



## INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

### INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	Laboratoire de Synthèse Organique
Website of the Host Laboratory	<a href="http://iso.polytechnique.fr/">http://iso.polytechnique.fr/</a> (LSO) and <a href="https://naygroup.wordpress.com/publications/">https://naygroup.wordpress.com/publications/</a> (Nay group)
Research Group	Organic synthesis and biological interfaces
Internship Supervisor	Dr. Bastien Nay
Internship Subject	Total synthesis of photocaged natural products for light-driven activation
Student's level	<input checked="" type="checkbox"/> Advanced Undergraduate Students (3 <sup>rd</sup> or 4 <sup>th</sup> year) <input checked="" type="checkbox"/> Master's students (1 <sup>st</sup> or 2 <sup>nd</sup> year) <input checked="" type="checkbox"/> PhD students
Proposed Duration	<input checked="" type="checkbox"/> 3 months <input checked="" type="checkbox"/> 4 months <input checked="" type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	Good knowledge of organic synthesis and communication skills
Internship description (max. 15 lines)	<p>Total synthesis is a preparative science that can make available rare organic compounds for specific applications. It is connected to methodological developments to invent new reactions. In order to synthesize new chemical tools based on relevant natural products for biology, we thus need to develop efficient synthetic strategies. Our long-term goal is to synthesize stimuli-responsive molecular tools that could be used to spatiotemporally control cell proteins, a strategy that is currently fast growing in chemical biology (Example of rapamycin: Umeda et al. <i>J. Am. Chem. Soc.</i> <b>2011</b>, <i>133</i>, 12–14; or Karginov et al. <i>J. Am. Chem. Soc.</i> <b>2011</b>, <i>133</i>, 420–423; Example of jasplakinolide: Borowiak et al. <i>J. Am. Chem. Soc.</i> <b>2020</b>, <i>142</i>, 9240–9249). Before that, we need to secure and optimize a new synthetic route to the compound of interest, taking benefit of recently discovered catalytic methods.</p> <p>This internship will be the occasion to participate to a cutting-edge synthetic project involving the use of asymmetric allylation by hydrogen-borrowing catalytic methods, cyanohydrine alkylation, and stereoretentive metathesis reactions for natural product total synthesis.</p>

The boxes marked with cross implies eligible