

PYROSMART
NEXTGEN™
RECOMBINANT
LAL REAGENT



Associates of Cape Cod, Inc.
Your Endotoxin & Glucan Experts



Keep Your Method. Make An Impact.

The future of sustainable LAL is here. The launch of Associates of Cape Cod, Inc.'s (ACC) PyroSmart NextGen™ recombinant Cascade Reagent (rCR) marks the introduction of a new sustainable recombinant LAL reagent technology for Bacterial Endotoxin Testing (BET). There are other recombinant reagents on the market, but **ACC's is the only one that uses the same LAL cascade as traditional LAL reagents**, while eliminating the potential for 1,3-β-D-glucans cross reactivity. PyroSmart NextGen™ gives you the same complete cascade with all of the quality and consistency of results you have come to expect from ACC LAL reagents.

 **PYROSMART**
NEXTGEN
Recombinant *Limulus* Amebocyte Lysate

PyroSmart NextGen™ is a sustainable recombinant Cascade Reagent (rCR) that delivers the same reliable results as your conventional LAL reagent and offers these additional advantages:

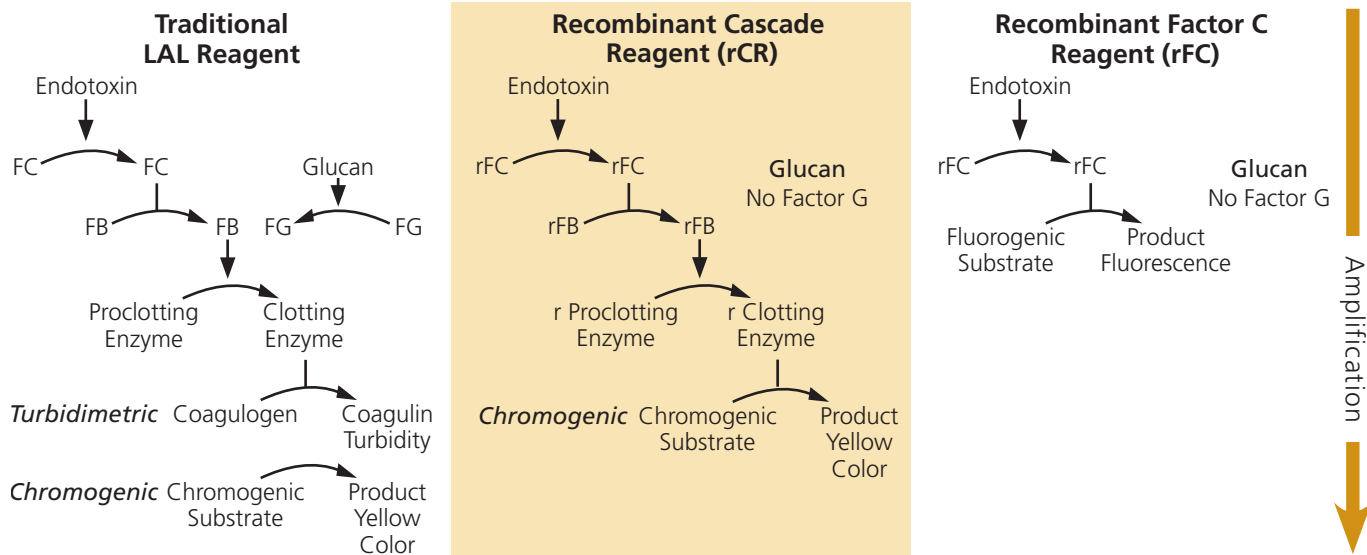
- **No Animal Content – Horseshoe Crab Blood Free**
- Same Cascade
- No Cross Reactivity With 1,3-β-D-glucans
- Same Instrument
- Same Preparation Steps
- Meets Your Sustainability Objectives

Keep Your Method. Make An Impact.

ACC's PyroSmart NextGen™ uses the same cascade as traditional LAL reagents by manufacturing the Factors responsible for the cascade using recombinant processes. As a result, our new recombinant reagent's mechanism of action will deliver results consistent with traditional LAL reagents. It offers the added advantage of eliminating 1,3-β-D-glucans cross reactivity from the LAL cascade, since there is no Factor G in the final reagent.

ACC developed PyroSmart NextGen™ to provide a sustainable alternative to traditional naturally sourced LAL reagents, while maintaining your lab procedures, methods, instrumentation and most importantly your results.

The Importance of Mechanism of Action Recombinant Cascade Reagent (rCR)



Traditional LAL reagent

In the presence of endotoxin, Factor C becomes an activated moiety which in turn activates Factor B and Proclotting Enzyme; ultimately resulting in the proteolytic cleavage of a substrate (either coagulogen in gel clot and turbidimetric assays or a colorless chromogenic substrate in chromogenic assays). The cascade mechanism thus amplifies the response of Factor C and leads to an exceptional sensitivity for this biological assay, with kinetic output being preferable. In the presence of 1,3-β-D-glucans, Factor G becomes an activated moiety which also activates Proclotting Enzyme and thus resulting in the same signal as that triggered by endotoxins through Factor C. This has been often observed as glucan-derived enhancement or false positive results.

Recombinant Cascade Reagent (rCR)

As with naturally sourced LAL reagents, in the presence of endotoxin, recombinant Factor C becomes an activated moiety which in turn activates recombinant Factor B and recombinant Proclotting Enzyme; ultimately resulting in the proteolytic cleavage of a colorless chromogenic substrate formulated with PyroSmart NextGen™. By relying on the same cascade mechanism, the response of recombinant Factor C is amplified the same way as by LAL reagents and thus the same sensitivity is achieved using this kinetic assay. Due to absence of Factor G, PyroSmart NextGen™ will not react with any 1,3-β-D-glucans and therefore will prevent glucan-derived enhancement and false positive results.

Recombinant Factor C (rFC) – Competition

Launched almost two decades ago, rFC reagents rely **only** on a recombinant form of Factor C. Due to the absence of the cascade as the amplification mechanism, rFC reagents are paired with a fluorescence method instead. However, this constitutes a different measured entity, different instrumentation, and different preparation steps with a limited output (endpoint assay only). Therefore the uptake and implementation of this method has been rather limited.

RECOMBINANT LAL REAGENT

The Benefits Are Clear

LAL Reagent Comparison Table	Conventional LAL Reagent	ACC's PyroSmart NextGen™ (rCR) Reagent	Competitor (rFC) Reagent
Year Technology Introduced	1977	2021	2005
Kinetic Assay	Kinetic	✓ Kinetic	✗ No. Endpoint only
Assay Setup	Single step reconstitution	✓ Single step reconstitution	✗ No. rFC requires three reagents in a 1:4:5 ratio and a 10 min. pre-incubation step
Same Standard Plate Reader	Incubating plate or tube reader at 405 nm	✓ Yes. Incubating plate or tube reader at 405 nm	✗ No. Fluorescent reader required
Derived From <i>Limulus</i> Amebocyte Lysate (LAL)	LAL	✓ Yes. rCR is recombinant LAL	✗ No. Based on <i>Carcinoscorpius</i> or <i>Tachypleus</i> Amebocyte Lysate (CAL/TAL)
Multi-step Cascade Pathway	Yes	✓ Yes	✗ No
Endotoxin Specific	No	✓ Endotoxin Specific	✓ Endotoxin Specific
Sustainable Reagent (animal free)	No	✓ Horseshoe Crab Blood Free	✓ Horseshoe Crab Blood Free

Converting to PyroSmart NextGen™ is Easy

Switching to this sustainable alternative is easy because PyroSmart NextGen™ follows the same cascade pathway as traditional reagents.

But don't take our word for it – evaluate PyroSmart NextGen™ yourself on your existing absorbance readers. Follow our user-friendly Evaluation Protocol to determine if PyroSmart NextGen™ works in your laboratory and on your samples. Our experts will assist you every step of the way.

If interested, simply contact an ACC Account Manager or Distributor today.

KEEP YOUR METHOD, MAKE AND IMPACT

- Same Instrument
- Same Preparation Steps
- Same Method

The future of sustainable LAL testing has arrived with **ACC's PyroSmart NextGen™** recombinant LAL reagent. The new testing technology that delivers the best of traditional methods, combined with the benefits of sustainable recombinant Cascade Reagents (rCR). The future of LAL testing is bright!



Keep Your Method.
Make An Impact.



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