Tagitoxin

Structural Features
- fully oxidized cyclopentane core
- multiple polar functional groups (practical issues)
- more heteroatoms than carbon atoms
- unknown absolute configuration

Retrosynthetic Analysis
1) core contraction
2) cyclopentane functionalization
3) cystein incorporation

1937 identified as a plant pathogen (Pseudomonas syringae)
1981 isolated and partially characterized
1989-2016 structure revisions
July 2020: first synthesis published


OSO₂ (cat.)
(acidic work up)

[oxidant]
SOLUTION

1) $H^+\text{, }H_2N\text{-SO}_2\text{Bu}$
2) MAC Reagent
3) TBAF, TFE

1) $O_2\text{, DMS, SiO}_2$

1) Conditions
2) Reagent
$\Delta$, then pTSA

1) $BrN\text{, }Me$  
2) JTOH
3) Bu$_3$SnH, acetone, $H^+$

1) MeOH, Et$_3$N
2) (+)-$\psi$

1) SeO$_2$
2) TMSOK
then MeONH$_2$HCl

### (-)-Tagetitoxin

2 diastereoisomers