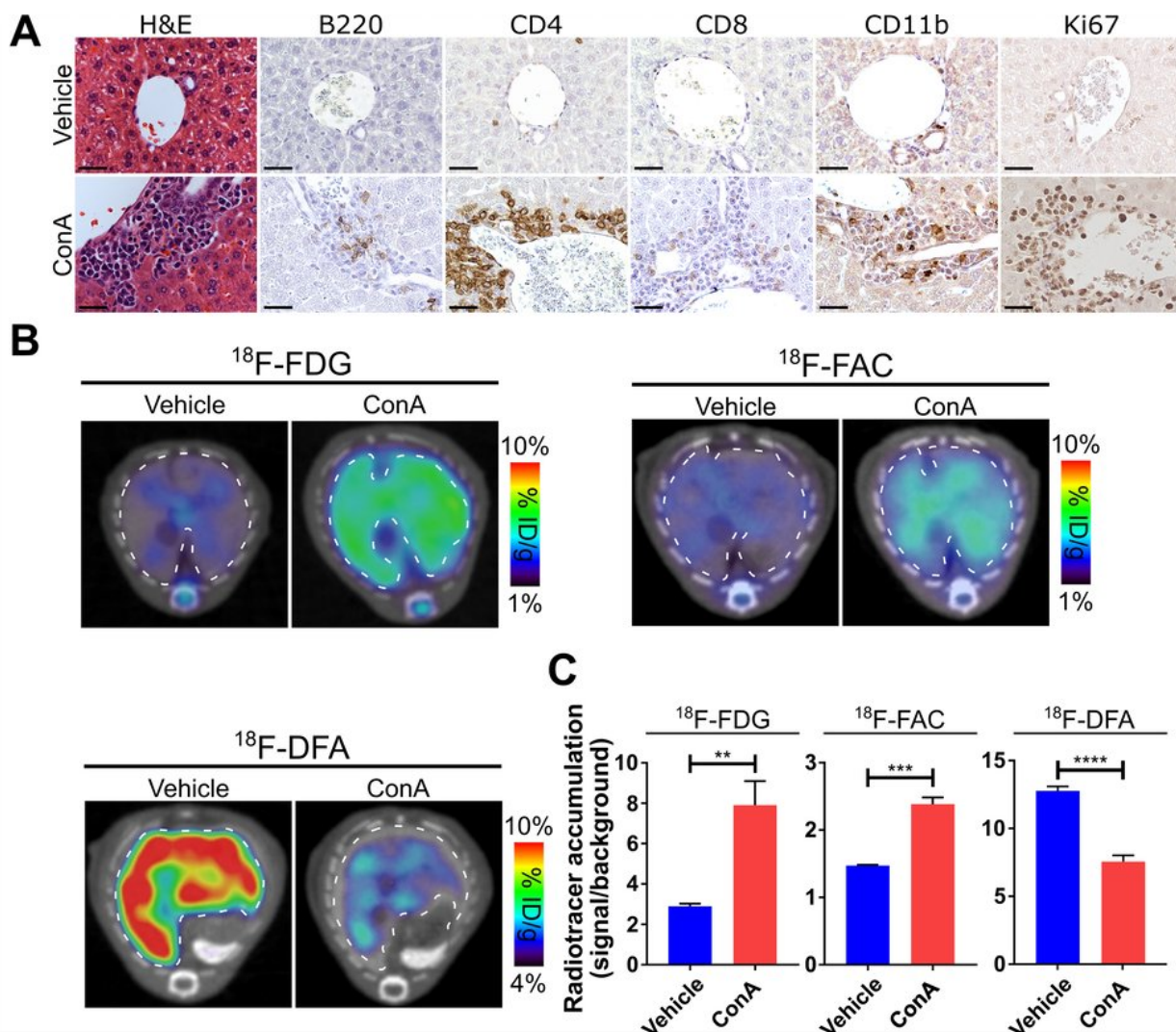


New study evaluates efficacy of PET imaging to manage chronic liver diseases

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Hepatic ^{18}F -FDG, ^{18}F -FAC, and ^{18}F -DFA accumulation are affected in a mouse model of autoimmune hepatitis. (A) Histochemical and immunohistochemical analyses of liver sections from vehicle- and ConA-treated

mice. Scale bars represent 50 microns. Transverse PET/CT images (B) and quantification (C) of vehicle- and ConA-treated mice injected with ^{18}F -FDG, ^{18}F -FAC, and ^{18}F DFDA. Livers are outlined in a white dotted line.

Quantification represents radiotracer accumulation in the liver normalized to a background organ. Credit: Salas et al.

While liver biopsies are powerful and reliable, they are also invasive, painful, limited and subject to complications. These effects may soon be a thing of the past for some patients thanks to new research showing PET imaging with the ^{18}F -FAC radiotracer can be used as a non-invasive substitute. The study is featured in the October issue of *The Journal of Nuclear Medicine*.

Sometimes immune cells work a little too hard, leading to attacks on our organs, especially in instances of organ transplant. What results is a lifetime reliance on immunosuppressant drugs, which need to be carefully administered to ensure they are working as intended without dangerous side effects. Physicians look for T cells to determine whether an organ is under attack, requiring a biopsy to sample tissues. Now, PET imaging might offer a non-invasive alternative in the case of immune cell attack on the [liver](#).

A team of researchers created a preclinical mouse model, testing the use of PET imaging to image T cells in the liver. The study shows that PET with the ^{18}F -FAC radiotracer can be used to image T cells as they attack the liver or during treatment with an immunosuppressive drug.

"The personalized treatment of patients suffering from immune attack on the liver will require precise and quantitative methods for measuring T [cells](#) in the liver," said Peter Clark, Ph.D. "Our work describes in a preclinical model one such way of doing this. We envision that if this

approach is translated into the clinic, it could lead to fewer [liver biopsies](#) and more precise treatment of patients with immune-related liver disease."

The team said they hope this study and others open the possibility of using molecular imaging to diagnose and manage [chronic liver diseases](#) as they become increasingly prevalent around the world.

"We and others are working to identify where and how molecular imaging and [nuclear medicine](#) could be used to improve the diagnosis and treatment of liver disease," Dr. Clark said. "Our study is just one example of this, but it adds to growing literature that suggests an important role for PET in the liver field."

Authors of "18F-FAC PET Selectively Images Hepatic Infiltrating CD4 and CD8 T Cells in a Mouse Model of Autoimmune Hepatitis" include Jessica Salas, Bao Ying Chen, Alicia Wong, Dongui Cheng, Owen Witte and Peter Clark, University of California, Los Angeles, and John Van Aram, University of Pennsylvania, Philadelphia.

More information: Jessica R. Salas et al, 18F-FAC PET Selectively Images Liver-Infiltrating CD4 and CD8 T Cells in a Mouse Model of Autoimmune Hepatitis, *Journal of Nuclear Medicine* (2018). [DOI: 10.2967/jnumed.118.210328](#)

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