

Resource Summary Report

Generated by [RRID](#) on Aug 18, 2026

C321.?A.opt

RRID:Addgene_87359

Type: Plasmid

Proper Citation

RRID:Addgene_87359

Plasmid Information

URL: <http://www.addgene.org/87359>

Proper Citation: RRID:Addgene_87359

Insert Name: C321.?A.opt strain

Organism: Synthetic

Bacterial Resistance: Gentamicin

Defining Citation: [PMID:28545477](#)

Vector Backbone Description: Vector Backbone:Whole genome; Vector Types:Synthetic
Biology; Bacterial Resistance:Gentamicin

Comments: C321.?A.opt is a variant of C321.?A (Addgene Item #48998) engineered to have a faster growth rate, as reported in Kuznetsov, Gleb, et al. "Optimizing complex phenotypes through model-guided multiplex genome engineering." bioRxiv (2016): 086595. This strain has a heat-inducible lambda prophage (42 C) and should be grown at or below 34 C to avoid induction. The original strain C321.?A (Addgene Item #48998) was reported in Lajoie, Marc J., et al. "Genomically recoded organisms expand biological functions." Science 342.6156 (2013): 357-360.

Plasmid Name: C321.?A.opt

Record Creation Time: 20220422T222600+0000

Record Last Update: 20260815T082143+0000

Ratings and Alerts

No rating or validation information has been found for C321.?A.opt.

No alerts have been found for C321.?A.opt.

Data and Source Information

Source: [Addgene](#)

Usage and Citation Metrics

We found 4 mentions in open access literature.

Listed below are recent publications. The full list is available at [RRID](#) .

Ong S, et al. (2026) Bridging continuous and discrete evolution through a controllable, hypermutagenic phage-bacteria system. Nature microbiology, 11(6), 1585.

Wang M, et al. (2025) A Programmable Finite-Replicated Organism Framework for Balanced Safety and Functionality. Life (Basel, Switzerland), 15(9).

Hemez C, et al. (2024) Genomically recoded Escherichia coli with optimized functional phenotypes. bioRxiv : the preprint server for biology.

González SS, et al. (2021) Genetic Code Expansion in the Engineered Organism Vmax X2: High Yield and Exceptional Fidelity. ACS central science, 7(9), 1500.