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Technology Development Concept Clearances

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National Human Genome
Research Institute

—
The **Forefront**
of **Genomics**[®]
—

Technology Development Program

- Foundational
- Impactful
- Enabling
- Communities

NATURE | NEWS FEATURE

Technology: The \$1,000 genome

With a unique programme, the US government has managed to drive the cost of genome sequencing down towards a much-anticipated target.

Erika Check Hayden

19 March 2014



Strategic Planning Feedback



Tremendous new and existing opportunities

Genomics overall

- Nucleic acid sequencing
- Synthetic nucleic acids
- Enabling the community



Clinical implementation for genomic medicine



Acceleration



Commercialization

Two Clearances Today

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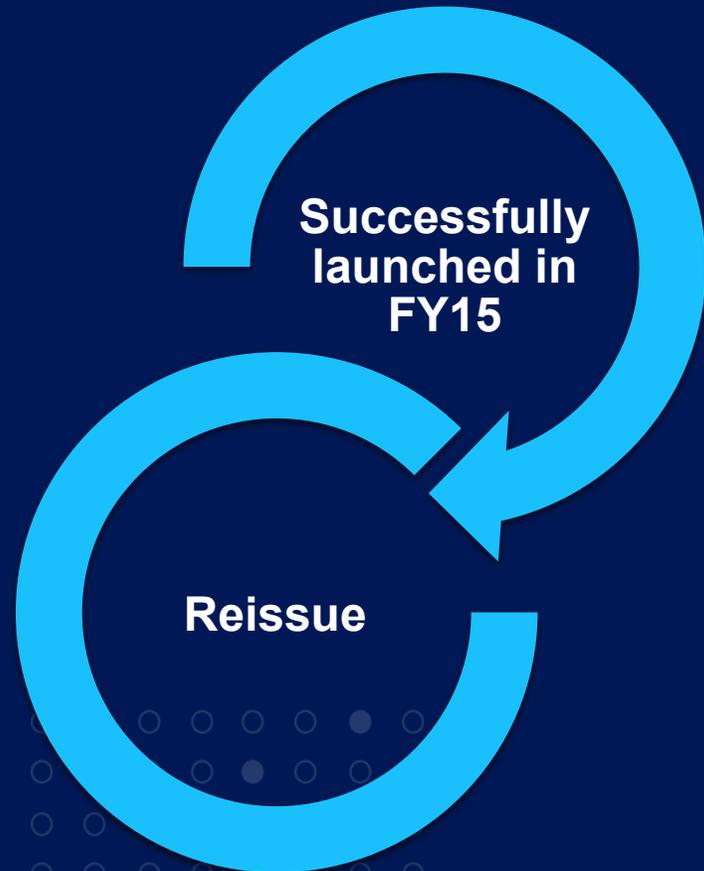
Genomic
Technology
Development PARs

Technology
Development RFAs

- Nucleic Acid Sequencing
- Synthetic Nucleic Acid
- Coordinating Center

RFA Set: R01, R21 and R43/R44 (Small Business)

Novel Genomic Technology Development PARs



Broad call for applications
\$11M in FY19
26 awards in four years



Enhancements
Spatial and functional genomics
Multi-omics
Complex genomic regions
Genomic recorders
Clinical applications



Clarify review criteria and FOA

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Questions and discussion



Technology Development RFAs

Nucleic Acid
Sequencing



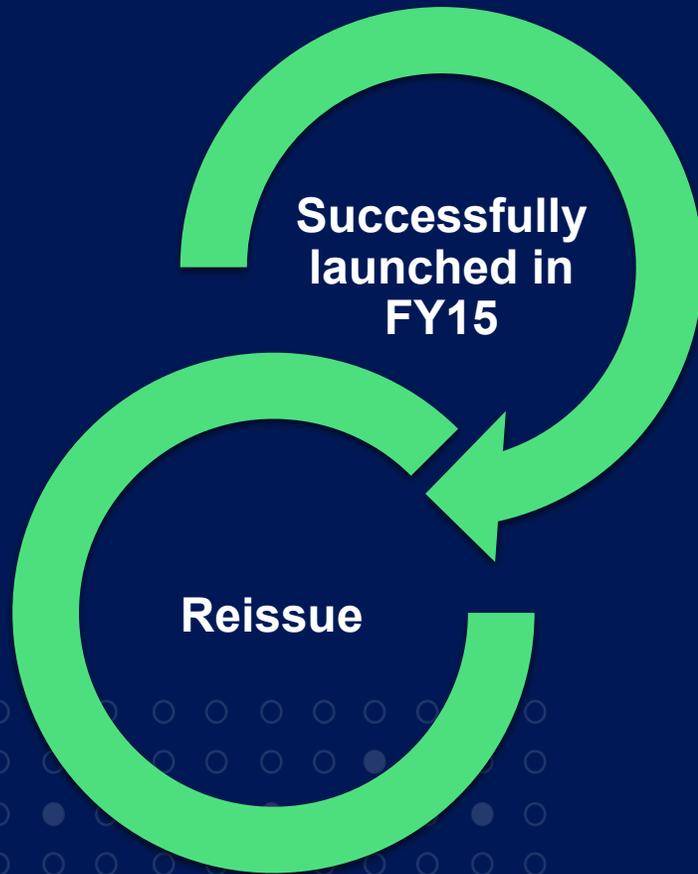
Synthetic
Nucleic Acids



Coordinating
Center



Novel Nucleic Acid Sequencing RFA Set



\$6M FY19 effort, \$2M competing yearly
30 awards in four years



Enhancements

- Alternative sequencing approaches
- Phasing
- Telomere to telomere sequencing
- Native nucleic acids
- Multiple base modifications
- Clinical applications



\$4M competing yearly FY22-24

Synthetic Nucleic Acids RFA Set

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\$1,000 genome-like impact



New efforts

- Oligonucleotides and synthetic constructs
- Increase accuracy, lengths and throughput
- Reduce costs
- Base modifications
- Delivery methods



\$3M competing yearly FY21-23

Coordinating Center RFA

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Cohesion, enabling and leveraging



New efforts

- Facilitate collaborations
- Synthesize and disseminate advances
- Tech transfer and knowledge resource
- Opportunity funds
- Facilitate path to clinic



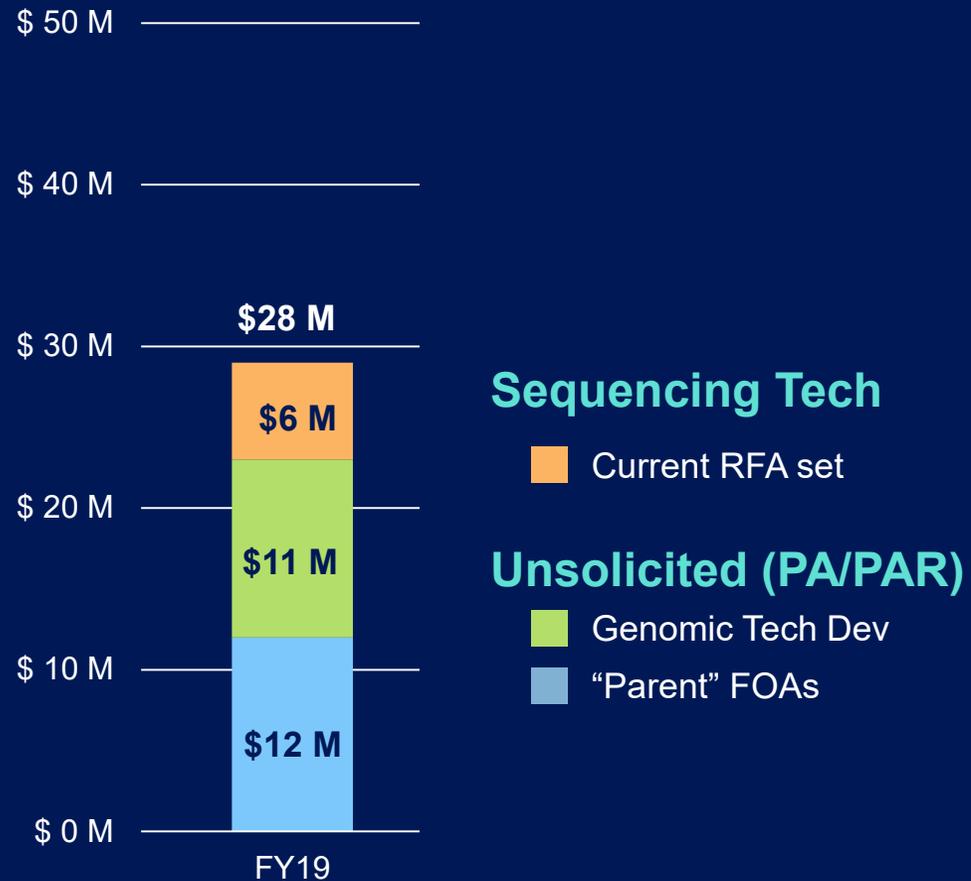
\$1.5M competing yearly FY21-24

Technology Development Spending

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Current effort

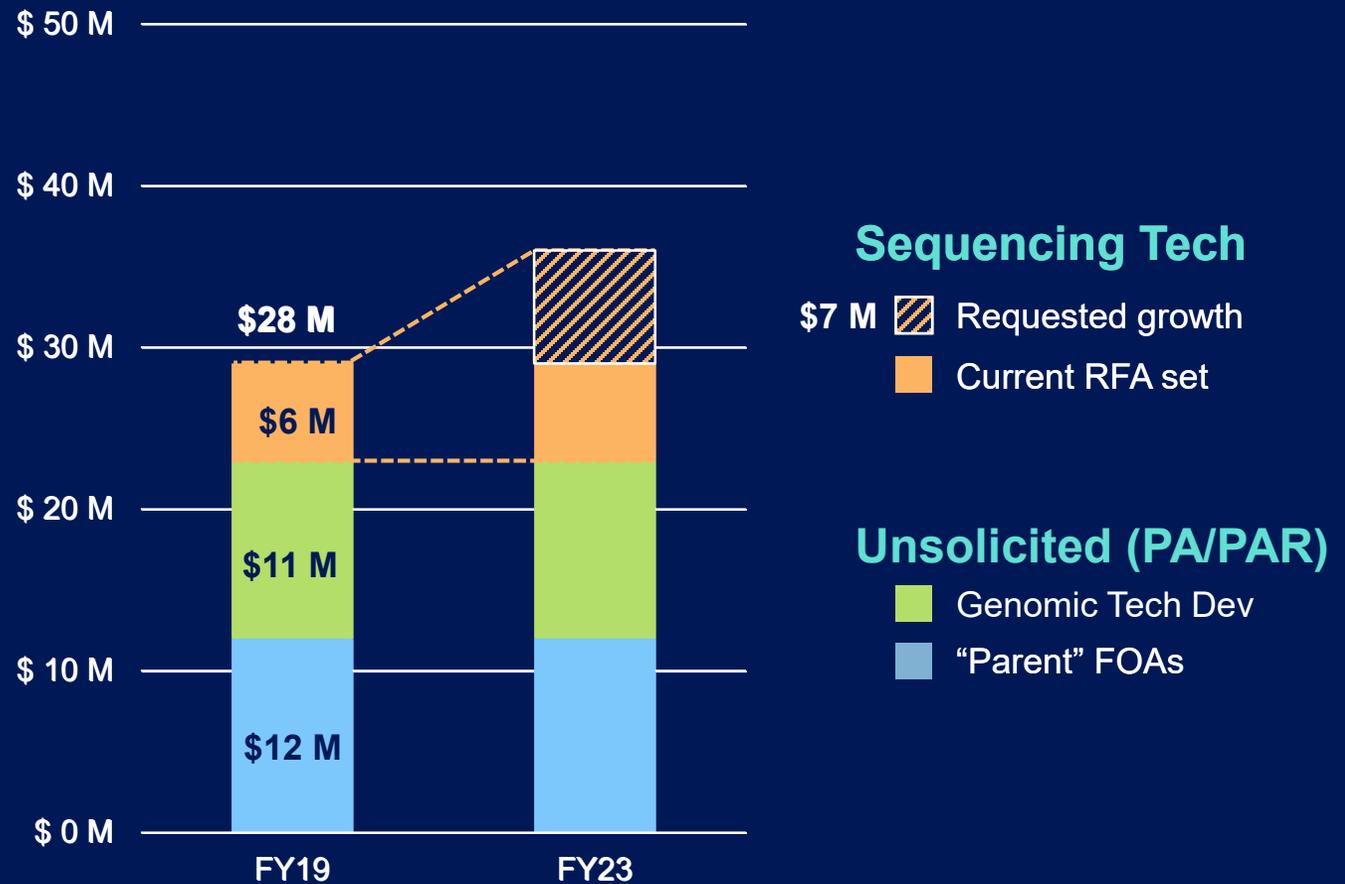


Technology Development Program

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Sequencing effort doubles



Technology Development Program

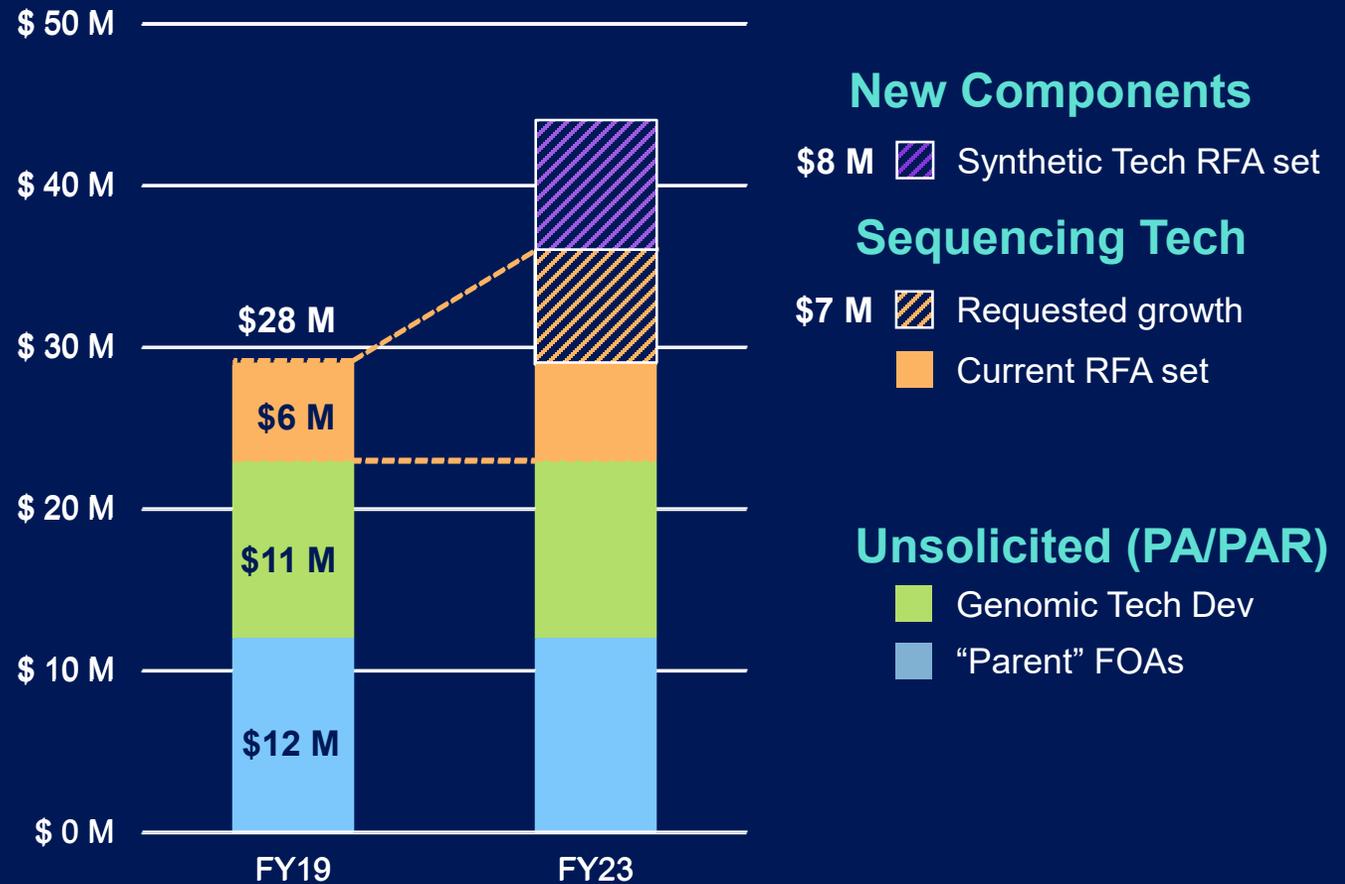
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Sequencing effort doubles



New Synthetic Nucleic Acids



Technology Development Program

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C G T
A C G



Sequencing effort ~ doubles



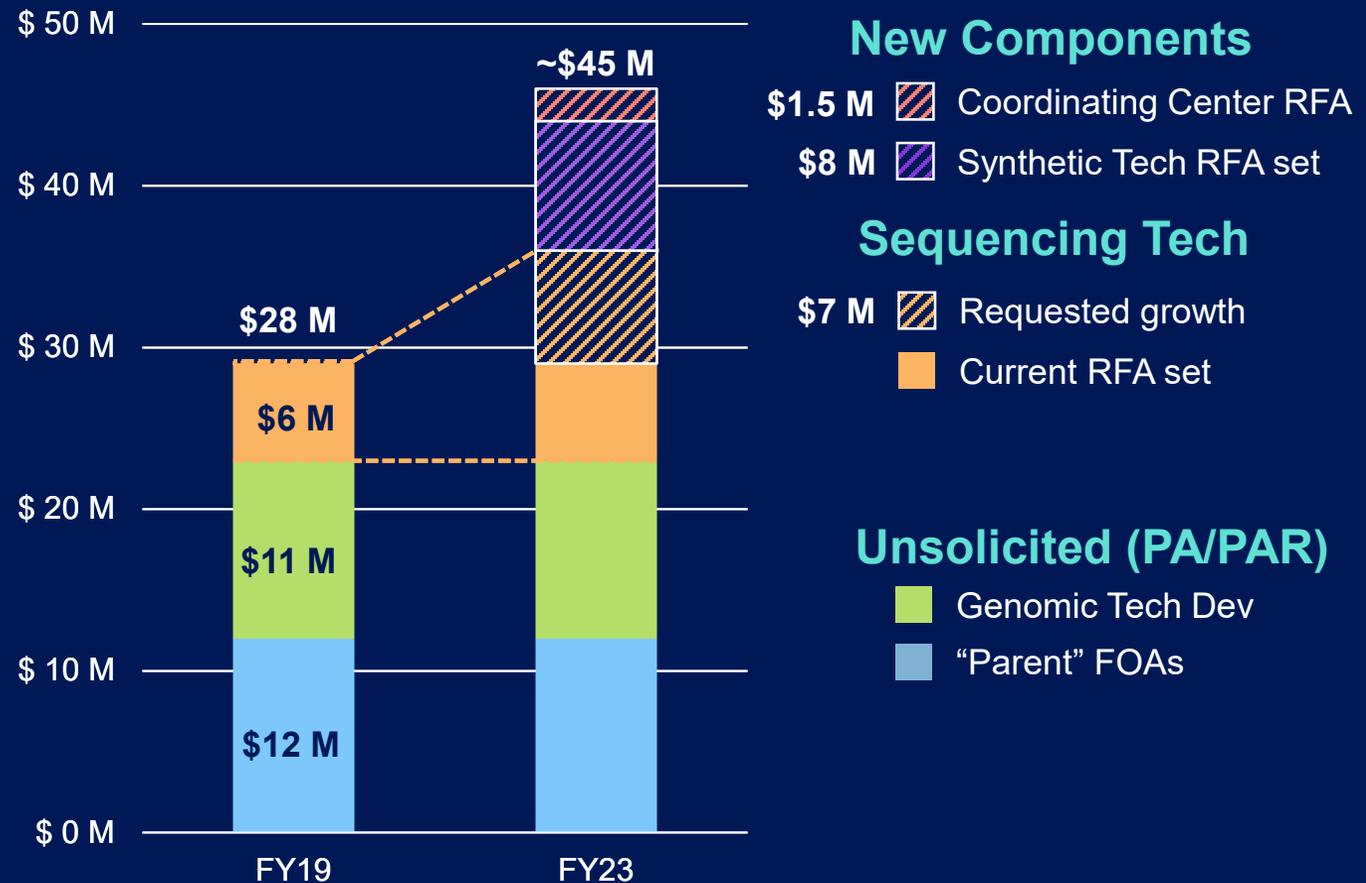
Synthetic Nucleic Acids - new



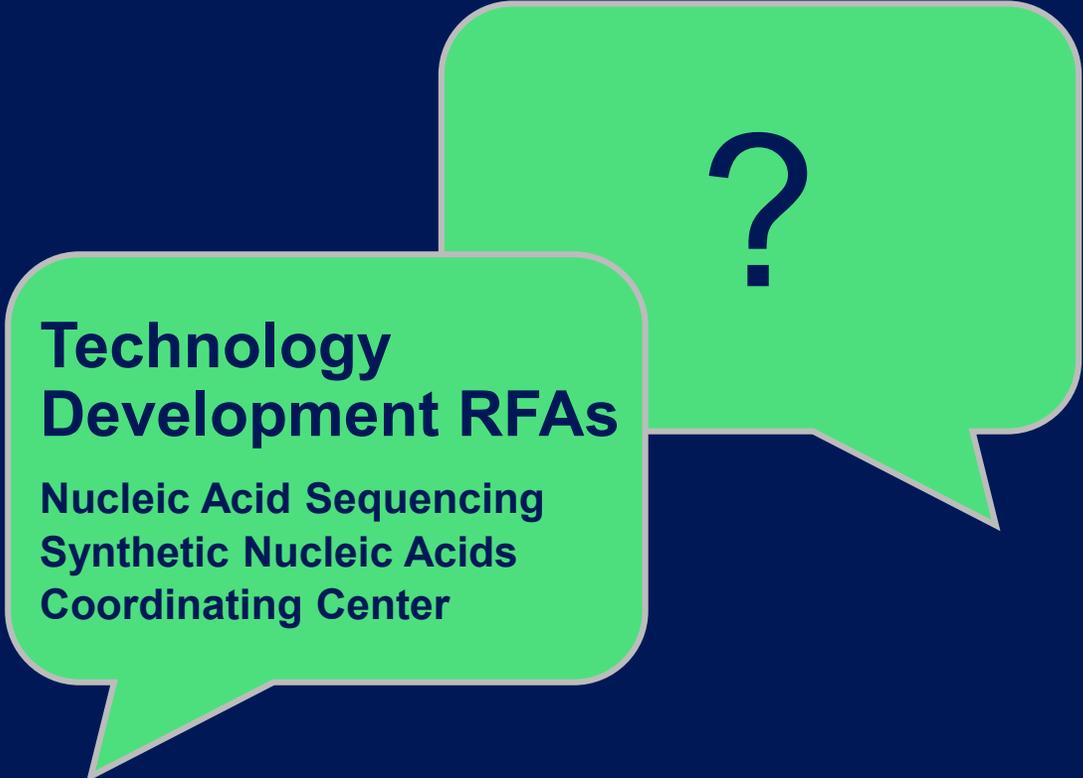
Coordinating Center - new



Steady growth



Questions and discussion



**Technology
Development RFAs**

Nucleic Acid Sequencing
Synthetic Nucleic Acids
Coordinating Center



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Opportunity Funds

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- Coordinating center
 - Application intake and review
- Small projects funded more rapidly
- Modeled on Undiagnosed Diseases Network, 4D Nucleome and other examples



Genomic Technology Development

Program Announcement with special Review criteria (PAR)

FOA set	Funding Dates	Activity Code(s)	Max award duration
Genomic Technology Development	FY21-23	R01, R21 & R43/R44	4 years

Request for Applications (RFAs)

FOA set	Funding Dates	Activity Code(s)	Max award duration	FY19 competing \$	Requested competing \$	Estimated plateau \$**
Nucleic Acid Sequencing	FY22-24	R01, R21 & R43/R44	4 years	\$2.0M*	\$4.0M	\$13.0M
Synthetic Nucleic Acids	FY21-23		3 years	-	\$3.0M	\$8.1M
Coordinating Center	FY21	U24	4 years	-	\$1.5M	\$1.5M
Total				\$2.0M	\$8.5M	\$22.6M

Technology Development Program Grantee Institutions FY19

