The study of the representation theory of skew group algebras was started in the eighties with the works of de la Peña, and Reiten and Riedtmann. Given an algebra $A$ and a group $G$ acting on $A$, we define the skew group algebra $A[G]$. It turns out that $A[G]$ often retains many features from $A$, such as being representation-finite, being hereditary, being tilted or quasitilted, etc.

In this talk, we study the interplay between the skew group algebras and the so-called piecewise hereditary algebras, that is algebras $A$ for which there exist a hereditary abelian category $\mathcal{H}$ and a triangle-equivalence between the derived categories of bounded complexes over $A$ and $\mathcal{H}$. Those algebras, first studied by Happel, Rickard and Schofield and later by Happel, Reiten and Smalø, played a decisive role in the classification of selfinjective algebras of finite and tame representation type. We show that, under some assumptions, the skew group algebra $A[G]$ is piecewise hereditary when so is $A$.

The talk is based on joint work in progress with Julie Dionne and Marcelo Lanzilotta.