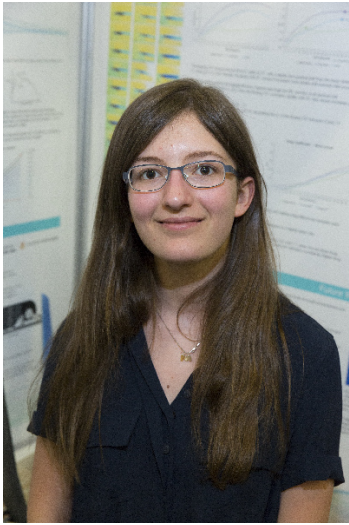


## CWSF 2018 - Ottawa, Ontario



### Sophie Hoyer Pacholek

#### Bioengineered Wings Inspired by the Avian Form

**Challenge:** Innovation

**Category:** Intermediate

**Region:** Calgary Youth

**City:** Calgary, AB

**School:** Louis Riel Elementary Junior High School

**Abstract:** Wings with different attributes inspired by Fregata Minor were designed, 3D printed, and tested using CFD software and then in a wind tunnel. The wing with the avian airfoil produced highest lift and highest stall angle, while the wing with the avian planform produced the least overall drag compared to the Boeing model. This work demonstrates that an avian airfoil results in improved low-speed performance.

#### Biography

Hi, I'm Sophie Hoyer Pacholek, currently a grade 9 student at Louis Riel School in Calgary. Ever since I was eight I've wanted to work as an aeronautical engineer for NASA, but since then I've decided that that's not my only option and love anything that has to do with science. Science fairs have been about expanding my learning in a variety of fields. In addition to science, I love classical and jazz music, and burying my nose in a good book. I'm inspired by the natural world (as it turns out, most of my projects come from something in nature), and enjoy hiking in the summer and cross - country skiing in the winter. Science fairs have always been the highlight of my school year, and while I've done well in the past (earning multiple national and local awards), I get the most enjoyment out of the amount of learning and experience involved during each individual project.

Youth Science Canada  
PO Box 297  
Pickering ON L1V 2R4  
[www.youthscience.ca](http://www.youthscience.ca) / [info@youthscience.ca](mailto:info@youthscience.ca)  
416-341-0040