

FLUOROPHORE & BHQ® DYE SELECTION CHART

| FLUOROPHORE | ALTERNATE DYES | DYE-5'-T ₁₀ | | RECOMMENDED QUENCHER | BHQ Dye QUENCHING RANGE |
|-------------------------------|------------------------------------|------------------------|-----|----------------------|----------------------------|
| | | EX | EM | | |
| 🌀 Biosearch Blue™ | | 352 | 447 | BHQ-1 | BHQ-0 430-520 nm |
| FAM | | 495 | 520 | BHQ-1 | |
| TET | | 521 | 536 | BHQ-1 | |
| 🌀 CAL Fluor® Gold 540 | VIC/TET/JOE | 522 | 544 | BHQ-1 | BHQ-1 480-580 nm |
| JOE | | 529 | 555 | BHQ-1 | |
| VIC | | 538 | 554 | | |
| HEX | | 535 | 556 | BHQ-1 | |
| 🌀 CAL Fluor Orange 560 | VIC/HEX/JOE | 538 | 559 | BHQ-1 | |
| 🌀 Quasar® 570 | CY3 | 548 | 566 | BHQ-2 | |
| Cy™ 3 | | 549 | 566 | | BHQ-2* 559-670 nm |
| NED | | 546 | 575 | | |
| TAMRA | | 557 | 583 | BHQ-2 | |
| 🌀 CAL Fluor Red 590 | TAMRA | 569 | 591 | BHQ-2 | |
| Cy 3.5 | | 581 | 596 | | |
| ROX | | 586 | 610 | BHQ-2 | |
| 🌀 CAL Fluor Red 610 | TEXAS RED/ROX/ ALEXA FLUOR® 594 | 590 | 610 | BHQ-2 | |
| Texas Red® | | 597 | 616 | | |
| 🌀 CAL Fluor Red 635 | LC RED® 640 | 618 | 637 | BHQ-2 | |
| 🌀 Pulsar® 650 | | 460 | 650 | BHQ-2 | |
| Cy 5 | | 646 | 669 | | BHQ-3 620-730 nm |
| 🌀 Quasar 670 | CY5 | 647 | 670 | BHQ-2*, BHQ-3 | |
| Cy 5.5 | | 675 | 694 | | |
| 🌀 Quasar 705 | CY5.5 | 690 | 705 | BHQ-2*, BHQ-3 | |

This chart is intended to guide you through the dye selection process for your oligonucleotide. A fluorophore and quencher combination may be selected for applications such as probe-based qPCR.

🌀 Indicates Biosearch Technologies' proprietary dyes.

Dyes in **BOLDFACE** are available modifications for labeled oligos.

*BHQ-2 dye is recommended for Quasar 670 and Quasar 705 fluorophores due to static quenching.

Many dyes are also available in at least one of the following forms: labeled oligos, amidites, controlled pore glass, synthesis columns, carboxylic acids, succinimidyl esters, and amine labels.

Products and technologies appearing in this chart may have trademark or patent restrictions associated with them. Please see www.biosearchtech.com/legal for full legal disclosure.



www.dna-technology.dk
info@dna-technology.dk
 +45 87 32 30 00

MULTIPLEXING RECOMMENDATIONS FOR DUAL-LABELED BHQ PROBES AND PRIMERS

| INSTRUMENT | COMPANY | CALIBRATION REQUIRED? | DYE 1 | DYE 2 | DYE 3 | DYE 4 | DYE 5 |
|---------------------------|-------------------|-----------------------|-------|-----------------------|-------------------|-------------------|------------|
| MX3000P™ | Agilent | No | FAM | CAL Fluor® Orange 560 | CAL Fluor Red 610 | Quasar® 670 | |
| MX4000® | Agilent | No | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |
| ABI® 7000 | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | SuperROX | | |
| ABI 7300 | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | SuperROX | | |
| ABI 7500 | Life Technologies | Yes | FAM | CAL Fluor Orange 560 | TAMRA | SuperROX | Quasar 670 |
| ABI 7700 | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | SuperROX®* | | |
| ABI 7900 | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | SuperROX | | |
| StepOne™ | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | | | |
| StepOnePlus™ | Life Technologies | Yes | FAM | CAL Fluor Gold 540 | TAMRA | | |
| QuantStudio™ | Life Technologies | Yes | FAM | CAL Fluor Orange 560 | SuperROX | Quasar 670 | Quasar 705 |
| ViiA™ 7 | Life Technologies | Yes | FAM | CAL Fluor Orange 560 | SuperROX | Quasar 670 | Quasar 705 |
| CFX96™ | Bio-Rad | Yes | FAM | CAL Fluor Gold 540 | CAL Fluor Red 610 | Quasar 670 | Quasar 705 |
| iCycler iQ® | Bio-Rad | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |
| iQ™5 | Bio-Rad | Yes | FAM | CAL Fluor Gold 540 | CAL Fluor Red 590 | CAL Fluor Red 610 | Quasar 670 |
| SmartCycler® | Cepheid | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 635 | | |
| SmartCycler II | Cepheid | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |
| Mastercycler® ep Realplex | Eppendorf | Yes | FAM | CAL Fluor Gold 540 | | | |
| Eco™ | Illumina | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |
| Rotor-Gene™ Q 2-plex | Qiagen | No | FAM | CAL Fluor Orange 560 | | | |
| Rotor-Gene Q 5-plex | Qiagen | No | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | Quasar 705 |
| LightCycler® 1.2 | Roche | Yes | FAM | Pulsar® 650 | | | |
| LightCycler 2.0 | Roche | Yes | FAM | CAL Fluor Red 610 | Pulsar 650 | | |
| LightCycler 480 | Roche | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |
| cobas® z 480 | Roche | Yes | FAM | CAL Fluor Orange 560 | CAL Fluor Red 610 | Quasar 670 | |

These dye recommendations apply to Biosearch and DNA Technology's dual-labeled BHQ probes and may not apply to other probe formats.

Some instruments may require fluorescence calibration. Please visit our website for more information.

Recommendations highlighted in yellow have not been proven and should be used cautiously on an experimental basis.

*SuperROX dye is Biosearch's proprietary passive reference dye and is available through DNA Technology A/S.

- Determined through research at Biosearch Technologies or a collaborator
- Predicted based on instrument specifications

