

 05.12.2018

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## Photo by Kiel-based scientist is successful in the Royal Society competition

Hamed Rajabi won second place with his picture of a dragonfly wing

The Royal Society Publishing Photography Competition is one of the world's most famous competitions for research photography. Hamed Rajabi, scientist in the Functional Morphology and Biomechanics working group at Kiel University (CAU), was able to convince the expert jury with his photo and won second place in the "microimaging" category. The photo shows a microscope image of the wing of the *Acisoma panorpoides* dragonfly.

During the lifetime of a flying insect, their wings are subjected to random collisions. These collisions often cause irreversible damage to the wings and may considerably affect the insect's ability to fly. Rajabi has intensively researched these dragonfly wings over the past few years, together with his PhD supervisor and the head of the working group, Professor Stanislav Gorb. The photo Rajabi entered into the competition came about as part of this work. "I used confocal laser scanning microscopy (CLSM) to investigate the wings of the *Acisoma panorpoides* dragonfly," said Rajabi. "During the scan, I was unable to observe autofluorescence of the wing membrane. That was very strange, because the membranes are well known for their blue autofluorescence when they are exposed to laser light." After the scan, Rajabi discovered that all the wing membranes were broken. "This is something that can happen, especially in the wing tip," the Kiel-based researcher explained. "I called this picture 'broken window'."

The photograph was taken using a Zeiss LSM 700 confocal laser scanning microscope, which the Functional Morphology and Biomechanics department has at its disposal.

### Original publications:

Rajabi, H., Ghoroubi, N., Stamm, K., Appel, E., & Gorb, S. N. (2017). *Dragonfly wing nodus: a one-way hinge contributing to the asymmetric wing deformation*. *Acta Biomaterialia*, 60, 330-338. doi: [doi.org/10.1016/j.actbio.2017.07.034](https://doi.org/10.1016/j.actbio.2017.07.034)

Rajabi, H., Schroeter, V., Eshghi, S., & Gorb, S. N. (2017). *The probability of the wing damage in the dragonfly *Sympetrum vulgatum* (Anisoptera: Libellulidae): a field study*. *Biology Open*, bio-027078. doi: [doi.org/10.1242/bio.027078](https://doi.org/10.1242/bio.027078)

Rajabi, H., Shafiei, A., Darvizeh, A., & Gorb, S. N. (2016). *Resilin microjoints: a smart design strategy to avoid failure in dragonfly wings*. *Scientific Reports*, 6, 39039. doi: [dx.doi.org/10.1038/srep39039](https://doi.org/10.1038/srep39039)

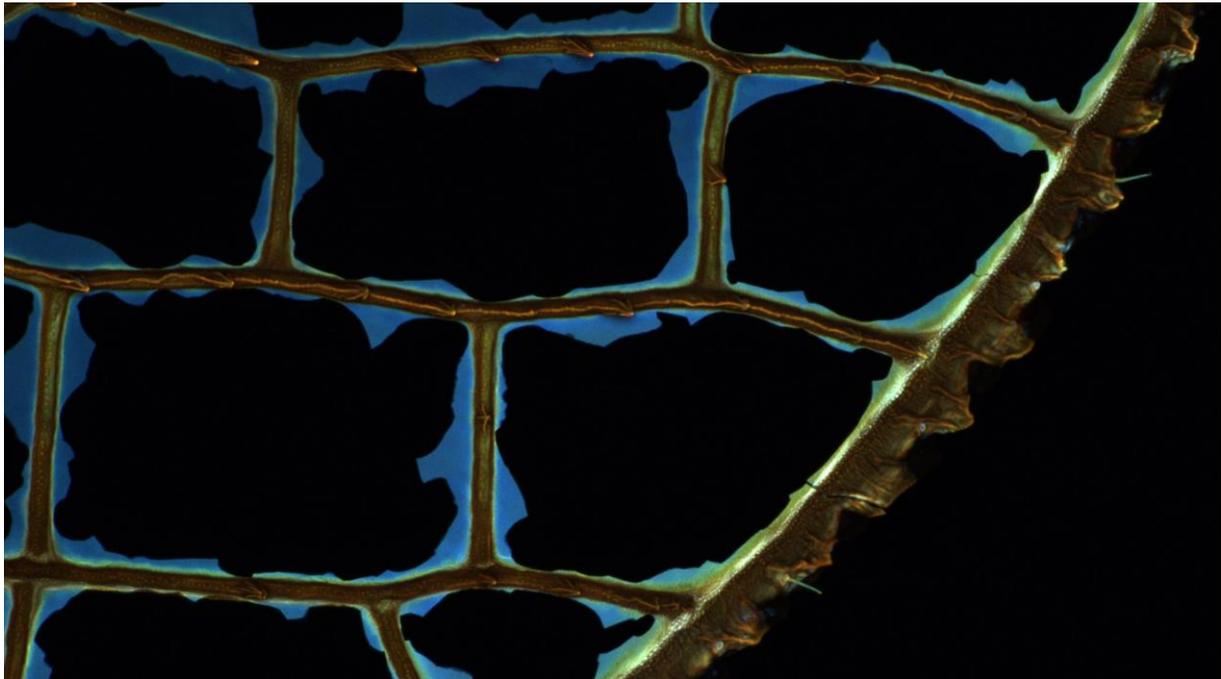
Rajabi, H., Stamm, K., Appel, E., & Gorb, S. N. (2018). Micro-morphological adaptations of the wing nodus to flight behaviour in four dragonfly species from the family Libellulidae (Odonata: Anisoptera). *Arthropod Structure & Development*, 47, 442-448. doi: [doi.org/10.1016/j.asd.2018.01.003](https://doi.org/10.1016/j.asd.2018.01.003)

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This photo of the wing of a *Acisoma panorpoides* dragonfly was the one which got Kiel-based scientist, Rajabi, second place in the “Royal Society Publishing Photography Competition”.