

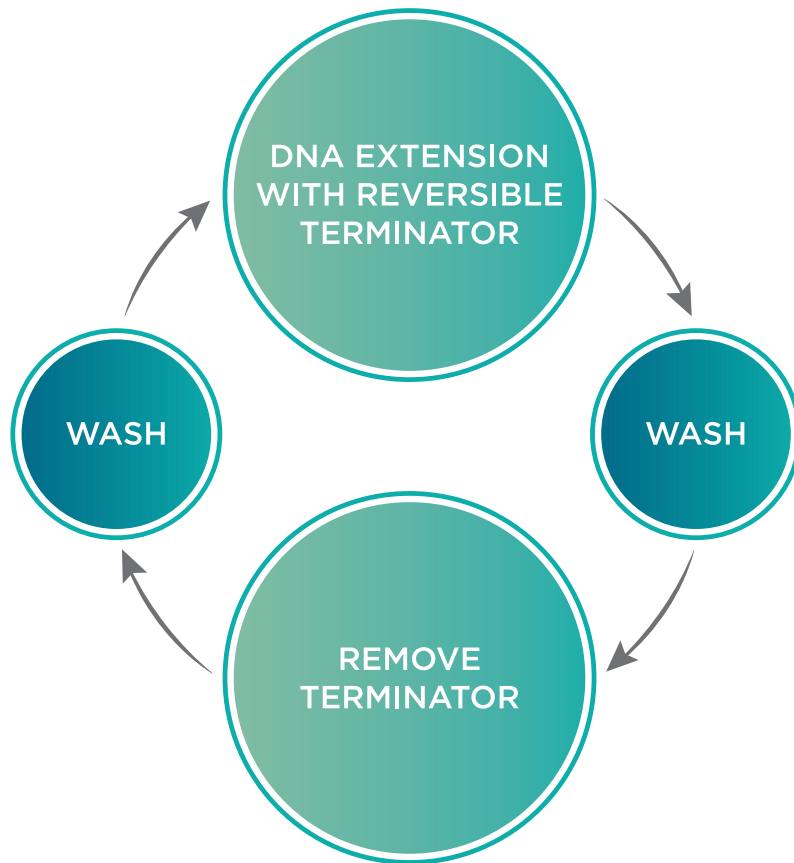


Enabling the Next Era in Biotechnology by Solving the Challenge of DNA Synthesis

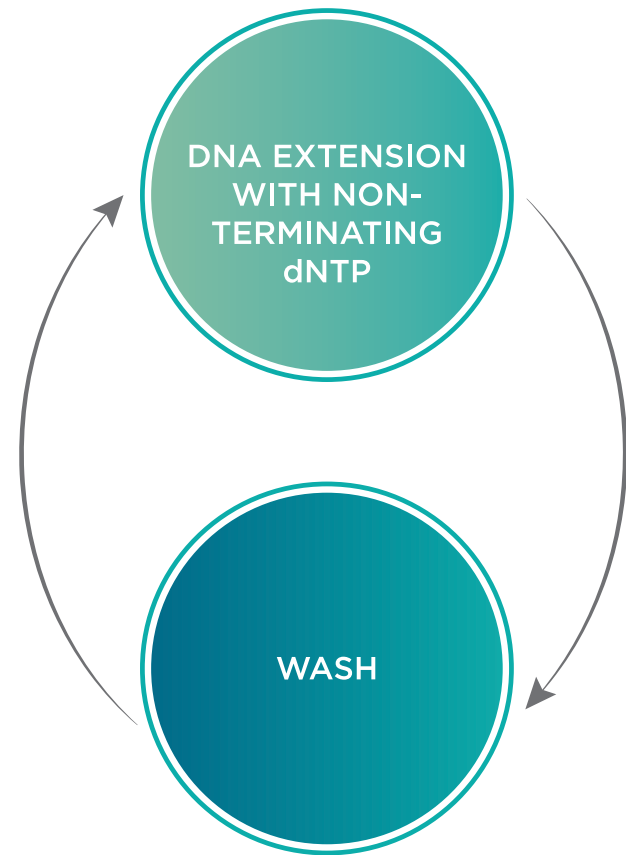
Michael J. Kamdar, President & CEO | J. William Efcavitch, PhD, CSO

The Future is in Our DNA

Two Enzymatic Synthesis Technologies For Two Different Markets

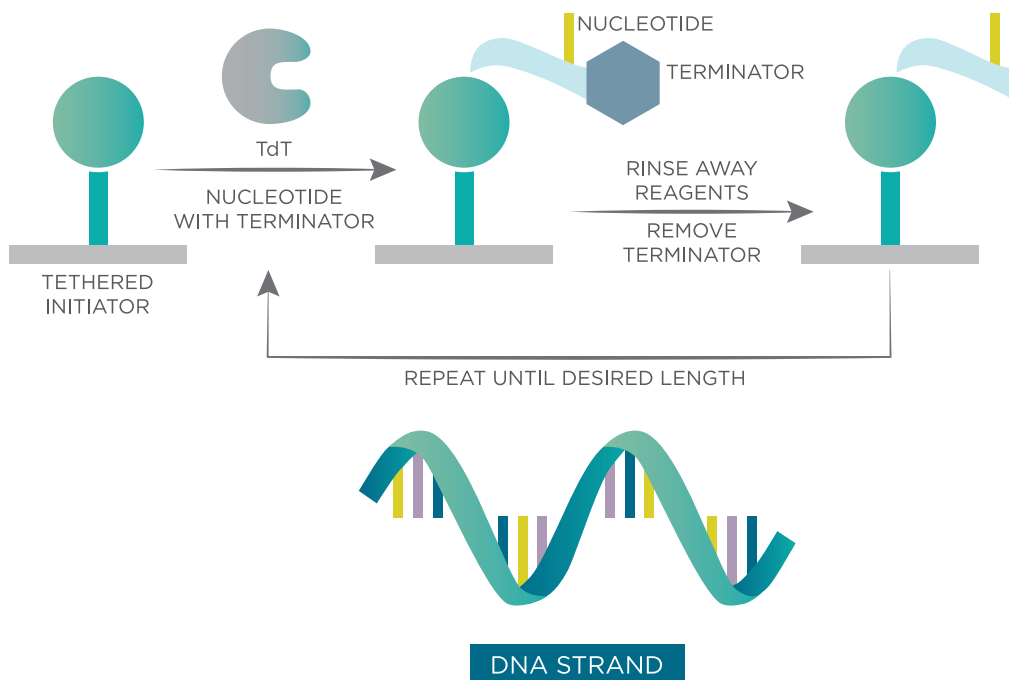


DNA FOR LIFE SCIENCES



DNA FOR DATA STORAGE

The Future For Life Sciences: A Simple & Efficient Production Process



- Mild reagents
- Only two yield determining steps
- Reduced cost of synthesis
- Generates natural DNA at every cycle
- Scales from fmole to umole quantities
- Scales to massively parallel synthesis

Enzymatic synthesis technology is compatible with multiple hardware implementations

How?

A Simple & Efficient Synthesis Process

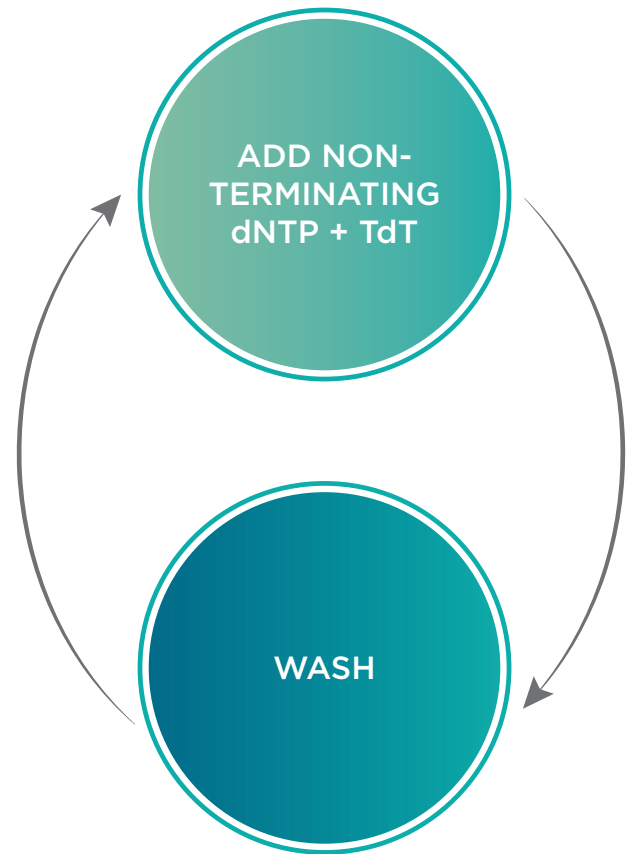
Non-hazardous aqueous reagents

Only two steps

Reduced cost of synthesis

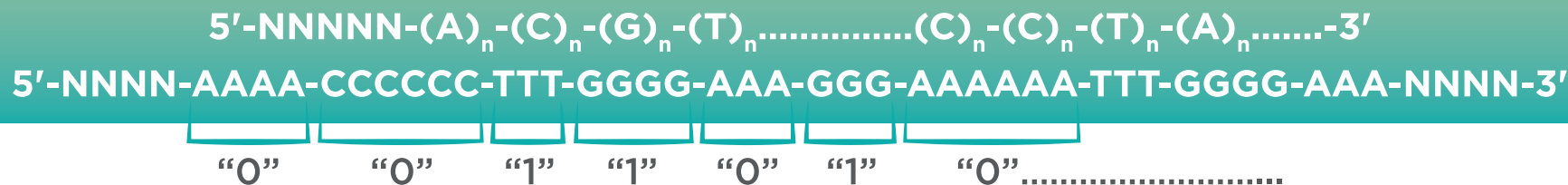
Highly parallel synthesis possible

No post-synthesis workup



HOMOPOLYMER LENGTH CONTROLLED BY
REACTION TIME OR dNTP CONCENTRATION

Encoding Information by Variable-length Homopolymers



- Imprecise length homopolymers are the “bits”
- **Transitions** between homopolymers are detected; not **length** of homopolymers
- Simple synthesis process; rapid cycle time; **only one reaction** – no terminator removal step; mechanically simple synthesizer hardware
- Low cost reactants
- Potential for using more than four nucleotides (>base2 encoding)

Commercial Opportunity

DNA Synthesis is Stuck!

- Today DNA synthesis is based upon Phosphoramidite methodology; 30+ years old and limited in its ability to produce long DNA
- The rapid escalation of Synthetic Biology into new exciting applications including Therapeutics, Materials, Agriculture and DNA Data Storage is creating a need for a better synthetic method

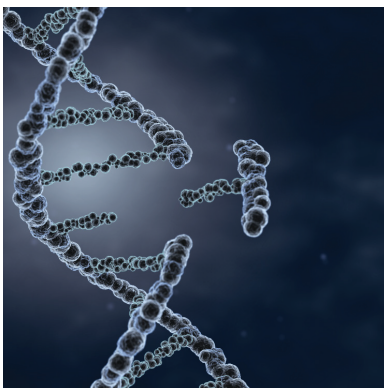
The Key Requirement: Long, Pure DNA

- Enzymatic DNA synthesis has emerged as the best way to meet the rapidly growing market for long pure DNA
- Molecular Assemblies has pioneered enzymatic DNA synthesis and established the leading proprietary position
- DNA for the future will be provided by Molecular Assemblies, both directly and through licensees of our proprietary enzymatic technology

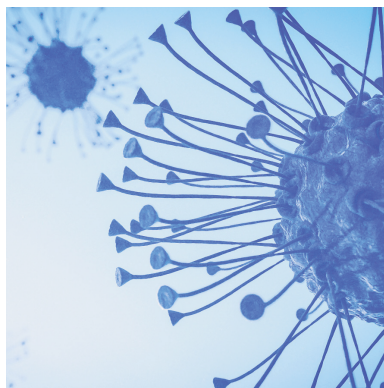
Expanding Synthetic Biology Opportunities

ENZYMATIC DNA SYNTHESIS

CRISPR/Cas



CAR T CELL THERAPY



VACCINES



INFORMATION STORAGE



MATERIAL SCIENCE

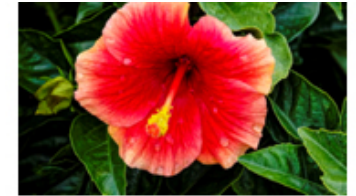


AG BIOTECH

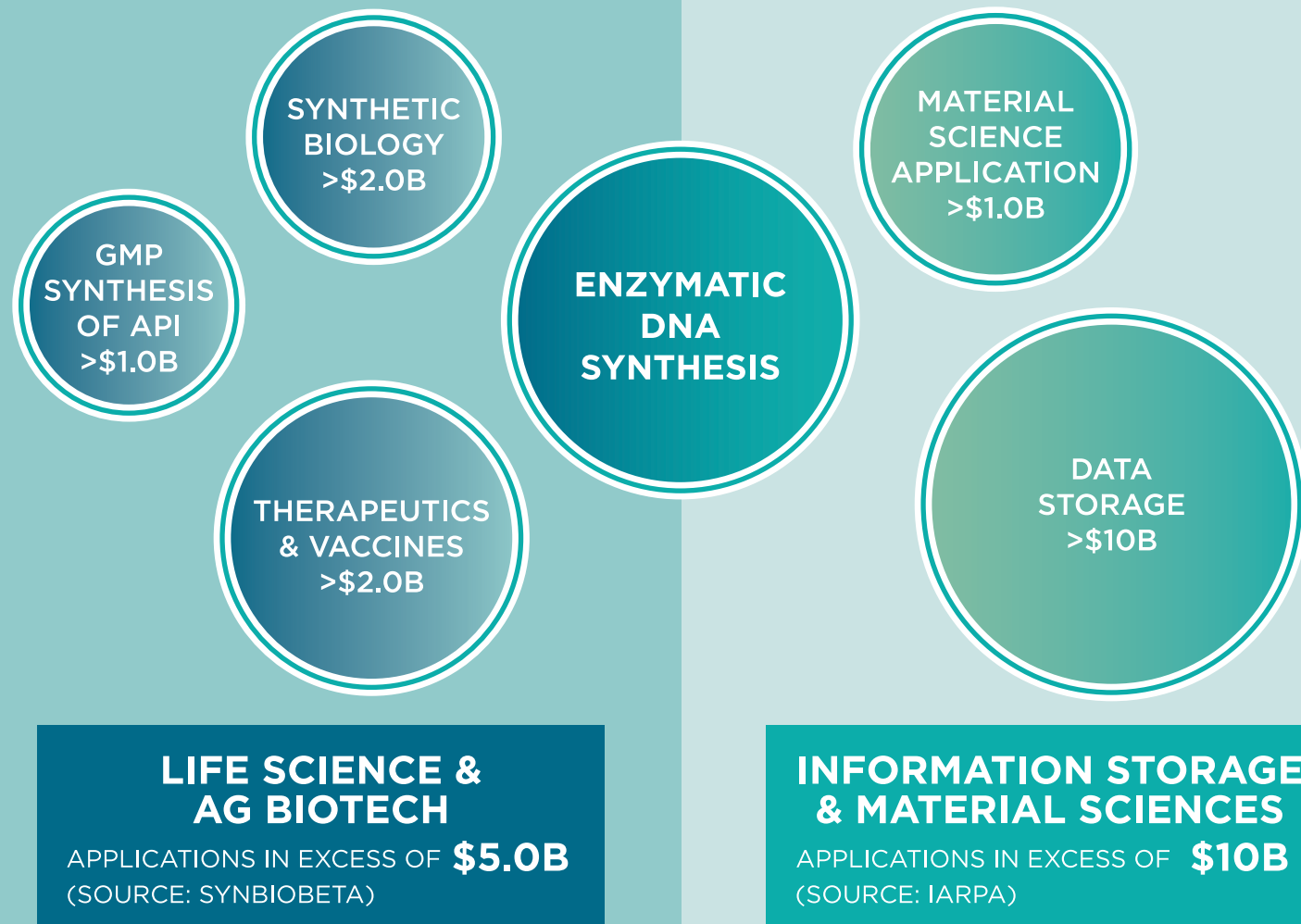


Synthetic DNA enables Gene Synthesis & Gene Editing for:

- Vaccines
- Antibiotics
- Flowers
- Biofuels
- Plant and Animal Breeding
- Pest Resistant Crops
- Pesticide-Resistant Crops
- Nutrient Supplementation
- Abiotic Stress Resistance
- Industrial Strength Fibers



Large and Rapidly Growing Commercial Markets in Enzymatic DNA Synthesis



The Future *is* Writing DNA

The ability to read DNA has revolutionized the fields of Biology, Life Science and Healthcare.

The ability to write DNA will have an even broader impact for our world in the fields of Agriculture, Biofuels, Chemicals, Electronics, Nanotechnology and Information Storage.

Molecular Assemblies is the first to develop a revolutionary DNA synthesis technology
Enzymatic-based - *the way nature makes DNA*

World-class team - developed and commercialized the first DNA synthesis method; 18 full-time staff in San Diego

Strong patent estate – foundational
- 18 patents issued (US, EU and Japan)

Unique ability to pursue diverse approaches to address multiple, large markets for synthetic DNA

Raised \$8.5M Seed Preferred Financing
iSelect Fund leading \$10M Series A



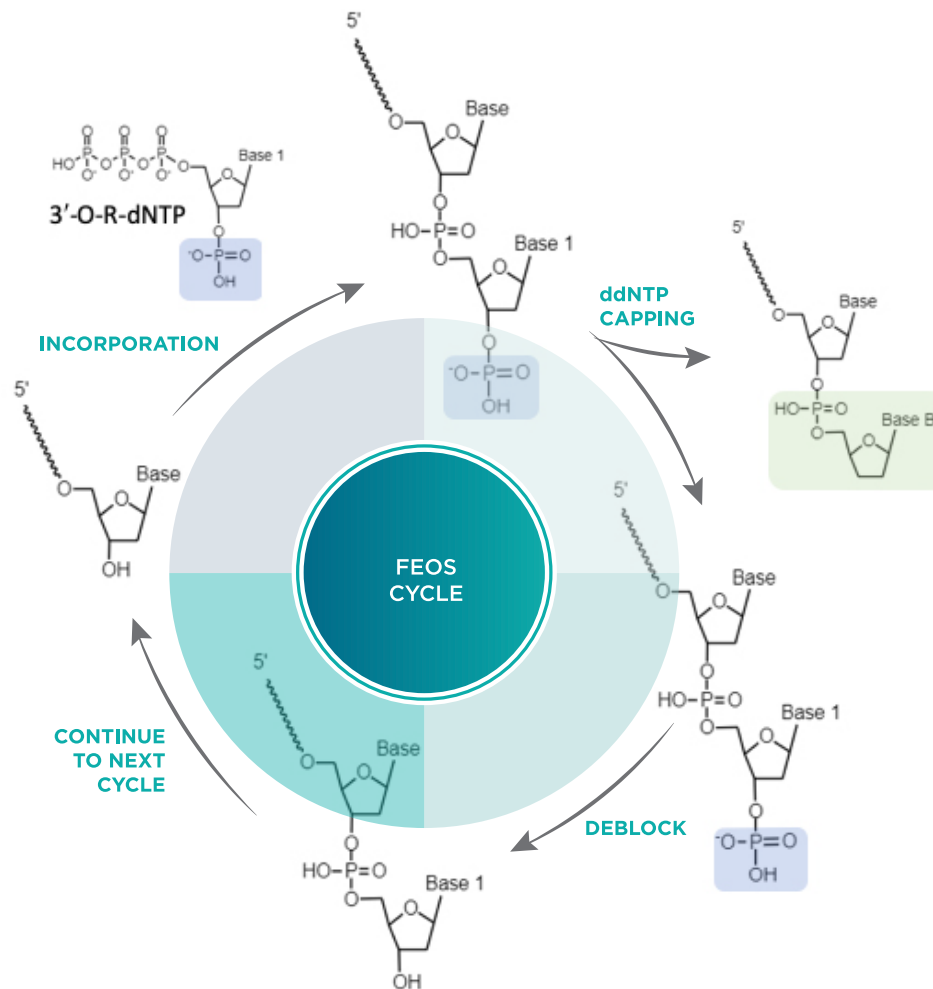
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www.molecularassemblies.com

FEOS Cycle



FEOS Cycle

