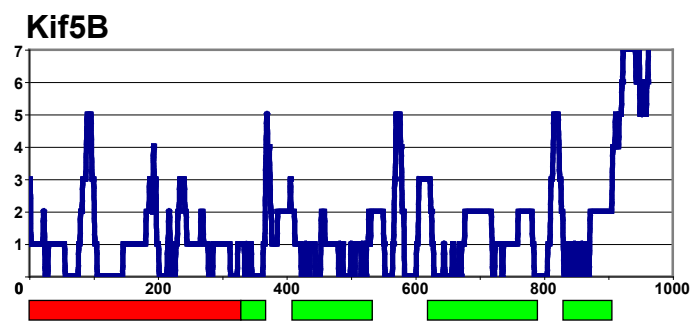
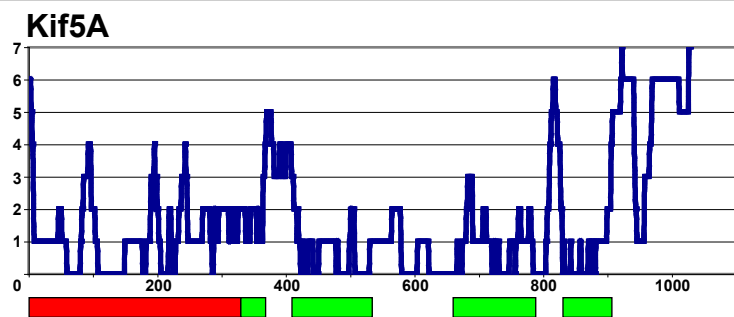


Figure S1

Kinesin-1 Disorder Predictions

Disorder Prediction

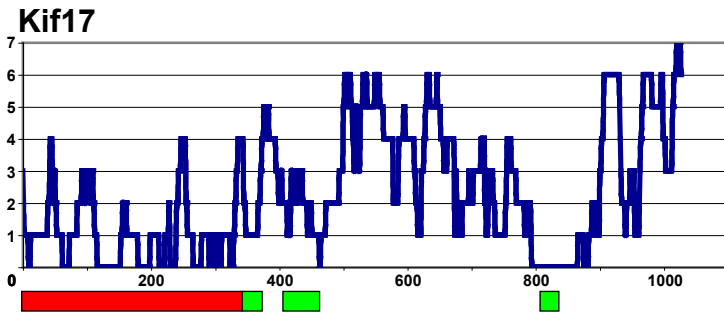
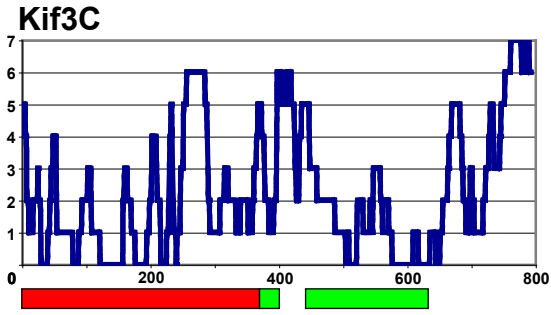
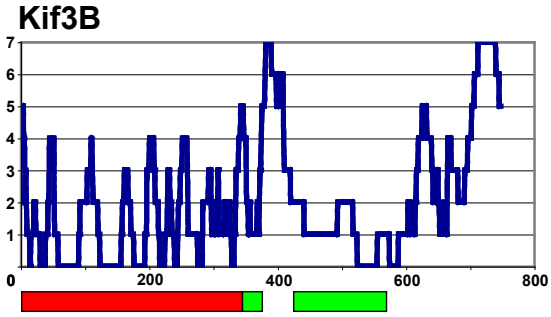
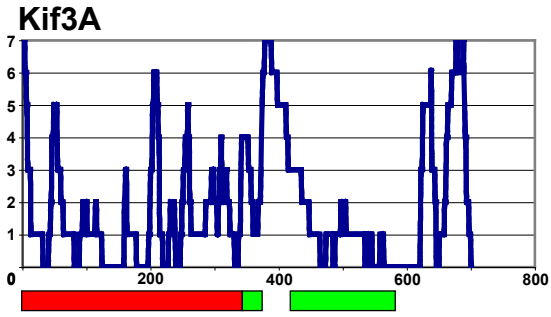


Residue

■ = Motor ■ = Coiled Coil

Kinesin-2 Disorder Predictions

Disorder Prediction



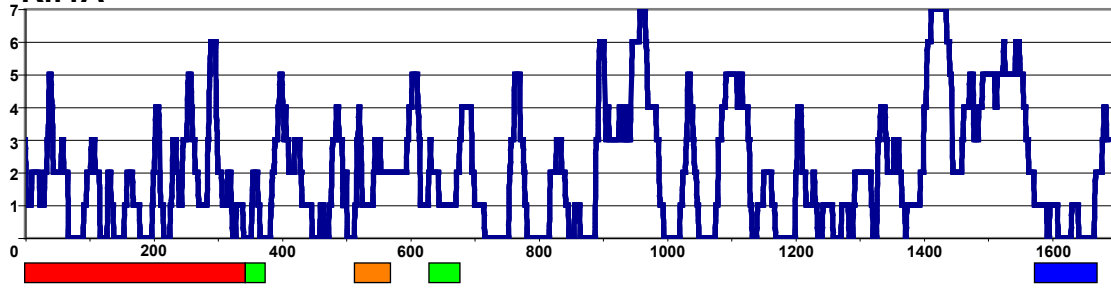
Residue

■ = Motor ■ = Coiled Coil

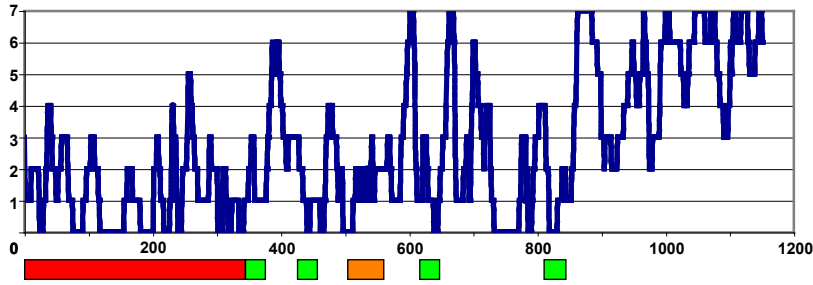
Kinesin-3 Disorder Predictions

Disorder Prediction

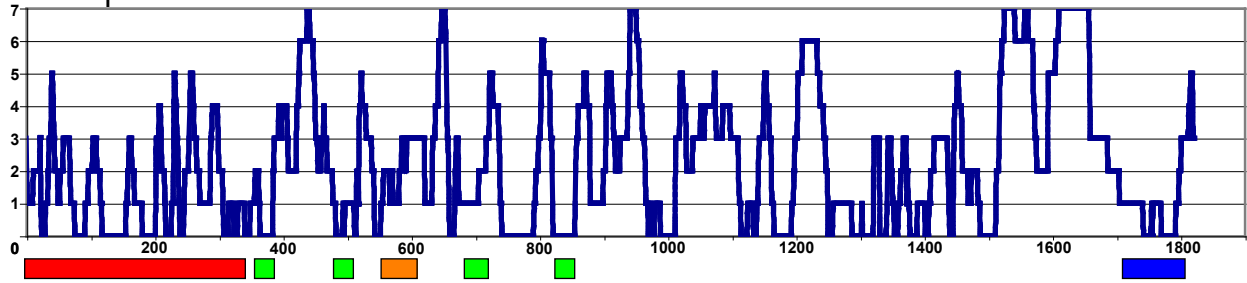
Kif1A



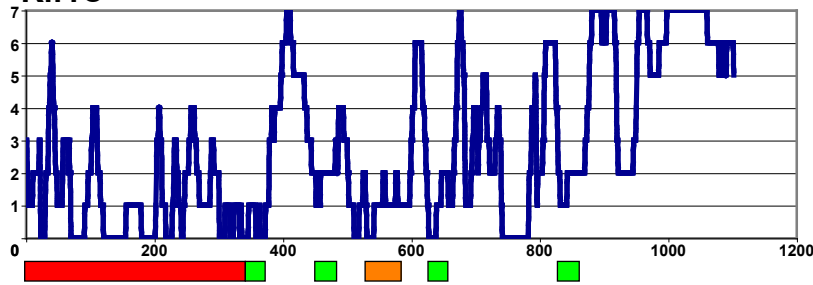
Kif1B α



Kif1B β



Kif1C



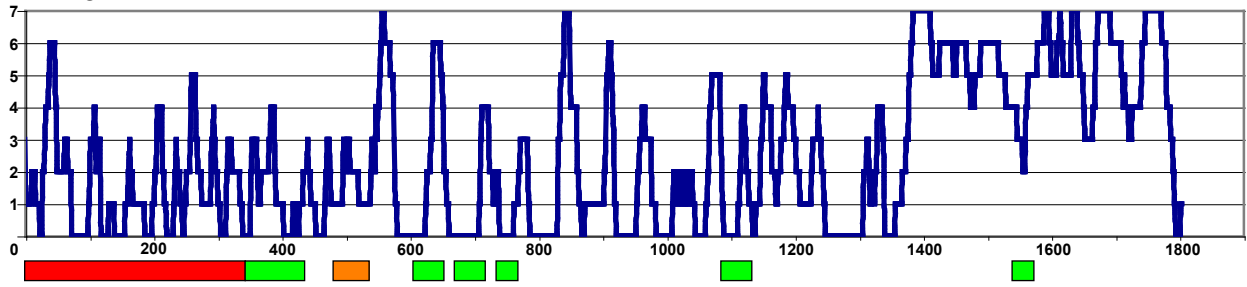
Residue

- = Motor
- = Coiled Coil
- = FHA
- = PH
- = PX
- = CAP-Gly

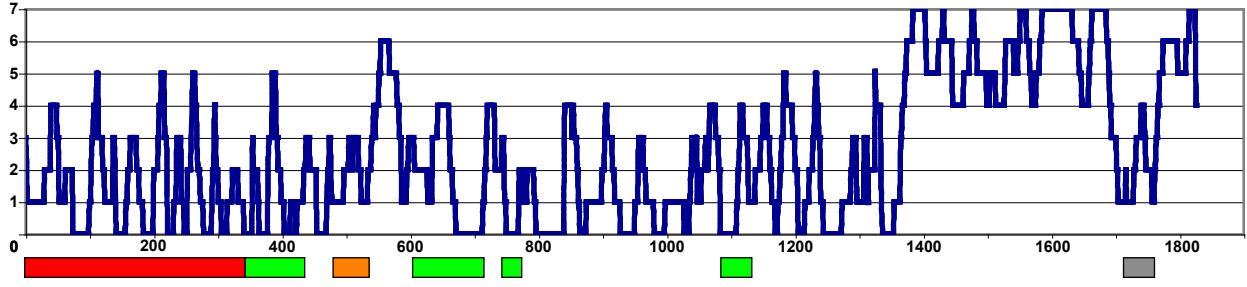
Kinesin-3 Disorder Predictions

Disorder Prediction

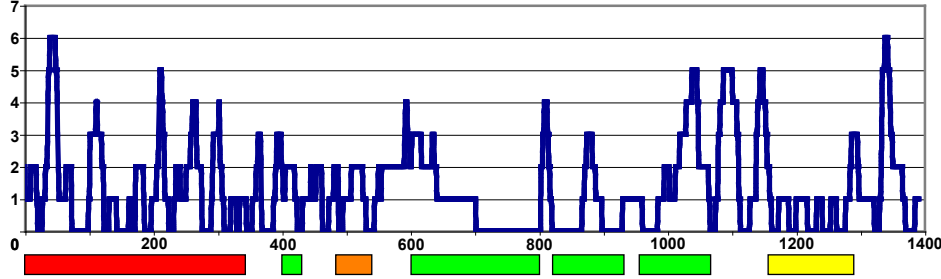
Kif13A



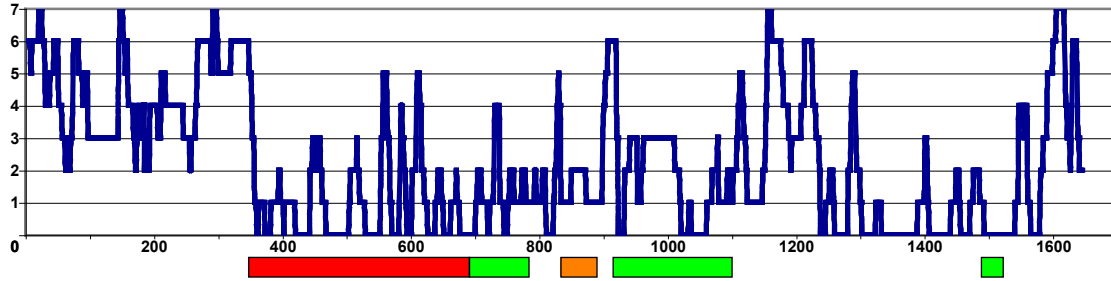
Kif13B



Kif16B



Kif14

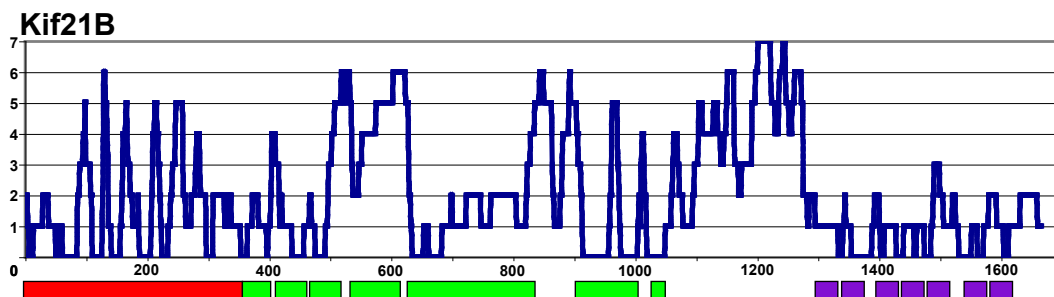
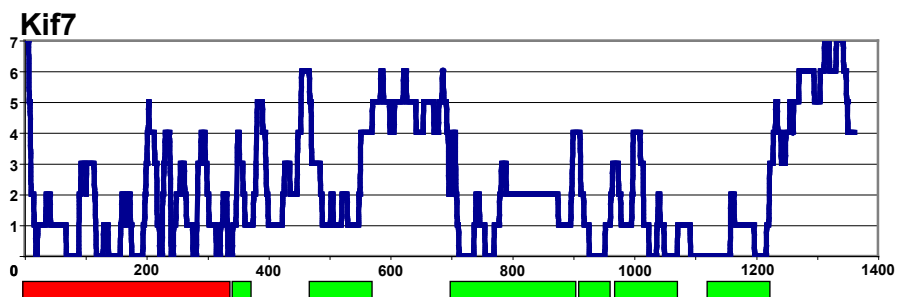
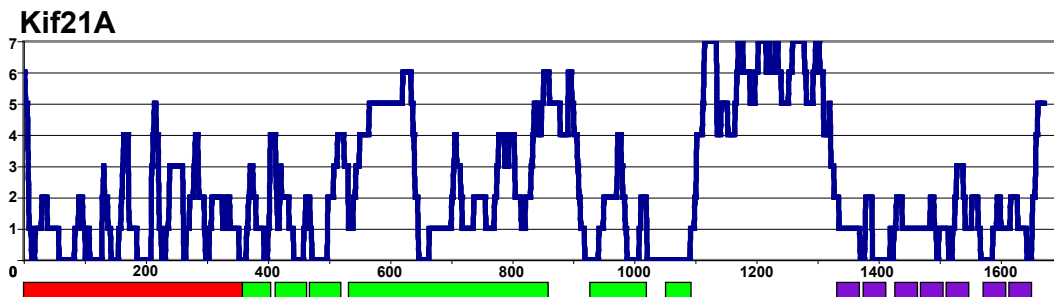
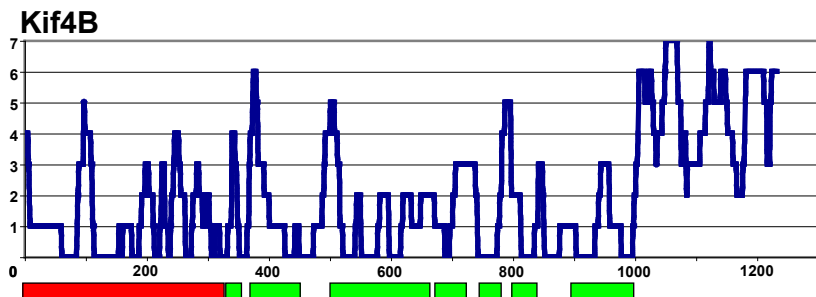
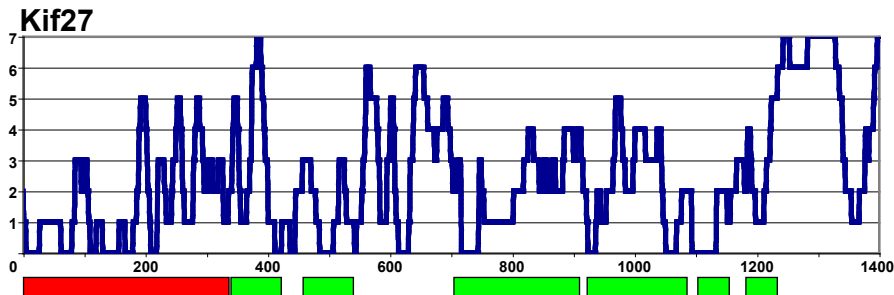
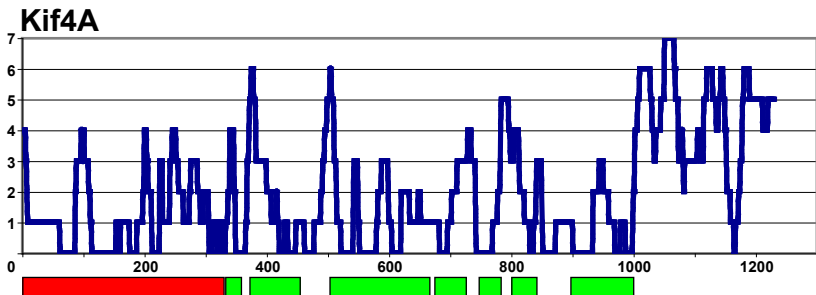


Residue

- = Motor
- = Coiled Coil
- = FHA
- = PH
- = PX
- = CAP-Gly

Kinesin-4 Disorder Predictions

Disorder Prediction

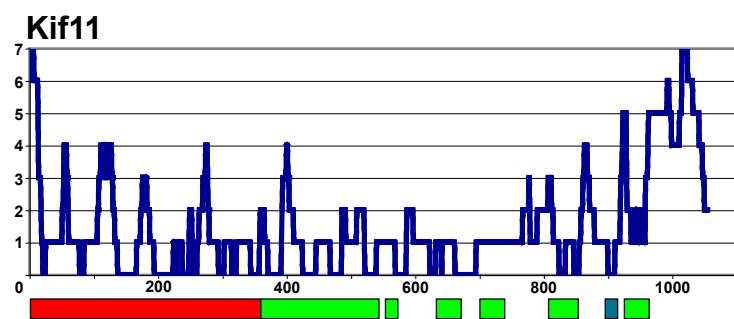


Residue

■ = Motor ■ = Coiled Coil
■ = WD40

Kinesin-5 Disorder Predictions

Disorder Prediction



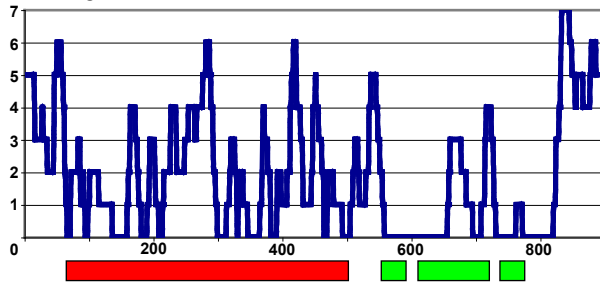
Residue

- = Motor
- = Coiled Coil
- = BimC Box

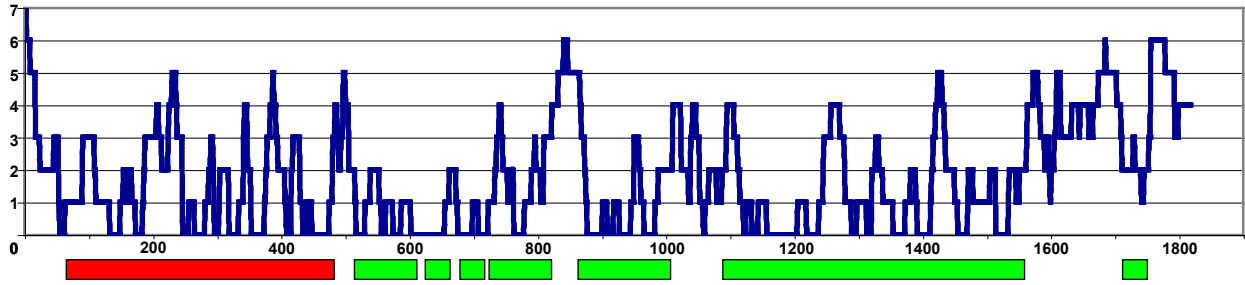
Kinesin-6 Disorder Predictions

Disorder Prediction

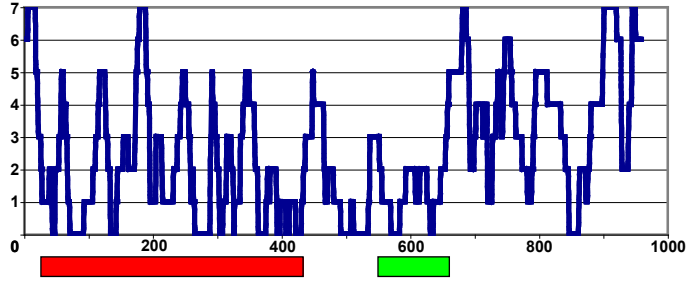
Kif20A



Kif20B



Kif23

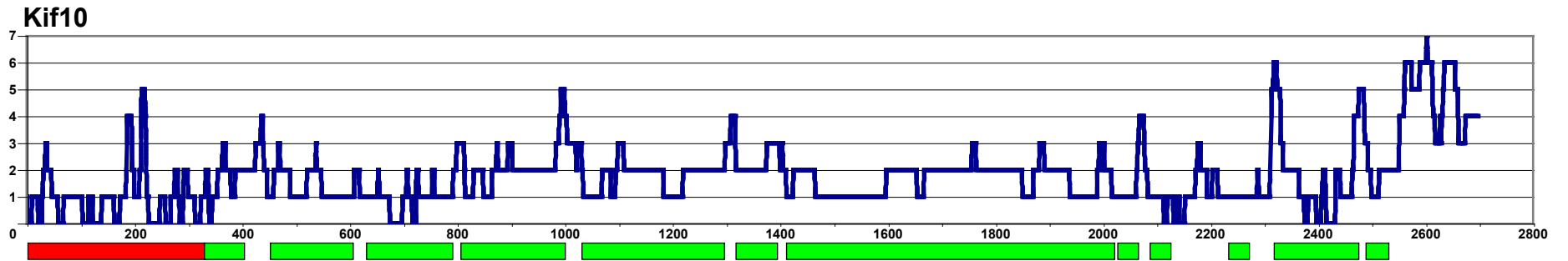


Residue

■ = Motor ■ = Coiled Coil

Kinesin-7 Disorder Predictions

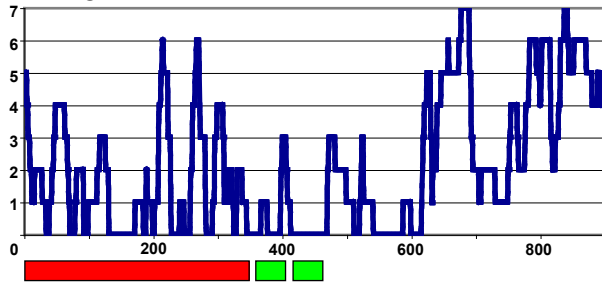
Disorder Prediction



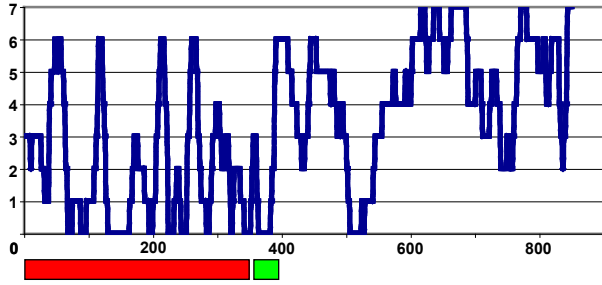
Kinesin-8 Disorder Predictions

Disorder Prediction

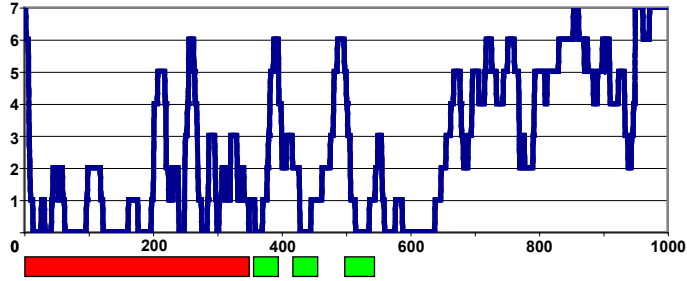
Kif18A



Kif18B



Kif19

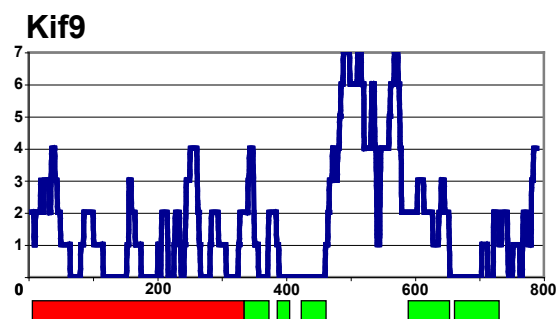
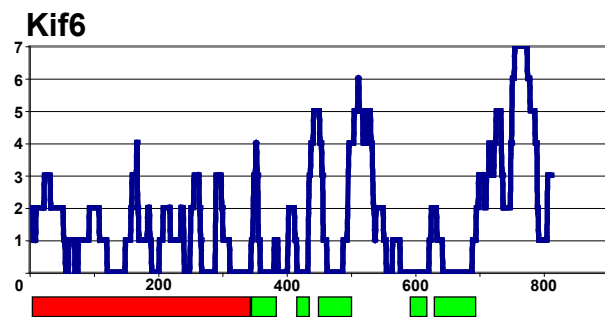


Residue

■ = Motor ■ = Coiled Coil

Kinesin-9 Disorder Predictions

Disorder Prediction

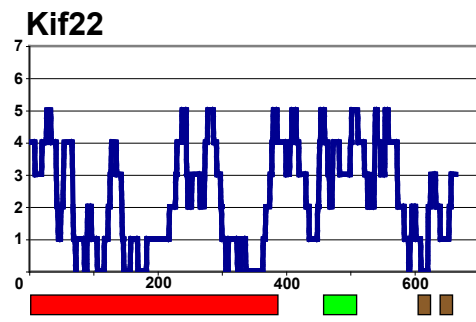


Residue

■ = Motor ■ = Coiled Coil

Kinesin-10 Disorder Predictions

Disorder Prediction



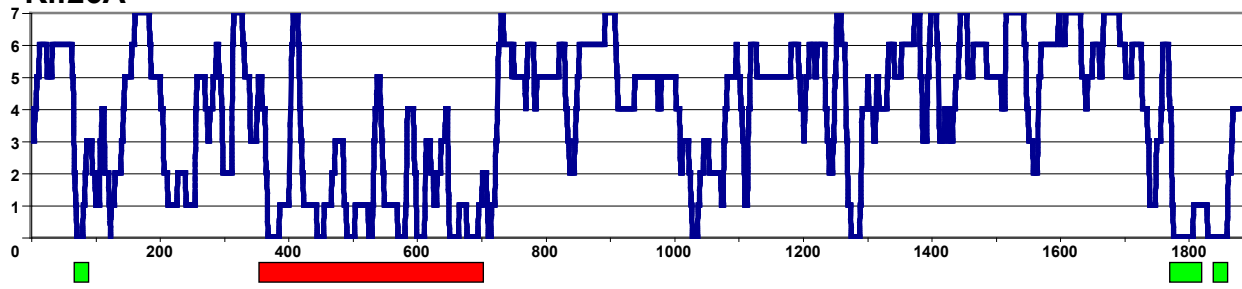
Residue

- = Motor
- = Coiled Coil
- = HhH

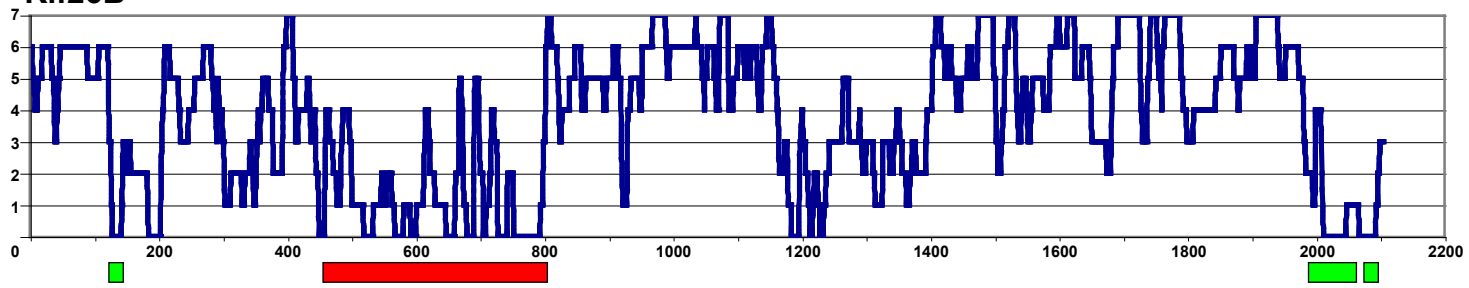
Kinesin-11 Disorder Predictions

Disorder Prediction

Kif26A



Kif26B

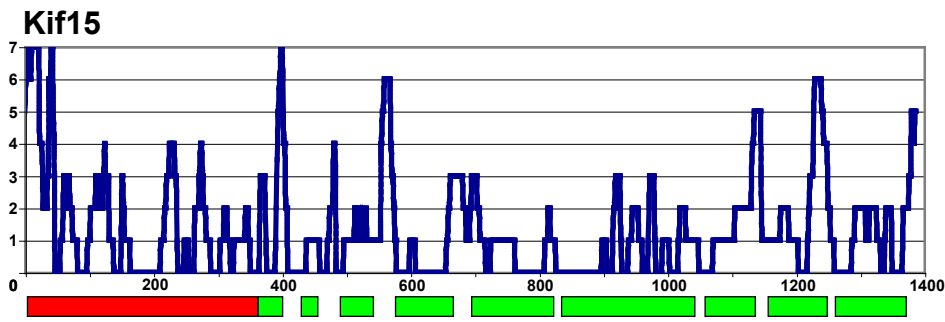
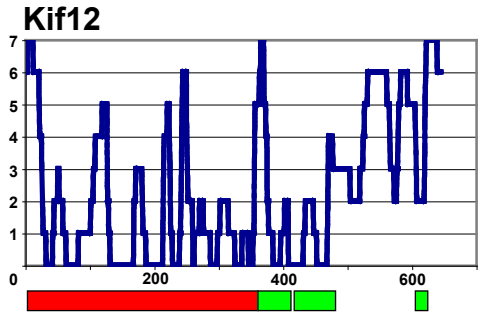


Residue

■ = Motor ■ = Coiled Coil

Kinesin-12 Disorder Predictions

Disorder Prediction

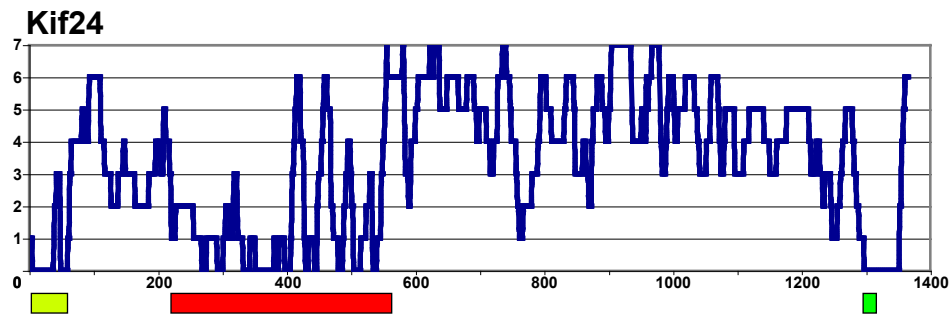
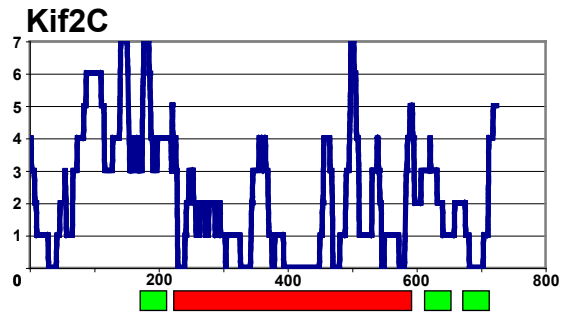
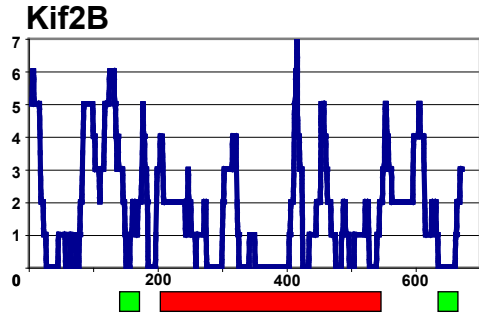
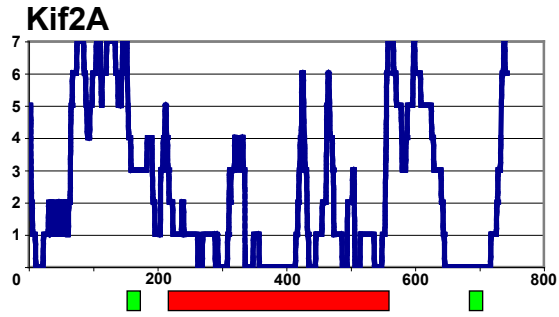


Residue

Motor Coiled Coil

Kinesin-13 Disorder Predictions

Disorder Prediction

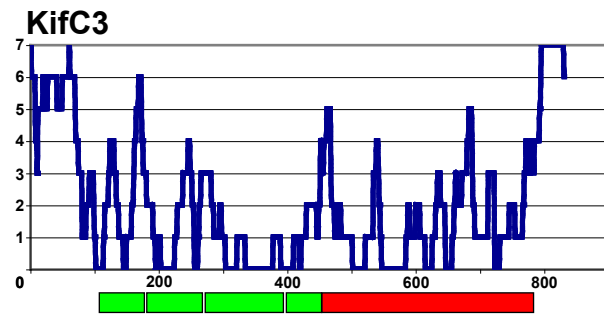
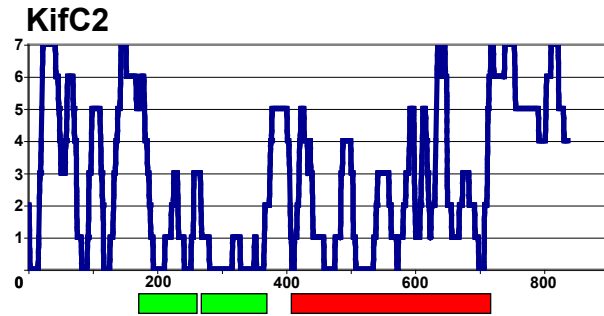
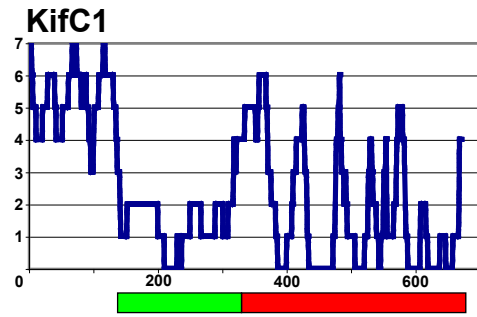


Residue

- = Motor
- = Coiled Coil
- = SAM

Kinesin-14 Disorder Predictions

Disorder Prediction



Residue

■ = Motor ■ = Coiled Coil

Table S1. Kinesin sequence conservation as classified by domain and by family.

Family	Domain	% Identity	% Similarity
Kinesin 1			
Kif5A,5B,5C			
	Motor	81.8	96.7
	Stalk	57.7	83.2
	Tail	16.7	28.6
	Non-motor	58.3	73.3
	Total	68.6	88.9
Kineisn 2			
Kif3A,3B,3C,17			
	Motor	44	73.3
	Stalk	6.9	20.6
	Tail	2.6	19.8
	Non-motor	5.7	20.4
	Total	19.9	40.3
Kif3A,3B,3C			
	Motor	52.8	82.5
	Stalk	26.2	60.3
	Tail	10.3	34.5
	Non-motor	19.9	50.1
	Total	35.6	65.6
Kinesin 3			
Kif1A,1Balpha,1Bbeta,1C,13A,13B,16B,14			
	Motor	36.1	63.9
	Stalk	2.6	5.1
	Total	9.3	18.5
Kif1A,1Bbeta			
	Motor	87	96.1
	Stalk1	74.3	86.8
	FHA	71.4	92.1
	Stalk2	61.8	82.1
	PH	77.4	93
	Non-motor	64.8	83.9
	Total	69.5	86.7
Kif1Balpha,1C			
	Motor	82	97.8
	Stalk1	63.9	81.3
	FHA	64.1	84.9
	Stalk2	68.2	87.5
	Tail	28.6	52.2
	Non-motor	52.6	73.2
	Total	62.4	81.7

Family	Domain	% Identity	% Similarity
Kif13A,13B	Motor	81.1	95.3
	Stalk1	85.3	99.1
	FHA	56	82
	Stalk2	52.3	81.8
	Tail/CAP-Gly	13	49.8
	Non-motor	47.5	77
	Total	53.3	80.6

Kinesin 4

Kif4A,4B,7,27,21A,21B	Motor	31	59
	Stalk	1.7	20
	Tail	0.4	5.7
	Non-motor	1.5	17
	Total	7.8	24.3
Kif4A,4B	Motor	97.3	100
	Stalk	91.6	98.2
	Tail	94.4	98.3
	Non-motor	92.4	98.2
	Total	95.4	98.7
Kif7,27	Motor	60.6	86.8
	Stalk	39.8	74.3
	Tail	15.9	42.4
	Non-motor	33.7	64.9
	Total	40.6	70.7
Kif21A,21B	Motor	75.2	92.2
	Stalk	50	81.4
	WD40	66.7	90
	Non-motor	54.3	83.7
	Total	59	85.5

Kinesin 5

Kif11
Single family member

Kinesin 6

Kif20A,20B,23	N-terminus	0	11.3
	Motor	24.5	58.7
	Stalk	1.5	10.7
	Tail	0	0
	Non-motor	1.3	9.6
	Total	7.1	22

Family	Domain	% Identity	% Similarity
Kinesin 7			
Kif10	Single family member		
Kineisn 8			
Kif18A,18B,19			
	Motor	37.5	71.3
	Stalk	5.6	28.3
	Tail	2.2	18.4
	Non-motor	3.3	21.4
	Total	15.7	39.8
Kinesin 9			
Kif6,9			
	Motor	41.6	81.9
	Stalk	18.1	57.5
	Tail	11.5	42.4
	Non-motor	16.4	53.4
	Total	27.8	67.2
Kinesin 10			
Kif22	Single family member		
Kinesin 11			
Kif26A,26B			
	N-terminal tail	17.2	32.8
	N-terminal stalk	30.1	62.3
	Motor	67.7	90.4
	C-terminal stalk	34.6	62.5
	Non-motor	2.5	60.4
	Total	38.8	65.9
Kinesin 12			
Kif12,15			
	Motor	33.4	66.6
	Stalk	5.5	15.3
	Total	13	29.8
Kineisn 13			
Kif2A,2B,2C,24			
	N-terminal tail	1.6	18.9
	N-terminal stalk	4.2	28.2
	Motor	15.6	45.6
	C-terminal stalk	0.2	2.9
	Non-motor	0.7	7.4
	Total	4.5	17.2

<u>Family</u>	<u>Domain</u>	<u>% Identity</u>	<u>% Similarity</u>
Kif2A,2B,2C			
	N-terminal tail	15.1	33.5
	N-terminal stalk	23.9	60.6
	Motor	65.9	89.7
	C-terminal stalk	6.8	37
	Non-motor	13.7	39.6
	Total	38.5	64

Kinesin 14

KifC1,C2,C3

Tail	1.6	15.1
Stalk	4.7	23.5
Motor	27.8	54.7
Non-motor	3.3	18.4
Total	13.2	34.6

Table S2. Locations, lengths, and pIs of predicted kinesin ID regions.

Isoform	3 Algorithm Consensus		Domain	Length	% Motor ID	% Stalk ID	% Tail ID	% Total ID	pI	Domains	Predicted % Domain Coiled-Coil	Domain pI
	ID Start	ID End										
Kinesin-1												
Kif5A	1	8 m	7	10.2	12.5	85.3	20.8	3.79	1-333 Motor	65.2	6.52 m	
	87	98 m	11					6.75	334-372 CC		5.32 s	
	192	200 m	8					5.24	412-538 CC		7.03 t	
	239	247 m	8					5.97	657-787 CC		5.65 total	
	366	413 s	47					4.15	825-902 CC			
	684	691 s	7					3.84	334-902 Stalk			
	811	828 s	17					4.83	903-1032 Tail			
	907	944 t	37					10.18				
	959	1032 t	73					4.12				
	Kif5B	1	3 m	2	10.7	8.8	100	14.5	3.8		1-336 Motor	72.1
84		101 m	17					6.92	337-367 CC	5.52 s		
188		198 m	10					9.49	415-542 CC	12.7 t		
235		242 m	7					8.31	617-791 CC	6.12 total		
368		375 s	7					6	827-906 CC			
569		580 s	11					4.37	337-906 Stalk			
607		624 s	17					6.28	907-963 Tail			
812		827 s	15					4.23				
907		963 t	56					12.7				
Kif5C		1	3 m	2	9.3	11.7	97.9	15.2	3.8	1-333 Motor	64.4	
	84	100 m	16					8.55	334-369 CC	5.17 s		
	193	197 m	4					5.49	411-519 CC	11.85 t		
	237	245 m	8					6.24	645-792 CC	5.86 total		
	278	279 m	1					5.95	829-908 CC			
	367	396 s	29					4.44	334-908 Stalk			
	402	411 s	9					5.52	909-957 Tail			
	604	618 s	14					9.99				
	780	781 s	1					9.79				
	816	830 s	14					3.37				
910	957 t	47					11.59					
Kinesin-2												
Kif3A	1	13 m	12	19.7	27.4	45.6	26.4	4.68	1-356 Motor	82.6	8.78 m	
	47	60 m	13					6.42	357-381 CC		4.98 s	
	162	163 m	1					8.75	421-587 CC		9.02 t	
	201	214 m	13					11	357-587 Stalk		6.16 total	
	252	261 m	9					8.79	588-702 Tail			
	296	299 m	3					9.18				
	309	312 m	3					5.24				
	342	357 m	15					9.53				
	373	436 s	63					4.68				
	623	644 t	21					9.4				
662	693 t	31					12.02					
Kif3B	1	8 m	7	19.9	20.4	60.4	28.9	8.35	1-351 Motor	63.5	9.13 m	
	46	53 m	7					7.17	352-373 CC		5.25 s	
	104	112 m	8					4.37	435-463 CC		9.33 t	
	162	167 m	5					9.99	485-582 CC		7.3 total	
	197	209 m	12					9.75	352-582 Stalk			
	230	232 m	2					3.8	583-747 Tail			
	249	260 m	11					5.86				
	293	296 m	3					8.75				
	336	351 m	15					10.45				
	373	420 s	47					4.52				
617	642 t	25					11					
648	650 t	2					9.5					
665	681 t	16					4.56					
692	748 t	56					9.6					
Kif3C	1	8 m	7	26	26.7	58.9	32.9	10	1-377 Motor	78.9	8.84 m	
	46	53 m	7					6	378-397 CC		5.77 s	
	103	107 m	4					8.59	450-629 CC		8.96 t	
	160	164 m	4					8.85	378-629 Stalk		8.28 total	
	202	210 m	8					9.76	630-793 Tail			
	230	235 m	5					3.56				
	248	290 m	42					8.63				
	316	321 m	5					9				
	362	378 m	16					8.47				
	397	427 s	30					12.31				
432	459 s	27					4.16					
548	558 s	10					8.84					
664	687 t	23					11.17					
699	702 t	3					6.74					
723	793 t	70					7.18					
Kif17	43	51 m	8	13.3	48.8	51.3	37.2	4.37	1-346 Motor	20.8	8.01 m	
	94	110 m	16					5.84	347-366 CC		4.62 s	
	244	255 m	11					5.86	402-461 CC		9.45 t	
	334	345 m	11					8.75	813-837 CC		5.38 total	
	372	399 s	27					4.68	347-837 Stalk			
	404	405 s	1					4	838-1029 Tail			
	421	422 s	1					8.75				
	431	437 s	6					4.68				
	495	578 s	83					4.37				
	587	613 s	26					4.09				
623	677 s	54					4.14					
697	700 s	3					5.57					
705	724 s	19					4.79					
730	735 s	5					3.56					
756	770 s	14					10.17					
901	934 t	33					4.86					
964	1029 t	65					10.01					
Kinesin-3												
Kif1A	1	2 m	1	16.9	24.8	37.7	30.8	5.28	1-362 Motor	42.5	8.6 m	
	36	45 m	9					8.26	431-460 CC		5.09 s	
	59	61 m	2					6.74	515-572 FHA		5.93 t	
	105	110 m	5					8.59	632-681 CC		5.86 total	
	204	211 m	7					5.19	363-681 Stalk			

	232	237 m	5					4	1576-1675 PH	
	248	266 m	18					4.03	682-1690 Tail	
	287	301 m	14					10		
	391	412 s	21					3.8		
	422	430 s	8					6.1		
	481	496 s	15					10		
	519	525 s	6					4.68		
	547	555 s	8					5.72		
	597	617 s	20					4.65		
	633	634 s	1					3.8		
	679	697 t	18					3.59		
	759	778 t	19					4.78		
	830	837 t	7					3.8		
	892	989 t	97					4.04		
	1032	1044 t	12					8.79		
	1082	1130 t	48					10.9		
	1205	1212 t	7					3.57		
	1331	1345 t	14					12		
	1361	1363 t	2					5.52		
	1403	1447 t	44					4.54		
	1462	1565 t	103					5.63		
	1681	1690 t	9					12.48		
Kif1Balpha										
	37	44 m	7	12.9	33.1	94.3	42.5	10	1-356 Motor	8.03 m
	59	68 m	9					4.35	361-379 CC	5.66 s
	105	110 m	5					8.59	425-453 CC	10.16 t
	208	210 m	2					5.19	509-566 FHA	8.66 total
	231	237 m	6					3.67	627-656 CC	
	255	266 m	11					9.99	815-856 CC	
	290	292 m	2					10.3	357-856 Stalk	34.7
	355	359 m	4					3.67	857-1153 Tail	
	381	409 s	28					3.56		
	414	429 s	15					4.09		
	472	488 s	16					6.85		
	543	544 s	1					5.52		
	568	571 s	3					5.52		
	589	611 s	22					5.02		
	623	628 s	5					5.84		
	654	673 s	19					4.04		
	691	693 s	2					8.47		
	698	727 s	29					10.7		
	777	783 s	6					4.56		
	798	814 s	16					4.32		
	858	916 t	58					6.79		
	926	975 t	49					12.13		
	981	1153 t	172					9.51		
Kif1Bbeta										
	1	2 m	1	16.3	36.5	45.2	37	5.28	1-362 Motor	8.03 m
	37	45 m	8					8.59	367-385 CC	5.11 s
	59	68 m	9					4.35	471-499 CC	5.31 t
	105	110 m	5					8.59	555-612 FHA	5.39 total
	162	165 m	3					8.75	672-722 CC	
	206	211 m	5					5.57	841-862 CC	
	231	237 m	6					3.67	363-862 Stalk	34.9
	255	266 m	11					9.99	1702-1801 PH	
	289	300 m	11					10	863-1823 Tail	
	388	409 s	21					5.18		
	423	455 s	32					4.64		
	461	469 s	8					4		
	520	539 s	19					6.92		
	587	622 s	35					4.88		
	635	659 s	24					4.82		
	672	674 s	2					4		
	718	739 s	21					6.18		
	800	820 s	20					6.21		
	859	880 t	21					3.66		
	905	919 t	14					3.71		
	927	965 t	38					10.26		
	1014	1030 t	16					4.35		
	1041	1111 t	70					5.13		
	1144	1162 t	18					5.73		
	1200	1247 t	47					4.97		
	1323	1331 t	8					8.75		
	1345	1349 t	4					5.08		
	1369	1373 t	4					9.75		
	1417	1437 t	20					6.18		
	1448	1460 t	12					4.32		
	1518	1576 t	58					4.67		
	1595	1687 t	92					7.83		
	1802	1823 t	21					11.01		
Kif1C										
	1	2 m	1	15.2	35.2	89.2	40	5.28	1-356 Motor	8.07 m
	22	23 m	1					3.8	360-379 CC	5.25 s
	36	46 m	10					8.31	438-479 CC	10.27 t
	59	68 m	9					4.35	522-575 FHA	6.47 total
	103	112 m	9					8.59	638-669 CC	
	205	212 m	7					4	828-871 CC	
	232	235 m	3					5.52	357-871 Stalk	36.4
	255	266 m	11					10.84	872-1103 Tail	
	290	293 m	3					11.17		
	380	445 s	65					4.37		
	487	501 s	14					10		
	601	623 s	22					4.59		
	668	684 s	16					4.28		
	696	722 s	26					11.56		
	732	740 s	8					11.71		
	788	795 s	7					4.21		
	806	829 s	23					3.9		
	872	922 t	50					3.88		
	947	1103 t	156					11.62		
Kif13A										
	1	2 m	1	20.6	35.9	89.5	40.4	5.28	1-360 Motor	8.38 m
	32	50 m	18					9.99	361-437 CC	5.26 s
	63	67 m	4					3.67	469-519 FHA	5.2 t
	103	118 m	15					6.75	602-640 CC	5.43 total
	207	215 m	8					9.75	664-705 CC	
	259	270 m	11					9.99	742-775 CC	

	292	297 m	5					8.75	1099-1138 CC	
	318	323 m	5					5.52	1517-1547 CC	
	355	362 m	7					4.32	361-1547 Stalk	25.9
	382	390 s	8					5.72	1548-1805 Tail	
	473	475 s	2					3.8		
	498	507 s	9					4.21		
	542	577 s	35					4.87		
	634	654 s	20					5.96		
	712	725 s	13					12.01		
	774	785 s	11					4.68		
	833	861 s	28					3.58		
	907	919 s	12					4.03		
	960	978 s	18					6.75		
	1068	1087 s	19					3.72		
	1118	1125 s	7					4.68		
	1149	1165 s	16					3.8		
	1180	1203 s	23					4.02		
	1230	1242 s	12					5.98		
	1314	1316 s	2					4		
	1330	1340 s	10					4		
	1375	1556 s	181					5.91		
	1561	1791 t	230					5.61		
Kif13B										
	1	2 m	1	18.8	27.6	69	41.4	5.28	1-361 Motor	7.58 m
	41	52 m	11					8.75	364-439 CC	5.22 s
	105	121 m	16					5.5	470-520 FHA	5.79 t
	138	140 m	2					3.8	607-710 CC	5.56 total
	165	174 m	9					12.02	752-772 CC	
	208	221 m	13					6.14	1096-1141 CC	
	238	243 m	5					5.83	363-1141 Stalk	34
	260	269 m	9					8.79	1721-1763 CAP-Gly	
	296	298 m	2					8.75	1142-1828 Tail	
	381	394 s	13					8.5		
	439	444 s	5					8.75		
	475	477 s	2					5.24		
	506	520 s	14					11		
	541	587 s	46					4.5		
	599	607 s	8					5.84		
	636	663 s	27					9.5		
	720	733 s	13					10.84		
	745	747 s	2					8.75		
	842	861 s	19					4.08		
	905	916 s	11					4.37		
	958	964 s	6					8.75		
	1041	1058 s	17					3.79		
	1062	1082 s	20					4.74		
	1115	1127 s	12					4.53		
	1148	1162 t	14					4		
	1181	1201 t	20					3.21		
	1230	1240 t	10					8.3		
	1292	1297 t	5					9.75		
	1310	1314 t	4					3.67		
	1327	1335 t	8					3.67		
	1367	1702 t	335					5.92		
	1734	1748 t	14					4.03		
	1765	1828 t	63					12.25		
Kif16B										
	36	52 m	16	17.5	10.8	20.6	15.2	5.85	1-366 Motor	8.87 m
	102	120 m	18					5.83	400-425 CC	5.13 s
	209	217 m	8					9.75	477-529 FHA	9.22 t
	259	268 m	9					5.88	595-801 CC	5.86 total
	294	304 m	10					9.7	829-882 CC	
	364	367 m	3					3.67	936-1083 CC	
	393	399 s	6					3.8	367-1083 Stalk	61.7
	592	617 s	25					5.24	1164-1301 PX	
	635	637 s	2					4	1084-1392 Tail	
	807	815 s	8					4.03		
	875	883 s	8					4.65		
	1020	1048 s	28					6.77		
	1080	1110 t	30					5.78		
	1139	1155 t	16					4.75		
	1287	1296 t	9					10		
	1334	1350 t	16					6.85		
Kif14										
	1	65 t	14	8.5	25.4	81.5	38.8	6.89	1-355 Tail1	9.65 t
	72	186 t	114					9.09	356-709 Motor	6.41 m
	195	357 t	162					9.97	710-791 CC	7.13 s
	449	455 m	6					8.26	824-876 FHA	5.5 t
	556	568 m	12					8.75	922-1079 CC	8.06 total
	586	590 m	4					3.67	1471-1500 CC	
	610	618 m	8					5.08	710-1500 Stalk	40.4
	732	740 s	8					6.07	1501-1648 Tail2	
	829	835 s	6					9.7		
	901	924 s	23					8.9		
	943	954 s	11					6.23		
	964	1012 s	48					5.79		
	1111	1123 s	12					5.3		
	1154	1237 s	83					5.73		
	1287	1295 s	8					3.39		
	1403	1405 s	2					8.75		
	1548	1562 t	14					4.37		
	1587	1642 t	55					6.03		
Kinesin-4										
Kif4A										
	1	8 m	7	16.9	22.1	96.5	34.6	5.9	1-344 Motor	8.34 m
	90	109 m	19					4.25	347-369 CC	5.7 s
	201	206 m	5					5.57	382-460 CC	5.67 t
	226	230 m	4					5.55	519-734 CC	5.99 total
	243	256 m	13					9.7	755-790 CC	
	277	287 m	10					5.96	742-856 ZBZ	
	341	347 s	6					3.8	808-849 CC	
	369	400 s	31					4.2	902-1000 CC	
	494	514 s	20					4	345-1000 Stalk	75.3
	544	549 s	5					3.8	1001-1232 Tail	
	589	599 s	10					11.71		
	713	742 s	29					10.41		
	783	814 s	31					6.49		

	843	850 s	7					3.92		
	945	951 s	6					4.25		
	1003	1082 t	79					4.76		
	1085	1173 t	88					7.57		
	1176	1232 t	56					8.87		
Kif4B				14.8	18.6	94.4	31.8			
	1	8 m	7					5.9 1-344 Motor		8.45 m
	90	111 m	21					4.25 347-368 CC		5.62 s
	199	204 m	5					5.19 382-460 CC		5.51 t
	226	230 m	4					5.55 519-678 CC		5.88 total
	245	256 m	11					9.7 685-734 CC		
	283	286 m	3					5.52 756-790 CC		
	341	348 s	7					5.08 742-856 ZBZ		
	369	393 s	24					4.25 811-849 CC		
	492	517 s	25					4.14 913-1000 CC		
	707	739 s	32					9.99 345-1000 Stalk	71.7	
	783	798 s	15					9.63 1001-1234 Tail		
	843	849 s	6					3.92		
	945	958 s	13					4.95		
	1003	1167 t	164					4.95		
	1178	1234 t	56					9.25		
Kif7				22	30.4	100				
	1	11 m	10					5.75 1-355 Motor		5.81 m
	94	115 m	21					4.53 360-389 CC		7.07 s
	201	218 m	17					12 488-552 CC		6.19 t
	230	240 m	10					12.3 711-903 CC		6.37 total
	257	263 m	6					8.85 912-961 CC		
	286	300 m	14					9.34 969-1082 CC		
	350	359 s	9					12.3 1113-1225 CC		
	381	397 s	16					12 356-1225 Stalk	65.1	
	428	436 s	8					4 1226-1363 Tail		
	449	486 s	37					4.12		
	552	696 s	144					5.85		
	703	708 s	5					5.52		
	784	791 s	7					11.7		
	900	913 s	13					6.2		
	966	975 s	9					4.37		
	1000	1016 s	16					4.78		
	1224	1363 t	139					6.21		
Kif27				23.2	37.9	89.3	40.4			
	86	95 m	9					8.26 1-349 Motor		8.15 m
	100	105 m	5					4 352-418 CC		6.33 s
	190	204 m	14					6.92 477-557 CC		8.8 t
	222	231 m	9					3.57 701-891 CC		6.9 total
	246	261 m	15					8.79 915-1070 CC		
	280	296 m	16					9.98 1118-1178 CC		
	304	310 m	6					3.8 1183-1231 CC		
	320	327 m	7					3.67 350-1231 Stalk	70.1	
	343	354 s	11					4.37 1232-1401 Tail		
	372	400 s	28					4.83		
	458	471 s	13					4.53		
	518	526 s	8					8.6		
	557	583 s	26					6.21		
	596	608 s	12					10.84		
	634	703 s	69					4.21		
	712	716 s	4					8.75		
	747	750 s	3					3.8		
	820	844 s	24					8.43		
	852	857 s	5					9.75		
	866	871 s	5					8.75		
	884	916 s	32					8.5		
	966	985 s	19					8.33		
	999	1045 s	46					9.16		
	1168	1180 s	12					6.76		
	1185	1192 s	7					4.14		
	1217	1345 t	128					6.09		
	1378	1401 t	23					8.59		
Kif21A				14.9	36.2	42.2	33.6			
	1	9 m	8					3.67 1-370 Motor		6.11 m
	164	173 m	9					9.7 371-413 CC		6.63 s
	212	223 m	11					9.75 416-462 CC		5.66 t
	241	262 m	21					3.77 465-515 CC		6.05 total
	281	288 m	7					11 532-838 CC		
	373	377 s	4					8.75 931-1019 CC		
	405	415 s	10					4.68 1053-1083 CC		
	510	533 s	23					6.11 371-1083 Stalk	78.8	
	546	642 s	96					11.24 1336-1373 WD40		
	706	717 s	11					6.2 1376-1414 WD40		
	777	806 s	29					10.15 1440-1478 WD40		
	833	910 s	77					11.52 1481-1523 WD40		
	974	982 s	8					4.14 1531-1569 WD40		
	1104	1328 t	224					5.17 1572-1612 WD40		
	1530	1540 t	10					5.24 1615-1652 WD40		
	1659	1674 t	15					3.37 1084-1674 Tail		
Kif21B				18.9	31.3	31.6	28.6			
	91	108 m	17					4.14 1-371 Motor		6.33 m
	129	137 m	8					9.6 372-412 CC		5.9 s
	162	173 m	11					11.52 418-467 CC		8.29 t
	211	221 m	10					9.75 472-514 CC		6.7 total
	243	260 m	17					3.49 532-612 CC		
	281	288 m	7					8.75 627-828 CC		
	406	417 s	11					4.68 924-1019 CC		
	499	538 s	39					8.74 1047-1068 CC		
	549	630 s	81					4.27 372-1068 Stalk	75.5	
	825	866 s	41					6.31 1299-1336 WD40		
	882	912 s	30					11.22 1339-1377 WD40		
	963	974 s	11					4.49 1404-1441 WD40		
	1011	1016 s	5					3.57 1444-1486 WD40		
	1063	1073 t	10					5.84 1494-1532 WD40		
	1099	1170 t	71					4.75 1535-1575 WD40		
	1176	1276 t	100					10.42 1578-1615 WD40		
	1492	1500 t	8					5.21 1069-1668 Tail		
Kinesin-5										
Kif11				15.8	5.1	100	17			
	1	18 m	17					9.82 1-367 Motor		7.07 m
	54	61 m	7					5.5 368-511 CC		5.19 s
	109	130 m	21					4.06 535-551 CC		5.08 t

	177	183 m	6					4.37	665-692 CC		5.47 total
	271	278 m	7					9.75	735-763 CC		
	395	404 s	9					4.53	805-849 CC		
	808	812 s	4					6	923-929 BimC Box		
	862	871 s	9					8.59	945-972 CC		
	921	930 s	9					11	368-972 Stalk	49.2	
	959	1050 t	91					4.76	973-1056 Tail		
Kinesin-6											
Kif20A	1	35 t	34	25.6	19.5	61.2	31.3	3.28	1-61 Tail1		3.85 t
	46	62 t	16					3.92	62-515 Motor		8.79 m
	84	86 m	2					3.8	561-588 CC		4.87 s
	164	175 m	11					10	611-719 CC		10.04 t
	195	202 m	7					6.74	728-762 CC		6.49 total
	227	236 m	9					3.67	516-762 Stalk	67.9	
	249	293 m	44					4.66	763-890 Tail2		
	321	326 m	5					12.01			
	370	377 m	7					6.46			
	413	431 m	18					8.27			
	448	461 m	13					10.84			
	513	517 s	4					5.28			
	535	551 s	16					3.96			
	661	677 s	16					9.61			
	715	727 s	12					8.59			
	825	890 t	65					11.07			
Kif20B	1	25 t	24	22.8	27.7	73.4	31.5	4.68	1-55 Tail1		4.25 t
	48	54 t	6					3.8	56-486 Motor		8.84 m
	93	110 m	17					6.23	523-607 CC		5.02 s
	190	215 m	25					8.44	614-641 CC		10.39 t
	226	247 m	21					3.93	667-696 CC		5.54 total
	292	295 m	3					8.47	710-795 CC		
	343	349 m	6					8.75	873-985 CC		
	380	396 m	16					4.87	1062-1559 CC		
	420	430 m	10					8.34	1655-1675 CC		
	483	491 s	8					4.37	487-1675 Stalk	65	
	495	506 s	11					4.21	1676-1820 Tail2		
	738	747 s	9					6.18			
	797	798 s	1					5.84			
	812	874 s	62					5.38			
	952	959 s	7					4.25			
	1012	1025 s	13					3.57			
	1041	1053 s	12					6.14			
	1096	1113 s	17					5.58			
	1248	1279 s	31					4.43			
	1329	1333 s	4					4			
	1418	1437 s	19					4.9			
	1564	1591 s	27					4.86			
	1595	1598 s	3					4.37			
	1607	1712 s	105					9.87			
	1730	1732 t	2					8.75			
	1755	1820 t	65					10.23			
Kif23	1	26 t	25	29.2	21.5	71.8	42.7	11.26	1-22 Tail1		12.04 t
	55	67 m	12					6.75	23-444 Motor		5.67 m
	112	130 m	18					6.75	535-640 CC		7.88 s
	155	162 m	7					4.21	445-640 Stalk	52.5	9.53 t
	173	195 m	22					10.27	641-960 Tail2		8.76 total
	206	214 m	8					3.83			
	239	258 m	19					9.53			
	291	300 m	9					9.61			
	316	322 m	6					3.56			
	337	359 m	22					9.4			
	438	466 s	28					10.79			
	538	552 s	14					8.51			
	656	693 t	37					9.69			
	700	720 t	20					10.35			
	729	774 t	45					10.51			
	792	841 t	49					11.61			
	880	929 t	49					6.35			
	940	960 t	20					11.17			
Kinesin-7											
Kif10	38	40 m	2	5.9	10.2	100	14.6	5.52	1-337 Motor		8.15 m
	189	198 m	9					8.6	338-401 CC		5.3 s
	216	225 m	9					4.53	489-609 CC		9.32 t
	367	372 s	5					6	629-785 CC		5.51 total
	428	443 s	15					8.5	820-1000 CC		
	471	473 s	2					5.49	1032-1282 CC		
	802	815 s	13					5.96	1318-1391 CC		
	877	878 s	1					6.1	1420-2007 CC		
	897	905 s	8					4.37	2020-2066 CC		
	986	1023 s	37					4.72	2085-2127 CC		
	1027	1034 s	7					5.5	2281-2318 CC		
	1101	1112 s	11					8.48	2337-2466 CC		
	1301	1320 s	19					3.91	2499-2553 CC		
	1378	1402 s	24					6.31	338-2553 Stalk	79.8	
	1760	1767 s	7					6.74	2554-2701 Tail		
	1885	1893 s	8					8.59			
	1996	2001 s	5					3.79			
	2068	2080 s	12					10.9			
	2179	2184 s	5					9.7			
	2315	2337 s	22					4.55			
	2469	2495 s	26					6.38			
	2554	2701 t	147					9.32			
Kinesin-8											
Kif18A	1	9 m	8	24	5.6	46.8	33.4	3.57	1-363 Motor		9.06 m
	47	67 m	20					9.83	368-408 CC		5.27 s
	118	126 m	8					8.76	413-453 CC		9.32 t
	209	227 m	18					10.84	364-453 Stalk	89.9	9.09 total
	262	281 m	19					8.46	454-898 Tail		
	296	310 m	14					10.28			
	401	406 s	5					3.67			
	473	482 t	9					8.57			
	524	526 t	2					5.52			
	619	632 t	13					4.37			

	640	695 t	55					10.2			
	753	766 t	13					6.75			
	777	819 t	42					8.15			
	824	898 t	74					11.34			
Kif18B	1	10 m	9	32.9	12.1	85.8	60.4	6.49	1-359 Motor		7.82 m
	13	27 m	14					6.17	361-393 CC		8.06 s
	40	65 m	25					4.18	360-393 Stalk	100	9.24 t
	114	127 m	13					8.57	394-852 Tail		9.01 total
	172	177 m	5					4.35			
	206	223 m	17					9.55			
	255	273 m	18					6.07			
	294	307 m	13					9.99			
	314	318 m	4					5.84			
	357	361 s	4					8.79			
	390	431 t	41					8.49			
	437	501 t	64					3.76			
	546	740 t	194					9.69			
	751	756 t	5					5.83			
	760	836 t	76					11.64			
Kif19	839	852 t	13					12			
	1	9 m	8	17.5	29.4	70.1	43.3	4.43	1-354 Motor		6.99 m
	203	221 m	18					11.7	356-391 CC		8.91 s
	252	270 m	18					10.74	418-454 CC		9.11 t
	288	297 m	9					8.22	507-552 CC		8.87 total
	322	331 m	9					5.24	355-552 Stalk	56.6	
	381	401 s	20					10.61	553-998 Tail		
	409	417 s	8					6.75			
	477	507 s	30					3.91			
	551	556 t	5					12			
	657	683 t	26					4.23			
	691	770 t	79					6.74			
	776	778 t	2					5.19			
	792	939 t	147					10.64			
	945	998 t	53					11.45			
Kinesin-9											
Kif6	24	33 m	9	8.8	19.7	61.2	21.5	3.92	1-353 Motor		6.36 m
	161	168 m	7					4.13	356-388 CC		7.36 s
	257	264 m	7					8.72	427-441 CC		5.49 t
	291	299 m	8					10.84	456-496 CC		6.47 total
	350	356 s	6					3.79	588-612 CC		
	436	457 s	21					4.51	633-684 CC		
	497	535 s	38					9.96	354-684 Stalk	46.2	
	700	707 t	7					6.71	685-814 Tail		
	712	737 t	25					4.31			
	750	790 t	40					8.18			
Kif9	807	814 t	7					8.22			
	25	32 m	7	10.4	35.8	8.8	21.5	8.59	1-345 Motor		6.87 m
	36	45 m	9					11	346-381 CC		6.66 s
	157	160 m	3					5.95	389-402 CC		6.11 t
	246	263 m	17					8.59	414-443 CC		6.71 total
	342	350 s	8					4.53	597-643 CC		
	468	541 s	73					9.52	654-698 CC		
	547	579 s	32					5.1	346-698 Stalk	48.1	
	605	614 s	9					10.74	699-790 Tail		
	642	646 s	4					6			
	782	790 t	8					11			
Kinesin-10											
Kif22	1	43 t	42	25.4	54.2	74.5	45.4	12.22	1-40 Tail1		12.13 t
	54	68 m	14					4.21	41-376 Motor		9.38 m
	127	144 m	17					6.75	465-508 CC		6.73 s
	229	247 m	18					12.6	377-508 Stalk	31.2	9.22 t
	254	266 m	12					11.52	602-621 HhH		9.5 total
	274	298 m	24					8.59	632-651 HhH		
	376	431 s	55					5.75	509-665 Tail2		
	452	468 s	16					10.83			
	473	527 t	54					9.21			
	538	574 t	36					5.22			
	626	633 t	7					3.67			
	658	665 t	7					8.29			
Kinesin-11											
Kif26A	1	69 t	68	19.5	79.9	63.6	66.7	5.64	1-119 Tail1		8.9 t
	89	97 t	8					5.55	120-145 CC		9.12 s
	110	116 t	6					5.57	120-368 Stalk	10.1	9.43 m
	144	209 s	65					6.93	369-733 Motor		8.99 s
	259	300 s	41					8.03	1778-1815 CC		4.54 t
	316	368 s	52					10.3	1832-1852 CC		9.12 total
	406	424 m	18					8.75	734-1852 Stalk	5.1	
	476	488 m	12					5.55	1853-1882 Tail2		
	536	549 m	13					3.67			
	587	599 m	12					8.25			
	618	624 m	6					8.25			
	641	651 m	10					6.05			
	726	840 s	114					7.89			
	849	1012 s	163					5.89			
	1016	1025 s	9					5.66			
	1049	1056 s	7					9.75			
	1081	1112 s	31					3.83			
	1119	1243 s	124					6.74			
	1250	1272 s	22					6.06			
	1294	1561 s	267					11.85			
	1569	1741 s	172					9.97			
	1753	1776 s	23					6.21			
	1870	1882 t	12					3.49			
Kif26B	1	128 t	127	15.5	77.5	95	65.1	9.58	1-128 Tail1		9.58 t
	148	150 s	2					5.52	129-147 CC		9.3 s
	157	158 s	1					5.96	129-447 Stalk	5.7	9.13 m
	208	304 s	96					9.15	448-809 Motor		6.87 s
	345	346 s	1					5.52	1994-2049 CC		10.26 t
	355	380 s	25					4.37	2072-2095 CC		8.76 total
	396	447 s	51					10.3	810-2095 Stalk	6.1	

	463	473 m	10					6.07	2096-2108 Tail2		
	487	502 m	15					9.51			
	616	624 m	8					3.8			
	670	675 m	5					3.28			
	694	702 m	8					10			
	718	728 m	10					8.79			
	801	922 s	121					5.69			
	932	1167 s	235					5.74			
	1176	1180 s	4					5.49			
	1200	1208 s	8					5.84			
	1246	1296 s	50					4.75			
	1303	1313 s	10					4.51			
	1329	1339 s	10					8.2			
	1346	1358 s	12					5.96			
	1375	1379 s	4					5.19			
	1396	1507 s	111					5.01			
	1513	1676 s	163					9.75			
	1684	1985 s	301					11.38			
	2002	2011 s	9					11.71			
	2102	2108 t	6					11.7			
Kinesin-12											
Kif12	1	26 m	25	20.4	53.2	100	36.4	4	1-368 Motor		9.63 m
	51	52 m	1					5.24	371-408 CC		8.27 s
	106	127 m	21					5.66	414-467 CC		11.52 t
	172	181 m	9					12	605-621 CC		9.19 total
	215	225 m	10					12	369-621 Stalk	42.1	
	243	252 m	9					3.67	622-646 Tail		
	356	375 s	19					12.31			
	471	504 s	33					6.97			
	520	572 s	52					8.44			
	577	607 s	30					5.9			
	620	646 t	26					11.52			
Kif15	1	28 m	27	18.6	14.1		15.2	5.94	1-371 Motor		8.55 m
	36	46 m	10					4.14	372-399 CC		5.46 s
	61	65 m	4					6.74	425-446 CC		5.75 total
	111	115 m	4					8.41	484-529 CC		
	123	131 m	8					4.35	576-650 CC		
	152	153 m	1					6.1	706-815 CC		
	221	236 m	15					12	825-1037 CC		
	272	278 s	6					5.32	1057-1138 CC		
	367	374 s	7					3.67	1151-1253 CC		
	393	406 s	13					3.8	1261-1388 CC		
	481	484 s	3					4	372-1388 Stalk	78.9	
	555	574 s	19					8.16			
	663	682 s	19					9.7			
	696	704 s	8					3.67			
	920	927 s	7					4			
	973	980 s	7					4.56			
	1132	1147 s	15					4.54			
	1223	1250 s	27					4.5			
	1377	1388 s	11					9.7			
Kinesin-13											
Kif2A	1	4 t	3	13.8	43	83.7	38.8	5.28	1-157 Tail1		5.92 t
	66	193 t	127					9.86	158-177 CC		7.99 s
	206	218 s	12					4.21	158-219 Stalk1	29.7	9.35 m
	313	336 m	23					8.18	220-560 Motor		4.24 s
	421	432 m	11					9.76	561-728 Stalk2	40.6	9.99 t
	463	474 m	11					5.96	705-728 CC		6.01 total
	504	506 m	2					9.75	729-744 Tail2		
	555	641 s	86					4.21			
	730	744 t	14					9.99			
Kif2B	1	19 t	18	11.8	26.9	53.3	25.1	5.75	1-150 Tail		9.1 t
	84	146 t	62					4.35	151-182 CC		9.8 s
	176	183 s	7					5.84	151-210 Stalk1	54.4	8.95 m
	200	209 s	9					5.72	211-549 Motor		5.97 s
	304	323 m	19					4.21	550-673 Stalk2	27.1	8.89 total
	412	424 m	12					12	638-673 CC		
	454	463 m	9					9.99			
	550	563 s	13					8.61			
	597	614 s	17					4.68			
	670	673 s	3					5.72			
Kif2C	1	8 t	7	22.8	42.5	67.4	39.4	3.8	1-184 Tail		7.81 t
	68	185 t	117					9.42	185-225 CC		9.3 s
	186	229 s	43					9.92	185-255 Stalk1		
	248	254 s	6					3.8	256-594 Motor	58	9.16 m
	347	370 m	23					8.51	595-725 Stalk2		4.43 s
	457	469 m	12					9.41	618-659 CC	61.4	8.03 total
	492	511 m	19					4.68	680-725 CC		
	532	543 m	11					9.99			
	585	597 m	12					5.4			
	608	632 s	24					3.98			
	713	725 s	12					12.02			
Kif24	44	49 t	5	15.7	91	49.1	64	5.08	1-64 SAM		5.8 t
	65	128 t	63					4.97	1-220 Tail1		8.83 m
	140	165 t	25					4.41	221-552 Motor		6.67 s
	188	221 t	33					8.19	553-1308 Stalk	4.1	4.55 t
	320	324 m	4					5.18	1287-1308 CC		6.69 total
	410	428 m	18					8.75	1309-1368 Tail2		
	451	470 m	19					4.78			
	494	502 m	8					11			
	531	534 m	3					5.24			
	549	590 s	41					10.06			
	594	759 s	165					10.44			
	783	870 s	87					4.87			
	876	1246 s	370					4.95			
	1262	1286 s	24					9.7			
	1357	1368 t	11					4			
Kinesin-14											
KifC1	1	141 t	140	33.1	0	87	38.5	10.93	1-161 Tail		10.5 t
	318	376 m	58					9.33	162-312 CC		5.4 s

	411	431 m	20					4.14	162-312 Stalk	100	6.68 m
	477	492 m	15					9.49	313-673 Motor		9.15 total
	528	534 m	6					9.6			
	552	555 m	3					9.47			
	571	584 m	13					4.68			
	669	673 m	4					11			
KifC2											
	19	75 t	56	31.8	20.5	85.9	47.9	4.76	1-185 Tail1		4.74 t
	95	115 t	20					3.79	186-258 CC		4.9 s
	134	188 t	54					5.01	270-351 CC		10.82 m
	227	232 s	5					3.8	186-406 Stalk	69.5	12.45 t
	258	268 s	10					9.76	407-725 Motor		9.62 total
	376	406 s	30					4.53	726-838 Tail2		
	421	441 m	20					5.72			
	486	504 m	18					4.14			
	543	560 m	17					6.57			
	587	600 m	13					12			
	611	621 m	10					9.79			
	632	650 m	18					8.84			
	675	680 m	5					9.81			
	713	838 t	125					12.33			
KifC3											
	1	81 t	80	16.3	17	94.9	31.3	11.7	1-101 Tail1		11.29 t
	93	99 t	6					6.74	102-166 CC		6.86 s
	123	134 s	11					4.68	172-251 CC		5.5 m
	162	181 s	19					6.42	257-368 CC		10.03 t
	239	252 s	13					5.32	394-444 CC		7.62 total
	267	282 s	15					9.99	102-444 Stalk	87.6	
	453	469 m	16					4.41	445-776 Motor		
	535	543 m	8					3.79	777-833 Tail2		
	635	639 m	4					4			
	663	664 m	1					5.52			
	673	689 m	16					4.68			
	714	723 m	9					12			
	770	833 t	63					11.27			
				18.2348837	29.5	71.7595238	34.8095238		Average		
				6.57208685	19.498608	23.9373681	13.324758		Standard Deviation		

Family	L1	L2	L3	L4	P-loop	L5	L6	L7	L8	L9	Switch I	L10	Switch II	L11	L12	L13	L14	NL
Kinesin-1	3	0	0	0	3	0	0	0	0	0	3	1	3	0	0	0	0	0
Kinesin-2	3	4	0	0	3	0	0	3	0	0	3	2	4	0	3	1	0	4
Kinesin-3	5	12	2	0	8	0	0	3	0	0	7	7	8	0	6	0	1	3
Kinesin-4	4	0	0	0	5	1	1	0	2	0	6	5	6	0	6	0	1	6
Kinesin-5	1	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0
Kinesin-6	2	1	0	0	2	4	4	2	0	0	3	1	3	0	2	0	0	3
Kinesin-7	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1
Kinesin-8	4	1	0	0	2	0	0	1	0	0	3	0	3	0	3	0	1	1
Kinesin-9	0	3	0	0	0	0	0	2	1	0	0	0	2	0	0	0	0	2
Kinesin-10	0	1	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0
Kinesin-11	0	3	0	0	1	0	0	2	1	0	2	2	1	0	0	0	1	0
Kinesin-12	3	2	0	0	3	0	1	1	0	0	2	1	1	0	0	0	0	2
Kinesin-13	0	0	0	0	4	0	0	0	0	0	4	0	4	0	3	0	1	0
Kinesin-14	0	3	0	0	3	0	0	2	0	0	3	3	3	0	1	0	3	0
Total	25	32	2	0	36	5	6	17	4	0	38	24	40	0	24	2	8	22

Family	Significant sequence differences relative to Kif5B motor
Kinesin-1	-
Kinesin-2	Kif3C Switch II contains a 24 residue Gly-rich insert
Kinesin-3	All Kinesin-3 motors except Kif14 contain a 5-12 residue Lys-rich L12 insert important for microtubule binding ⁵⁵
Kinesin-4	-
Kinesin-5	L5 contains a 8 residue insert that is involved in regulating motility ⁵⁶
Kinesin-6	All Kinesin-6 motors contain 20-100 residue L1 and L6 inserts important for microtubule binding and bundling ⁵⁷
Kinesin-7	-
Kinesin-8	All Kinesin-8 motors contain a 16-25 residue L2 insert rich in Pro and charged amino acids
Kinesin-9	-
Kinesin-10	L1 contains a 35 residue insert rich in Ala and positive amino acids that is ubiquitinated by CHFR ⁵⁸
Kinesin-11	All Kinesin-11 motors contain a 24 residue Pro-rich L1 insert, and are non-motile due to a 1 residue Switch I insert in the conserved SSRSH motif and a 4 residue Switch II deletion
Kinesin-12	All Kinesin-12 motors contain a 18 residue L1 insert
Kinesin-13	All Kinesin-13 motors contain a 13 residue L2 insert that is important for the microtubule depolymerase activity of the motors ³⁸
Kinesin-14	Neck-linker is located at the N-terminal end of the motor

Table S3. Predicted ID regions located in the kinesin motor domains.

Table S4. Secondary structure estimates calculated from predictions and CD data for the Kif5B, Kif10, and KifC3 tails.

Construct	α -Helix (%)	β -Strand (%)	Random Coil (%)	Predicted α -Helix (COILS) (%)	Predicted ID (%)	Number of Residues
Kif5B 822-963	26	14	60	54	43	148
Kif5B 860-963	28	32	40	40	53	110
Kif5B 905-963	3	12	85	0	95	66
Kif10 2600-2701	7	51	42	0	100	112
KifC3 1-99	7	49	44	0	89	108