

















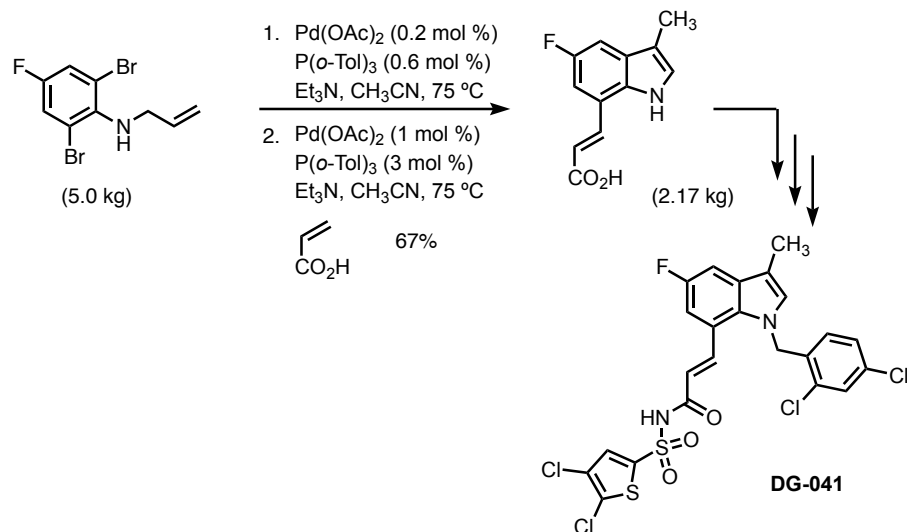






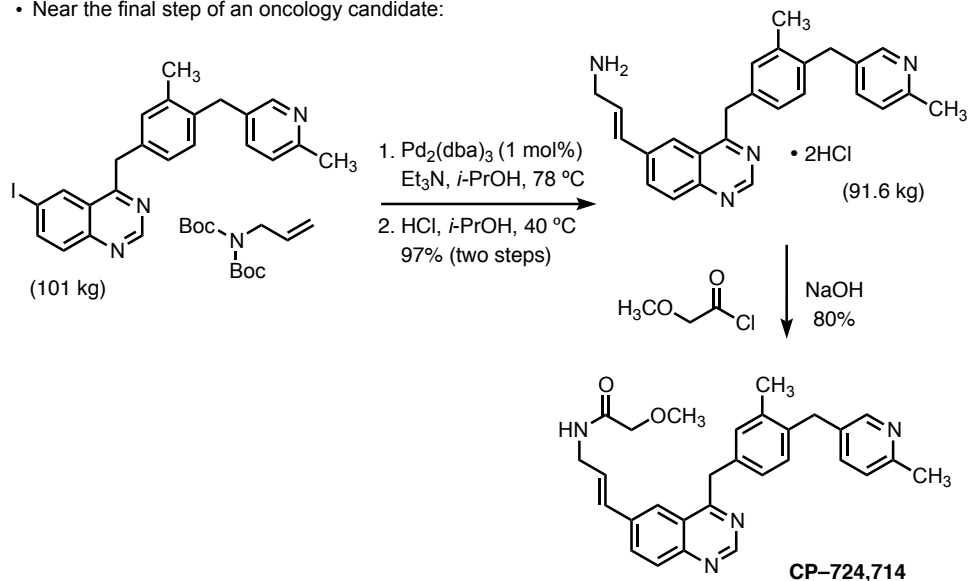
## Selected Applications in Industry:

- Synthesis of an EP3 receptor antagonist via a double Heck cyclization reaction:



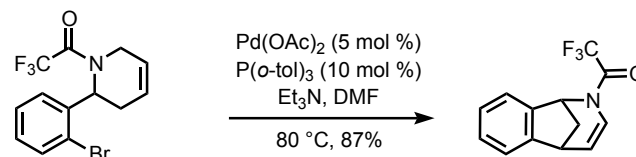
Zegar, S.; Tokar, C.; Enache, L. A.; Rajagopol, V.; Zeller, W.; O'Connell, M.; Singh, J.; Muellner, F. W.; Zembower, D. E. *Org. Proc. Res. Dev.* **2007**, *11*, 747–753.

- Near the final step of an oncology candidate:



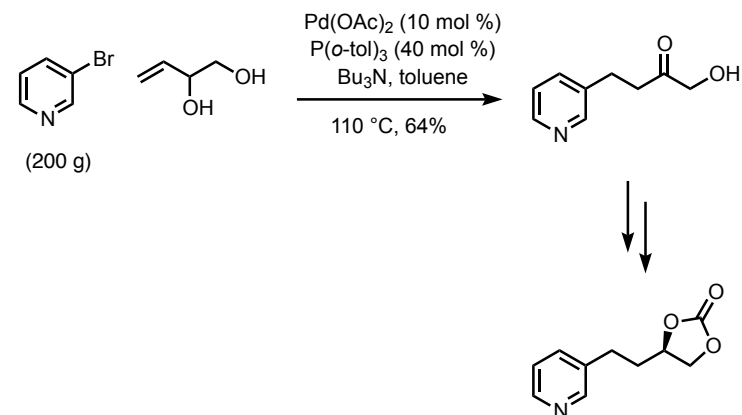
Ripin, D.H. B.; Bourassa, D. E.; Brandt, T.; Castaldi, M. J.; Frost, H. N.; Hawkins, J.; Johnson, P. J.; Massett, S. S.; Neumann, K.; Phillips, J.; Raggon, J. W.; Rose, P. R.; Rutherford, J. L.; Sitter, B.; Stewart, A. M.; Vetelino, M. G.; Wei, L. *Org. Proc. Res. Dev.* **2005**, *9*, 440–450.

- Application to the synthesis of the anti-smoking drug, Chantix®:

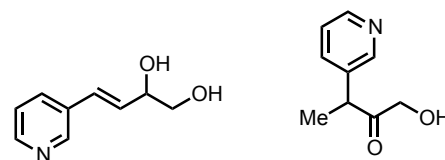


Coe, J. W.; Brooks, P. R.; Vetelino, M. G.; Bashore, C. G.; Bianco, K.; Flick, A. C. *Tetrahedron Lett.* **2011**, *52*, 953–954.

- Application in the manufacturing route of 1-hydroxy-4-(3-pyridyl)butan-2-one:
- Reaction was optimized to limit the formation of the by-products depicted below.



Possible by-products (not observed):



Ainge, D.; Vaz, L-M. *Org. Proc. Res. Dev.* **2002**, *6*, 811.