

Mysterious DNA in brain unexpected blessing for evolution

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Mutations can cost an organism its life, but they are also essential to evolution. Without them, there would be no novelty and no change; the slow-churning Darwinian search algorithm would stop. In this sense, transposons—wandering snippets of DNA that hide in genomes, copying and pasting themselves at random—are unsung heroes of natural selection. Although the information that they carry is spare, they account for fifty per cent of all mammalian genetic material.

Each of us is the product of trillions of successful divisions, and so our cells are remarkably good at silencing transposons. Until recently, in fact, they were thought to be dormant in most areas of the body. This turns out to be true almost everywhere but in the brain. Fifteen years ago, the neurobiologist Rusty Gage and his colleagues at the Salk Institute, in La Jolla, California, were studying neurogenesis, the development of adult brain cells from immature stem cells. When they ran a survey of all the genes being expressed in these stem cells, compared with mature neurons, they were puzzled to find that transposons were the most active. Far from being silenced, they were singing.

For some time the finding floated around the lab as a sort of curiosity. It was hard getting anyone to work on the project, Gage told me, because the results were unexpected, even a little disturbing. If transposons were tampering with the DNA of every future neuron, then they were endowing each one with a slightly different genome. Even neurons that budded from the same mother would behave differently.

Read full, original post: [The strangers in your brain](#)