PRECISION for medicine®

CASE STUDY

Use of Epiontis ID to support understanding therapeutic efficacy in a Phase 2 psoriasis trial

Background

Eli Lilly was conducting a Phase II trial to determine the safety and efficacy of mirikizumab, a humanized monoclonal antibody targeting the p19 subunit of interleukin-23 (IL-23) in patients with moderate to severe plaque psoriasis. IL-23 is a pro-inflammatory cytokine, which drives secretion of IL-17 from T cells and other immune cells. Cells producing IL-17 may remain in the skin even when psoriasis is clinically resolved, which may contribute to disease flare-ups after withdrawal of therapy. The goal of this study was to determine the effects of a 16-week treatment regimen with mirikizumab on CD3, Treg, and IL-17-producing cell levels as measured in skin biopsies, and this was done via a 4 arm study of 205 patients given mirikizumab at 30 mg, 100 mg, 300 mg, or placebo.

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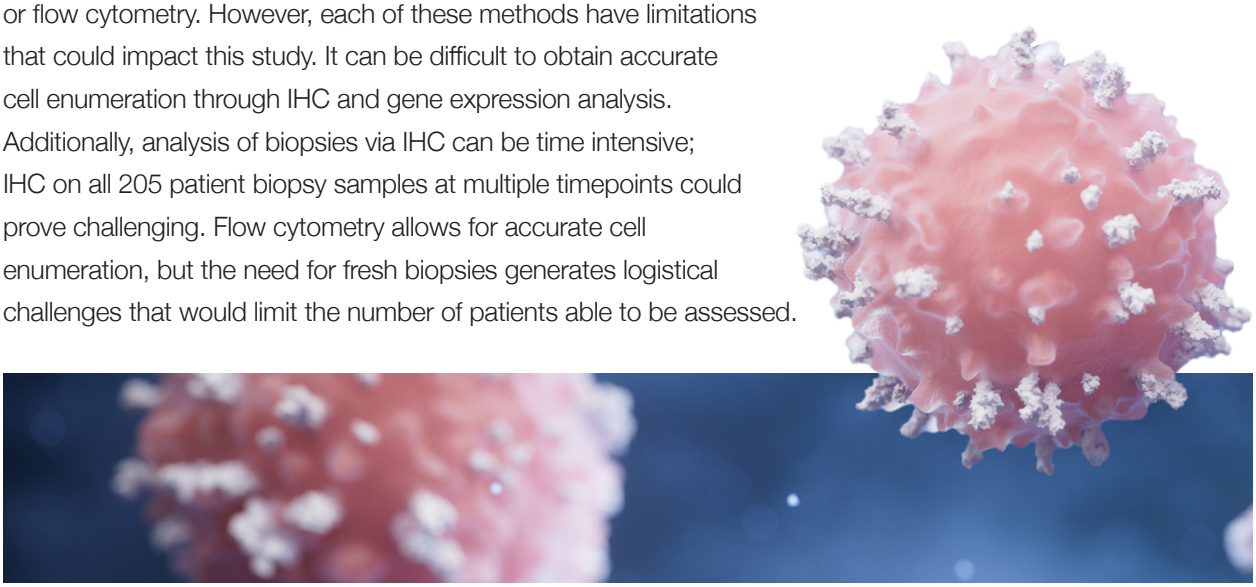
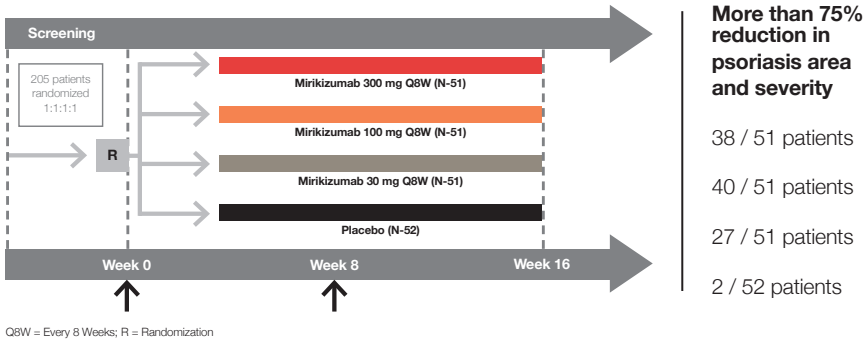
Challenges

Common approaches to analysis of cell types within skin biopsies include immunohistochemistry (IHC), gene expression analysis, or flow cytometry. However, each of these methods have limitations that could impact this study. It can be difficult to obtain accurate cell enumeration through IHC and gene expression analysis. Additionally, analysis of biopsies via IHC can be time intensive; IHC on all 205 patient biopsy samples at multiple timepoints could prove challenging. Flow cytometry allows for accurate cell enumeration, but the need for fresh biopsies generates logistical challenges that would limit the number of patients able to be assessed.



Solution

Epigenetic cell counting (Epiontis ID) allows for the rapid quantification of cell types and is effective in multiple matrices, including tissue samples. This approach can provide cell counts of multiple specific cell types at once with flexibility in sample type (including fresh or frozen biopsies, or FFPE embedded tissues).

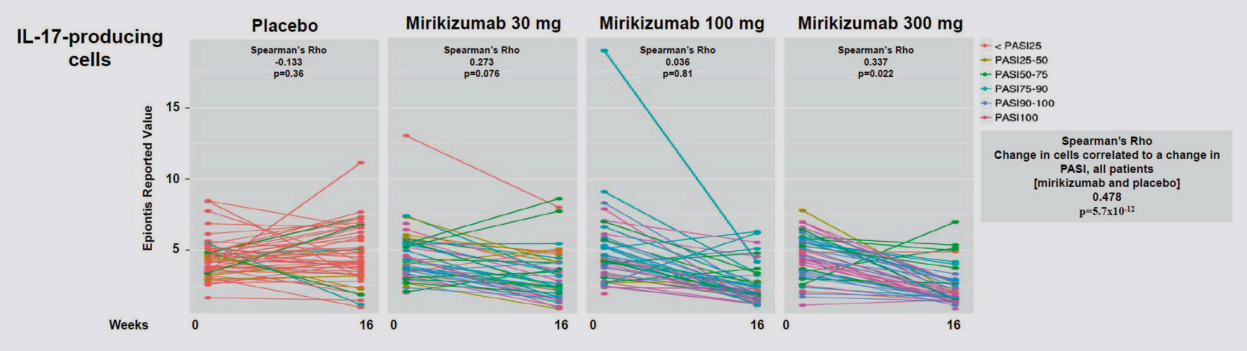


Q8W = Every 8 Weeks; R = Randomization

By using Epiontis ID, the entire study patient population of 205 patients was able to be assessed using biopsies from 2 time points—at baseline, and at 16 weeks. Using Epiontis ID, the number of CD3, Treg, and IL-17 producing cells were quantified, and an analysis of the effect of mirikizumab on these cell types was generated.

Results

Through the use of Epiontis ID, it was shown that mirikizumab decreased the frequency of T cells within psoriatic skin. A decrease in IL-17 cells, specifically, was shown to correlate with clinical response (improvements in PASI scores, which measure the severity of psoriasis). Through this analysis, the team at Eli Lilly was able to determine that mirikizumab may create a different skin environment than anti-IL-17 or anti-TNF treatments, which may lead to a more stable response and longer periods of skin clearance without flares.



This study highlights the benefits of Epiontis ID's precise cell counting capabilities in analyzing samples from a broad range of matrices.

For more information about Epiontis ID, please visit **epiontis.com**, or to learn more about Precision for Medicine's suite of immune monitoring solutions, visit **precisionformedicine.com**

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