

Supporting Information

Almost complete radiationless energy transfer from excited triplet state of a dim phosphor to a covalently linked adjacent fluorescent dye in purely organic tandem luminophores doped into PVA matrix

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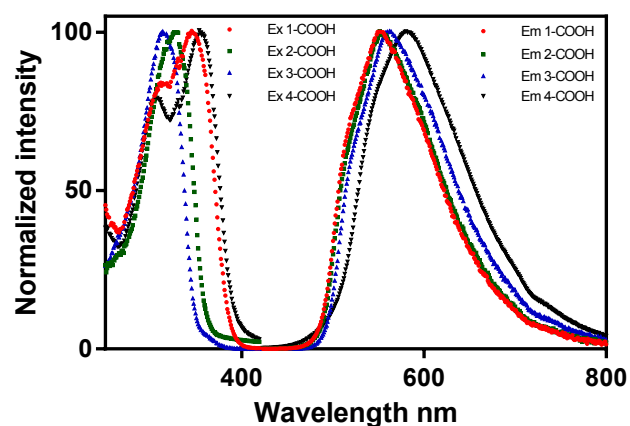


Figure S11. Excitation and emission spectra of phosphorescence of carboxylic acid analogues of **1-4**. 6-10 nmol of **1 - 4** in 0.7 mg of PVA *per well* were used.

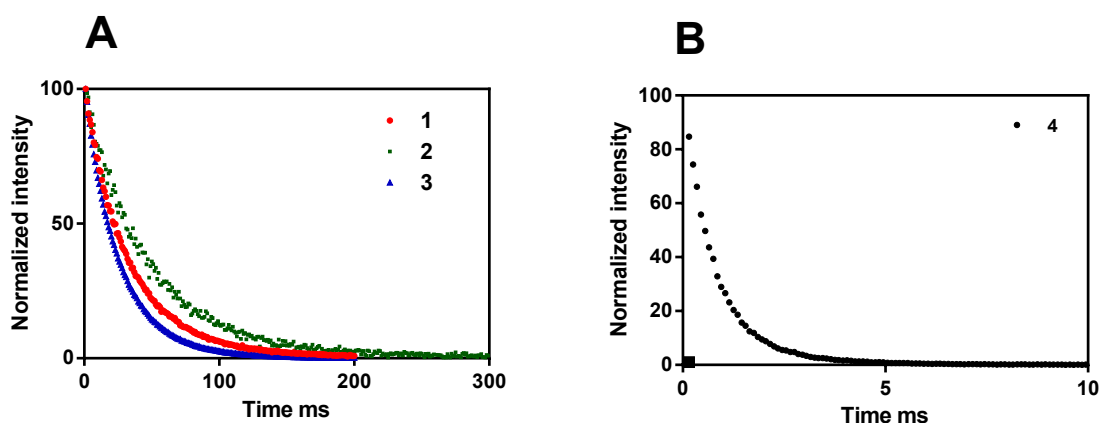


Figure S12. Phosphorescence decays of **1-3** (A) and **4** (B) in PVA.

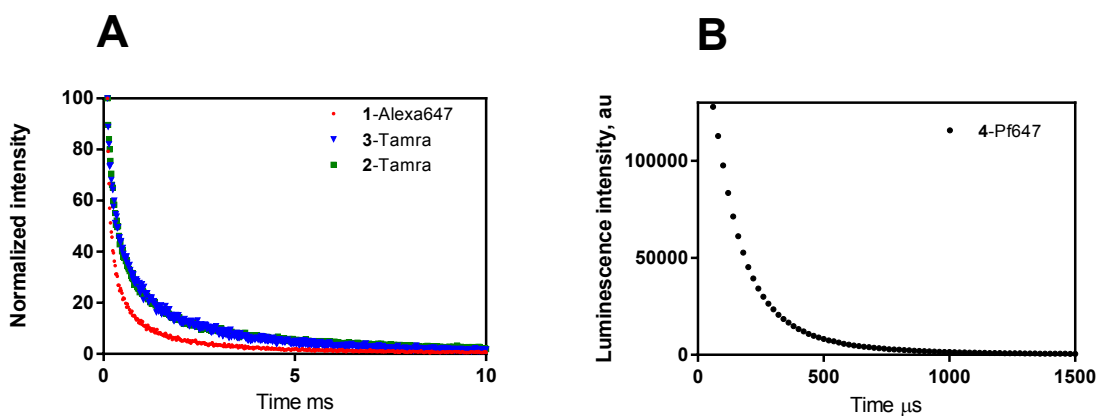


Figure S13. Luminescence decays of donor-acceptor compounds in PVA.

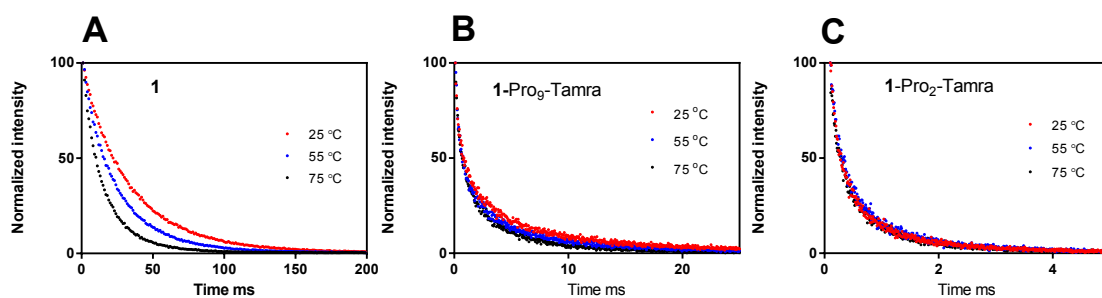


Figure S14. Temperature dependence of luminescence decays of compounds in PVA.

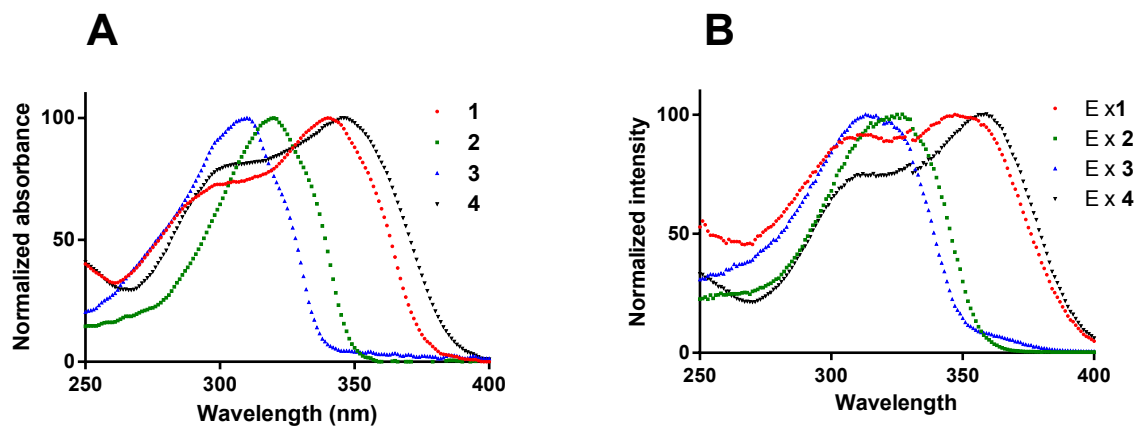
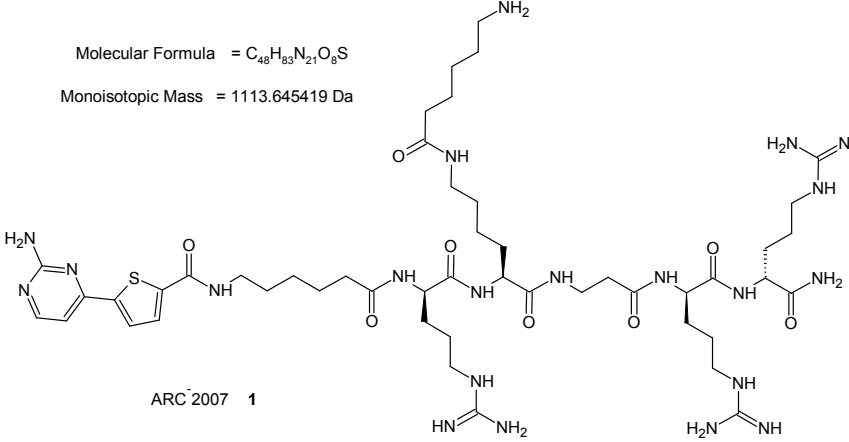
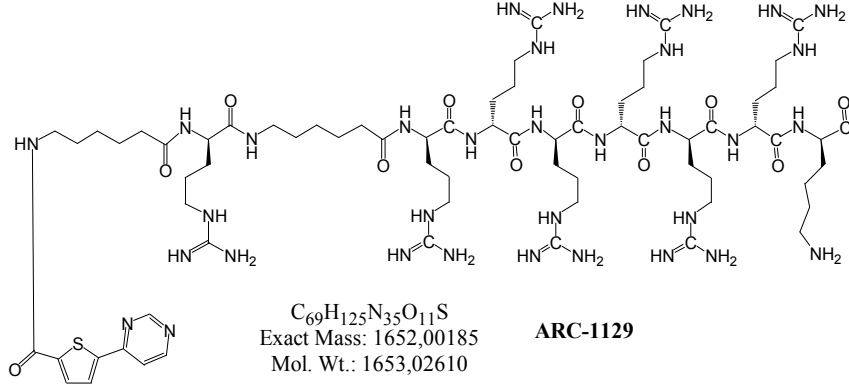
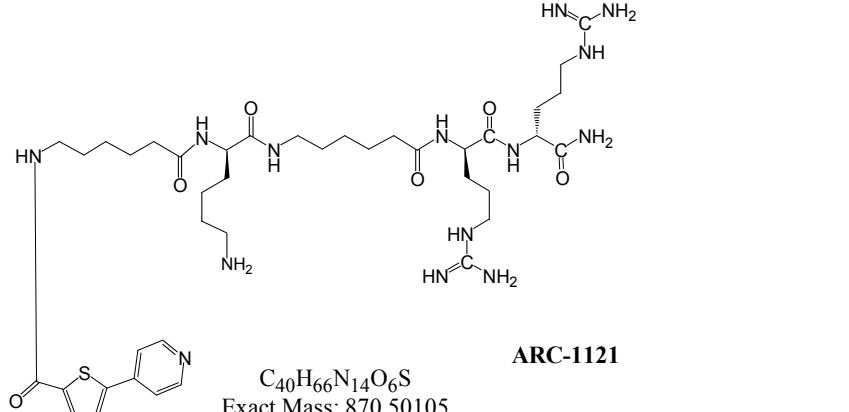
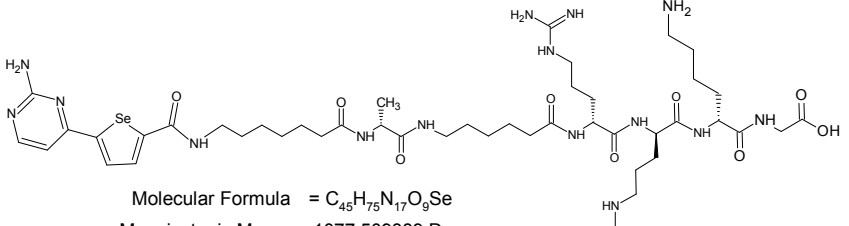
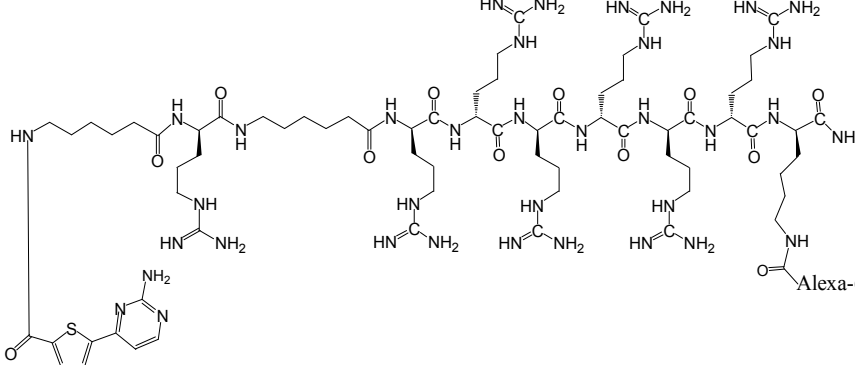
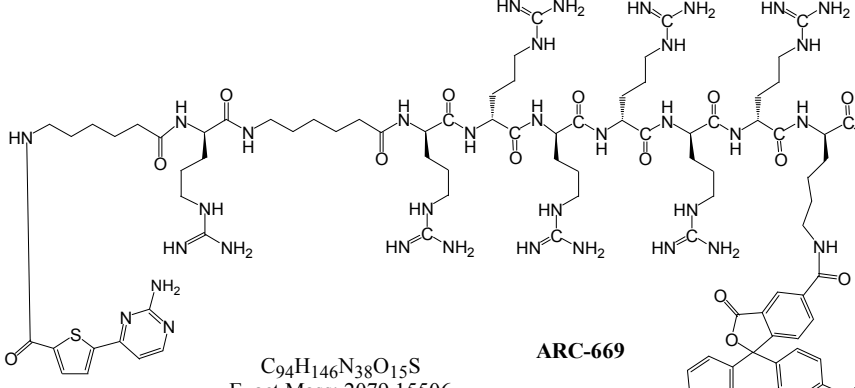
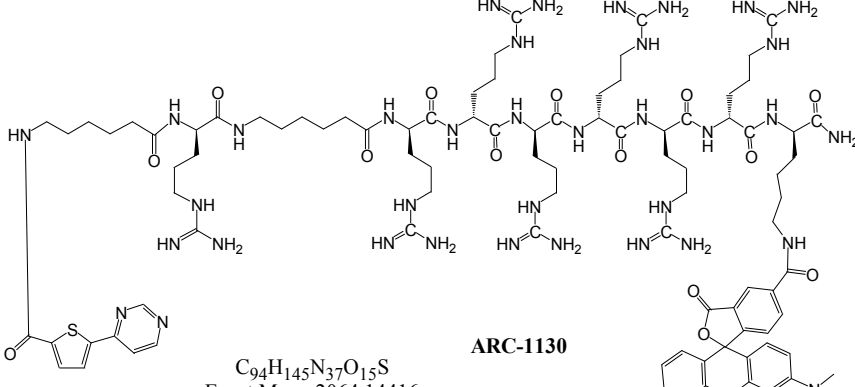
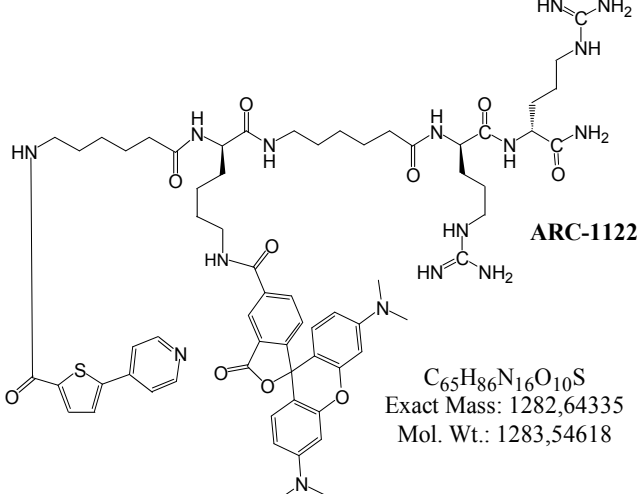
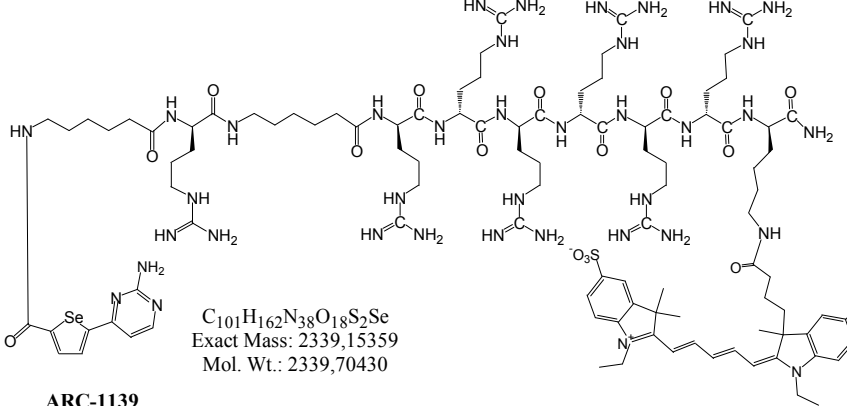
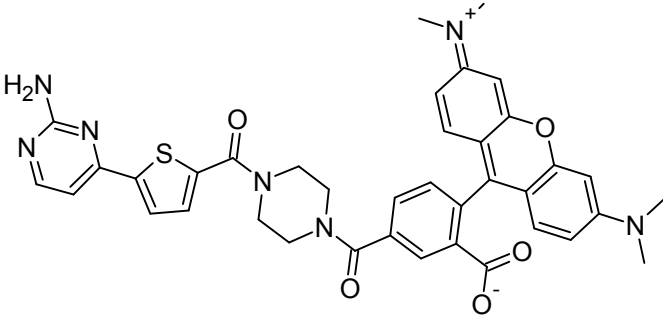


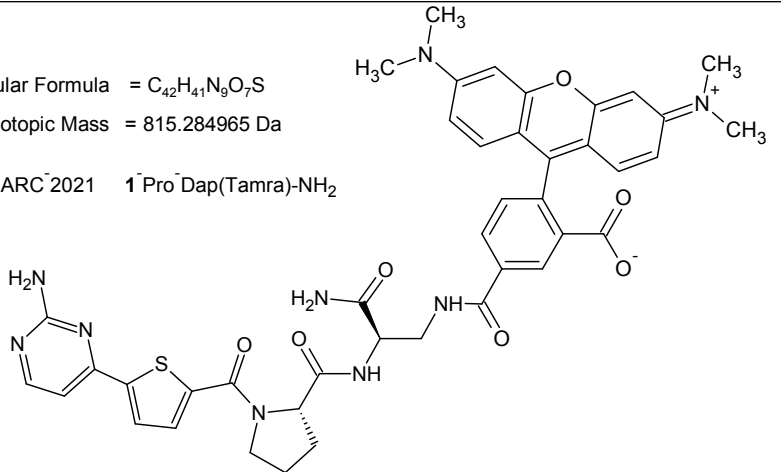
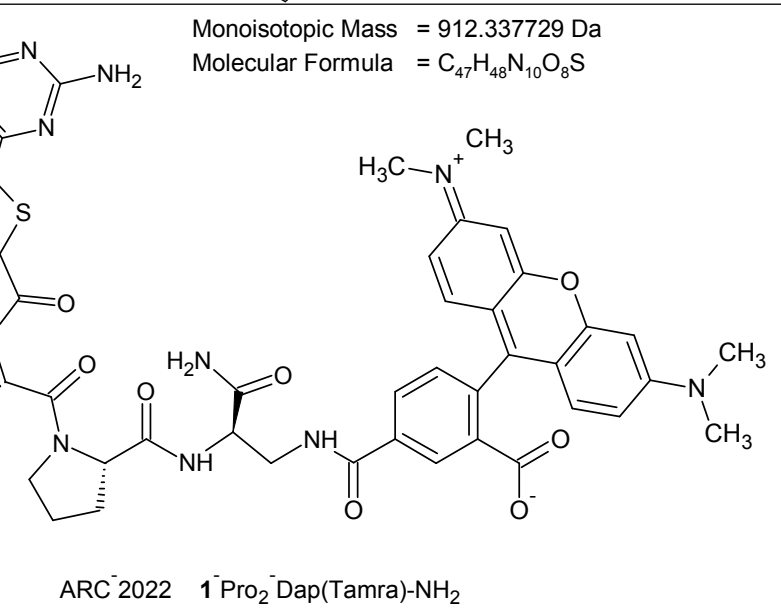
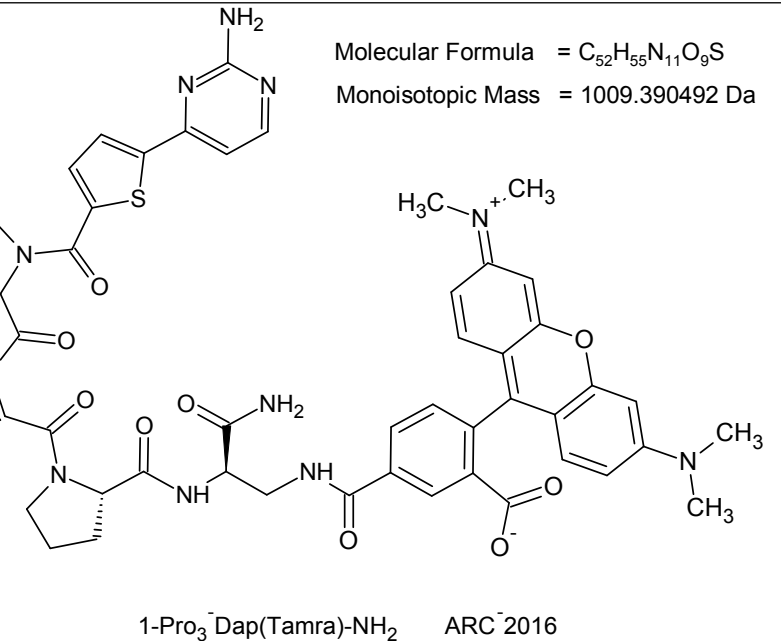
Figure SI5. A) Normalized UV-spectra of **1** – **4**. B) Normalized phosphorescence excitation spectra of **1** – **4**. Minor differences between absorption and excitation spectra are probably mainly caused by slit width used in the measurements of excitation spectra.

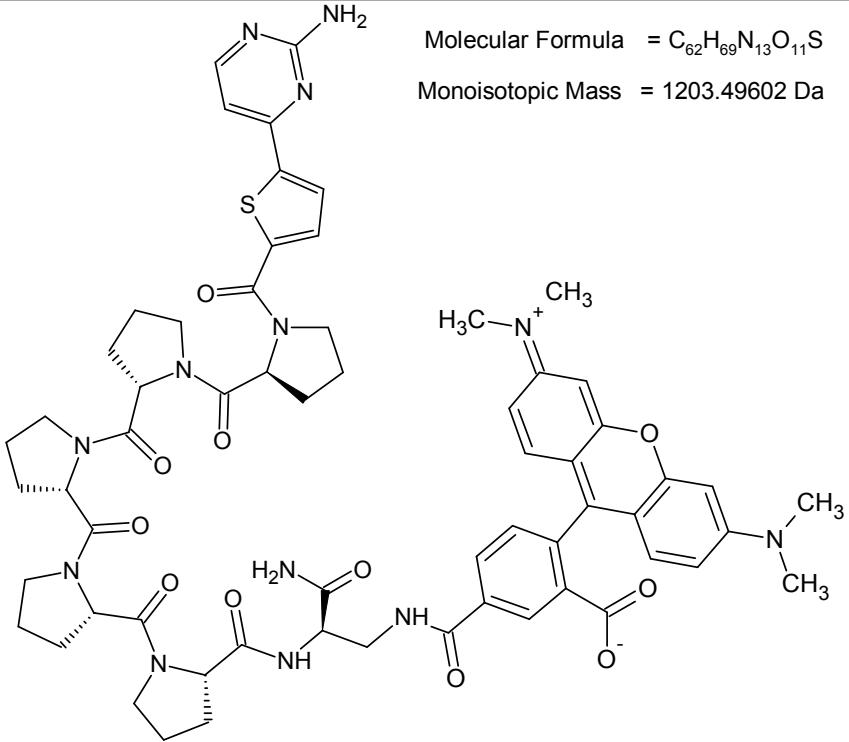
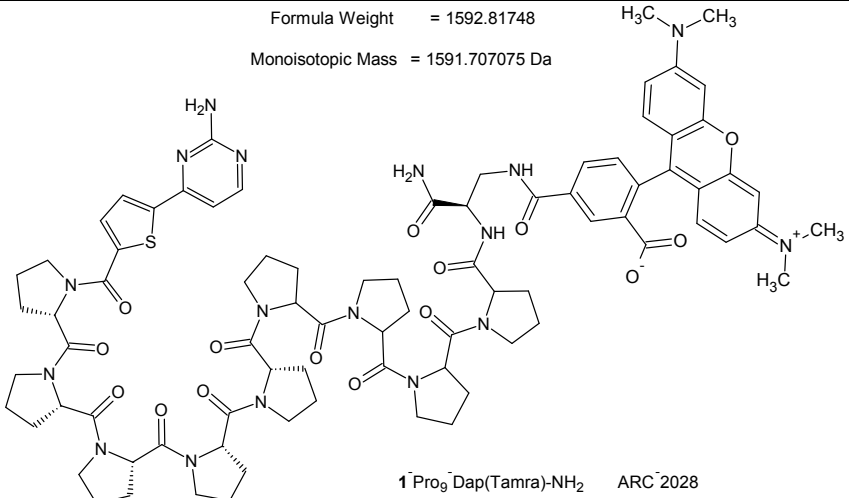
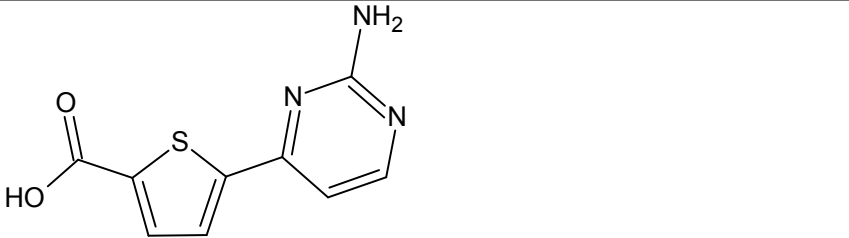
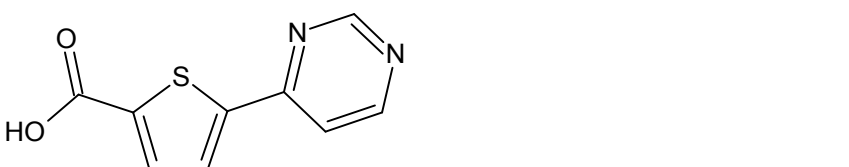
SI Table 1. Table of full structures

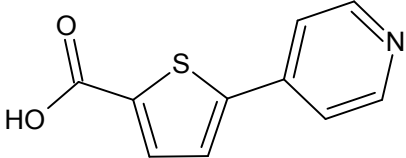
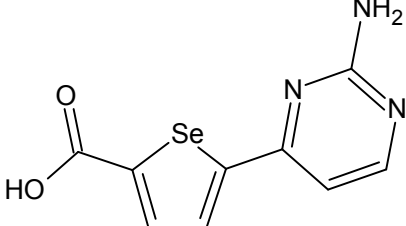
Compound codes	Structure	Reference or HRMS
<p>1 (ARC-2007)</p>	<p>Molecular Formula = C₄₈H₈₃N₂₁O₈S Monoisotopic Mass = 1113.645419 Da</p>  <p>ARC 2007 1</p>	<p>1113.6447</p>
<p>2 (ARC-1129)</p>	 <p>C₆₉H₁₂₅N₃₅O₁₁S Exact Mass: 1652,00185 Mol. Wt.: 1653,02610</p> <p>ARC-1129</p>	<p>[1]</p>
<p>3 (ARC-1121)</p>	 <p>C₄₀H₆₆N₁₄O₆S Exact Mass: 870,50105 Mol. Wt.: 871,10880</p> <p>ARC-1121</p>	<p>[1]</p>
<p>4 (ARC-1180)</p>	 <p>Molecular Formula = C₄₅H₇₅N₁₇O₉Se Monoisotopic Mass = 1077.509889 Da</p>	<p>1077.5105</p>

<p>1-Alexa647 (ARC-1063)</p>	 <p style="text-align: center;">ARC-1063</p>	<p>[1]</p>
<p>1-Tamra (ARC-669)</p>	 <p style="text-align: center;">ARC-669</p> <p style="text-align: center;"> $C_{94}H_{146}N_{38}O_{15}S$ Exact Mass: 2079,15506 Mol. Wt.: 2080,47816 </p>	<p>[1]</p>
<p>2-Tamra (ARC-1130)</p>	 <p style="text-align: center;">ARC-1130</p> <p style="text-align: center;"> $C_{94}H_{145}N_{37}O_{15}S$ Exact Mass: 2064,14416 Mol. Wt.: 2065,46348 </p>	<p>[1]</p>

<p>3-Tamra (ARC-1122)</p>	 <p style="text-align: center;">ARC-1122</p> <p style="text-align: center;">C₆₅H₈₆N₁₆O₁₀S Exact Mass: 1282,64335 Mol. Wt.: 1283,54618</p>	<p>[1]</p>
<p>4-PF647 (ARC-1139)</p>	 <p style="text-align: center;">ARC-1139</p> <p style="text-align: center;">C₁₀₁H₁₆₂N₃₈O₁₈S₂Se Exact Mass: 2339,15359 Mol. Wt.: 2339,70430</p>	<p>[1]</p>
<p>1-Pip-Tamra (ARC-2024)</p>	<p>Molecular Formula = C₃₈H₃₅N₇O₅S</p> <p>Monoisotopic Mass = 701.242037 Da</p>  <p style="text-align: center;">ARC-2024 1⁻Pip-Tamra</p>	<p>701.2405</p>

<p>1-Pro-Dap(Tamra)-NH₂ (ARC-2021)</p>	<p>Molecular Formula = C₄₂H₄₁N₉O₇S Monoisotopic Mass = 815.284965 Da</p> <p>ARC 2021 1⁻Pro⁻Dap(Tamra)-NH₂</p> 	<p>815.2837</p>
<p>1-Pro₂-Dap(Tamra)-NH₂ (ARC-2021)</p>	<p>Monoisotopic Mass = 912.337729 Da Molecular Formula = C₄₇H₄₈N₁₀O₈S</p>  <p>ARC 2022 1⁻Pro₂⁻Dap(Tamra)-NH₂</p>	<p>912.3369</p>
<p>1-Pro₃-Dap(Tamra)-NH₂ (ARC-2016)</p>	<p>Molecular Formula = C₅₂H₅₅N₁₁O₉S Monoisotopic Mass = 1009.390492 Da</p>  <p>1-Pro₃⁻Dap(Tamra)-NH₂ ARC 2016</p>	<p>1009.3886</p>

<p>1-Pro₅-Dap(Tamra)-NH₂ (ARC-2017)</p>	<p>Molecular Formula = C₆₂H₆₉N₁₃O₁₁S Monoisotopic Mass = 1203.49602 Da</p>  <p>The structure shows a central Dap-Tamra core. The Dap part consists of a proline ring with a side chain containing a secondary amine and a methyl group. The Tamra part is a xanthene derivative with a trimethylammonium group and a methyl group. The Dap and Tamra are linked via an amide bond. The proline ring is further substituted with a side chain containing a secondary amine and a methyl group.</p> <p>1-Pro₅⁻Dap(Tamra)-NH₂ ARC 2017</p>	<p>1203.4968</p>
<p>1-Pro₉-Dap(Tamra)-NH₂ (ARC-2028)</p>	<p>Formula Weight = 1592.81748 Monoisotopic Mass = 1591.707075 Da</p>  <p>The structure shows a central Dap-Tamra core. The Dap part consists of a proline ring with a side chain containing a secondary amine and a methyl group. The Tamra part is a xanthene derivative with a trimethylammonium group and a methyl group. The Dap and Tamra are linked via an amide bond. The proline ring is further substituted with a side chain containing a secondary amine and a methyl group.</p> <p>1-Pro₉⁻Dap(Tamra)-NH₂ ARC 2028</p>	<p>1591.7086</p>
<p>1-COOH</p>	 <p>The structure shows a proline ring with a side chain containing a secondary amine and a methyl group. The proline ring is further substituted with a side chain containing a secondary amine and a methyl group.</p>	<p>[1]</p>
<p>2-COOH</p>	 <p>The structure shows a proline ring with a side chain containing a secondary amine and a methyl group. The proline ring is further substituted with a side chain containing a secondary amine and a methyl group.</p>	<p>[1]</p>

3-COOH		[1]
4-COOH		[1]

SI references

- 1) E. Enkvist, A. Vaasa, M. Kasari, M. Kriisa, T. Ivan, K. Ligi, G. Raidaru, A. Uri, *ACS Chem. Biol.* **2011**, *6*, 1052–1062.