

## Qtracker® non-targeted quantum dots for *in vivo* imaging

Catalog nos. Q21021MP, Q21031MP, Q21061MP, Q21071MP

**Table 1.** Contents and Storage information.

Material	Amount	Concentration	Storage	Stability
Qtracker® non-targeted quantum dots	200 µL	2 µM solution in 50 mM borate buffer, pH 8.3	<ul style="list-style-type: none"> <li>• 2–6°C</li> <li>• DO NOT FREEZE</li> </ul>	When stored as directed the product is stable for at least 6 months.
<b>Number of applications:</b> Sufficient material is supplied for 5–10 injections, based on the protocol below.				
<b>Approximate fluorescence excitation and emission maxima:</b> See Table 2.				

### Introduction

Qtracker® non-targeted quantum dots are designed for small animal *in vivo* imaging at all levels of magnification, especially for studying vascular structure after tail vein injection of mice (Figures 1–2). These nanocrystals exhibit intense fluorescence with red-shifted emission for increased tissue penetration, and have a PEG surface coating specially developed to minimize nonspecific interactions and reduce immune response by the tissue. Because the PEG surface coating does not contain reactive functional groups, the Qtracker® non-targeted quantum dots are retained in circulation longer and can be imaged for up to 3 hours with a single injection or for longer periods of time with additional injections.

Qtracker® non-targeted quantum dots are available with 565 nm, 655 nm, 705 nm, or 800 nm emission. For details and scientific posters visit [probes.invitrogen.com/products/saivi](http://probes.invitrogen.com/products/saivi).

### Before You Begin

**Materials Required but Not Provided**

- Saline solution (0.14 M) or PBS (phosphate buffered saline)
- Syringes
- Mice (18–25 g)

**Note**

We recommend that you read the entire protocol before starting. For additional information, visit <http://probes.invitrogen.com/products/qdot>.

## Experimental Protocol

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- Injection Procedure** 1.1 Dilute 20–40  $\mu\text{L}$  of the Qtracker<sup>®</sup> non-targeted quantum dots stock solution to a total volume of 100  $\mu\text{L}$  with saline solution (0.14 M) or PBS. (This dosage is recommended for an 18–25 g mouse.)

If you are using a rat, you may need to titer the concentration of Qtracker<sup>®</sup> non-targeted quantum dots based on the blood volume.

**Note:** Dilute the Qtracker<sup>®</sup> non-targeted quantum dots stock solution immediately before injection into the tail vein. **Do not** store the diluted solution.

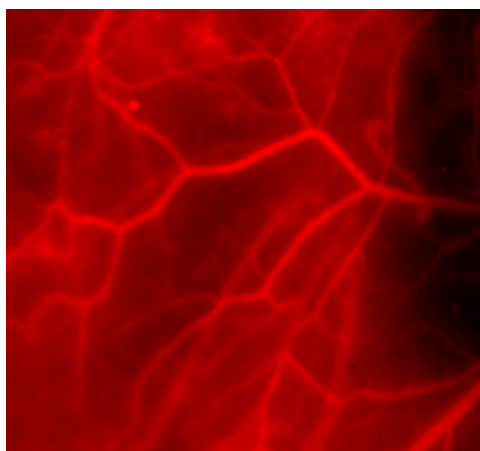
- 1.2 Intravenously inject the entire volume of the diluted solution from step 1.1 via the lateral tail vein. The injections can be repeated daily, if needed. The signal is retained in the vascular system with little to no leakage.

**Imaging and Analysis** The mice can be imaged immediately after the injection. The Qtracker<sup>®</sup> non-targeted quantum dot material has been shown to remain in the vascular system for up to three hours.

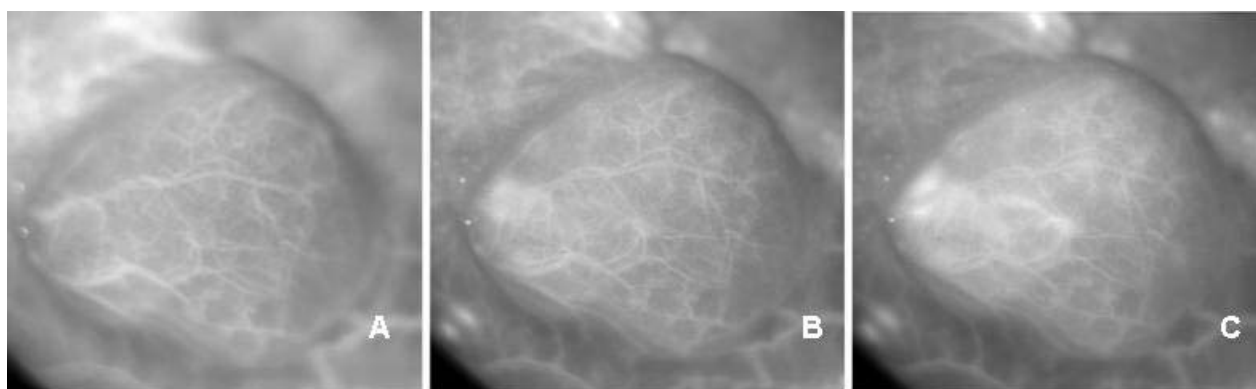
Follow the imaging protocol as recommended by the manufacturer of your imaging system. To maximally excite the Qtracker<sup>®</sup> non-targeted quantum dots, the excitation light wavelength must be at least 40 nm below the emission peak for a particular quantum dot color. The recommended emission and excitation wavelengths are listed in Table 2.

**Table 2.** Qtracker<sup>®</sup> non-targeted quantum dots.

Product	Catalog no.	Emission (nm)	Excitation (nm)
Qtracker <sup>®</sup> 565 non-targeted quantum dots	Q21031MP	565	405–525
Qtracker <sup>®</sup> 655 non-targeted quantum dots	Q21021MP	655	405–615
Qtracker <sup>®</sup> 705 non-targeted quantum dots	Q21061MP	705	405–665
Qtracker <sup>®</sup> 800 non-targeted quantum dots	Q21071MP	800	405–760



**Figure 1.** Non-tumor vasculature labeled with Qtracker<sup>®</sup> 800 non-targeted quantum dots (Invitrogen Cat. no. Q21071MP). The agent was injected into an athymic nu/nu mouse intravenously via the tail vein. Images were obtained using the Maestro<sup>™</sup> In-Vivo Imaging System (CRi, Inc, [www.cri-inc.com/products/maestro.asp](http://www.cri-inc.com/products/maestro.asp)) with an excitation wavelength of 465 nm and emission wavelength range of 790–950 nm.



**Figure 2.** Tumor vasculature labeled with Qtracker<sup>®</sup> 655 non-targeted quantum dots (Invitrogen Cat. no. Q21021MP). The agent was injected into an athymic nu/nu mouse carrying a LS174 T human tumor xenograft intravenously via the tail vein. Images were obtained using the Maestro<sup>™</sup> In-Vivo Imaging System (CRi, Inc, [www.cri-inc.com/products/maestro.asp](http://www.cri-inc.com/products/maestro.asp)) with an excitation wavelength of 465 nm and emission wavelength range of 640–950 nm. Imaged at 5 minutes (A), 1 hour (B) and 2 hours (C) post-injection.

## References

1. Nat. Biotechnol. 21, 41 (2003);
2. Bioconjug Chem 15, 79 (2004);
3. Nat. Biotechnol 22, 93(2004).

## Product List Current prices are available from [www.invitrogen.com](http://www.invitrogen.com) or from our Customer Service Department

Catalog no.	Product Name	Unit Size
Q21031MP	Qtracker <sup>®</sup> 565 non-targeted quantum dots *2 µM solution*	200 µL
Q21021MP	Qtracker <sup>®</sup> 655 non-targeted quantum dots *2 µM solution*	200 µL
Q21061MP	Qtracker <sup>®</sup> 705 non-targeted quantum dots *2 µM solution*	200 µL
Q21071MP	Qtracker <sup>®</sup> 800 non-targeted quantum dots *2 µM solution*	200 µL
<b>SAIVI<sup>™</sup> Near Infrared Injectable Contrast Reagents</b>		
S34788	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 680 injectable contrast agent *bovine serum albumin*	1 mL
S34790	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 680 injectable contrast agent *human serum transferrin*	1 mL
S34789	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 750 injectable contrast agent *bovine serum albumin*	1 mL
S34791	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 750 injectable contrast agent *human serum transferrin*	1 mL
<b>SAIVI<sup>™</sup> Microsphere Injectable Contrast Reagents</b>		
S31201	SAIVI <sup>™</sup> 715 injectable contrast agent *0.1 µm microspheres*	1 mL
S31203	SAIVI <sup>™</sup> 715 injectable contrast agent *2 µm microspheres*	1 mL
<b>SAIVI<sup>™</sup> Near Infrared Labeling Kits</b>		
S30043	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 647 Antibody/Protein 0.1 mg-Labeling Kit *5 labelings*	1 kit
S30044	SAIVI <sup>™</sup> Alexa Fluor <sup>®</sup> 647 Antibody/Protein 1 mg-Labeling Kit *3 labelings*	1 kit
S30045	SAIVI <sup>™</sup> Rapid Antibody Labeling Kit, Alexa Fluor <sup>®</sup> 680 *3 labelings*	1 kit
S30046	SAIVI <sup>™</sup> Rapid Antibody Labeling Kit, Alexa Fluor <sup>®</sup> 750 *3 labelings*	1 kit

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