The Journal of Immaterial Science

Half-Arsed Papers

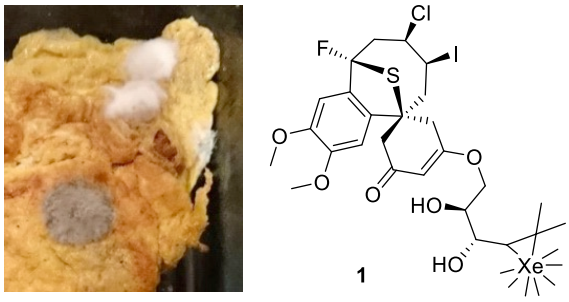
Towards a Total Synthesis of *3,8*-Unethoxy-Discombobulene and Discovery of the Furzmeister-Wencke Reagent

*Ava P. Wencke, Beer R. Yllium, Bert W. H. Smith, Orlaph N. Donuthin, Harold G. Furzmeister**

University of Technicalities and Inaccuracies (UTI)

** Corresponding author (but for real please don't contact me)*

3,8-unethoxy-discombobulannulene is a wtfwereyouthinkingolide-type natural product which was recently isolated from a mould found growing on a cheese omelette in Kent (Fig. 1).[1] It features a complex polycyclic structure, with a challenging pentavalent carbon[2] and a rare heptamethyl xenon cyclopropane moiety.



The Kent omelette *3,8*-unethoxy-discombobulene

Figure 1: *3,8*-unethoxy-discombobulannuleneone was isolated in 2020 from a cheese omelette in Kent.[1]

As we all know, total syntheses must always be justified in some way, usually with biological studies that no chemist cares about, because "the structure looked kinda cool" is not a good enough reason to get funding. Extensive biological testing showed that **1** was slightly more active than my bath water against RGEFGDWA1-B9 raccoon ear carcinoma cells. Raccoons are really cute (Fig. 2) and the lack of treatment options for raccoon ear carcinoma represents an urgent unmet medical need.

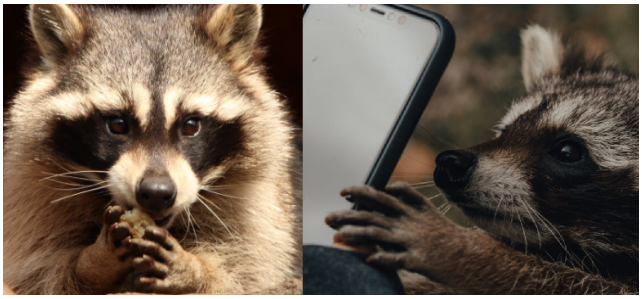
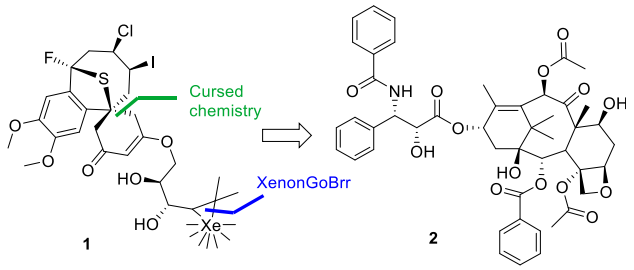


Figure 2: Raccoons are really cute. Their little hands are grabby. Cute little grabby hands.[3]

Starting from the readily accessible Taxol **2**, we imagined that the pentavalent carbon could be constructed using recently described Cursed Chemistry techniques.[2]

The xenon cyclopropane unit could be installed using a XenonGoBrr reaction.[4] Subsequent dysfunctional group transformations would furnish the desired *3,8*-maxi-discombobuloxylene **1** (Scheme 1).



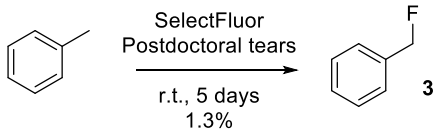
Scheme 1: Retrosynthetic analysis of *3,8*-unethoxy-discombobulneeyloylerylene from Taxol **2**.

This pathway was promptly abandoned once we began the synthesis.

Results and Discussion

As a first step on our journey towards *3,8*-phthethoxy-discombobulobularyleneamine **1**, I insisted that our PhD students synthesize their reagents themselves instead of ordering them from Thigma Helldrich. The grant money was used up on their plane flights to a boron mine in South America. They have yet to return.

The project was handed over to our dynamic team of totally-not-depressed postdoctoral researchers, who took turns crying into a flask containing toluene and SelectFluor for several days. This completed the first portion of the synthesis to afford the highly complex structure **3**, creating an entire carbon-fluorine bond in a single step, with a total yield of 1.3%.



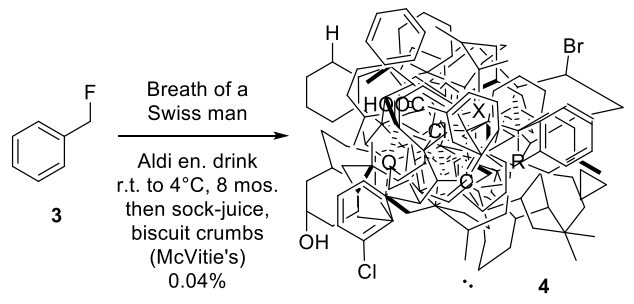
Scheme 2: Construction of the C—F bond of **3** in a single step.

Next, we set out to do the rest of the synthesis. Benzyl fluoride **3** was dissolved in sugar-free Red Bull under air. (Just kidding, no one here has the cash to buy Red Bull; it was one of those Aldi energy drinks.) Our Swiss NMR technician, who had eaten a large fondue the night before (which he stated was made of cheese, garlic and Kirsch in a 1:1:1 ratio), breathed in the general direction of the reaction. It foamed and turned a tarry black colour. When bubbling had ceased, the reaction was sealed, labelled "thingy 2 purif", placed in the back of the fridge, and forgotten until cleaning day eight months later. During purification, it is important to drop the flask on the floor near the break room (where all the digestive biscuit crumbs tend to accumulate) and mop up the sludge with one of Doug's gym socks. This proved to be crucial for the reproducibility of the yield (Scheme 3).

DOIOU: 7440-63-3

SYSIPHOS

goodenough.immaterial.science@gmail.com
https://www.facebook.com/J.Immat.Sci
r/ImmaterialScience twitter: @JImmatSci

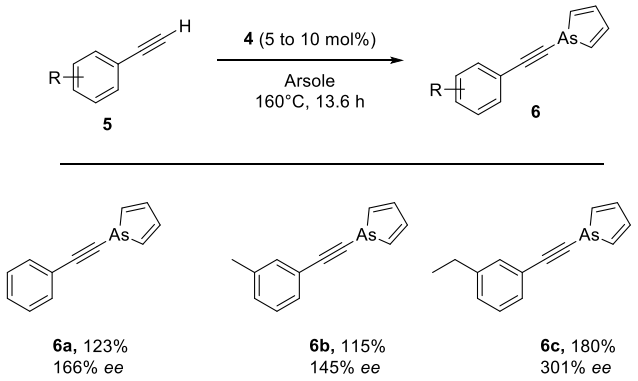


Scheme 3: Formation of complex polycycle **4** in a single step from **3.**

After careful optimization, product **4** could be isolated in 0.04% yield from **3** (for more details, please see the Supporting Disinformation). We have no clue what the ever-loving fuck it is, but we have confirmed via detailed spectroscopic analyses that **4** contains carbon and hydrogen atoms, perhaps a few oxygen atoms, a couple of nitrogens, some halogens, maybe even the original fluorine; who knows. Someone said they saw it moving at one point. Structural elucidation is ongoing.

The reaction depicted in Scheme 3 represents an unprecedented, novel, flagship, seminal, concise, [*any other pretentious adjective you can think of*] increase in complexity in a single step, and has laid the foundations to complete the synthesis of the target compound *3,8*-phthphthethyl-discombobulobulorlylamylhexylamyloyl **1**.

We were interested in the reactivity of **4**, especially as a chiral catalytic arsenylating reagent, because why not. The ideal conditions involved heating an alkyne substrate **5** in arsole in the presence of 5 to 10 mol% of **4**. Pleasingly, all of the substrates afforded the arsoley products **6** consistently in over 110% yields and up to 301% *ee* (Scheme 4). The scope is large, tolerating an additional methyl group and even an ethyl group in one position.



Scheme 4: Scope of the enantioselective arsenylating reaction employing the Furzmeister-Wencke reagent **4**.

With these experiments, we have shown for the first time that it is possible to *create matter*. We have decided to humbly name **4** the ~~God~~ Furzmeister-Wencke reagent. Further exploration of the reactivity of the Furzmeister-Wencke reagent, as well as a detailed mechanistic study, will be published in due course.

Conclusions

Tl;dr: We did some stuff and got Furzmeister-Wencke reagent **4**, which might one day be useful for making *3,8*-undiethoxy-discombobulobulobulobulolene **1** to help raccoons. It also creates matter, which is nice.

The Supporting Disinformation containing experimental data, spectra, and reaction conditions can be accessed free of charge by completing the online game "guess which one of these pictures of my skin folds is actually my bum" on our research group website.

About the Authors

Ava P. Wencke is a researcher doing sciency stuff. Her career plans include travelling to the Florida Keys where she will wander around naked in the hopes of getting arrested and sent to a mental asylum where she will fake amnesia until she is given a new name and a nice flat in an assisted living facility by the sea.

The other authors couldn't be bothered to write an "about" section.

Author Contributions

All authors contributed equally to the errors in this manuscript (except for Orlaph, he did absolutely nothing and no one knows why he's on here). Ava and Beer carried out the experiments. Bert brought cake for afternoon tea sometimes.

Conflicts of Interest

This research was funded by Big Omelette for no particular reason at all.

Acknowledgements

We gratefully acknowledge Big Omelette grant number 832748248 which was spent on the PhD students' flights to South America. Thanks also to the local police department who are searching for the students there. Doing a great job, hope they'll be home soon with their fresh reagents.

Notes and references

1 For an important review on the subject of cheese omelettes, please see: MrSchwab, Omelette du Fromage, *UrbanDictionary*, 12 December 2012.

2 Washing, F.; Mhama, J.; Dover, B. Applications of Cursed Chemistry in the Total Synthesis of Impracticatechol. *J. Immat. Sci.* **2021**, *1*, 21-23.

3 Look at their little grabby hands. *Look. At. Them.**

4 Brr. (Brr.)

* The raccoon images used in this manuscript were obtained from the stock photo website https://www.pexels.com/. No raccoons were harmed in the making of this manuscript. However, many PhDs and postdocs were harmed. Even the lab cactus has suffered.