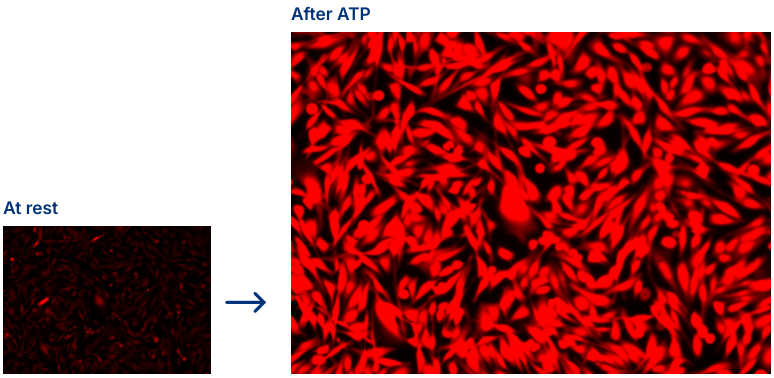
CALCIUM INDICATORS & ASSAY KITS

Calcium indicators for every color and affinity

- **No transfection**, results within 2 hours
- **Primary cells and tissue**, even non-model organisms
- **Every laser line**, from UV to near-infrared



Calbryte™ 590 AM in CHO-K1 — dim at rest, over 7-fold brighter after Ca^{2+} binding.

350–750 nm
EXCITATION

400–800 nm
EMISSION

50 nM – 300 µM
BINDING AFFINITY, K_d

~300-fold response

Calbryte™ 520, 590 and 630 give the largest calcium signal response, ~300-fold against ~100-fold for Fluo-4.

Probenecid-free retention

Calbryte™ and Cal™ indicators stay in cells without it: Cal-520® AM keeps the ATP response Fluo-4 AM loses, and Calbryte™ 520 AM still responds 24 h after loading.

Industry gold standard

Cal-520® ranked first in an independent study, ahead of Fluo-4 and Oregon Green® 488 BAPTA-1, with the lowest background, largest dynamic range and fastest response times in cells. *Lock, Parker & Smith, Cell Calcium 2015.*

Calcium indicators

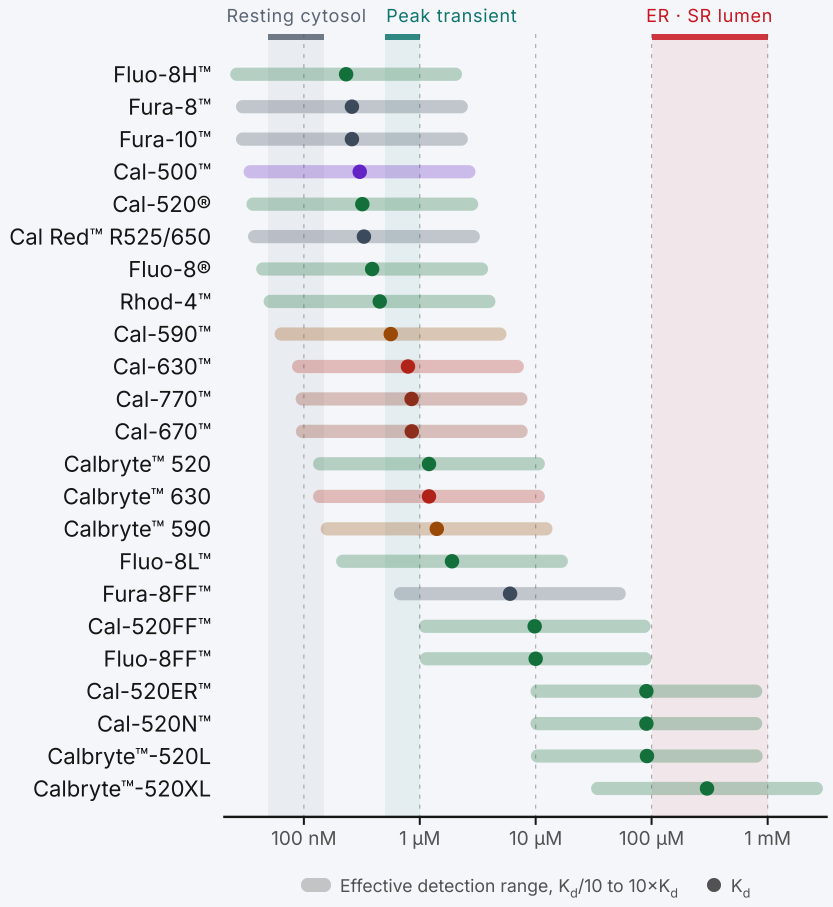
Grouped by detection channel

Channel	Indicator	Cat#	Ex (nm)	Em (nm)	K_d	F_{Ca} / F_{free}	Filter	Available as
Violet 405 nm laser	Cal-500™	20412	388	482	303 nM	~100	DAPI	AM, K salt
Green 488 nm laser	Calbryte™ 520	20650	493	515	1.2 µM	~300	FITC	AM, K salt
	Calbryte™-520L	20640	493	515	91 µM	—	FITC	AM, K salt
	Calbryte™-520XL	20646	493	515	300 µM	—	FITC	AM
	Cal-520®	21130	492	515	320 nM	~100	FITC	AM, K/Na salt, dextran, biotin, reactives
	Cal-520FF™	21143	492	515	9.8 µM	—	FITC	AM, K salt
	Cal-520N™	21146	492	515	90 µM	—	FITC	AM, K salt
	Cal-520ER™	21149	492	515	90 µM	~250	FITC	AM, K salt
	Fluo-8®	21081	495	516	389 nM	~200	FITC	AM, K/Na salt
	Fluo-8H™	21091	495	516	232 nM	~200	FITC	AM, Na salt
	Fluo-8L™	21097	495	516	1.9 µM	—	FITC	AM, K/Na salt
	Fluo-8FF™	21104	495	516	10 µM	—	FITC	AM, K salt
	Rhod-4™	21121	523	551	451 nM	—	TRITC	AM, K/Na salt, reactives
Orange 561 nm laser	Calbryte™ 590	20700	581	593	1.4 µM	~300	Cy3 TRITC	AM, K salt
	Cal-590™	20510	574	588	561 nM	~100	Cy3 TRITC	AM, K/Na salt, dextran
Red 640 nm laser	Calbryte™ 630	20720	607	624	1.2 µM	~300	Texas Red	AM, K salt
	Cal-630™	20530	609	626	792 nM	~100	Texas Red	AM, K/Na salt, dextran
Far-red & NIR 640 nm and NIR lasers	Cal-670™	20455*	667	680	853 nM	~100	Cy5 APC	K salt, dextran
	Cal-770™	20460*	758	783	850 nM	~100	Cy7	K salt
Ratiometric UV / violet / 488 nm lasers	Fura-8™	21056	354/415	524	260 nM	—	Ratiometric	AM, K/Na salt
	Fura-8FF™	20620	354/415	524	6 µM	—	Ratiometric	AM, K salt
	Fura-10™	21114	354/415	524	260 nM	—	Ratiometric	AM, K salt
	Cal Red™ R525/650	20591	488	525/650	330 nM	—	Ratiometric	AM, K salt

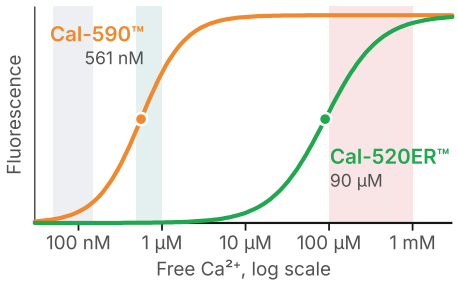
Catalog numbers are for the AM ester; *potassium salt where no AM ester is offered. Multiple sizes available; other forms have their own catalog numbers. Filter colors follow each filter set's emission band. Also available: the classic indicators Fluo-4, Fluo-3, Cal Green™ 1, Oregon Green® 488 BAPTA-1, Rhod-2, Fura-2, Indo-1 and Fura Red.

Binding affinity

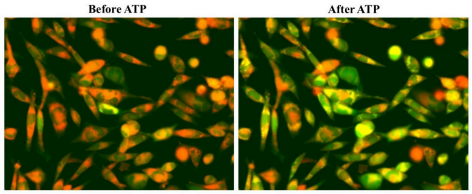
AAT indicators by K_d, against the concentrations that exist in a cell



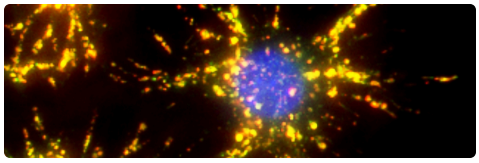
AFFINITY IN PRACTICE



Each dye reports Ca^{2+} around its own K_d: Cal-590™ in the cytosol, Cal-520ER™ in the ER lumen, where free Ca^{2+} is far higher. Curves drawn at each dye's K_d.



Cal-520ER™ AM in CHO-K1 before and after ATP, ER stained red (Cell Navigator® ER kit).



Three channels, all AAT — Cal-520®-Dextran, LysoBrite™ Red and Nuclear Violet™ LCS1 in live RAW 264.7.

K_d is the free Ca^{2+} concentration at which half the indicator is bound; bars are colored by detection channel. Indicators with a K_d of 230–850 nM track cytosolic Ca^{2+} from rest to peak. For large or fast transients, higher-K_d dyes such as Calbryte™ 520, 590 and 630 buffer less Ca^{2+} and give a larger response, while the L and FF variants extend to still higher concentrations.

Calcium assay kits

No-wash, probenecid-free and flow formats

Kit	Cat#	Indicator	Filter	Format	Ex/Em (nm)
Calbryte-520 Probenecid-Free and Wash-Free	36317	Calbryte™ 520	FITC	No wash, probenecid-free	493/515
Calbryte-590 Probenecid-Free and Wash-Free	36200	Calbryte™ 590	Cy3 TRITC	No wash, probenecid-free	581/593
Fluo-8® No Wash	36314	Fluo-8®	FITC	No wash	495/516
Fluo-8® Medium Removal Optimized for Difficult Cell Lines	36307	Fluo-8®	FITC	Medium removal	495/516
Fluo-4 No Wash	36325	Fluo-4	FITC	No wash	495/528
Rhod-4 No Wash	36333	Rhod-4™	TRITC	No wash	523/551
Rhod-4 No Wash Medium Removal	36330	Rhod-4™	TRITC	Medium removal	523/551
Fura-2 No Wash	36320	Fura-2	Ratiometric	No wash	340 · 380 / 505
Luminometric Calcium Assay Kit	36305	Coelenterazine	Luminescence	Microplate, apoaequorin-expressing cells	—
Cell Meter™ Flow Cytometric Calcium Assay Kit	36310	Calbryte™ 520	FITC	Flow cytometry	493/515
Cell Meter™ No Wash and Probenecid-Free Endpoint	36312	Fluo-8E™	FITC	Endpoint, microplate	495/516

Each kit is available in multiple sizes, listed on their respective product pages.

Talk to our scientists

Guidance on probe choice, loading and assay design

aatbio.com/catalog/calcium-indicators
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