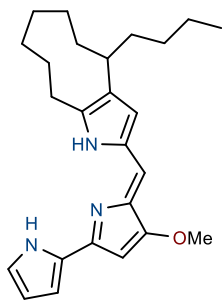
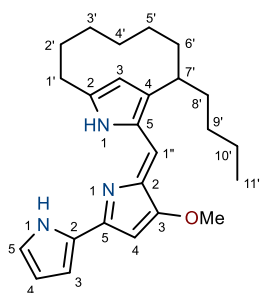


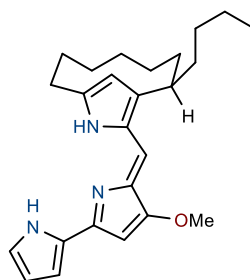
stereochemistry unknown:



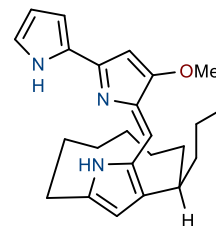
originally proposed structure



streptorubin B revised



"anti" isomer



"syn" isomer

- ❖ Prodigines class of natural products/antibiotics produced by a wide range of bacteria.
- ❖ One analogue of prodigiosin completed phase II oncology trials.
- ❖ Stereochemistry of streptorubin B has been in question until this study.

- ❖ In particular, relative stereochemistry at 7', 1" and syn vs. anti atropisomerism had yet to be resolved.
- ❖ The NMR of streptorubin B HCl reveals a unique shift at C-4' of -1.48 ppm.
- ❖ This, combined with knowledge of the biosynthesis led Challis and coworkers to a mutasynthesis strategy for absolute stereochemical elucidation.
- ❖ Thomson and coworkers were ultimately able to obtain an x-ray crystallographic structure from synthetic streptorubin B, confirming its structure.



Greg Challis

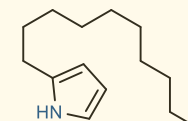
(stereochemical elucidation)
J. Am. Chem. Soc. **2011**, 133 (6), 1793–1798. <https://doi.org/10.1021/ja109164t>.



Regan Thomson
(Total synthesis)

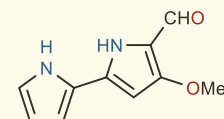
J. Am. Chem. Soc. **2011**, 133 (6), 1799–1804. <https://doi.org/10.1021/ja109165f>.

Biosynthesis:



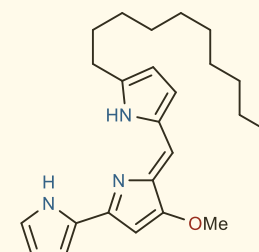
2-undecylpyrrole

+



4-methoxy-2,2'-bipyrrole-5-carboxyaldehyde
MBC

RedH

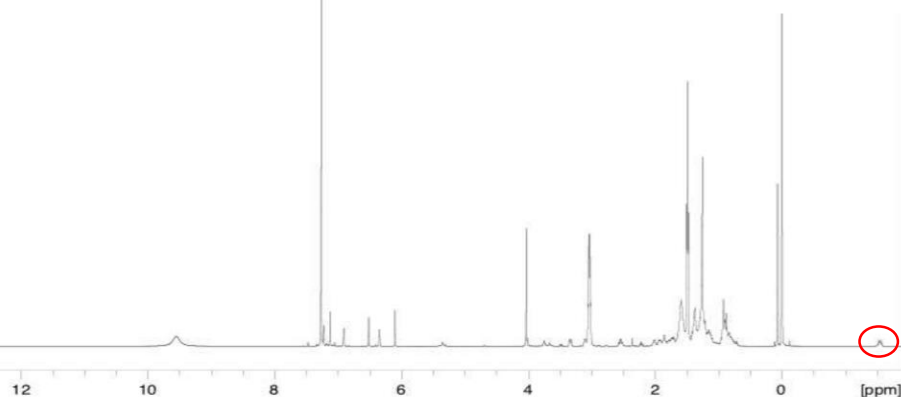


undecylprodigiosin

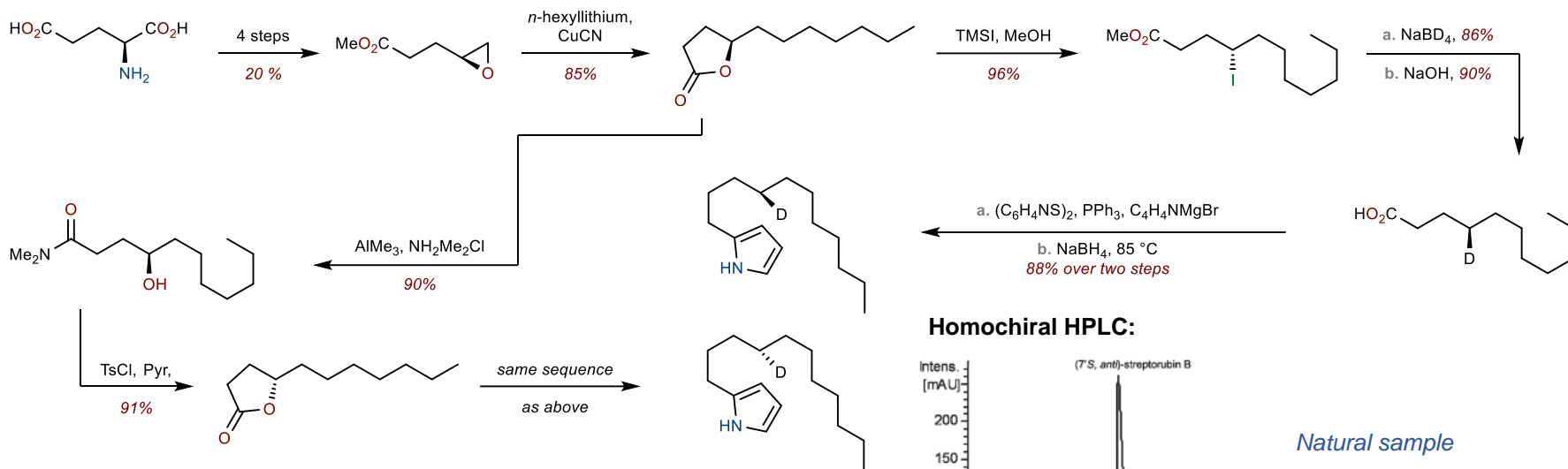
RedG

streptorubin B

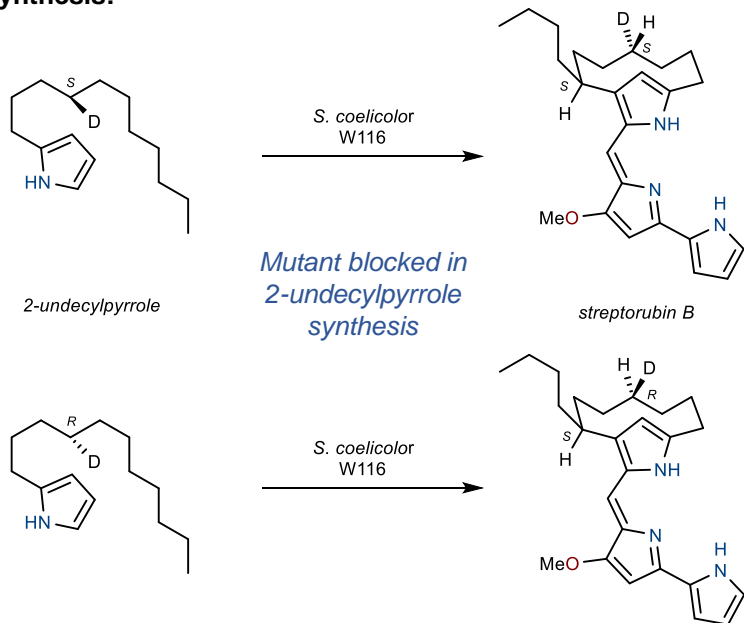
streptorubin B
Natural sample



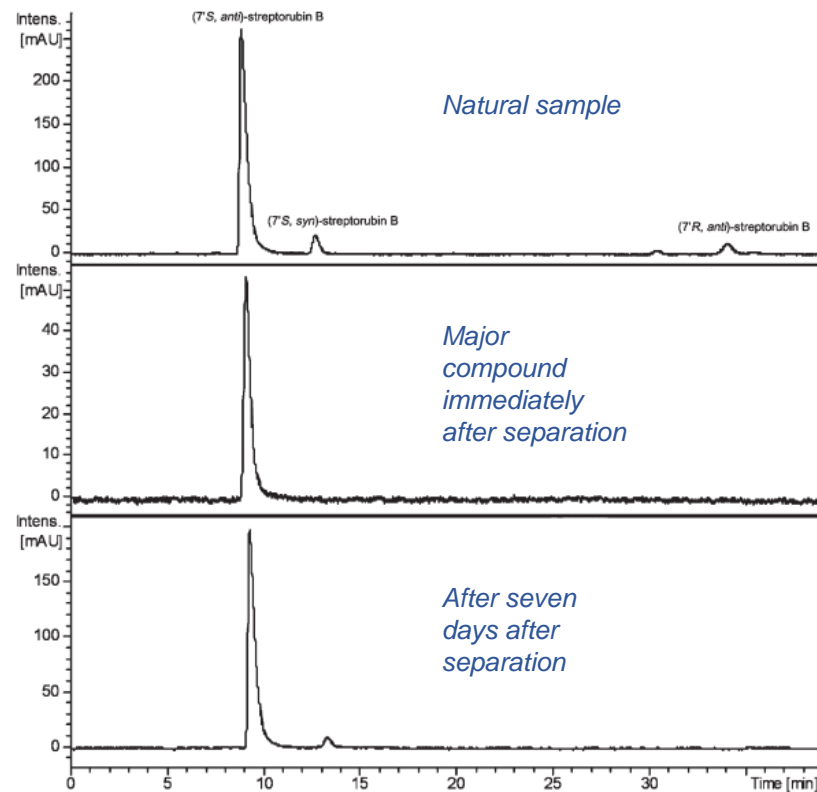
Preparation of each enantiomer of C-4 D 2-undecylpyrrole:

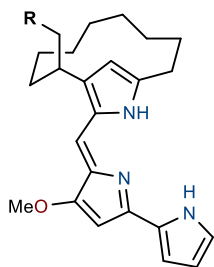


Mutasynthesis:

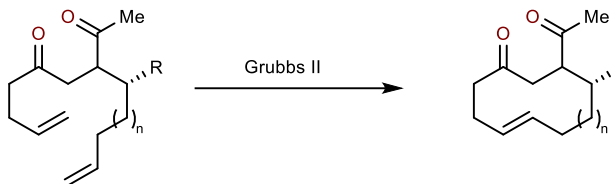


Homochiral HPLC:



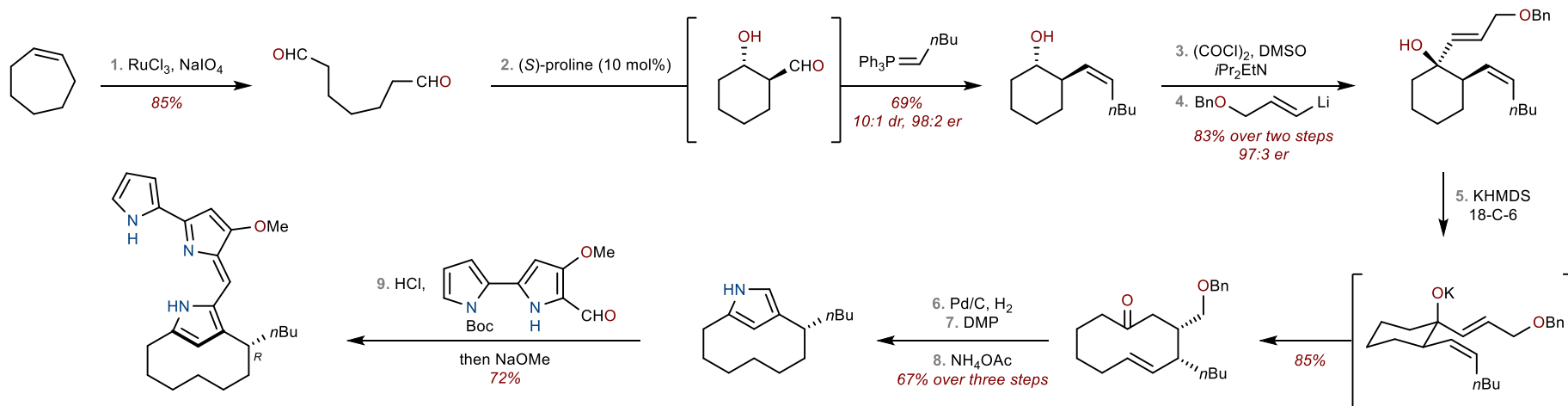


Previous Work:



R	n	yield (%)
Et	3	69
Bu	1	0

Enantioselective synthesis and structural confirmation of streptorubin B:



streptorubin B
9 steps
20% overall yield

NMR sample left to sit, initially it did not match

