

A simple method to monitor beta-cell death in individuals at-risk for type 1 diabetes

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Type 1 diabetes is characterized by death and reduced function of β cells, which produce insulin. The presence of specific autoantibodies can identify individuals at risk of developing type 1 diabetes, and many of these at-risk individuals exhibit evidence of β cell death before the onset of clinical symptoms. However, the course of β cell death that ultimately leads to the development of type 1 diabetes is poorly understood.

A new study in the *Journal of Clinical Investigation* reveals that a DNA biomarker can be used to evaluate the extent of β cell death and type 1 diabetes risk. Kevan Herold and colleagues at Yale University measured the amount of unmethylated insulin DNA in blood in healthy individuals and a cohort at risk of developing type 1 [diabetes](#). Insulin DNA is methylated in most cell types, which prevents its expression.

Therefore, the authors predicted that the unmethylated form of DNA would only be present if there had been substantial β cell death and lysis. At-risk individuals had much higher levels of unmethylated insulin DNA, and the increase in this DNA biomarker also correlated with a reduction in other measures of β cell function. Moreover, the levels of unmethylated DNA further increased in the period prior to clinical onset.

Together, these results of this study indicate that unmethylated [insulin](#) DNA can be used as a marker of β [cell death](#).

More information: β Cell death and dysfunction during type 1

diabetes development in at-risk individuals, *J Clin Invest.* [DOI: 10.1172/JCI78142](https://doi.org/10.1172/JCI78142)

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