1139-92-642 **Jordan Hoffmann** (jhoffmann@g.harvard.edu), **Seth Donoughe** (donoughe@fas.harvard.edu), **Kathy Li** (kathy2132@gmail.com), **Mary K Salcedo** (maryksalcedo@gmail.com) and **Chris H Rycroft*** (chr@seas.harvard.edu), 29 Oxford Street, Cambridge, MA 02138. *Modeling the diverse geometry of insect wings.*

The formation of geometric patterns in tissues has long been a topic of fascination. The patterns of "veins" that provide structure to the insect wing are especially intriguing because they often form a wide diversity of arrangements within a single wing. Moreover, for many insect species, even the left and right wings from the same individual have veins with unique topological arrangements. We present the first large-scale quantitative study of the fingerprint-like "secondary veins". We compile a dataset of wings from 232 species and 17 families from the order Odonata (dragonflies and damselflies), a group with particularly elaborate vein patterns. We characterize the geometric arrangements of veins and then develop a simple model of secondary vein patterning. Finally, we show that our model is capable of reproducing the vein geometries of species from other, distantly related winged insect clades. (Received February 20, 2018)