

## Fluorophore Selection Guide for DNA & RNA Labeling Kits

**Table 1 Spectral properties of selected fluorescent dyes. ++: good, +: moderate, -: poor.**

**Please note:** The choice of fluorophore not only depends on the available excitation source or filter sets but also on the final application. It is a compromise between hydrophilicity and photostability that determine enzymatic label incorporation efficiency and detection sensitivity, respectively. Good photostability: Increased sensitivity thus improved detection limits; Good hydrophilicity: Increased incorporation efficiency of labeled (d)NTP.

<sup>[1]</sup> free acid \* AF = Alexa Fluor

| Emission colour | Dye         | Exc <sub>max</sub> [nm] <sup>[1]</sup> | Em <sub>max</sub> [nm] <sup>[1]</sup> | ε <sub>max</sub> [L x mmol <sup>-1</sup> cm <sup>-1</sup> ] <sup>[1]</sup> | Substitute for                               | Hydrophilicity | Photostability                       |
|-----------------|-------------|--|---------------------------------------|--|--|----------------|--------------------------------------|
| Blue            | AMCA        | 350                                    | 450                                   | 19.0   |  | +              | +                                    |
|                 | ATTO425     | 436                                    | 484                                   | 45.0   | DEAC   | +              | ++ (> DEAC)                          |
| Green           | Fluorescein | 492                                    | 517                                   | 83.0   |  | ++             | -                                    |
|                 | ATTO488     | 501                                    | 523                                   | 90.0   | Fluorescein, Rhodamine, Alexa Fluor 488, Cy2 | ++             | ++<br>(>fluorescein, rhodamine, Cy2) |
|                 | AF*488      | 494                                    | 515                                   | 73.0   | Fluorescein, Rhodamine, ATTO488, Cy2         | ++             | ++<br>(>fluorescein, rhodamine, Cy2) |
| Yellow          | Cy3         | 550                                    | 570                                   | 150.0  |  | ++             | +                                    |
|                 | ATTO550     | 554                                    | 576                                   | 120.0  | Cy3  | -              | ++ (> Cy3)                           |
|                 | AF*555      | 555                                    | 572                                   | 155.0  | Cy3, ATTO550                                 | ++             | ++ (> Cy3)                           |

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|-----------------|-----------|---|--|---|--------------------------------|----------------|----------------|
| Orange          | Texas Red | 588                                       | 609                                      | 80.0  | Cy3.5                          | +              | +              |
|                 | AF*594    | 590                                       | 617                                      | 92.0  | Texas Red                      | ++             | ++             |
|                 | ATTO594   | 602                                       | 626                                      | 120.0   | Texas Red, AF*594              | ++             | ++             |
| Red             | ATTO647N  | 644                                       | 669                                      | 150.0   | Cy5, Alexa Fluor 647           | -              | ++ (> Cy5)     |
|                 | AF*647    | 648                                       | 671                                      | 270.0   | Cy5, ATTO647N                  | ++             | ++ (> Cy5)     |
|                 | Atto643   | 643                                       | 665                                      | 150.0   | Cy5, Alexa Fluor 647, ATTO647N | ++             | ++ (> Cy5)     |
|                 | Cy5       | 649                                       | 670                                      | 250.0   |                                | ++             | -              |
| IR-Red          | ATTO680   | 681                                       | 698                                      | 125.0   |                                | ++             | ++             |