Two questions

1. Correlation between ITW and topology of the eye?
2. Can we group BT samples based on PH that correspond with size?

- Persistent homology is a good choice, measures shape not size.
- H_1 encodes loops in volume, H_2 encodes voids in volume.

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- Cluster *Bombus terrestris* based on best metric from Mantel test

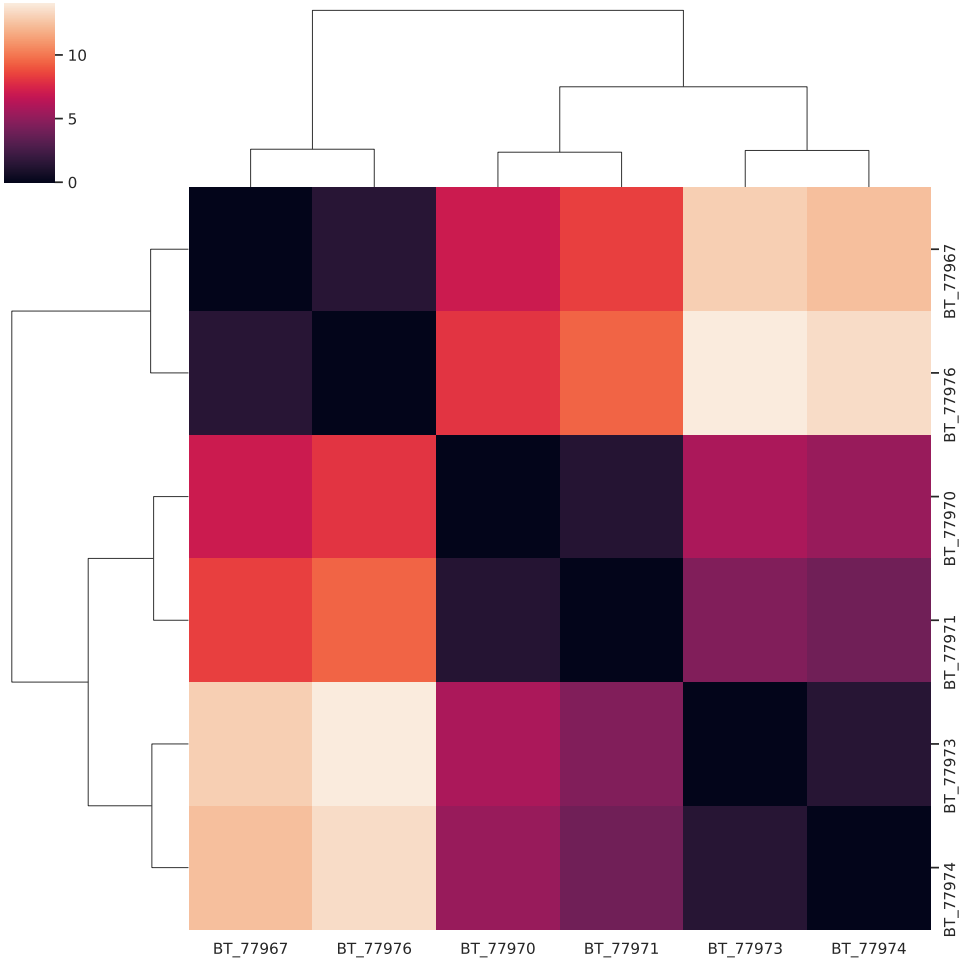
Mantel test results

Group	Metric	$H_1\rho$	H_1 p-value	$H_2\rho$	H_2 p-value
BT	Bottleneck	-0.069	0.84	0.86	0.0083
BT	Wasserstein	0.59	0.053	0.49	0.080
Others	Bottleneck	0.22	0.030	0.33	0.0073
Others	Wasserstein	0.23	0.023	0.26	0.013

H_2 with bottleneck distance shows significant results for *Bombus terrestris* and the other group of insects.

Clustering on H_2 (bottleneck)

ID	ITW
BT_77976	5.47
BT_77967	5.42
BT_77971	4.02
BT_77970	4.00
BT_77974	2.97
BT_77973	1.97



Conclusions

- Supports the hypothesis that ITW and topology of eye are related
- Other dimensions/metrics were not as correlated, but do we want strong correlation?