# Identification of Male and Female Mating Pheromones in *Panagrellus redivivus*

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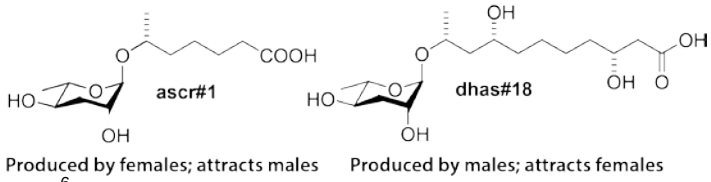
## Introduction

Nematodes are the most abundant animal on earth, and they live in virtually every ecological niche on earth. Parasitic species have a significant health and economic impact through the infection of crops, domestic animals, and humans. Therefore, we are working to unravel the chemical language used by nematodes, with the ultimate goals of better understanding the role of small molecules in regulating behavior and of developing new approaches to control nematode parasites. We and others have shown that nematodes produce a family of signaling molecules called ascarosides that act as pheromones that regulate development,[1,2] mating attraction,[3] aggregation,[4] and dispersal.[5] Von Reuss and coworkers have developed an efficient liquid chromatography-mass spectrometry (LC-MS) screen for ascarosides and have found over 150 different molecules in the model nematode *Caenorhabditis elegans*,[6] and using this screen Choe and coworkers discovered ascarosides in many free-living and parasitic nematode species. In this study, we used both traditional activity-guided fractionation (AGF) and metabolomics screening to identify both the male and female mating pheromones in the free-living nematode, *Panagrellus redivivus*.[7]

## Experimental Procedures

We used NMR, LC-MS, synthetic chemistry, and behavioral assays to identify the pheromones. These are all described in detail in our recent publication.[7]

## Results and Discussion




Using AGF we found that males were strongly attracted to ascr#1 and females to dhas#18. This was conducted using mixed cultures from both males and females. Using the LC-MS metabolomic screen[6] we found that these compounds were made exclusively by the opposite gender.

## Conclusions

This study is the first to show a female-specific attractant in nematodes. These results suggest different types of genetic regulation of biosynthesis in males and females. We were especially pleased that two independent approaches, AGF and metabolomics, yielded the same conclusion.

## Acknowledgements

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## References

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