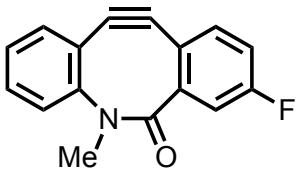
Engle Lab Group Meeting
June 9, 2016

Team Challenge #4
Presenter: Keary Engle

Bioorthogonal Chemistry Challenge: In 2003, Carolyn Bertozzi coined the term "bioorthogonal chemistry" to refer to chemical reactions that can take place in living systems but do not interfere with native biological processes. As a consequence of their circumstances, bioorthogonal reactions have extreme constraints. For example, they require: aqueous compatibility, tolerance for a potpourri of polar functional groups and very high reaction rates. As a result energetic reagents with "soft" reactive groups are commonly employed.

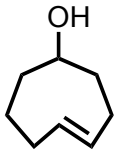
For this team challenge, you have recently been hired as the lone synthetic chemistry team in a biotech startup focused on diagnostics. Your company cannot afford a SciFinder license or journal subscriptions, and you have been tasked with preparing the following compounds, each of which is known to participate in a specific bioorthognoal ligation. Working in teams, for each of the molecules below: (**1**) propose a concise forward synthesis from simple starting materials, (**2**) provide a representative reaction partner, and (**3**) give give the name of its inventor(s).

You are not permitted to use a computer for this team challenge. If you have a question about starting material availability, ask Keary.



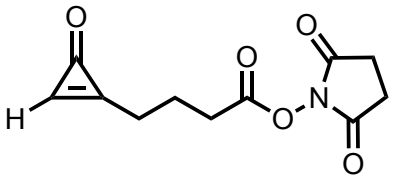
A

J. Am. Chem. Soc. **2010**, *132*, 3688.
J. Am. Chem. Soc. **2012**, *134*, 9199.



B

J. Am. Chem. Soc. **2008**, *130*, 3760.
J. Am. Chem. Soc. **2008**, *130*, 13518.



C

J. Am. Chem. Soc. **2015**, *137*,10036.