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New treatment options for common debilitating skin disease Hidradenitis suppurativa

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Researchers focusing on the common debilitating skin disease Hidradenitis suppurativa (HS), which causes deep, painful lesions and leads to a poor quality of life have isolated new treatment options after performing a comparative analysis that showed which cells were active - and responsive to medication—in those living with HS.

HS is thought to be both under-reported and under-diagnosed, but researchers estimate that 1-4% of people have the disease. HS sufferers experience extreme pain and must manage the psychological distress that accompanies the disease. Current treatments are often ineffective, so there is a pressing need for more effective new therapies.

A research team led by Ussher Assistant Professor in Translational Immunology Jean Fletcher, researcher Barry Moran, both at Trinity College Dublin, and dermatologists Professor Brian Kirby at St. Vincent's University Hospital, and Dr Anne-Marie Tobin at Tallaght Hospital, studied the cells that were most active in the blood and skin of HS patients compared with healthy volunteers. This approach led them to identify particular inflammatory cells in the skin of HS patients, known as Th17 cells, as key mediators of the disease.

Additionally, the researchers showed that the biological brakes that exist in a healthy immune system appear unable to control this inflammatory response in HS patients, indicating an underlying imbalance within their

immune systems.

Crucially, this research brings to light the potential of targeting the Th17 pathway to treat HS, with the researchers believing that existing medication used to treat other skin conditions may prove effective.

Professor Fletcher said: "Similar treatments have been extremely successful in treating psoriasis, which is another inflammatory skin disease. In the samples we screened we saw that HS patients who had been successfully treated by a therapy known as 'TNF blockers' had far fewer Th17 cells than previously, which suggests that medications which target this pathway may hold the key."

"Our work provides a target molecule for drug developers aiming to tackle HS. A number of products that focus on the Th17 pathway are already on the market, but have not yet been tested in clinical trials as agents for tackling HS. We hope our work opens the door to better outcomes for clinicians and HS patients alike."

This research was recently published in the top-ranked international dermatology journal, the *Journal of Investigative Dermatology* (DOI: 10.1016/j.jid.2017.05.033). In addition, the study was selected as the Editor's Choice by the highly prestigious Science Translational Medicine journal, which recognised the potential clinical impact of this work on patients' lives.

The work relied on the high-end, SFI-funded Flow Cytometry Facility at the Trinity Biomedical Sciences Institute. It was a collaborative effort between translational scientists in the Schools of Biochemistry and Immunology and the School of Medicine in Trinity, and collaborators from Tallaght Hospital and St. Vincent's University Hospital, UCD.

More information: Barry Moran et al, Hidradenitis suppurativa is

characterised by dysregulation of the Th17:Treg cell axis, which is corrected by anti-TNF therapy, *Journal of Investigative Dermatology* (2017). DOI: 10.1016/j.jid.2017.05.033