

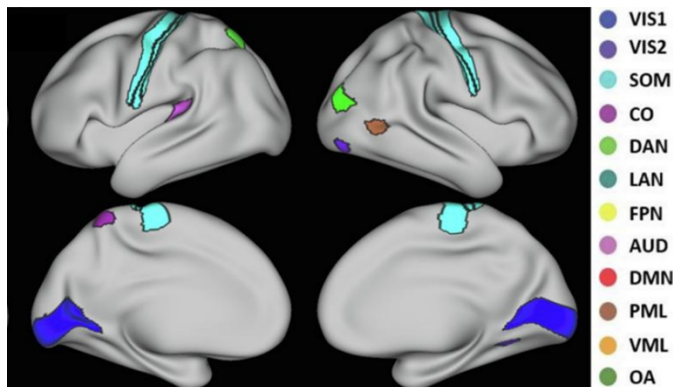
# SOFTWARE TO PREDICT LOW BACK PAIN FROM BRAIN IMAGING

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## Technology Description:

Researchers at Washington University, led by Eric Leuthardt, have developed software that can identify specific brain regions involved in chronic low back pain from neuroimaging data. This software, powered by machine learning, relies on differences in cortical thickness and connectivity in patients with chronic low back pain when compared to healthy controls. The software can predict a patient's outcome and estimate the level of pain. Additionally, the specific brain regions identified are potential targets for pain disorder treatment.



*Resting state fMRI data show hubs common to low back pain patients but not to healthy controls*

## Stage of Research:

The software algorithm was trained on MRI and fMRI data from a sample of 24 patients with lumbar spondyloarthropathy and 27 healthy controls. The accuracy, sensitivity, and specificity for classification of that data set were all approximately 75%.

## Publications:

- Lamichhane B, Jayasekera D, Jakes R, Glasser MF, Zhang J, ... Hawasli AH. (2021). [Multi-modal biomarkers of low back pain: A machine learning approach](#). *NeuroImage: Clinical*, 29(102530).

## Applications:

- Chronic low back pain
  - Cervical myelopathy
  - Spondyloarthritis

**Key Advantages:**

- Identifies brain regions to target for pain disorder treatment
- Estimates patient's level of low back pain

**Patents:** Pending

**Related Web Links:** Leuthardt [Profile](#) & [Lab](#); Ray [Profile](#) & [Lab](#)