

## Introducing new Diffinity™ technology

Diffinity Genomics has developed an innovative new technology that removes undesirable impurities from PCR reactions leaving you with nothing but purified DNA — fast!

## Diffinity RapidTip™ — it's all in the tip!

- Purification of PCR products in *one* minute!
- No bind-wash-elute, enzymes, or magnetic beads!
- All you need is a standard pipettor and our RapidTip.

### Diffinity RapidTip Product

- Is filled with our proprietary adsorption technology
- Contains everything you need for PCR purification *in* the tip
- Uses a standard pipettor and a simple, one-step mixing process
- Effectively removes dNTPs and primers
- Returns pure double-stranded DNA fragments of 100bp to 10Kb

### Diffinity RapidTip Protocol

1. Attach one or more of our pipette tips to a standard P100/P200 pipettor (single or multi-channel).
2. Aspirate PCR product into the pipette tip and mix by pipetting up and down for approximately *one minute*.
3. Dispense purified PCR product into a clean tube or well and dispose of the tip in normal laboratory trash — that's it!

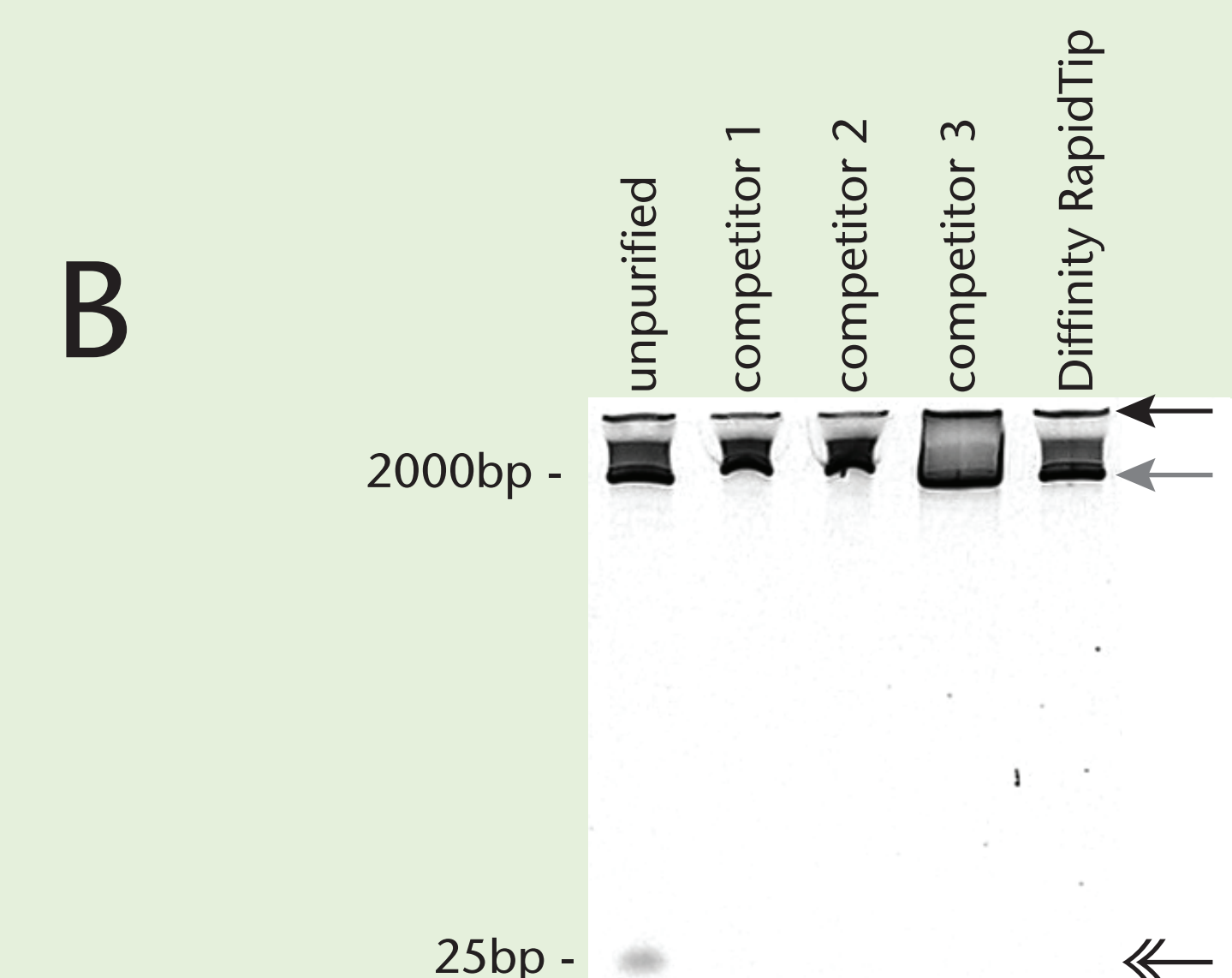
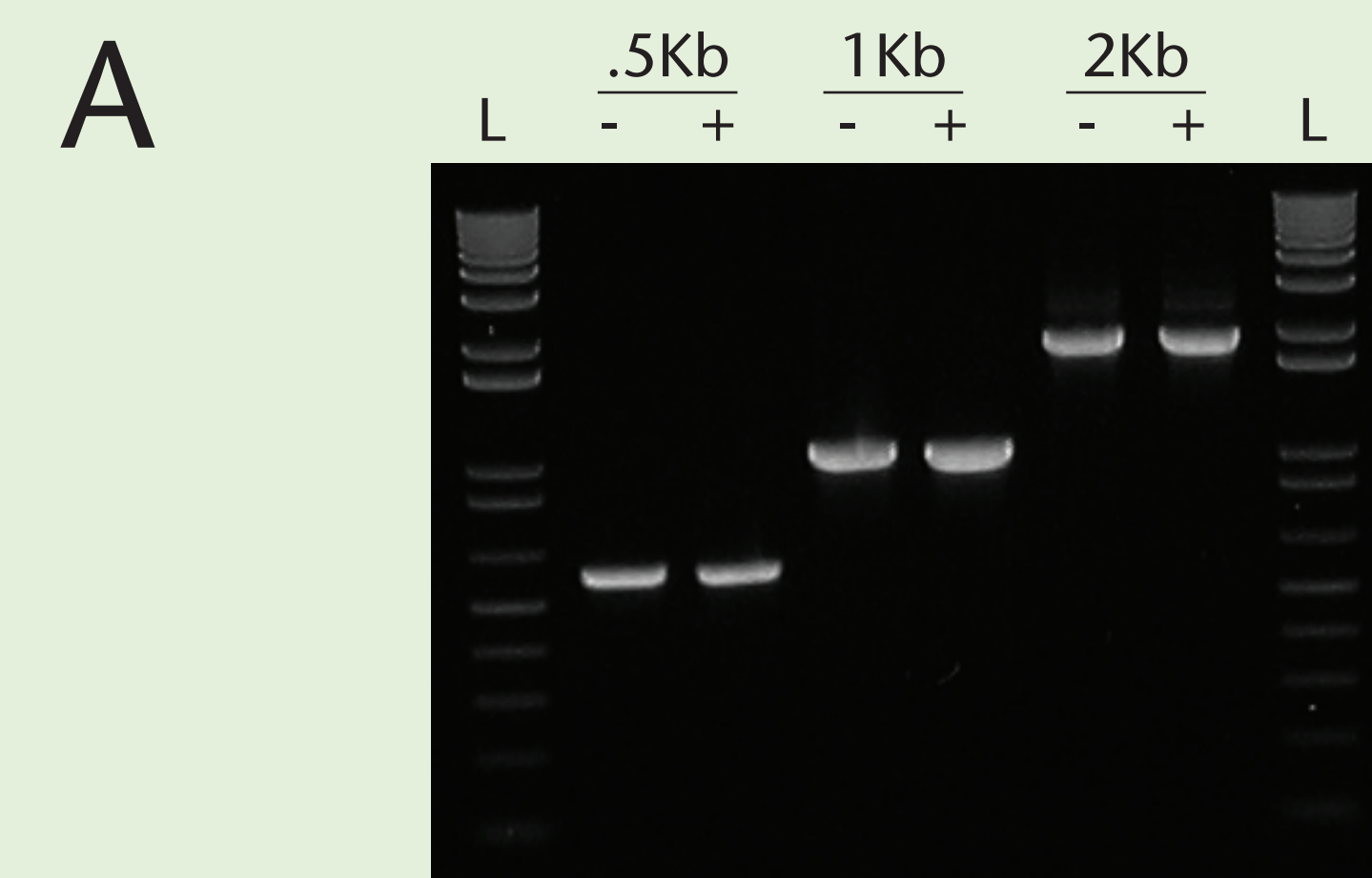
### Contact Us:

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Learn more: [www.diffinitygenomics.com](http://www.diffinitygenomics.com)

## Diffinity RapidTip reliably demonstrates:

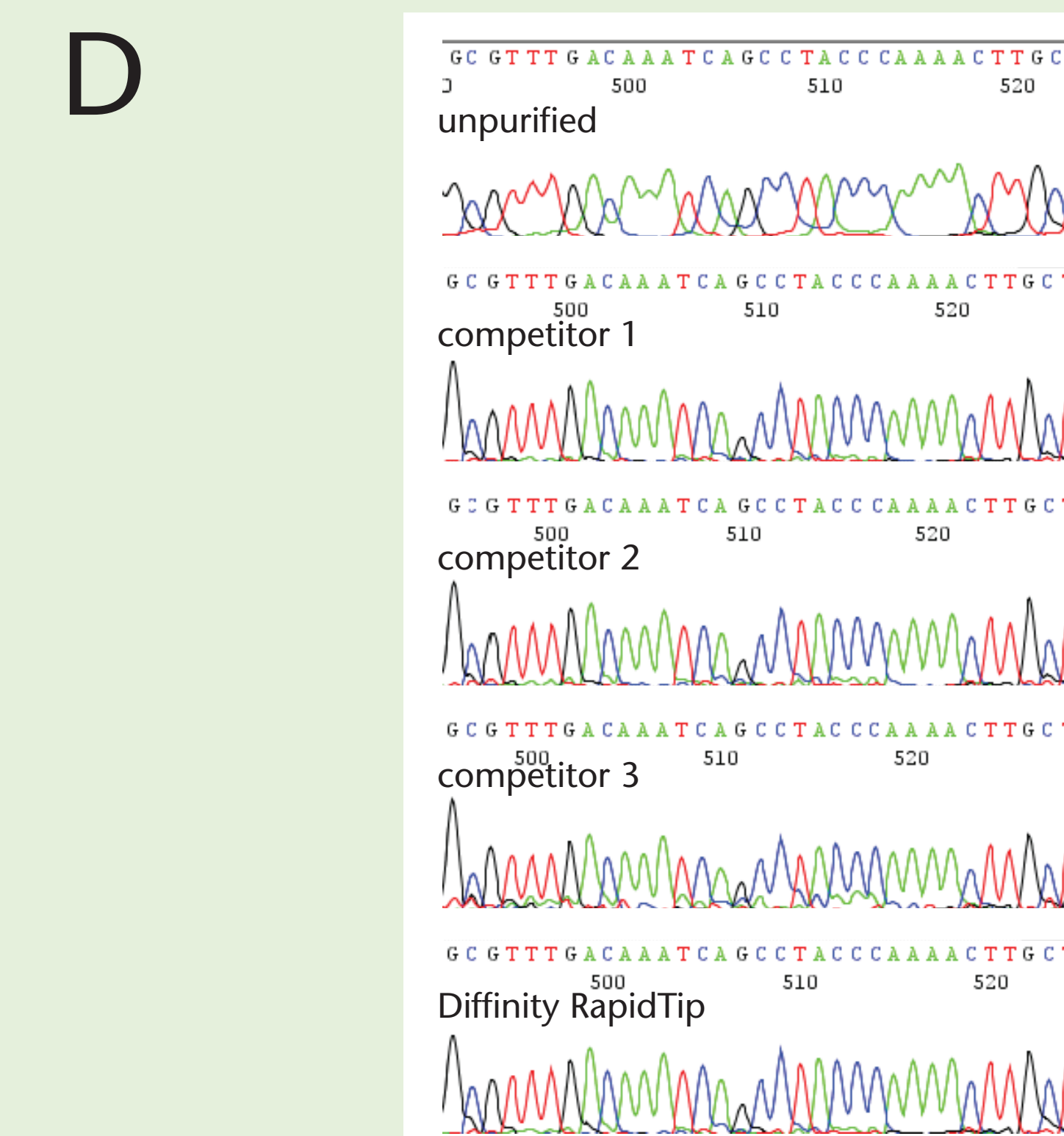
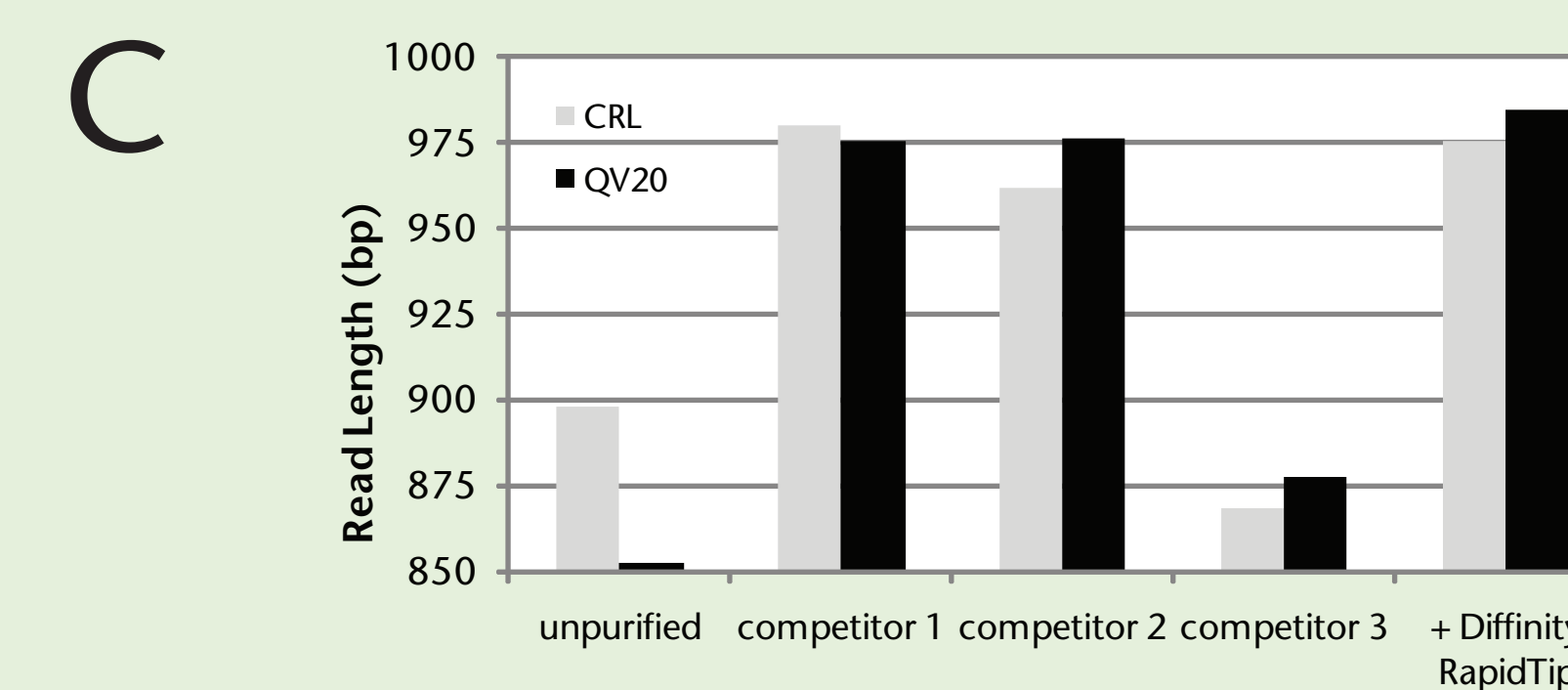
### Excellent Yield & Effective Purification



*Diffinity RapidTip achieves high sample recoveries with successful primer removal.*

- A** Equal volumes of untreated (-) and Diffinity RapidTip treated (+) PCR product (.5, 1, and 2 Kb) were run on a 1% agarose gel alongside 1Kb Plus ladder (L) and labeled with SybrSafe.
- B** PCR product was divided and subjected to PCR purification with either competitor's products (1, 2, 3) or Diffinity's RapidTip. Manufacturer's protocols were carefully followed and equivalent amounts of unpurified and purified sample were run on adjacent lanes of a non-denaturing 5% polyacrylamide gel labeled with SybrGold. The black arrow points to PCR template, the gray arrow to the PCR amplicon (2Kb) and the double arrow points to the primer (24bp). Distortion visible in competitor's lanes 1 and 2 is a result of organic solvent.

### Excellent Sanger Sequence



*Diffinity RapidTip compares favorably to competitor's purification methods for Sanger sequencing.*

- C** Read lengths are used to quantify sequence quality and compare purification methods. Quality Value 20 (QV20) is the number of bases with an error rate less than 1% while the Continuous Read Length (CRL) is the number of adjacent bases with an error rate of less than 1%.
- D** Sequence chromatograms show improved peak quality and lower background in Diffinity RapidTip purified samples as compared to unpurified samples.

### Features and Benefits

- Excellent Yield: up to 90% recovery
- Effective Purification: >95% removal of dNTPs and primers
- One Minute, One Step: simple protocol
- Easy to Use: standard pipettor and Diffinity RapidTip
- Environmentally Friendly: very little waste
- Robot Compatible: just mix & transfer
- Large Range of Fragment Lengths: 100bp to 10Kb

### Detailed Methods

#### Sample Prep/Challenge Solutions

All tests are performed in 1x PCR buffer pH 8.5. Challenge solutions include the impurities (dNTP or primer), the target PCR amplicon, and PCR solution. The target PCR amplicon is amplified from lambda bacteriophage DNA (NEB N3011) to generate a .5, 1, or 2 Kb band. Simulated PCR reactions comprising of 25ng/μL amplicon (Qiagen Qiaquick® purified), 462 ng/μL dNTP, and 2.4 ng/μL primer in 1X PCR buffer were used to ensure a consistent amount of impurities for electrophoresis and sequencing tests.

#### Treatment

The Diffinity™ material was tested in a functional pipette tip. A pre-measured volume of challenge solution was alternately aspirated and dispensed for 75 seconds (12–15 mixes) after which purified solution was placed in a clean tube. Competitor's products including Qiagen Qiaquick® (28106) Invitrogen PureLink® (K3100-01) and USB ExoSAP-IT® (78200) were used for PCR purification alongside Diffinity's functional tip. In all cases, manufacturer's protocols were followed using one spin column per 50 μL reaction and scaling the ExoSAP-IT as necessary. Equivalent volumes were used for downstream analysis. Treatment efficacy in mixtures such as simulated PCR reactions is analyzed via polyacrylamide gel electrophoresis and also by Sanger sequencing fidelity. Sanger sequencing was employed as a functional test of purification efficacy.