

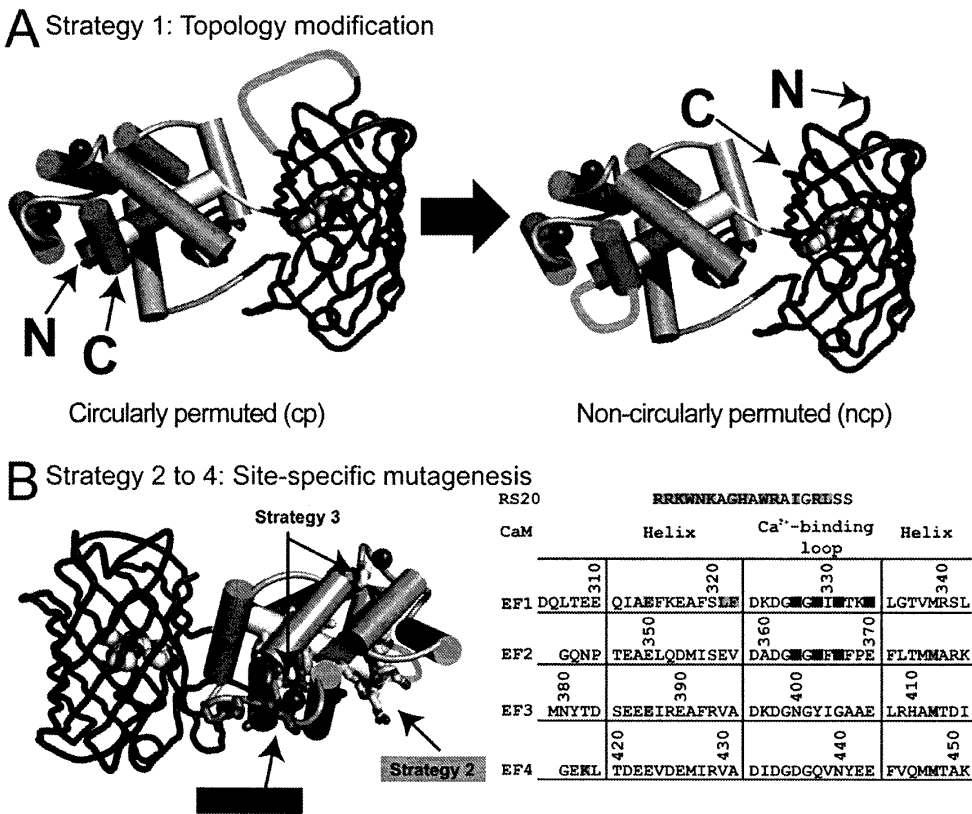
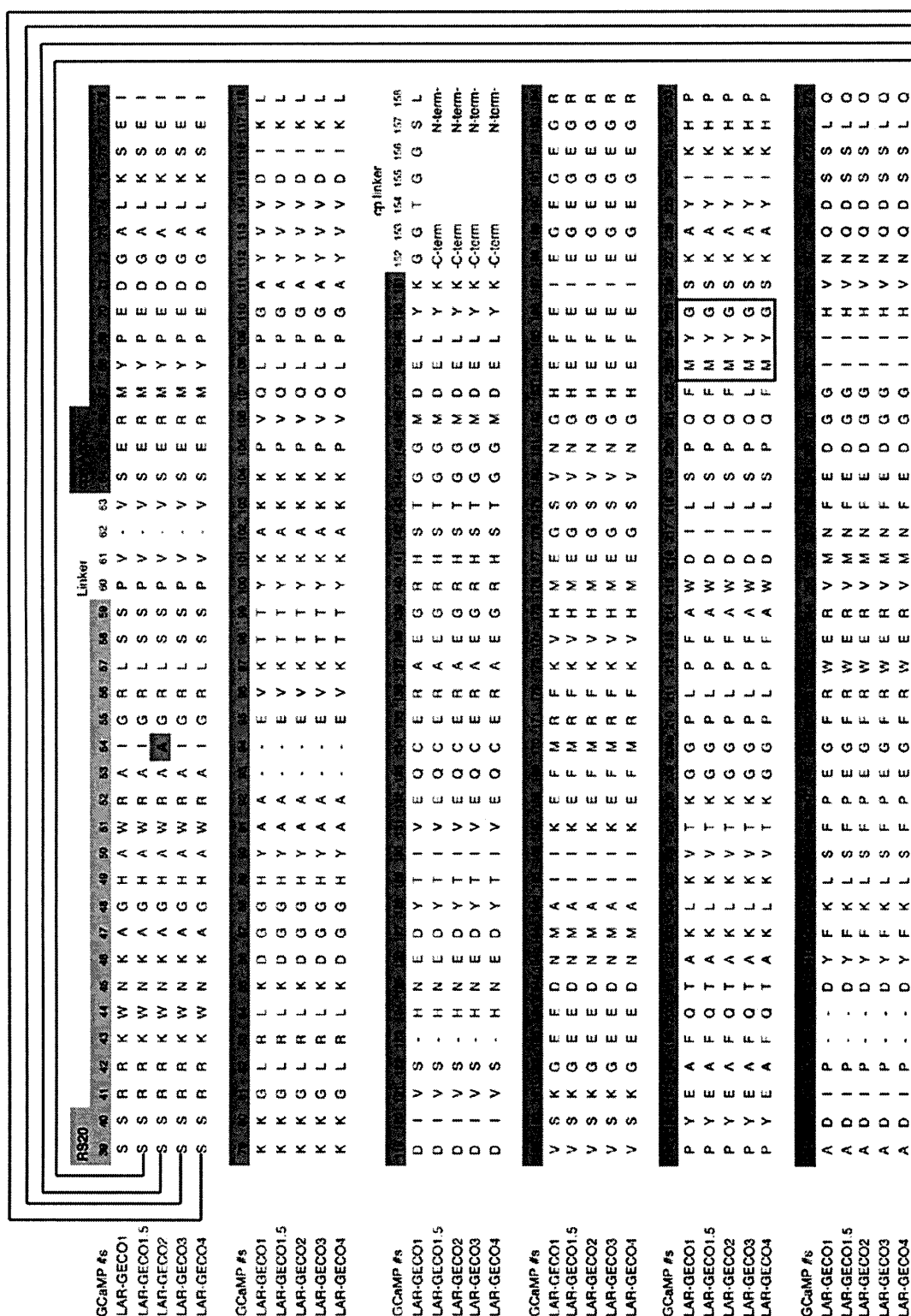


Figure 1



GCAMP #s	Linker	CAMP
LAR-GECO1	D G V F I Y K V K L R G T N F P P D G G P V M Q K K T M G W E A T R D Q Q L T E E Q	303 304 305 306 307 308 309 310 311
LAR-GECO1.5	D G V F I Y K V K L R G T N F P P D G G P V M Q K K T M G W E A T R D Q Q L T E E Q	
LAR-GECO2	D G V F I Y K V K L R G T N F P P D G G P V M Q K K T M G W E A T R D Q Q L T E E Q	
LAR-GECO3	D G V F I Y K V K L R G T N F P P D G G P V M Q K K T M G W E A T R D Q Q L T E E Q	
LAR-GECO4	D G V F I Y K V K L R G T N F P P D G G P V M Q K K T M G W E A T R D Q Q L T E E Q	
GCAMP #s		
LAR-GECO1	312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351	
LAR-GECO1.5	I A E F K E A F S L F D K D G D G T I T T K E L G T V M R S L G Q N P T F A E E L	
LAR-GECO2	I A E F K E A F S L F D K D G D G T I T T K E L G T V M R S L G Q N P T F A E E L	
LAR-GECO3	I A E F K E A F S L F D K D G D G T I T T K E L G T V M R S L G Q N P T F A E E L	
LAR-GECO4	I A E F K E A F S L F D K D G D G T I T T K E L G T V M R S L G Q N P T F A E E L	
GCAMP #s		
LAR-GECO1	352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391	
LAR-GECO1.5	Q D M I S E V D A D G D G T F D F P E F L T M M A R K M N Y T D S E E E I R E A	
LAR-GECO2	Q D M I S E V D A D G D G T F D F P E F L T M M A R K M N Y T D S E E E I R E A	
LAR-GECO3	Q D M I S E V D A D G D G T F D F P E F L T M M A R K M N Y T D S E E E I R E A	
LAR-GECO4	Q D M I S E V D A D G D G T F D F P E F L T M M A R K M N Y T D S E E E I R E A	
GCAMP #s		
LAR-GECO1	392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431	
LAR-GECO1.5	F R V A D K D G N G Y I G A A E L R H A M T D I G E K L T D E E V D E M I R V A	
LAR-GECO2	F R V A D K D G N G Y I G A A E L R H A M T D I G E K L T D E E V D E M I R V A	
LAR-GECO3	F R V A D K D G N G Y I G A A E L R H A M T D I G E K L T D E E V D E M I R V A	
LAR-GECO4	F R V A D K D G N G Y I G A A E L R H A M T D I G E K L T D E E V D E M I R V A	
GCAMP #s		
LAR-GECO1	432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450	
LAR-GECO1.5	D I D G D G Q V N Y E E F V Q M M T A K G G G S V D	
LAR-GECO2	D I D G D G Q V N Y E E F V Q M M T A K G G G S V D	
LAR-GECO3	D I D G D G Q V N Y E E F V Q M M T A K G G G S V D	
LAR-GECO4	D I D G D G Q V N Y E E F V Q M M T A K G G G S V D	

Figure 2 (continued)

GCaMP #s	R820									
LAREX-GECO1	39	40	41	42	43	44	45	46	47	48
LAREX-GECO2	S	S	R	R	K	W	N	K	A	G
LAREX-GECO3	S	S	R	R	K	W	N	K	A	G
LAREX-GECO4	S	S	R	R	K	W	N	K	A	G
GCaMP #s	Linker									
LAREX-GECO1	59	60	61	62	63	64	65	66	67	68
LAREX-GECO2	S	S	E	W	M	Y	P	E	D	G
LAREX-GECO3	S	S	E	W	M	Y	P	E	D	G
LAREX-GECO4	S	S	E	W	M	Y	P	E	D	G
GCaMP #s	cp linker									
LAREX-GECO1	152	153	154	155	156	157	158	159	160	161
LAREX-GECO2	D	I	V	S	-	H	N	E	D	Y
LAREX-GECO3	D	I	V	S	-	H	N	E	D	Y
LAREX-GECO4	D	I	V	S	-	H	N	E	D	Y
GCaMP #s	N-term-									
LAREX-GECO1	162	163	164	165	166	167	168	169	170	171
LAREX-GECO2	V	S	K	G	E	E	D	N	M	A
LAREX-GECO3	V	S	K	G	E	E	D	N	M	A
LAREX-GECO4	V	S	K	G	E	E	D	N	M	A
GCaMP #s	N-term-									
LAREX-GECO1	172	173	174	175	176	177	178	179	180	181
LAREX-GECO2	P	Y	E	A	F	Q	T	A	K	L
LAREX-GECO3	P	Y	E	A	F	Q	T	A	K	L
LAREX-GECO4	P	Y	E	A	F	Q	T	A	K	L
GCaMP #s	N-term-									
LAREX-GECO1	182	183	184	185	186	187	188	189	190	191
LAREX-GECO2	A	D	I	P	-	-	D	Y	F	K
LAREX-GECO3	A	D	I	P	-	-	D	Y	F	K
LAREX-GECO4	A	D	I	P	-	-	D	Y	F	K

Figure 3

GCAMP #s

LAREX-GE01

LAREX-GE02

LAREX-GE03

LAREX-GE04

Linker

CaM

D G V F I Y K V K L R G T N F P P D G P V M Q K K T M G W E P T R D Q L T E E Q

D G V F I Y K V K L R G T N F P P D G P V M Q K K T M G W E P T R D Q L T E E Q

D G V F I Y K V K L R G T N F P P D G P V M Q K K T M G W E P T R D Q L T E E Q

D G V F I Y K V K L R G T N F P P D G P V M Q K K T M G W E P T R D Q L T E E Q

GCAMP #s

LAREX-GE01

LAREX-GE02

LAREX-GE03

LAREX-GE04

312 313 314 315 310 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351

I A E F K E A F S L F D K D G D G T M T T K E L G T V L R S L G Q N P T E A E L

I A E F K E A F S L F D K D G D G T M T T K E L G T V L R S L G Q N P T E A E L

I A E F K E A F S L F D K D G D G T T T K L G T V L R S L G Q N P T E A E L

I A E F K E A F S L F D K D G D G T T T K L G T V L R S L G Q N P T E A E L

GCAMP #s

LAREX-GE01

LAREX-GE02

LAREX-GE03

LAREX-GE04

352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391

Q D M I N E V D A D G D G T F D F P E F L T M M A R K M N D S D S E E E I R E A

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Q D M I N E V D A D G D G T F D F P E F L T M M A R K M N D S D S E E E I R E A

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GCAMP #s

LAREX-GE01

LAREX-GE02

LAREX-GE03

LAREX-GE04

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F R V A D K D G N G Y I G A A E L R H A M T D I G E K L T D E E V D E M I R V A

F R V A D K D G N G Y I G A A L R H H M T T N G E K L T D E E V D E M I R A

F R V A D K D G N G Y I S A A D L R H V M T N G E K L T D E E V D E M I R A

GCAMP #s

LAREX-GE01

LAREX-GE02

LAREX-GE03

LAREX-GE04

432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451

D I D G D G Q V N Y E E F V Q M M T A K G G G S V D

D I D G D G Q V N Y E E F V Q M M T A K G G G S V D

D I D G D G Q V N Y E E F V Q M M T A K G G G S V D

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Figure 3 (continued)

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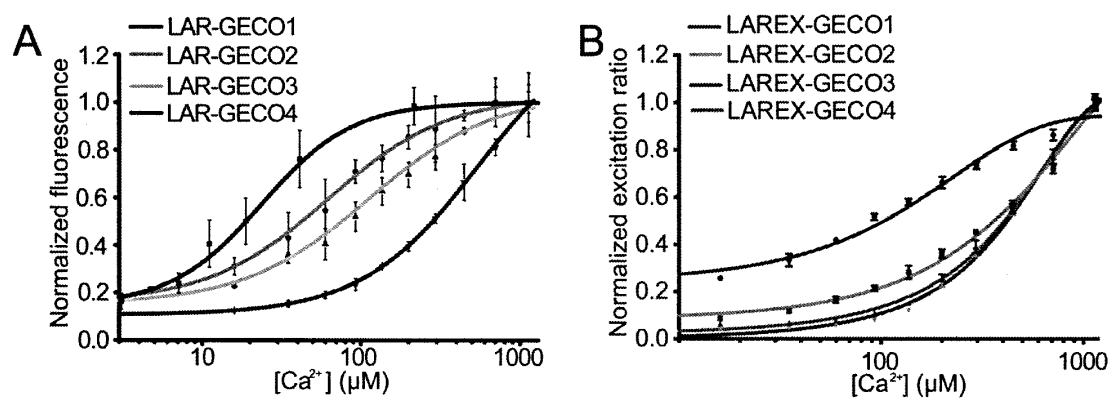


Figure 4

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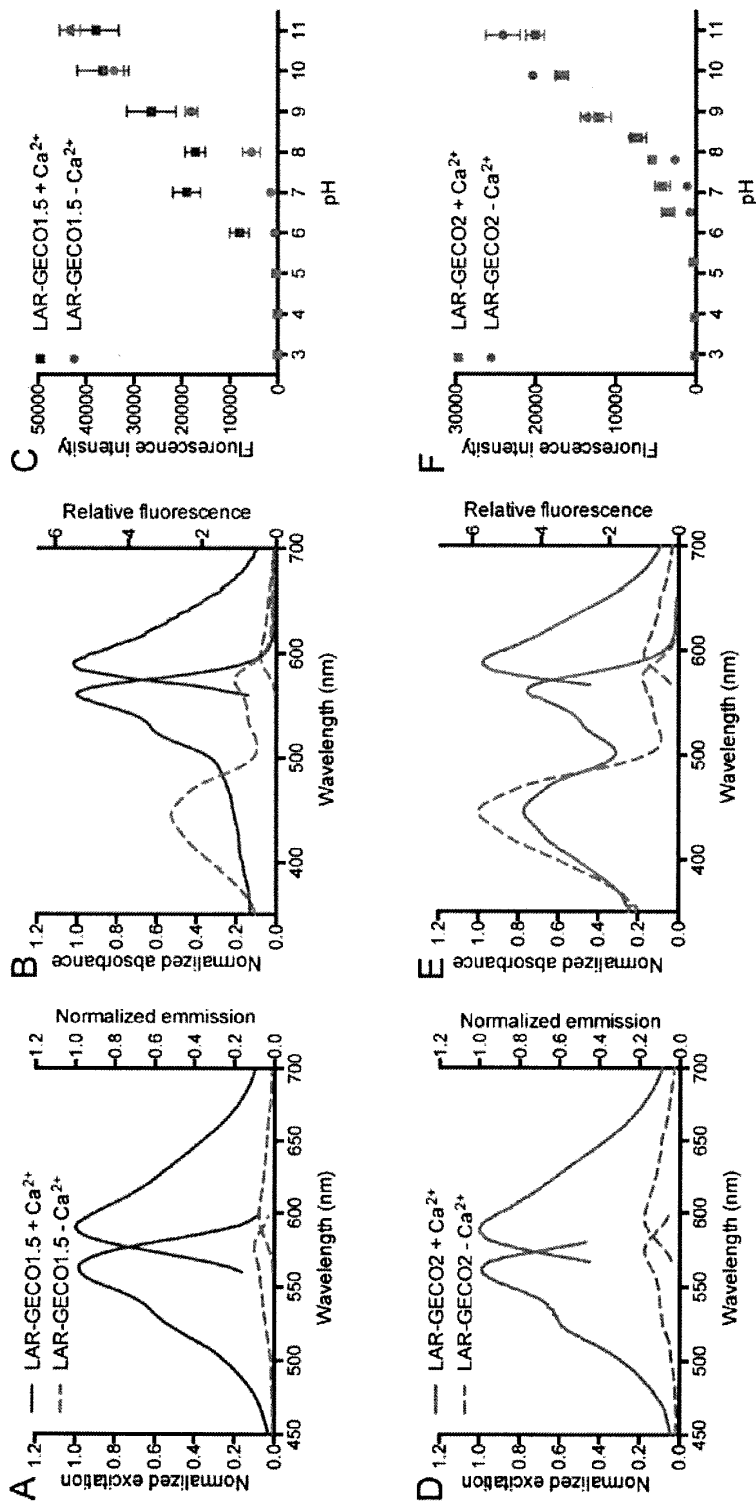


Figure 5

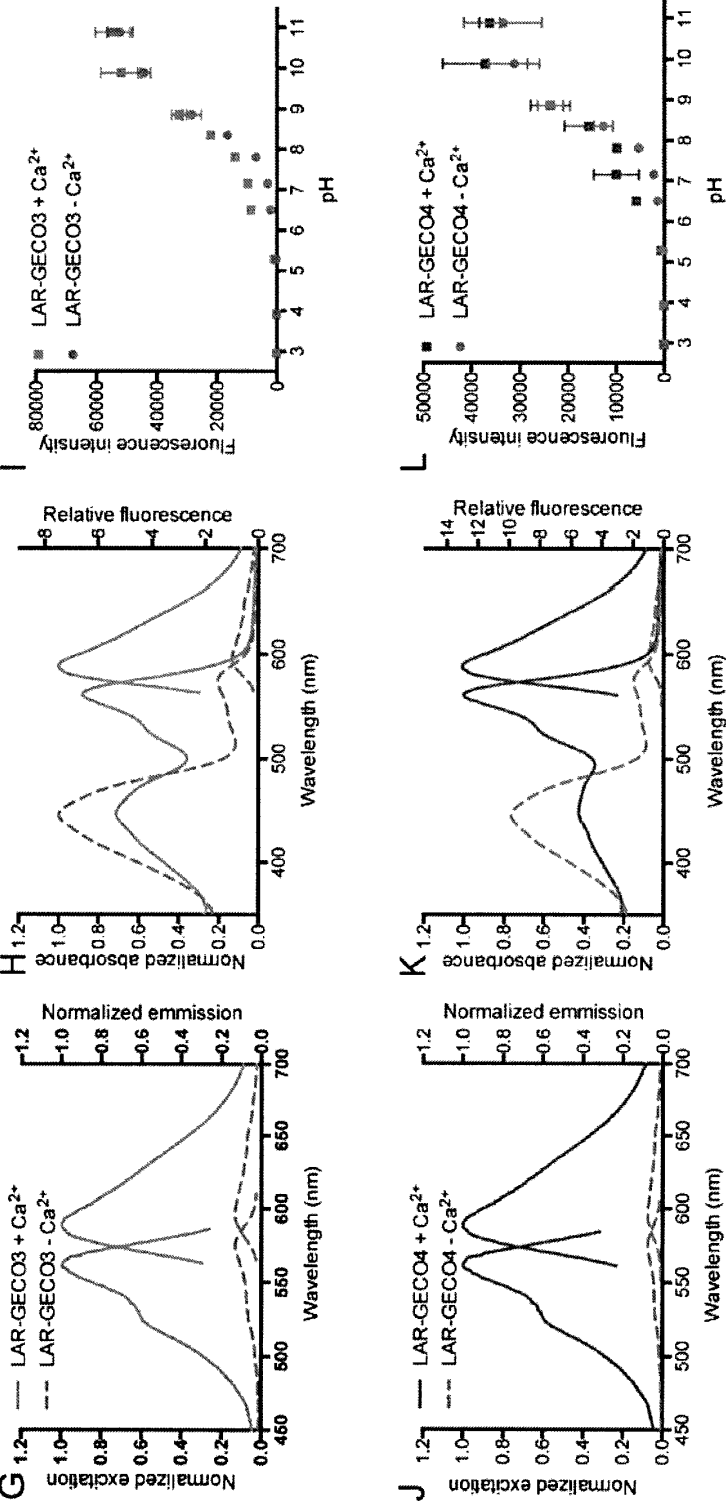


Figure 5 (continued)

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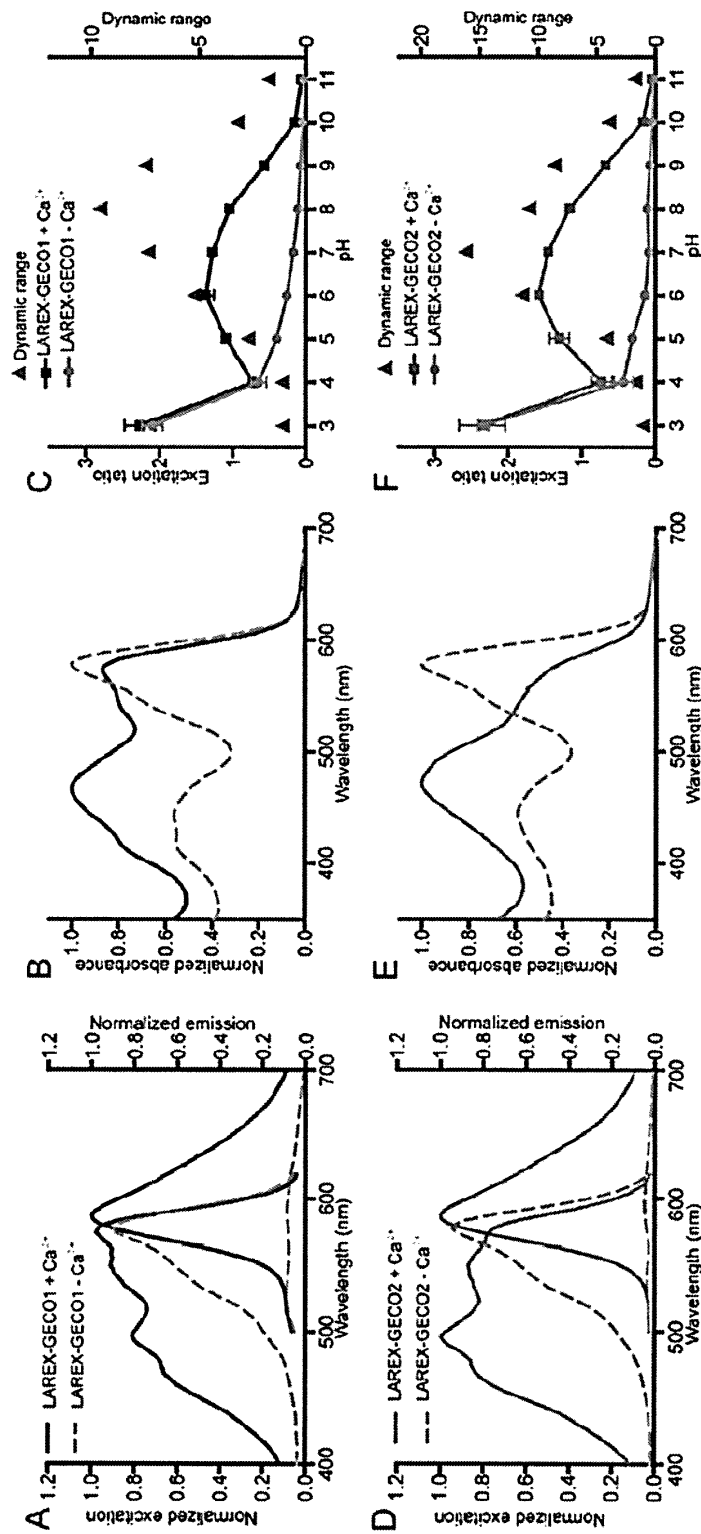


Figure 6

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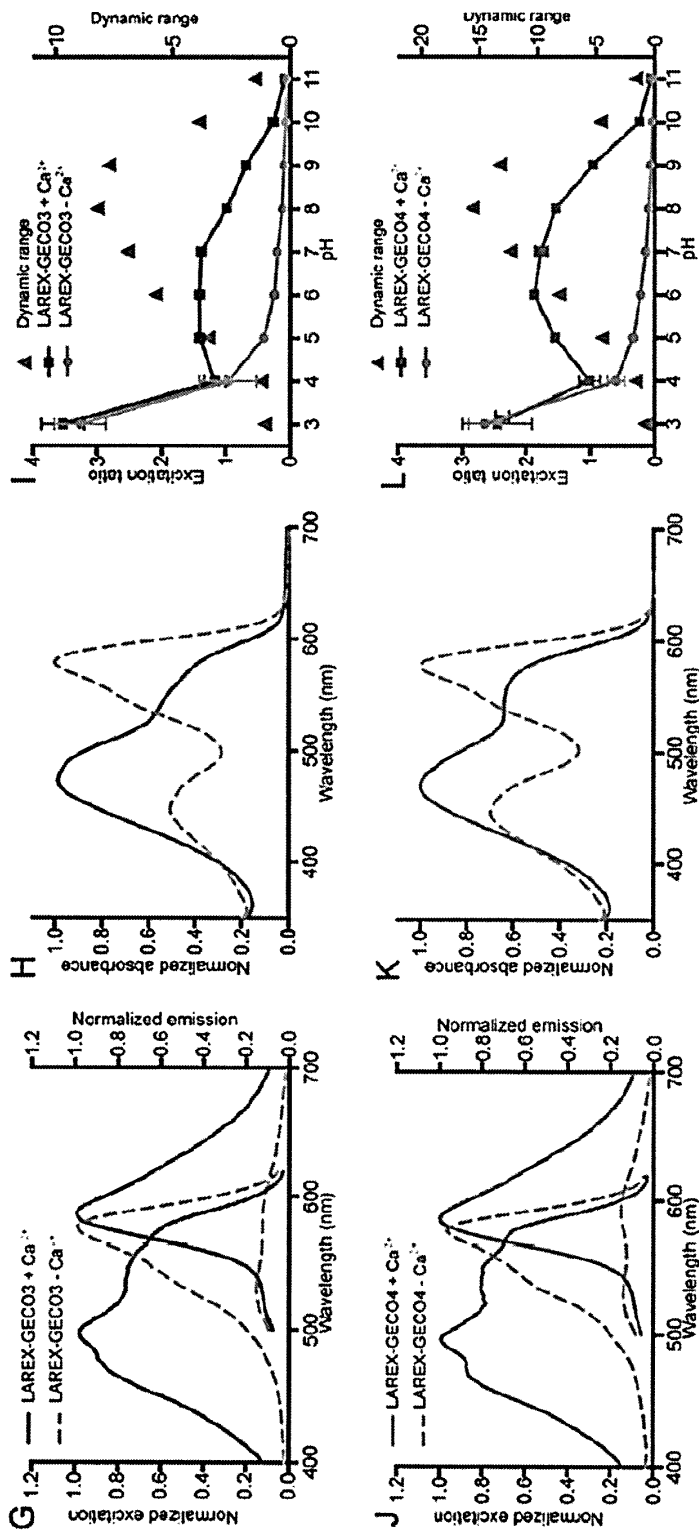
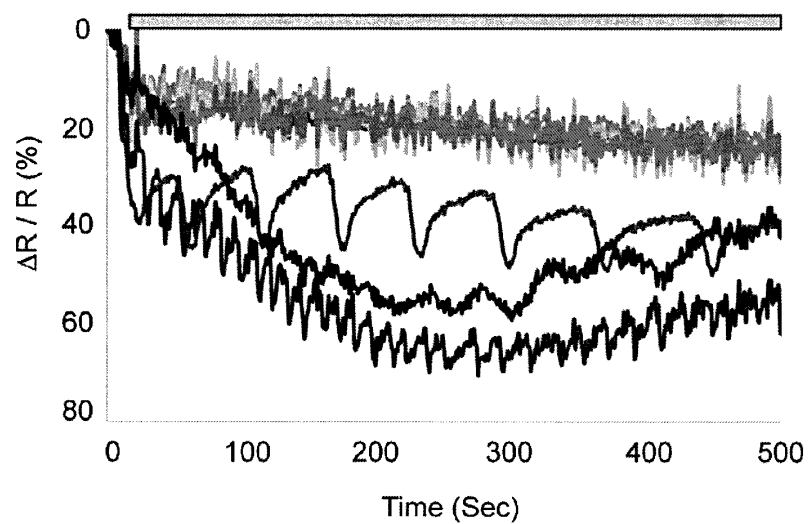


Figure 6 (continued)

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LAREX-GE04
histamine**Figure 7**

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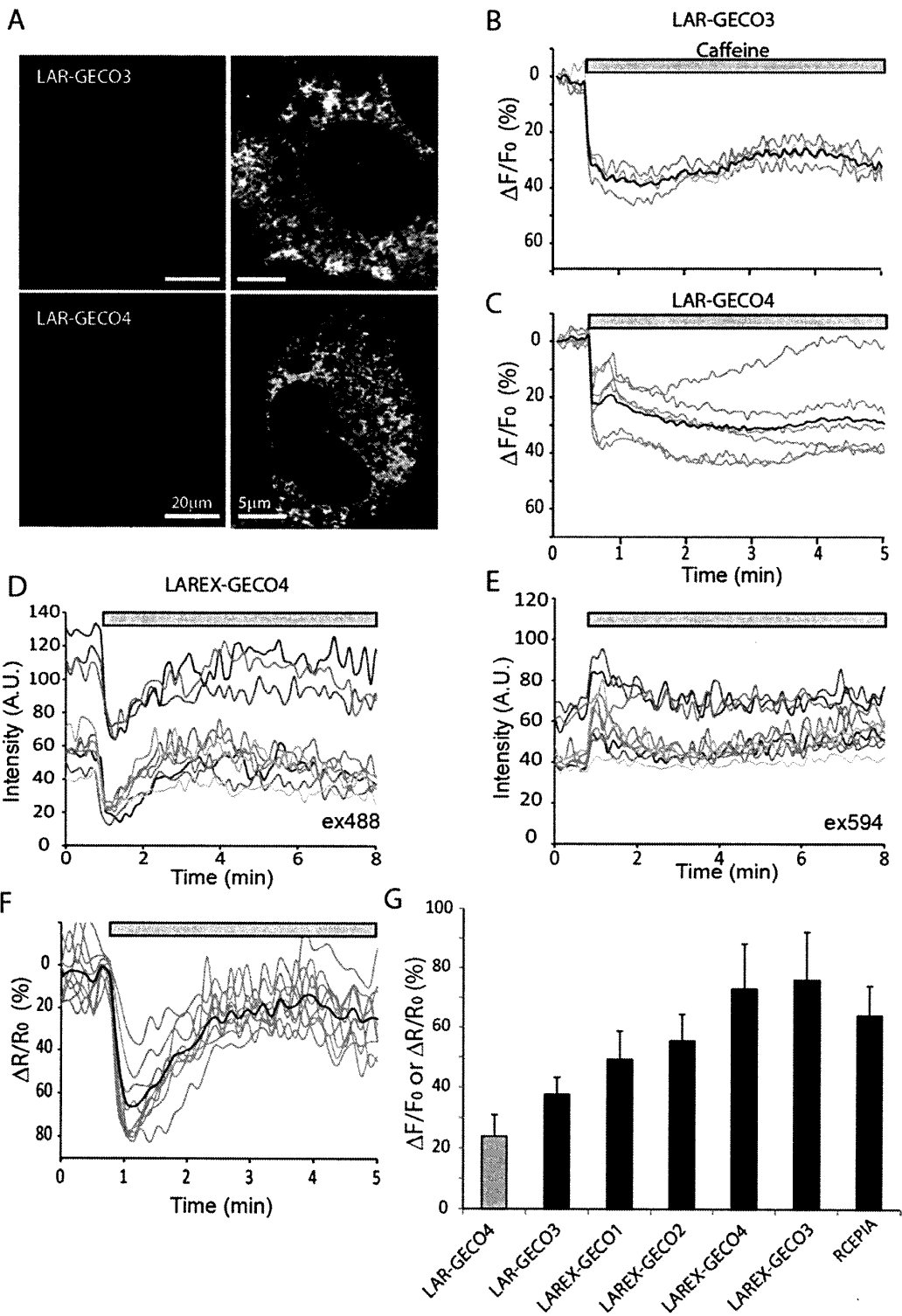


Figure 8

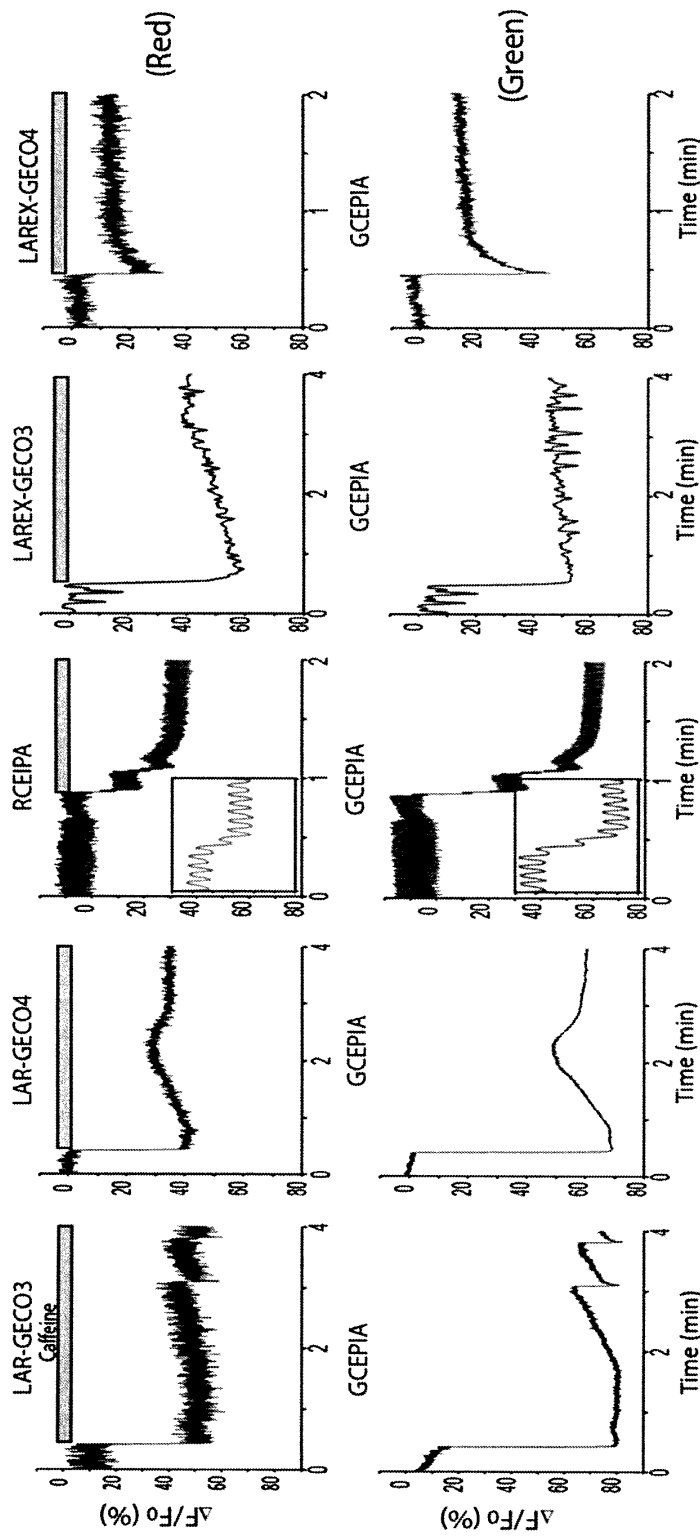


Figure 9

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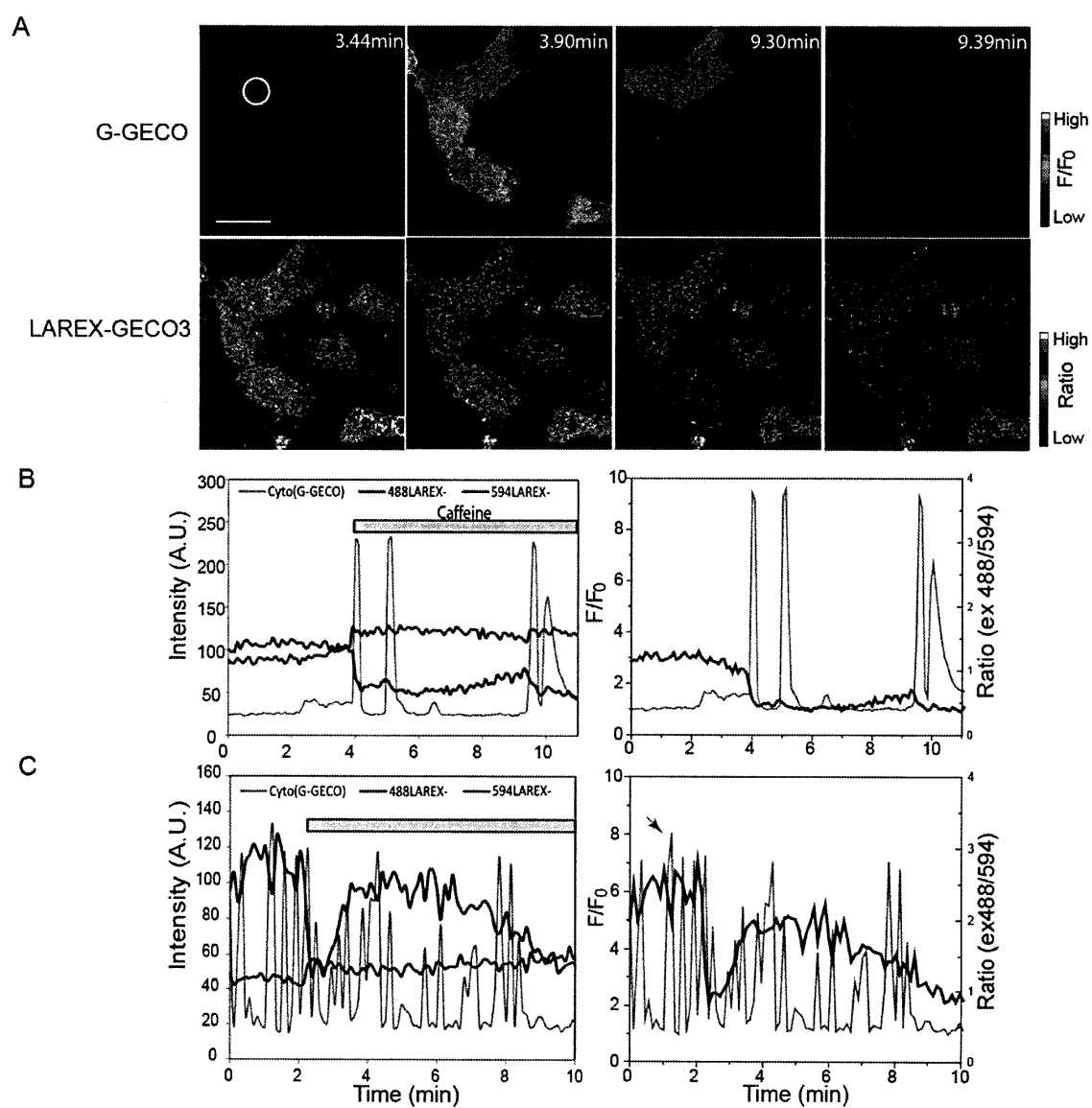


Figure 10

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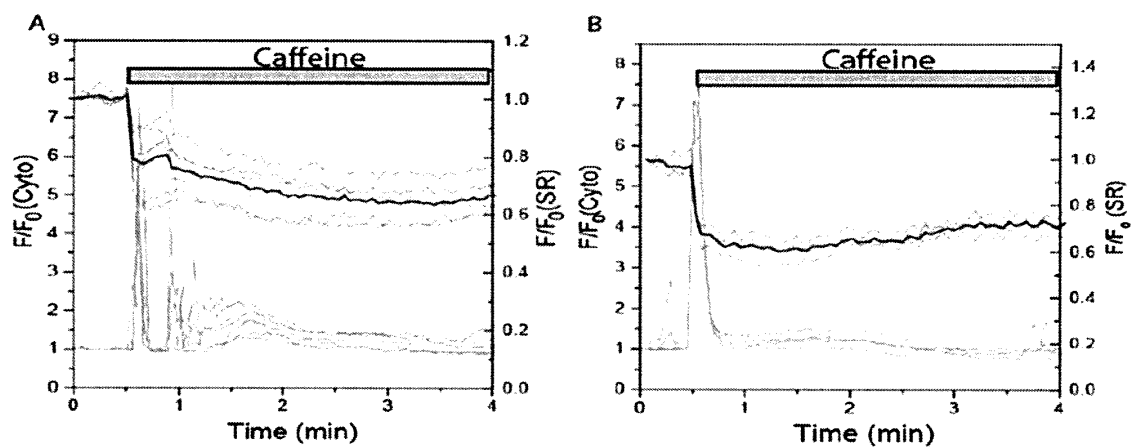


Figure 11

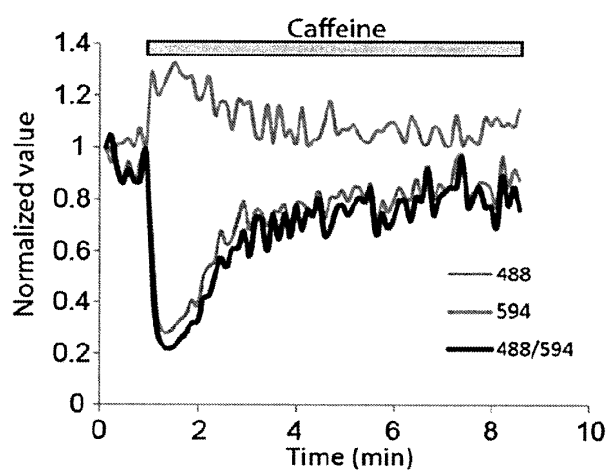


Figure 12

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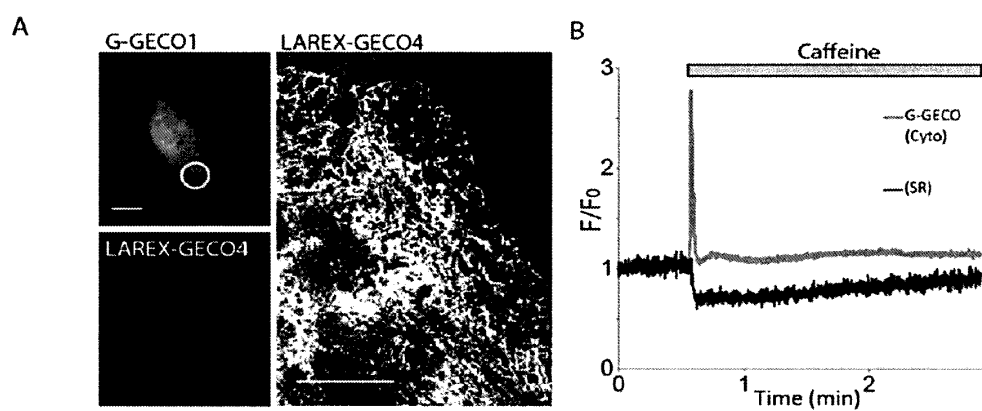


Figure 13

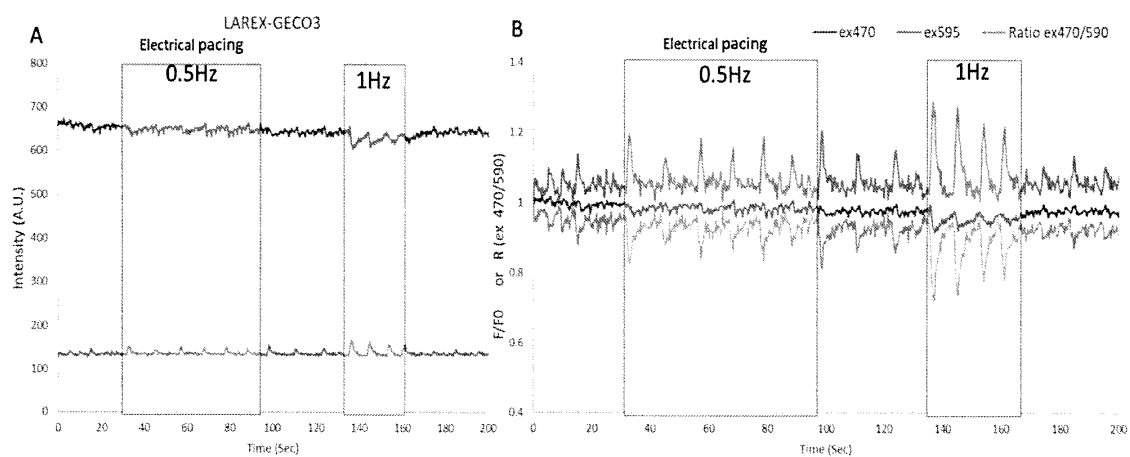


Figure 14

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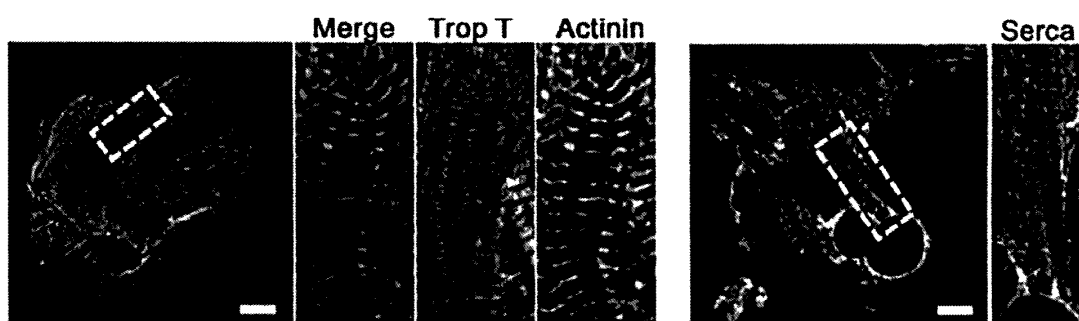


Figure 15

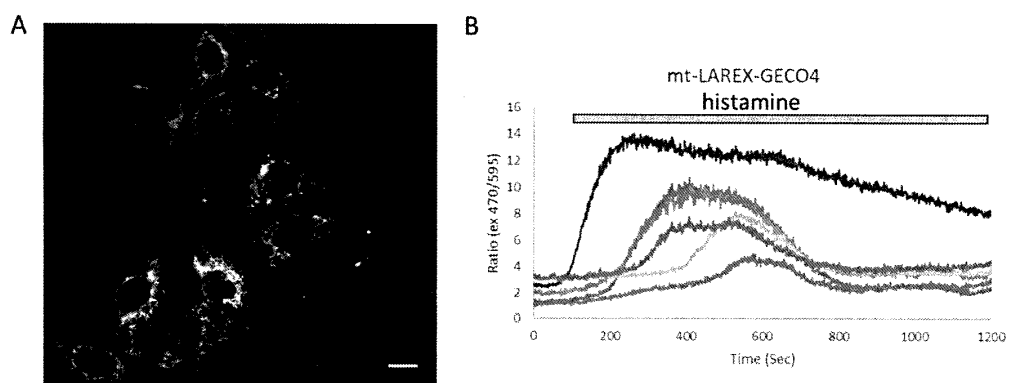


Figure 16