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**Neil J.A. Sloane\*** ([njas@research.att.com](mailto:njas@research.att.com)), 180 Park Ave., Room C233, Florham Park, NJ 07932-0971. *The Toothpick Sequence and Other Sequences from Cellular Automata*. Preliminary report.

The toothpick sequence was invented by Omar Pol (in Buenos Aires). One starts by placing a single toothpick of length 1 on a square grid. At each subsequent stage, for every exposed toothpick end, place an orthogonal toothpick centered at that end. The result has a remarkable fractal-like structure (which will be illustrated by a movie), and the number of toothpicks added at each stage satisfies an unusual recurrence and generating function. Some related sequences generated by two-dimensional cellular automata will also be discussed. This is joint work with David Applegate. (Received August 19, 2009)