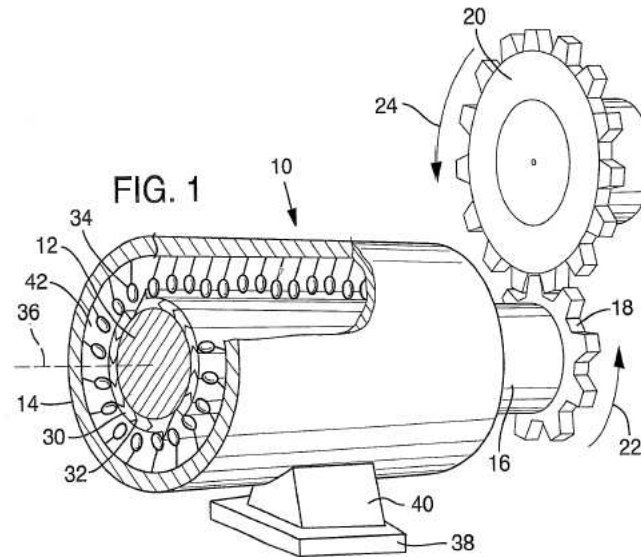


Molecular Rotation Engine

Schneider Lab Nanotechnology

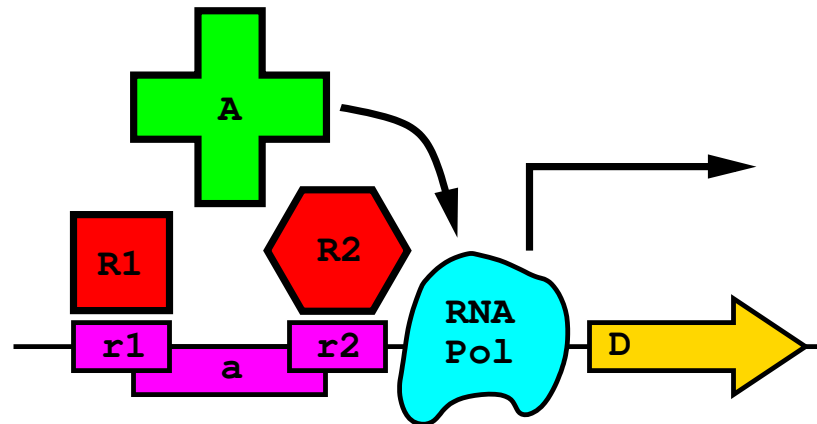


Attach one end of actin molecules (or microtubules) 30 to an inner cylinder 12 and wrap them around the cylinder by spinning. Then attach the other end of the actin. Now attach myosin (or kinesin) 34 to the inner surface 42 of cylinder 10. Insert cylinder 12 into 10 and add ATP. The inner cylinder will rotate. This green nanotechnology is Patent Pending.

www.ccrnp.ncifcrf.gov/~toms/patent/molecularrotationengine

Molecular Computer

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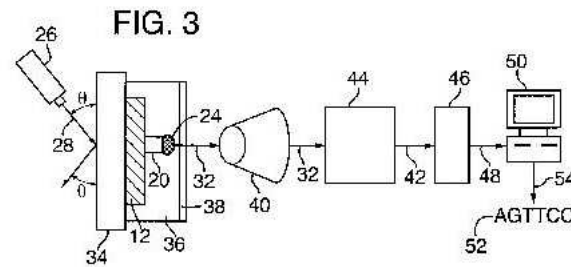
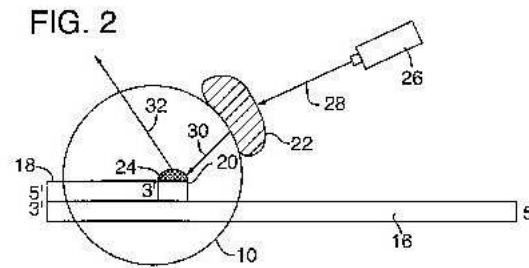


A complete computer can be constructed entirely from logical NOR gates. The molecular NOR gate shown above has two input proteins, **R1** and **R2**. If either one OR the other is present, then the activator **A** will NOT activate transcription of gene **D**. Gene **D** can activate other gates to construct a complete machine. This molecular computer method is patented (US 6,774,222).
We are looking for collaborators to help build it.

www.ccrnp.ncifcrf.gov/~toms/patent/molecularcomputing

High Speed Parallel Molecular Nucleic Acid Sequencing

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A donor fluorophore 22 is attached to a polymerase 10. Each nucleotide 20 has an acceptor fluorophore 24 with a different emission spectrum. During polymerization, FRET between the donor and acceptor gives different signals 32 which are captured by the microscope 40 and processed (44, 46, 50) to produce a DNA sequence 52. US patent 6,982,146.

www.ccrnp.ncifcrf.gov/~toms/patent/dnasequencing