Regularity of the inverse of a Sobolev homeomorphism

Let $\Omega \subset \mathbb{R}^n$ be a domain and let $f \in W^{1,p}(\Omega, \mathbb{R}^n)$ be a homeomorphism. We discuss the conditions under which we can conclude that the inverse mapping is also weakly differentiable $f^{-1} \in W^{1,p}(f(\Omega), \mathbb{R}^n)$.

We start with a pioneering planar result with P. Koskela and end up with recent results joint with A. Kauranen and R. Luisto.