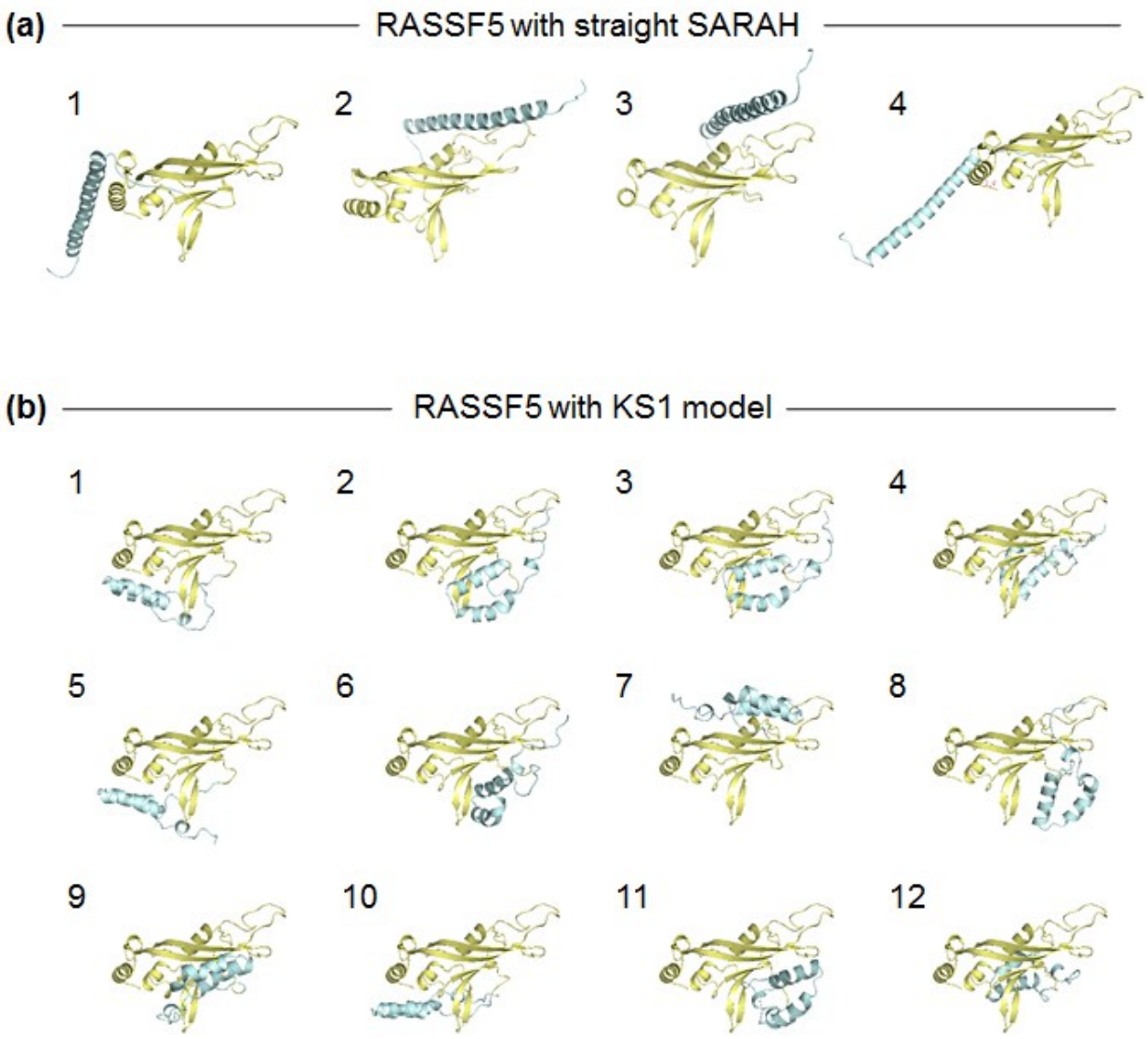
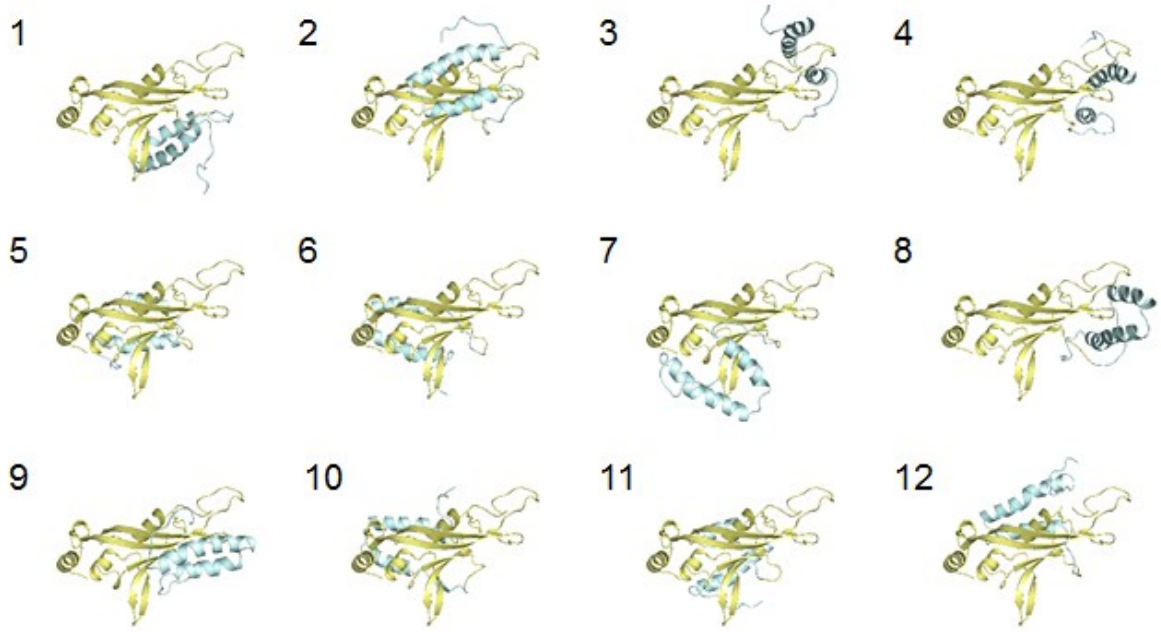
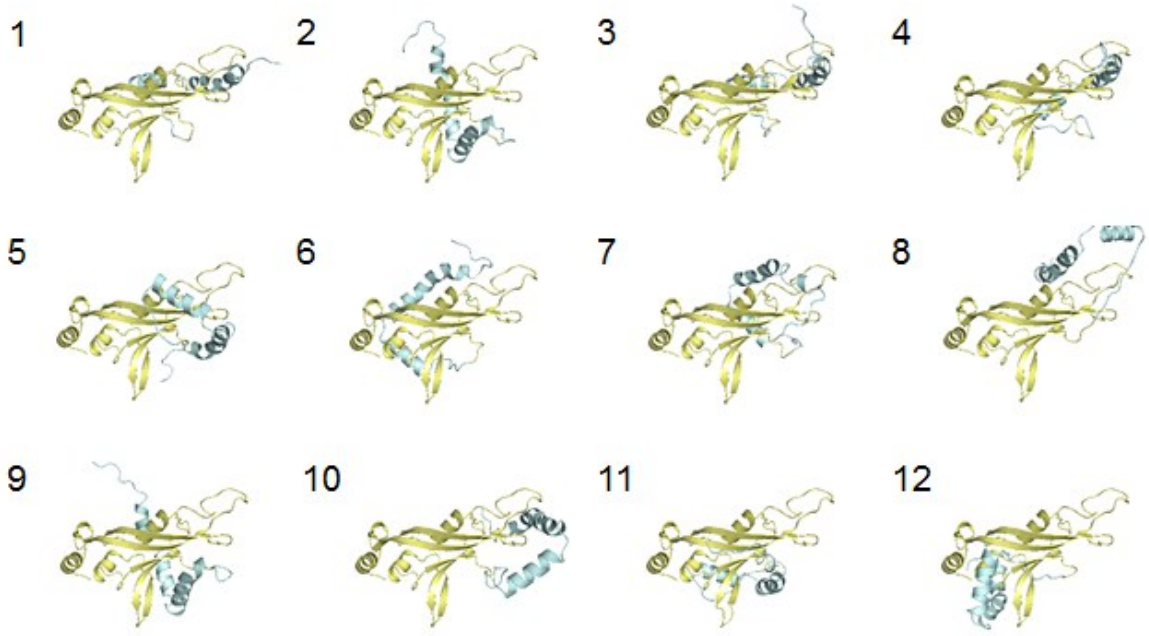
Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.



(c) RASSF5 with KS2 model



(d) RASSF5 with KS3 model



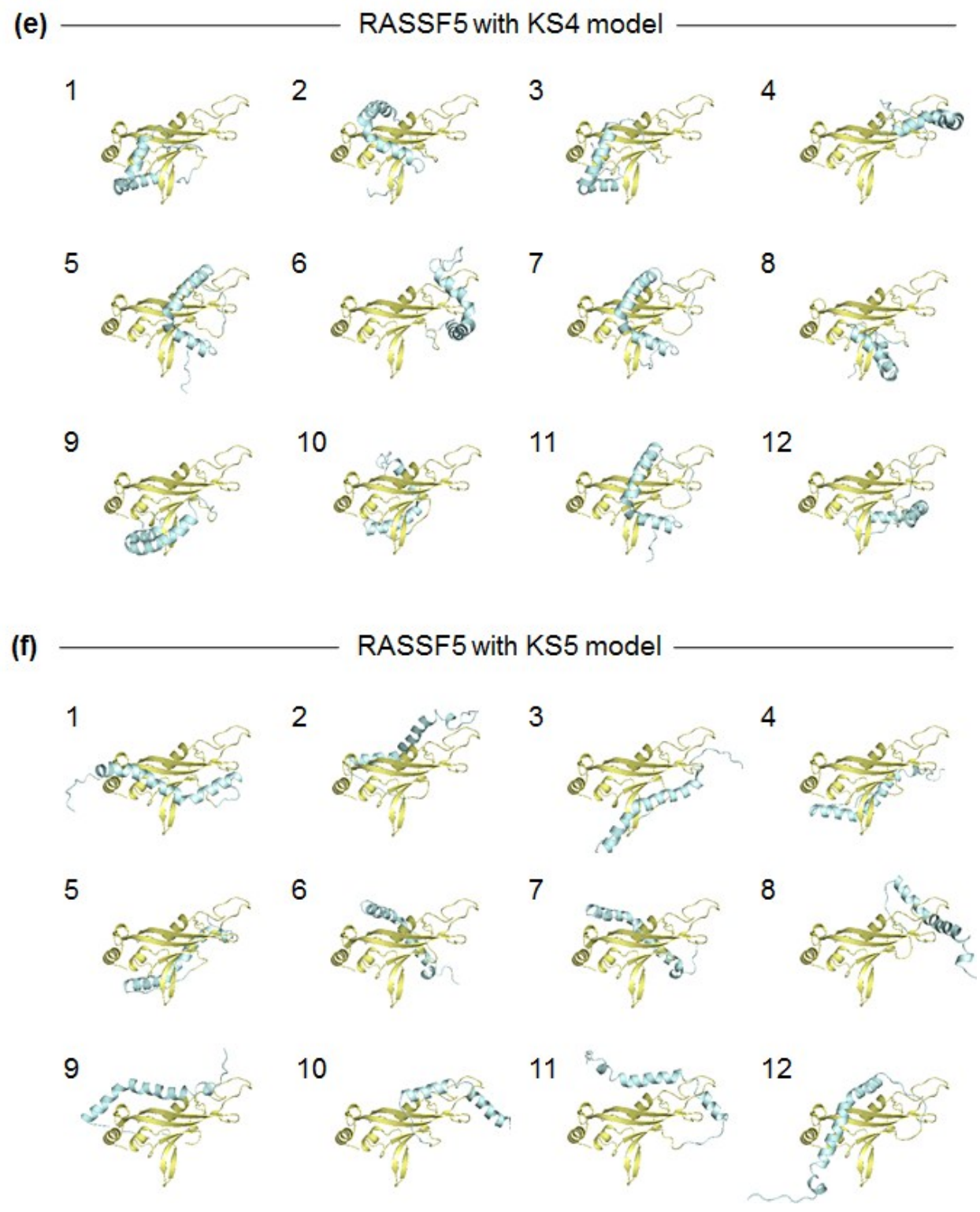


Fig. S1 Predicted RASSF5 decoys from (a) the PRISM server with straight SARAH and the Patchdock server with the kinked SARAH models of (b) KS1, (c) KS2, (d) KS3, (e) KS4, and (f) KS5.

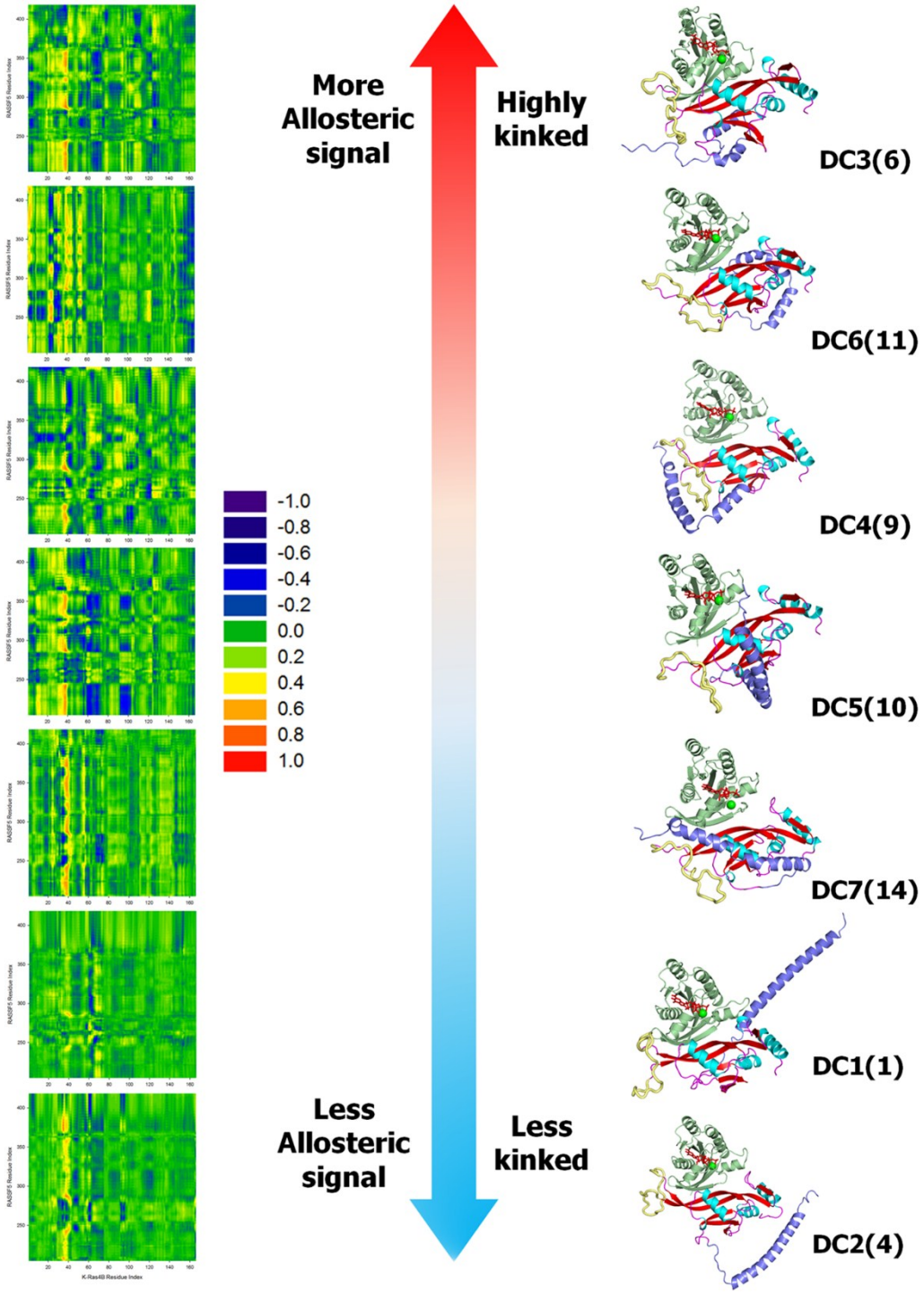

More Allosteric signal
Highly kinked
Less Allosteric signal
Less kinked
-1.0
-0.8
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
DC3(6)
DC6(11)
DC4(9)
DC5(10)
DC7(14)
DC1(1)
DC2(4)

Fig. S2 The configurations with highly kinked SARAH show the strong residue correlations with K-Ras4B-GTP. In contrast, straight SARAH (the least kinked) has less correlation with K-Ras4B-GTP. The RASSF5 structures with K-Ras4B-GTP are shown in the order of highly kinked on the left (DC3(6)) to less kinked or straight on the right (DC1(1), DC2(4)) SARAH. For the kinked SARAH models, the dynamical cross-correlation maps (DCCMs) shows strong residue correlations between K-Ras4B allosteric lobe and SARAH, which suggests that the allosteric signals are transmitted to release SARAH, activating RASSF5. With less kinked or straight SARAH, the signals from either allosteric lobe or effective lobe become weaker and eventually disappear when SARAH is fully stretched.

Table S1 Types of atomic interactions in the SARAH dimers. The atomic pair indicates monomer 1 – monomer 2 residue pair in the interface. The pairs will be viewed effective and counted when the residue pairs have more than 50 % occurrence rate.

Configuration	Salt bridge	Nonpolar	Polar	H-bond
RASSF5-MST2 hetero-SARAH	E385 - R474, E388 - R467, E388 - R474, K398 - E462, R403 - D456	I374 - M481, L377 - I477, L377 - A480, L377 - M481, F380 - I477, L381 - I477, L381 - L478, L381 - M481, L384 - I477, I392 - M459, I392 - I463, I392 - L466, V395 - M459, V395 - I463, V395 - L466, F402 - F437, F402 - F439, F402 - L440, F402 - L455, F402 - M458, L406 - F437, L406 - L440, L406 - L443, L406 - L448, L406 - L452, L406 - L455, A409 - L440, A409 - L443, A409 - L448	S373 - Q489	NA
MST2-MST2 homo-SARAH	D456 - R474, E462 - R469 R469 - E462, R474 - D456	F437 - P476, F437 - I477, F437 - A480, L440 - P476, L440 - I477, L440 - A480, L443 - I477, L443 - A480, L445 - M481, L448 - I477, L448 - A480, L448 - M481, L452 - I477, L452 - L478, L452 - M481, L455 - I477, M459 - I463, M459 - L466, I463 - M459, I463 - I463, I463 - L466, L466 - M458, L466 - M459, L466 - I463, L466 - L466, P476 - F437, P476 - L440, I477 - F437, I477 - L440, I477 - L443, I477 - L448, I477 - L452, I477 - L455, L478 - L452, A480 - F437, A480 - L440, A480 - L443, A480 - L448, M481 - L445, M481 - L448, M481 - L452	NA	NA
RASSF5-RASSF5 homo-SARAH	E385 - R403, E388 - R403, R403 - E388	L377 - L406, L377 - A409, F380 - F402, F380 - L406, F380 - A409, L381 - L406, L384 - F402, L384 - L406, I392 - I392, I392 - V395, V395 - I392, V395 - V395, F402 - F380, F402 - L384	Q389 - Q396, Q396 - Q389	NA

Continued

Configuration	*Salt bridge*	*Nonpolar*	*Polar*	*H-bond*
RASSF5(E388A)-MST2 hetero-SARAH	E385 - R474, K398 - E462, R403 - D456	I374 - M481, L377 - I477, L377 - A480 L377 - M481, F380 - I477, L381 - I477, L381 - L478, L381 - M481, L384 - I477, A388 - L466, I392 - M459, I392 - I463, I392 - L466, V395 - M459, V395 - I463, V395 - L466, F402 - F437, F402 - F439, F402 - L440, F402 - L455, F402 - M458, L406 - F437, L406 - F439, L406 - L440, L406 - L443, L406 - L448, L406 - L452, L406 - L455, A409 - L440, A409 - L443, A409 - L448, L410 - L445, L410 - L448, L410 - L452	S373 - N490	NA
RASSF5(E388K)-MST2 hetero-SARAH	E385 - R474, K398 - E462, R403 - D456	I374 - M481, L377 - I477, L377 - A480, L377 - M481, F380 - I477, L381 - I477, L381 - L478, L381 - M481, L384 - I477, I392 - M459, I392 - I463, I392 - L466, V395 - M459, V395 - I463, V395 - L466, F402 - F437, F402 - F439, F402 - L440, F402 - L455, F402 - M458, L406 - F437, L406 - L440, L406 - L443, L406 - L448, L406 - L452, L406 - L455, A409 - L440, A409 - L448, L410 - L445, L410 - L448, L410 - L452	S373 - N490	NA
RASSF5(E388A)-RASSF5(E388A) homo-SARAH	R403 - E385	I374 - L410, L377 - L406, L377 - L410, F380 - F402, F380 - L406, F380 - L410, L381 - L406, L381 - L410, L384 - F402, L384 - L406, A388 - V395, I392 - I392, I392 - V395, V395 - A388, V395 - I392, V395 - V395, F402 - F380, F402 - L384, L406 - I374, L406 - L377, L406 - F380, L406 - L381, L406 - L384, A409 - I374, A409 - L377, A409 - F380, L410 - I374, L410 - P375, L410 - L377, L410 - F380, L410 - L381	Q389 - Q396, Q396 - Q389	NA
RASSF5(E388K)-RASSF5(E388K) homo-SARAH	E385 - R403, D400 - K388, K388 - D400	I374 - L406, I374 - A409, I374 - L410, P375 - L410, L377 - L406, L377 - A409, L377 - L410, F380 - F402, F380 - L406, F380 - L410, L381 - L406, L381 - L410, L384 - F402, L384 - L406, I392 - I392, I392 - V395, V395 - I392, V395 - V395, F402 - F380, F402 - L384, L406 - I374, L406 - L377, L406 - F380, L406 - L381, L406 - L384, A409 - L377, A409 - F380, L410 - I374, L410 - P375, L410 - L377, L410 - F380, L410 - L381	Q389 - Q396, Q396 - Q389	NA

Table S2 Types of atomic interactions in the SARAH dimers. The results of replica exchange molecular dynamics (REMD) simulations of SARAH monomer show that the sum of straight and one kinked SARAH domain have about 90% population across 300 K to 360 K. To consider the most probable RASSF5 configurations, we used straight and one kinked SARAH for docking and modeling.

Number of kink	Number of structure	Percentage	Kink residue
Fully unfolded	646	1.077%	NA
0	23945	39.908%	NA
1	30512	50.853%	E388
2	4677	7.795%	E388 K398
3	219	0.365%	Q378 E388 Y399
4	1	0.002%	NA

Table S3 Types of atomic interactions in the RA-SARAH association for the RASSF5 configurations 1-14. The atomic pair indicates RA – SARAH residue pair in the interface. The pairs will be viewed effective and counted when the residue pairs have more than 50 % occurrence rate. Letters in italic denote the cation-π interaction.

RASSF5 configuration	Salt bridge	Nonpolar	Polar	H-bond
Config. 1	K214 - E387, R221 - D370, R221 - E376, K223 - D370, K223 - E376, K241 - E366, K241 - E368	I215 - L381, I215 - L384, M228 - L377, L230 - I383, L230 - L384, I287 - V367, V354 - F380	Q209 - Q394, Q213 - Q394, T220 - Q378, T220 - N379, T220 - T382	NA
Config. 2	R257 - D400, R257 - E407, K307 - E387, K307 - D390, K334 - E366, K334 - E368	V252 - F402, V252 - L406, P253 - F402, P253 - L406, A254 - F402, A254 - L406, I256 - L406, I256 - A409, I256 - L410, P258 - F402, P258 - L406, P258 - L410, I261 - I392, I261 - V395, V298 - W369, I302 - W369, M310 - V395, M310 - F402, V311 - V395, V312 - I392, V312 - V395, P315 - F380, P315 - L384, A319 - V367, A319 - W369, I337 - V367, I337 - W369, I337 - A371, I337 - F372, I337 - F380, A338 - W369, A338 - A371, A338 - F372, A338 - F380	Q259 - Q396, Q259 - Y399, S260 - Q396, S260 - Y399, Y262 - Y399	NA
Config. 3	R257 - E388, K266 - E385, K266 - E388, K307 - E387, K308 - E387, K334 - E368	I256 - I392, I256 - V395, P258 - I392, P258 - V395, V268 - F372, V268 - I374, V268 - L377, V268 - F380, V268 - L381, V268 - L384, L270 - V367, L270 - W369, L270 - A371, L270 - F372, L270 - I374, L270 - L377, A272 - V367, A272 - W369, V298 - W369, I302 - W369, L306 - W369, L306 - F380, L306 - L384, M310 - L384, V311 - F380, V311 - L384, V312 - F380, V312 - L381, V312 - L384, P315 - W369, P315 - A371, P315 - F372, P315 - L377, P315 - F380, F318 - W369, A319 - W369, L320 - W369, I337 - W369	NA	NA
Config. 4	K212 - E387, E232 - K391, D233 - K391, K334 - E368, R340 - D370, R340 - E376	L208 - L377, L208 - F380, L208 - L381, L208 - I383, L208 - L384, I211 - I383, L230 - I383, V298 - W369, I302 - V367, I302 - W369, P315 - W369, F318 - V367, A319 - V367, L331 - W369, I337 - V367, I337 - W369, I337 - A371, I337 - F372, A338 - W369, A338 - A371, A338 - F372, A338 - L377	T295 - N379, Y343 - N379	NA

Continued

RASSF5 configuration	*Salt bridge*	*Nonpolar*	*Polar*	*H-bond*
Config. 5	K214 - E387, K322 - D370, K326 - E376, K334 - D370, R340 - E387	F321 - V367, F321 - W369, F321 - P417, F332 - V367, L335 - W369, I337 - W369, I337 - F372, I337 - L377, I337 - F380, I337 - I383, I337 - L384, I337 - V395, A338 - F380, A338 - I383, A338 - L384, L347 - F380, L347 - I383, L347 - F402, A348 - I383, P350 - I383, V354 - I383	Q213 - Q389, S217 - Q389, T297 - Q389, H325 - N379, Q329 - Q414, Y343 - Y399	NA
Config. 6	K245 - E376, R247 - D370, R277 - D370, R323 - E387, K334 - E366, K334 - E368, K334 - D370, K360 - E376, E353 - K386	L246 - W369, L246 - P375, V250 - L410, F280 - A409, F280 - L410, L282 - A409, L282 - L410, P283 - I374, P283 - P375, P283 - L406, P283 - A409, P283 - L410, L284 - P375, F321 - W369, F321 - F372, V330 - F372, V330 - F380, V330 - I383, V330 - L384, V330 - F402, L331 - W369, L331 - F372, L331 - F380, L331 - F402, F332 - V367, F332 - W369, F332 - F372, F332 - F380, F332 - I383, F332 - F402, V358 - W369	H243 - N379, T251 - S413, *Y262 - K416*, Y281 - S373, Y281 - Q404, H325 - N379, H325 - Q389, Q329 - Q389, Q329 - Y399	Y281 - E408, Y281 - L410
Config. 7	K245 - E407, R247 - E366, R323 - D400, K334 - E385, K360 - E366	I265 - F372, V268 - F372, L270 - A371, L270 - F372, L270 - I374, L270 - P375, A271 - P375, A272 - I374, A272 - P375, F280 - A409, L282 - A409, P283 - L406, P283 - A409, F321 - F380, L331 - I392, I337 - L381	T273 - Q378, T274 - Q378, Q329 - Q393, Q329 - Q394, Q333 - Q389, Q333 - Q393, Q333 - Q396, Q333 - Y399, N362 - Q378, N362 - Y399, T364 - S373, T364 - Q378	F332 - Q396
Config. 8	K223 - E388, R247 - E368, R248 - E407, R257 - E366, R257 - D370, R323 - E385, E353 - K386	V250 - F372, V250 - L406, V250 - A409, V250 - L410, V252 - F372, V252 - L406, V252 - A409, V252 - L410, P253 - F372, P253 - L406, P253 - A409, P253 - L410, A254 - F372, A254 - A409, A254 - L410, I256 - W369, P258 - W369, P258 - A409, F280 - W369, F280 - A371, F280 - F372, F280 - L406, F280 - L410, L282 - A371, L282 - F372, L282 - L377, L282 - F402, L282 - L406, L282 - L410, P283 - A371, P283 - F372, P283 - I374, P283 - L377, P283 - F380, P283 - L381, L284 - F380, L284 - F402, A286 - F380, A286 - L381, A286 - L384, A286 - I392, I287 - L381, I287 - L384, I287 - I392	H243 - Q378, Q289 - Q389, Q289 - Q393	Y281 - D370, Y281 - F372, P283 - Y399

Continued

RASSF5 configuration	*Salt bridge*	*Nonpolar*	*Polar*	*H-bond*
Config. 9	E267 - K391, E267 - K398, K276 - D400, K276 - E407, K307 - E376, K334 - E366	P249 - F402, P249 - L406, P249 - L410, V250 - L406, V250 - L410, V252 - F402, V252 - L406, V252 - A409, V252 - L410, P253 - L406, P253 - A409, P253 - L410, A254 - L410, I256 - A409, I256 - L410, I261 - F402, I261 - L406, I261 - A409, I261 - L410, A264 - F402, I265 - V395, I265 - F402, V268 - F372, V268 - F380, V268 - I383, V268 - L384, V268 - I392, V268 - V395, L270 - F372, L270 - L377, L270 - F380, L270 - L381, L270 - I383, L270 - L384, L270 - I392, L270 - V395, A271 - F380, A271 - L381, A271 - I383, A271 - L384, A271 - I392, A271 - V395, A272 - F380, F280 - L406, F280 - L410, V298 - W369, I302 - W369, I302 - A371, L306 - F372, V312 - F380, P315 - W369, P315 - A371, P315 - F372, F318 - W369, A319 - W369, L320 - W369, I337 - V367, I337 - W369, I337 - A371	Y262 - Y399, N269 - Q396, N269 - Y399, T273 - Q396, T273 - Y399, T274 - Q396, T274 - Y399, T278 - Q404, S279 - Q404, Y281 - Y399, T297 - S373, S299 - S373, Q303 - S373, N314 - Y399	T274 - R403, Q316 -W369, N362 - E366
Config. 10	K245 - D370, K245 - E376, R247 - E366, K266 - E407, E267 - R403, E300 - K405, R323 - E376, K334 - E387, K360 - E376,	L246 - W369, A264 - L406, A264 - L410, I265 - F402, I265 - L406, I265 - L410, V268 - L406, V268 - L410, L270 - I392, L270 - L406, L270 - L410, A272 - I392, F280 - V367, F280 - F372, L282 - F372, P283 - W369, P283 - F372, P315 - F402, P315 - L406, A319 - L384, F321 - F380, F321 - I383, F321 - L384, V330 - P375, L331 - I383, F332 - F380, F332 - I383, I337 - V395, I337 - F402, A338 - F402, V358 - F380	T235 - Q414, N269 - Q393, T274 - Q389, Y281 - S373, T295 - Q414, S299 - Y399, Q303 - Y399, N314 - Q396, N314 - Y399, Q316 - Q396, Q316 - Y399, Q329 - N379, Q333 - N379, N362 - Q389, N362 - Q396, T364 - Q389, T364 - Q393	NA
Config. 11	K214 - E385, R221 - E388, K241 - E412, R247 - E366, R323 - E412, K326 - E376, K326 - E387, D327 - K386, K334 - E366, K334 - D370, D351 - K391, D351 - K398, D351 - K401, E353 - K391, E353 - K397, E353 - K398, E353 - K401, E353 - K405, K360 - E366, K360 - E368	P206 - L381, V268 - W369, L270 - V367, L270 - W369, L270 - F372, A271 - V367, A271 - F372, A272 - V367, I287 - F402, I287 - L406, I287 - A409, I287 - L410, V298 - W369, I324 - L377, I324 - F380, I324 - I383, I324 - L384, L331 - W369, L331 - F380, L331 - I383, F332 - V367, F332 - W369, L335 - F372, L335 - F380, I337 - W369, L344 - L377, L344 - F380, L344 - L381, L344 - L384, L347 - L381, L347 - L384, A348 - L384, P350 - V395, V354 - I383, V354 - L384, L355 - F380, L355 - L384, F357 - F380	Q333 - S373	T364 - E368

Continued

RASSF5 configuration	*Salt bridge*	*Nonpolar*	*Polar*	*H-bond*
Config. 12	K245 - E412, K308 - E385, K308 - E388, R323 - E412, K334 - E366, E222 - K398, E353 - K405	L226 - V395, F239 - I383, F239 - L384, V268 - I374, L270 - A371, L270 - F372, A271 - V367, A272 - V367, A272 - W369, A286 - F402, A286 - L406, I287 - F402, I287 - L406, I287 - L410, L290 - L377, L290 - F380, L290 - L381, L290 - L384, I292 - L377, I292 - F380, V301 - L377, I302 - W369, L305 - L381, L306 - W369, P315 - W369, P315 - A371, P315 - I374, F318 - W369, A319 - W369, F332 - L410, I337 - V367, I337 - W369, I337 - F372, A338 - F372, V358 - L410	N224 - Q394, C225 - Q394, Q289 - Y399, Q303 - S373, H325 - S413, Q329 - S413, T352 - S413	Q316 - W369
Config. 13	K223 - E408, K245 - E387, R247 - D370, R257 - E385, R323 - E387, R323 - E388, E222 - K398, D285 - K386, D351 - K401, E353 - K401	P253 - P375, A254 - P375, I256 - I374, I256 - P375, P258 - I383, I261 - I383, A272 - V367, F280 - P375, L282 - F380, L282 - I383, P283 - F380, P283 - I383, L284 - I383, V330 - V395	N224 - S413, H243 - Q394, Q259 - N379, Q259 - T382, Y281 - N379, H325 - Q394, H325 - Y399, T352 - Q394, S356 - Q394	Y281 - E376, Y281 - N379
Config. 14	K307 - E387, K307 - E388, K307 - D390, K334 - E366, R340 - E376	I256 - L406, I256 - A409, I256 - L410, P258 - F402, P258 - L406, P258 - A409, P258 - L410, I261 - V395, I261 - F402, I261 - L406, I261 - A409, A264 - V395, A264 - F402, I265 - V395, I265 - F402, V268 - I392, V268 - V395, L270 - L384, L270 - I392, L270 - V395, V312 - V395, P315 - L384, L335 - V367, L335 - W369, I337 - V367, I337 - W369, I337 - F372, I337 - L377, I337 - F380, I337 - L381, I337 - L384, A338 - W369, A338 - A371, A338 - F372, A338 - L377, A338 - F380, A338 - L381	T297 - N379	NA

Table S4 Types of atomic interactions in the RA-SARAH association for the K-Ras4B-GTP/RASSF5 dimeric configurations. The atomic pair indicates RA – SARAH residue pair in the interface. The pairs will be viewed effective and counted when the residue pairs have more than 50 % occurrence rate.

Dimeric configuration	Salt bridge	Nonpolar	Polar	H-bond
DC1(1)	K223 - E376, R323 - E366, R323 - E368, R323 - D370, K360 - E368	I287 - V367, I287 - W369, V330 - V367, V330 - W369, F332 - V367, P350 - F372	N219 - Q378, T220 - Q378, N224 - S373	NA
DC2(4)	K322 - E376, K334 - E368, E210 - R411	P205 - F372, P205 - I374, P205 - I392, P206 - F372, P206 - I374, L208 - L381, L270 - V367, L270 - W369, A272 - V367, V298 - W369, I302 - W369, F318 - V367, A319 - V367, A319 - W369, I337 - V367, I337 - W369, I337 - A371, I337 - F372, I337 - I374, A338 - W369, A338 - A371, A338 - F372, A338 - I374, L344 - P375, L347 - P375, L347 - L377, L347 - L381, A348 - L377	T207 - Q389, T207 - Q393, T207 - Q396, Q209 - Q389, Q209 - Q393, Q209 - Q396, Q209 - Q404, S336 - S373, S336 - Q378, Y343 - Q378, Y343 - T382	NA
DC3(6)	K276 - E408, K276 - E412, R323 - E387, K334 - D370, K360 - E376, D327 - K398	P283 - P375, I287 - I383, F321 - F372, V330 - F380, V330 - L384, V330 - V395, L331 - F380, L331 - V395, F332 - F372, F332 - L377, F332 - F380, V358 - F372	H243 - N379, T278 - S413, T278 - Q414, S279 - Q414, H325 - Q389, Q329 - Q394, Q333 - Y399	F332 - Y399
DC4(9)	K276 - E407, K276 - E408, K317 - E368, K334 - E366	P249 - L410, V250 - L410, V252 - A409, V252 - L410, A254 - A409, A254 - L410, I256 - A409, I261 - A409, I261 - L410, A264 - F402, A264 - L406, I265 - F402, I265 - L406, V268 - F372, V268 - F380, V268 - I383, L270 - F380, L270 - I383, L270 - L384, L270 - I392, L270 - V395, A271 - F380, A271 - I392, A271 - V395, F280 - L410, I302 - A371, P315 - A371, P315 - F372, I337 - W369, I337 - A371, I337 - F372, I337 - I374, A338 - I374	T251 - S413, T251 - Q414, S260 - S413, Y262 - Y399, N269 - Q396, N269 - Y399, T273 - Q396, T273 - Y399, T274 - Q396, T274 - Y399, T297 - S373, S299 - S373, Q303 - S373, N314 - Y399	T274 - Y399
DC5(10)	K245 - E366, K245 - D370, K245 - E376, R323 - E376, K334 - E387, K360 - E366, K360 - E376	L282 - V367, P283 - V367, P283 - F372, P315 - F402, F321 - F380, F321 - I383, V330 - F372, V330 - P375, F332 - F380, F332 - I383, I337 - V395	S299 - Y399, Q303 - Y399, N314 - Q396, N314 - Y399, Q316 - Q396, Q316 - Y399, Q333 - N379, Q333 - T382, N362 - Q389,	NA

Continued

Dimeric configuration	*Salt bridge*	*Nonpolar*	*Polar*	*H-bond*
DC6(11)	K214 - E385, K214 - E388, K241 - E407, K245 - E366, K326 - D370, K326 - E376, K360 - E366	L226 - L406, I287 - L406, I287 - A409, F321 - W369, I324 - L377, I324 - F380, L331 - W369, L331 - A371, F332 - V367, F332 - W369, L344 - L377, L344 - F380, L344 - L381, L344 - L384, L347 - F380, L347 - L381, L347 - L384, A348 - F380, A348 - L381, A348 - L384, G349 - L384, G349 - I392, P350 - I392, V354 - F380, V354 - I383, V354 - L384, L355 - L377, L355 - F380, L355 - L381, L355 - L384, F357 - L406	NA	NA
DC7(14)	K307 - D390, K334 - E366, R340 - D370	P205 - A371, P205 - F372, P205 - I374, P205 - P375, L208 - P375, I211 - P375, P253 - L410, P253 - P417, A254 - P417, P258 - F402, P258 - L406, P258 - A409, P258 - L410, I261 - V395, I261 - F402, I261 - L406, I261 - L410, V268 - I392, L306 - I392, M310 - V395, M310 - F402, V311 - V395, V312 - I392, V312 - V395, P315 - I392, L335 - V367, I337 - V367, I337 - W369, A338 - W369, A338 - A371, A338 - F380, L344 - W369	T235 - S373, T235 - N379, T251 - S413, T251 - Q414, Q259 - Q414, S260 - Y399, S294 - S373, S294 - N379, T295 - S373, T295 - N379	S336 - W369

Table S5 The WISP calculates 100 desirable allosteric pathways between two selected residues for K-Ras4B-GTP/RASSF5 dimeric configurations, DC3(6), DC4(9), DC5(10), and DC7(14). The table shows the occurrence rate of each residue on the allosteric pathway. Except the source and sink residue which have the 100% occurrence rate, based on the results, the higher occurrence rate may imply the more importance.

Dimeric configuration	K-Ras4B		RASSF5			
	Residue	Rate (%)	RA residue	Rate (%)	SARAH residue	Rate (%)
DC3(6)	G13 V14 K16 S17 Q22 L23 F28 V29 Y32 D33 P34 T35 D38 S39 R41 K42 D57 A83 I84 N85 N116 K117 D119 T124 V125 D126 S145 A146 K147 GTP Mg^{2+}	12 20 3 1 4 4 1 4 44 66 8 24 25 25 4 4 1 25 58 23 1 79 2 15 99 100 3 1 1 81 15	K245 L246 D285 V301 G304 K308 M310 V311 R323 Q329 V330 P341 R345 L355	5 5 29 66 66 66 5 5 66 7 7 66 66 66	N379 L381 T382 L384 E385 E387 E388 Q389 D390 I392 V395 Q396 D400	34 34 4 14 13 58 20 30 30 59 19 100 100
DC4(9)	G13 V14 G15 S17 Y32 P34 T35 I36 D38 A83 N86 S89 N116 K117 GTP Mg^{2+}	28 63 4 44 54 55 45 55 100 62 2 100 2 37 78 44	T237 G238 F239 Q289 L290 H291 I292 S293 T296 T297 E300	58 85 87 100 13 2 68 75 100 32 68	S373 P375 N379 I383 E387	100 100 100 100 100

Continued	*K-Ras4B*		*RASSF5*			
Dimeric configuration	*Residue*	*Rate (%)*	*RA residue*	*Rate (%)*	*SARAH residue*	*Rate (%)*
DC5(10)	G15 K16 S17 Y40 I55 L56 D57 T58 GTP Mg^{2+}	8 30 78 100 2 100 77 18 16 48	L306 F309 V311 V312 D313 N314 P315 Q316	6 100 97 33 94 4 98 100	E387 E388 Q389 D390 K391 I392 Q394 V395 Q396	100 98 2 18 93 9 28 91 11
DC6(11)	S17 T20 L23 T35 Y40 A59 R68 D69 Q70 Y71 Mg^{2+}	7 100 100 7 93 7 4 1 7 3 7	V242 H243 L244 D285 A286 I287 R323 D351 T352 E353 V354 L355 S356 F357 V358 L359	29 67 15 14 86 4 1 19 16 37 59 76 86 63 54 5	D390 K391 I392 Q393 Q394 V395 Q396 Y399 D400 R403 Q404	100 93 2 3 8 4 3 4 5 2 7
DC7(14)	D38 S39 Y40	1 100 4	Y236 T237 G238 I240 V242 H243 I287 K288 L290 H291 I292 S293 S294 T295 T296 T297 V301 F309 M310 L342	17 25 31 50 86 2 86 11 41 4 67 31 92 8 12 1 9 3 3 18	S373 P375 E376 Q378 N379 T382 I383 K386 E388 K391 I392 V395	100 14 100 1 6 3 1 3 3 3 3 3