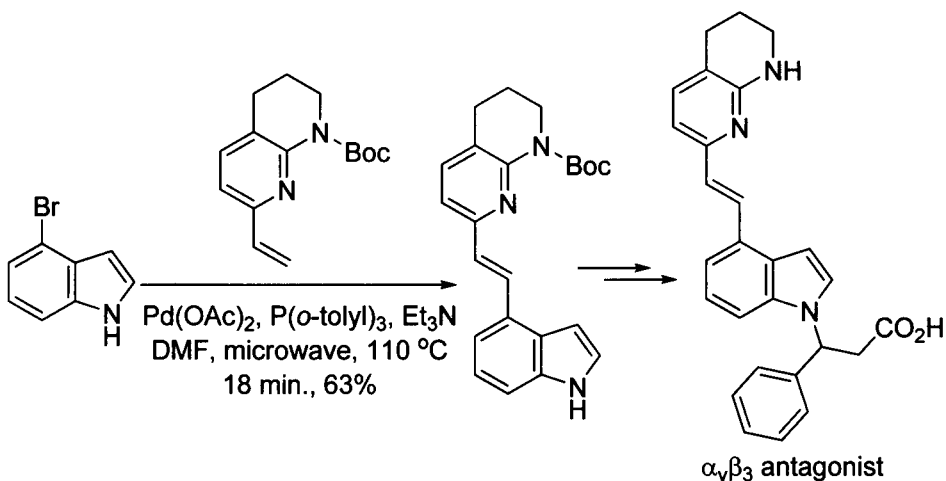


In another example of intermolecular Heck reaction shown below, 4-bromoindole was coupled with a BOC-protected 7-vinyl-1,2,3,4-tetrahydronaph-thyridine olefin in 63% yield.<sup>81</sup> The resulting alkene was manipulated to a potent  $\alpha_v\beta_3$  antagonist, a vitronectin receptor that has been identified as a promising potential target for the treatment of osteoporosis, diabetic retinopathy, and cancer.



Three representative examples of intramolecular Heck reaction are shown below. The first one is the Mori–Ban reaction; the second is an intramolecular Heck reaction taking place on the indole ring; and the third one is an intramolecular heteroaryl Heck reaction connecting two aromatic rings.

The Mori–Ban reaction has been widely used in drug discovery and development. In the process synthesis of a selective PPAR $\gamma$  modulator by Merck, the enamine was cyclized to afford the indole core.<sup>53</sup>