Total Synthesis of Njaoamine C by Concurrent Macrocycle Formation
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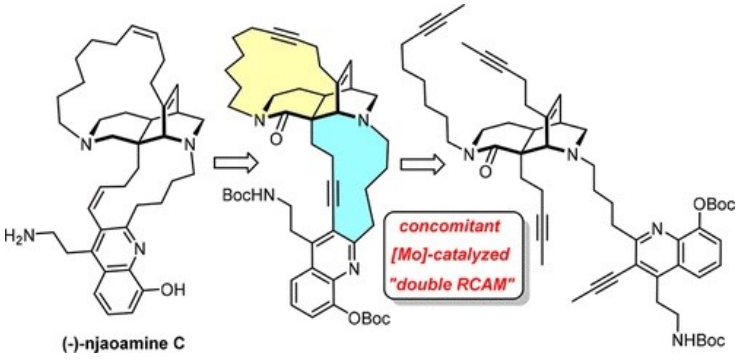
Cite this: J. Am. Chem. Soc. 2023, 145, 39, 21197–21202

double ring closing alkyne metathesis (dRCAM)

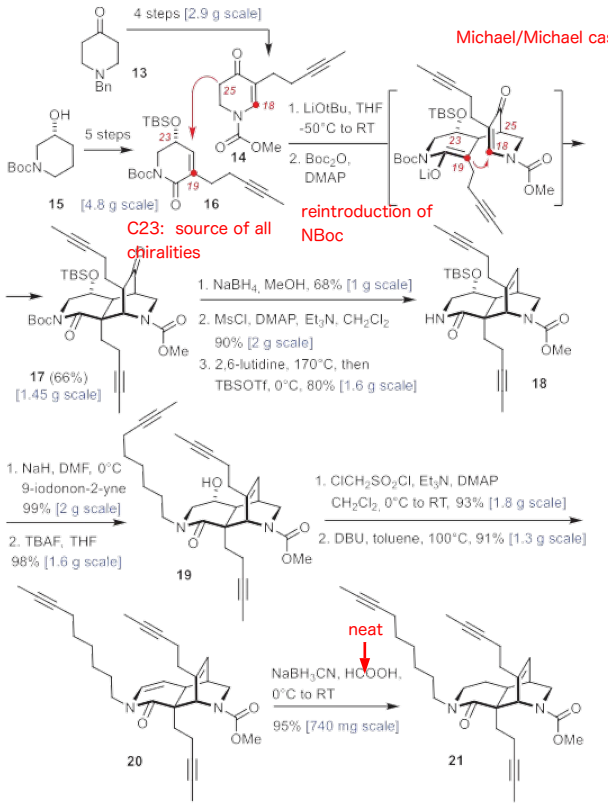
dynamic covalent chemistry

"canopy" molybdenium alkylidene catalyst



manzamine alkaloid

Scheme 2. Diazatricyclic Core[a]



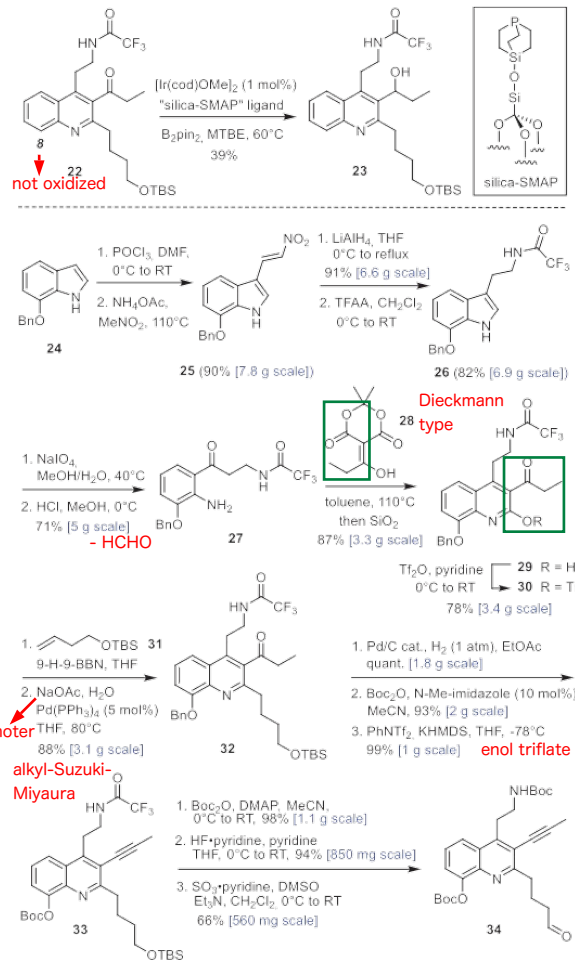
Michael/Michael cascade

reintroduction of NBoc

C23: source of all chiralities

neat

Scheme 3. Hydroxyquinoline Segment



not oxidized

Dieckmann type

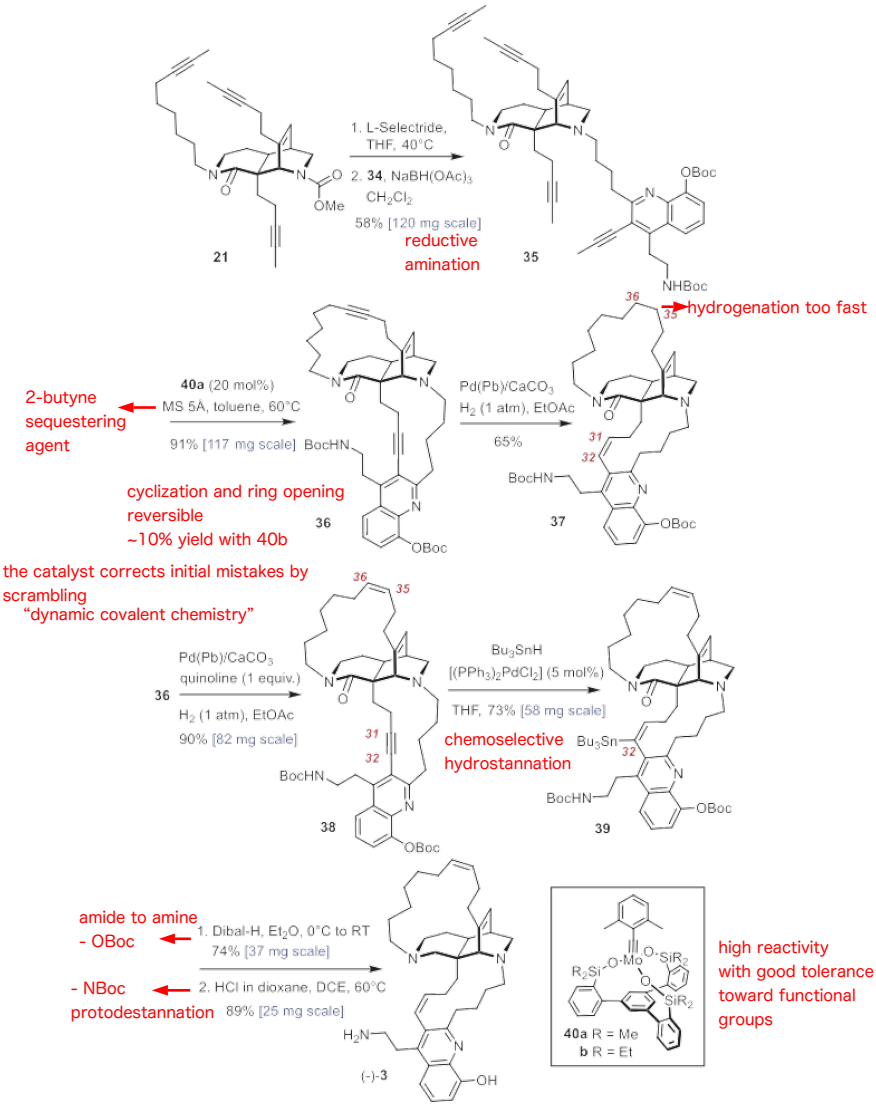
- HCHO

promoter

alkyl-Suzuki-Miyaura

enol triflate formation/elimination

Scheme 4. Completion of the Total Synthesis



reductive amination

hydrogenation too fast

2-butyne sequestering agent

cyclization and ring opening reversible
~10% yield with 40b

the catalyst corrects initial mistakes by scrambling
"dynamic covalent chemistry"

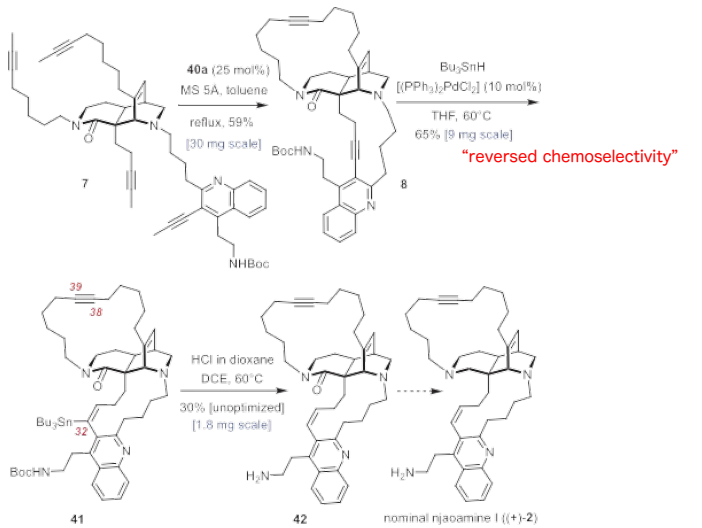
chemoselective hydrostannation

amide to amine
- OBoc

- NBoc
protodestannation

high reactivity with good tolerance toward functional groups

Scheme 5. Route to Nominal Njaoamine I Revisited



"reversed chemoselectivity"