Let $F$ be a differential field with algebraically closed field of constants $C$ and let $E$ be a differential field extension of $F$. $E$ is a differential Galois extension if it is generated over $F$ by a full set of solutions of a linear homogeneous differential equation with coefficients in $F$ and its field of constants coincides with $C$. We study the differential field extensions $E$ of $F$ that satisfy the first condition but not the second. Our main result shows that nonetheless $E$ is much like a differential Galois extension of $FK$, where $K$ is the field of constants of $E$. In particular, we find an algebraic subgroup $G$ of $\text{GL}_n(K)$ with $E^G = FK$. (Received September 22, 2009)