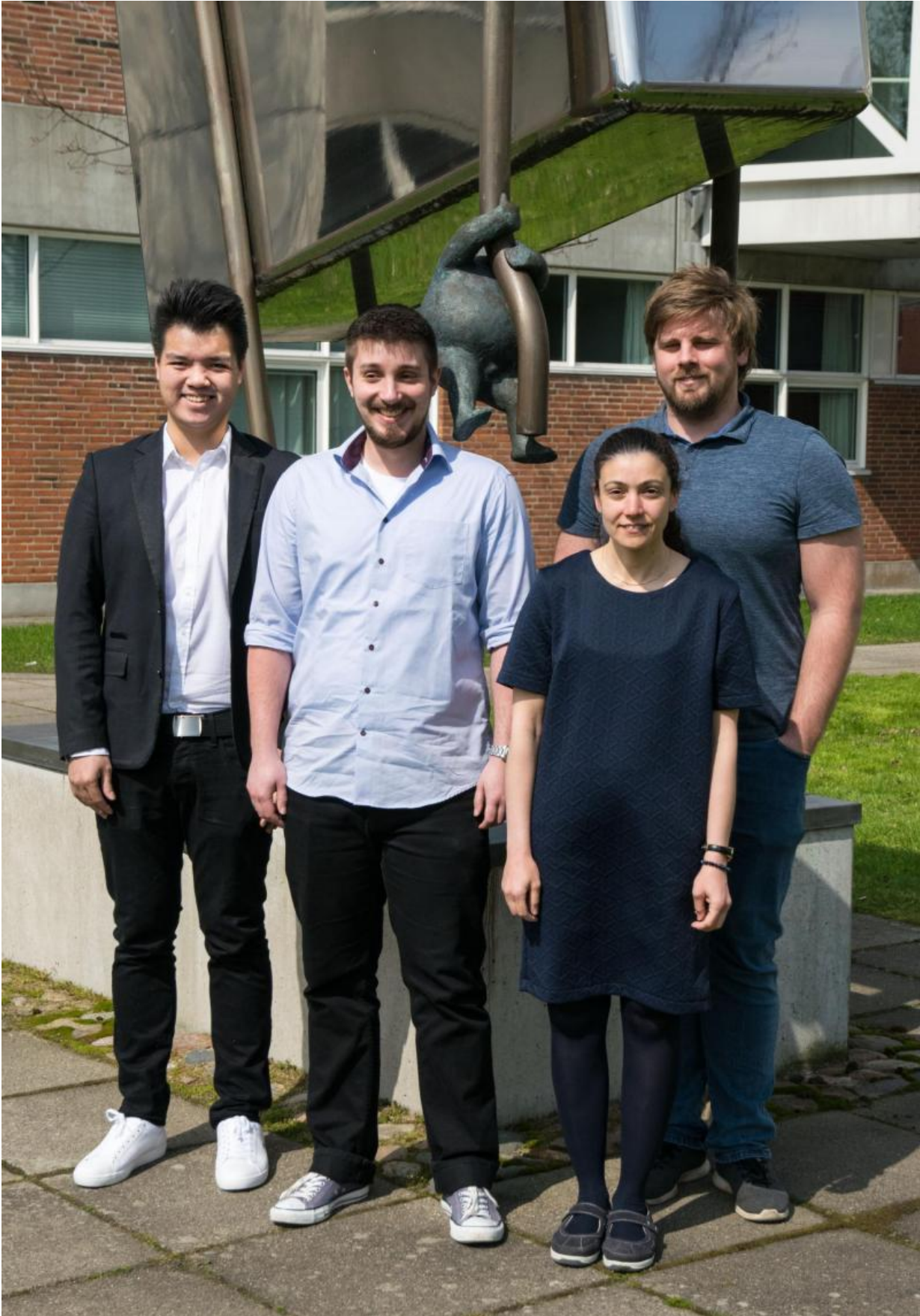


Researchers aim to cure headache during flight

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From left: The two researchers, Sebastian Bao Dinh Bui and Torben Petersen, and the project supervisors Parisa Gazerani, Associate Professor, and Jeppe Nørgaard Poulsen, PhD student. Credit: Aalborg University

Many people suffer from pain when they fly but that may soon be a thing of the past. A new study from Aalborg University may have discovered the mechanisms responsible, opening the door to developing a cure.

A getaway to the southern sunshine should be a treat but according to a study done at Aalborg University last year, for one out of twelve people a flight means a [severe headache](#). Now, the same research group is the first in the world to investigate the cause of the problem, and they have a preliminary explanation.

"The major changes in cabin pressure at take-off and landing may cause tissue damage and inflammation in the sinuses. This releases the substance PGE2, which can make the blood vessels in the brain expand and thus cause head pain," says Master's student Sebastian Bao Dinh Bui.

Torben Petersen and Sebastian Bao Dinh Bui conducted the study as part of their studies in Medicine with Industrial Specialization (MedIS) at Aalborg University along with their supervisor, Parisa Gazerani, Associate Professor. The group's results have just been published in the *Journal of Headache and Pain*.

Tests in flight simulator

The two Master's students put subjects in a pressure chamber that

simulates the pressure changes during a flight. During the "trip" they took regular saliva samples to measure the levels of PGE2 and the [stress hormone cortisol](#). Both substances were prominent in people who suffer from headaches when flying.

"The elevated cortisol level indicates that these people are very stressed when they fly. We have already seen that some airline passengers develop anxiety and stress when they travel, which may also trigger a headache. It is a vicious cycle." says Master's student Sebastian Bao Dinh Bui.

The research group at Aalborg University has identified PGE2 and cortisol as causes of airplane headache, but the case is far from closed. Although the study examines [airline passengers](#), it is still only a pilot project and the results are not written in stone.

"Clearly there is more work to be done. Our study is the first of its kind in the world on airplane headache, and that is why we need more and larger studies that can repeat the experiment and see if our conclusions are accurate," says Sebastian Bao Dinh Bui, AAU.

Treatment on the way

"We are presenting the first finding on the cause of airplane headache, and thus we are also taking the first step towards being able to develop a treatment," says Master's student Sebastian Bao Dinh Bui.

Although more data is still needed, Sebastian Bao Dinh Bui is moving forward to the final stage of his three-stage research project. After having first mapped the extent of airplane headache, and then investigated the cause of the problem, he has more clues to work with. He is now starting on his Master's thesis at AAU where he will examine potential treatments for airplane headache.

"There has already been success with using the migraine medication triptans for airplane headache as these prevent the [blood vessels](#) in the brain from expanding. In my thesis I will measure the biological effects of triptans using saliva samples from passengers while they are traveling," says Sebastian Bao Dinh Bui.

More information: Sebastian Bao Dinh Bui et al. Simulated airplane headache: a proxy towards identification of underlying mechanisms, *The Journal of Headache and Pain* (2017). [DOI: 10.1186/s10194-017-0724-3](#)

Provided by Aalborg University

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