

Medicina en 2050: “**Doctor in a Cell**”

A genetically modified cell that can operate in the human body with an intracellular computer ...

that receives **input** from signal transduction pathways and, based on its program, produces **output** to protein synthesis and secretion pathways effecting any desired molecular medical treatment.

Ehud Shapiro, 2006 (Inst. Weizman, Israel)

Doctor en una célula

Conocimiento/diagnóstico codificado en un dispositivo biomolecular que se introduce en una célula

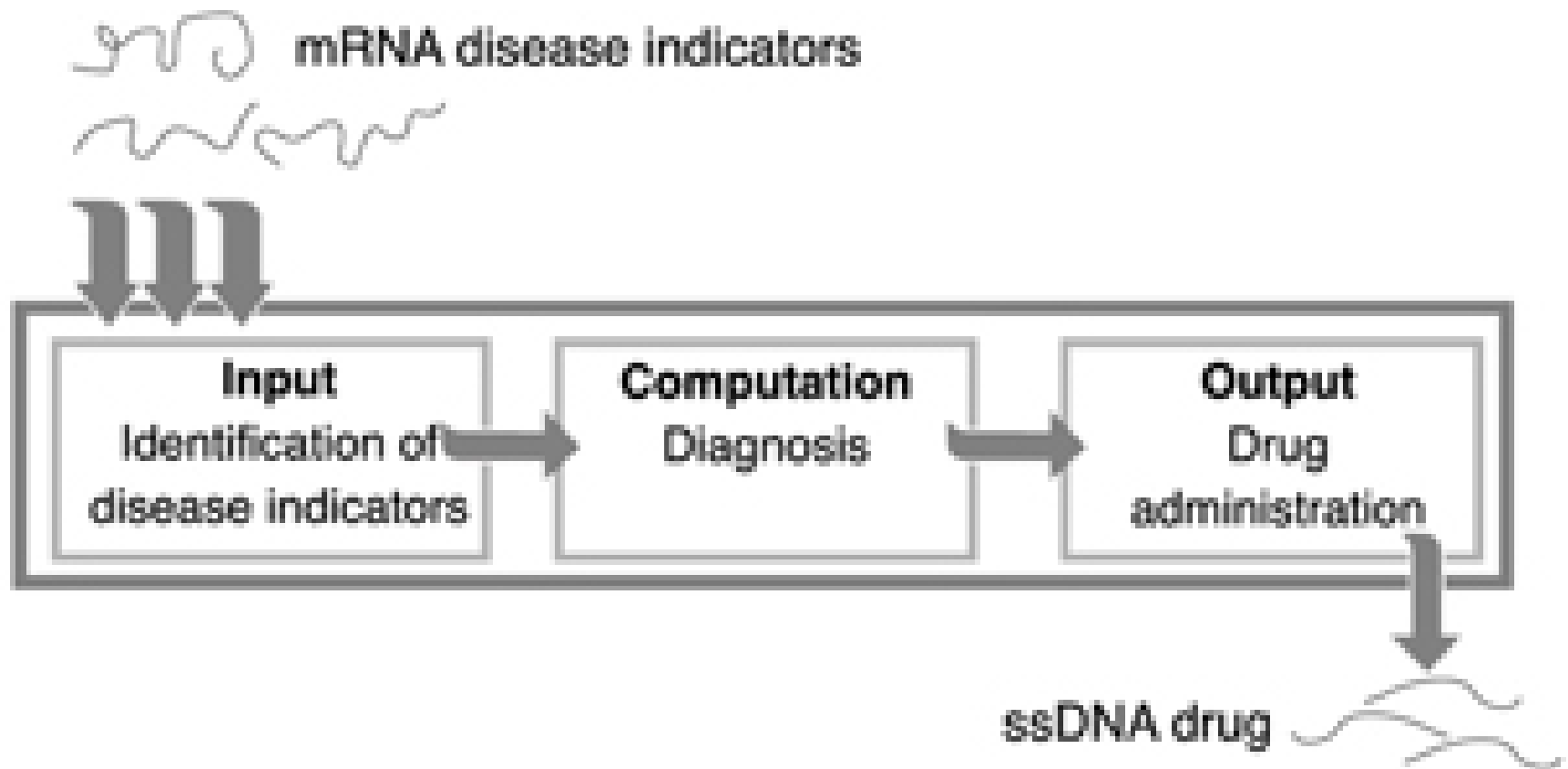
Fármacos inteligentes: Diagnóstico + fármaco

¿Cómo?

Autómatas biomoleculares

Autómata biomolecular de Benenson

a Modular design of the molecular computer

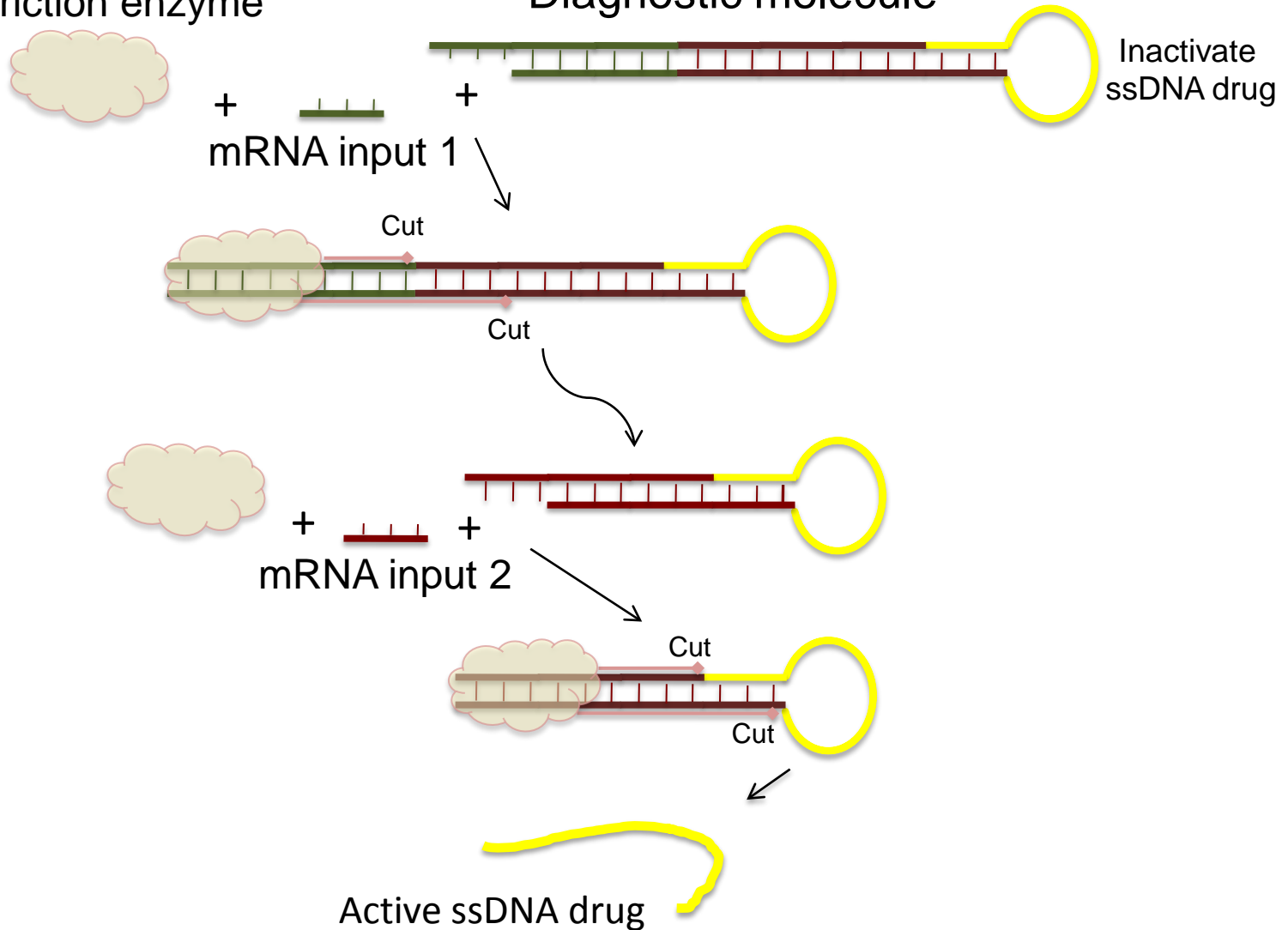


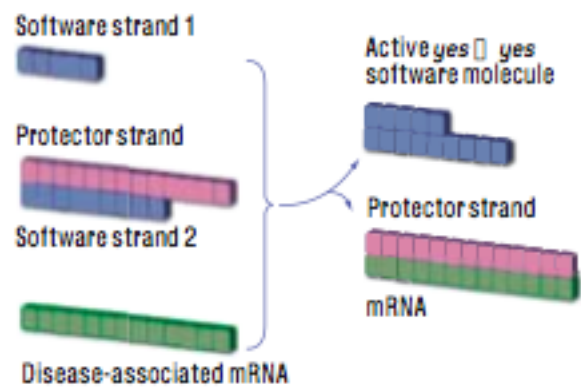
Autómata biomolecular que realiza un diagnóstico y libera un fármaco

Fármaco inteligente: El fármaco se libera sólo si se cumple el diagnóstico

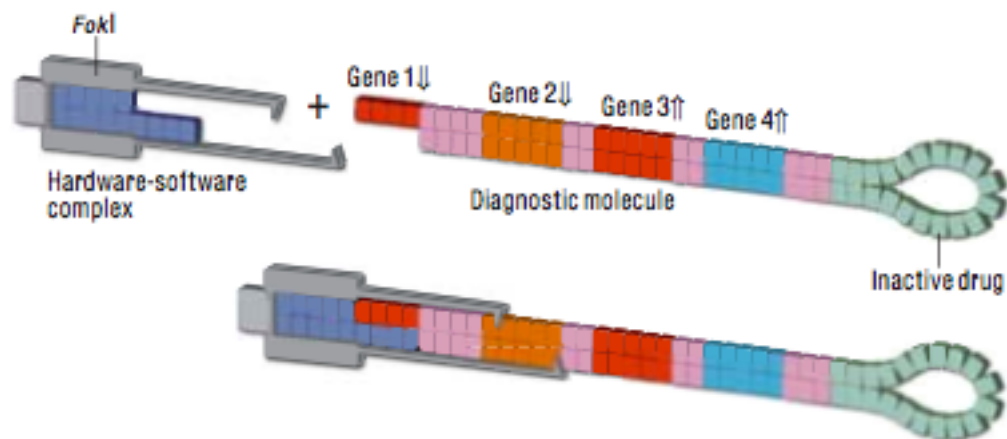
Fok I restriction enzyme

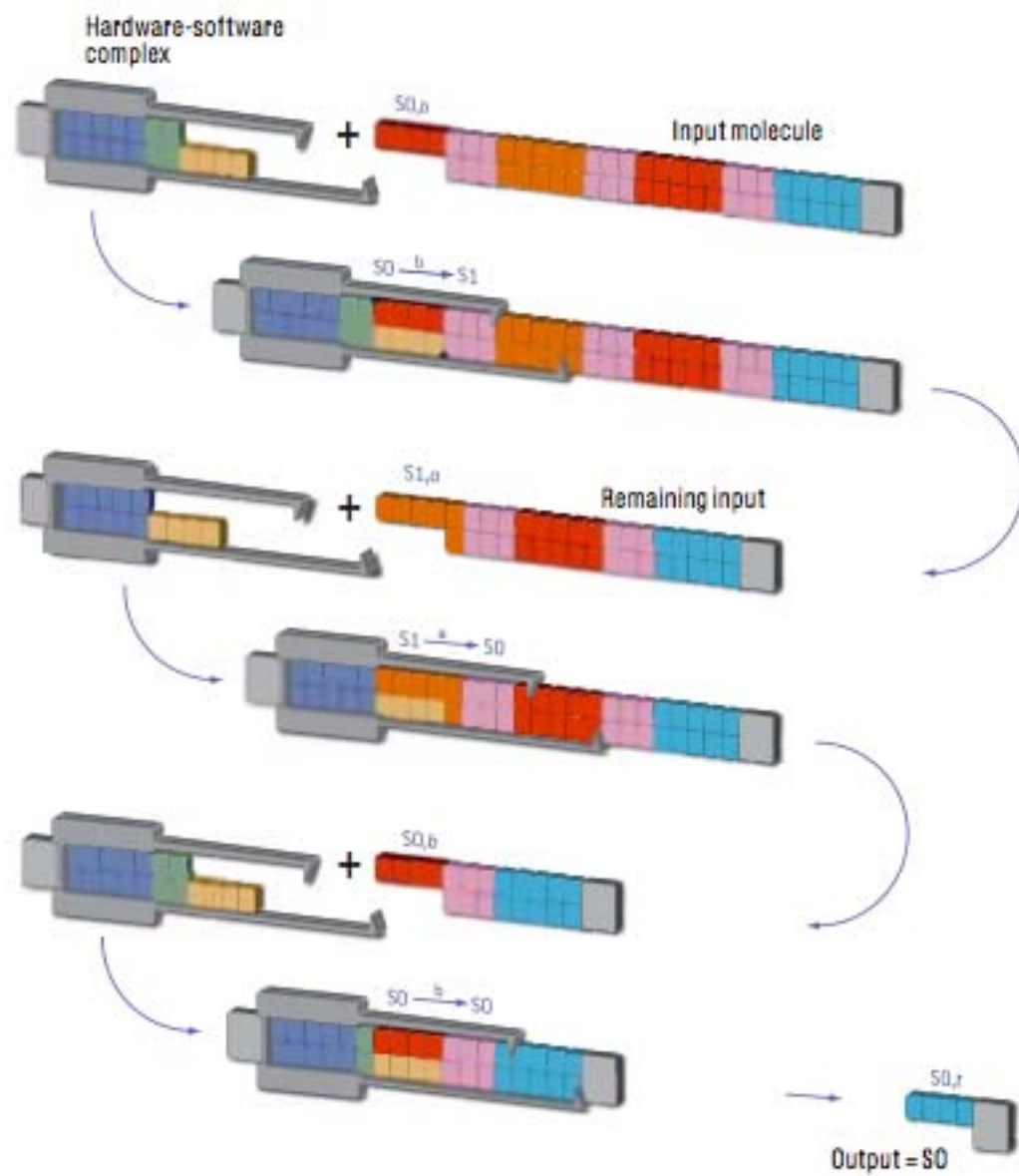
Diagnostic molecule





INPUT





[http://www.wisdom.weizmann.ac.il/~udi/Press
Room/new_pages/abstract/abstract.swf](http://www.wisdom.weizmann.ac.il/~udi/PressRoom/new_pages/abstract/abstract.swf)

Autómatas biomoleculares

Regla diagnóstico (sistema experto ☺): “fármaco inteligente”

PPAP2B↓ & GSTP1↓ & PIM1↑ & HEPSIN↑ ➔

Administer GTTGGTATTGCACAT

Autómata de diagnóstico

