



Find out more in our latest blog post:
The right STEM program can open the door to a STEM career

Looking for life science STEM (science, technology, engineering and mathematics) education opportunities for yourself or students can be a daunting task. This blog will walk you through how to identify nearby programs that can introduce students to future careers in biology related fields.

[Read now!](#)

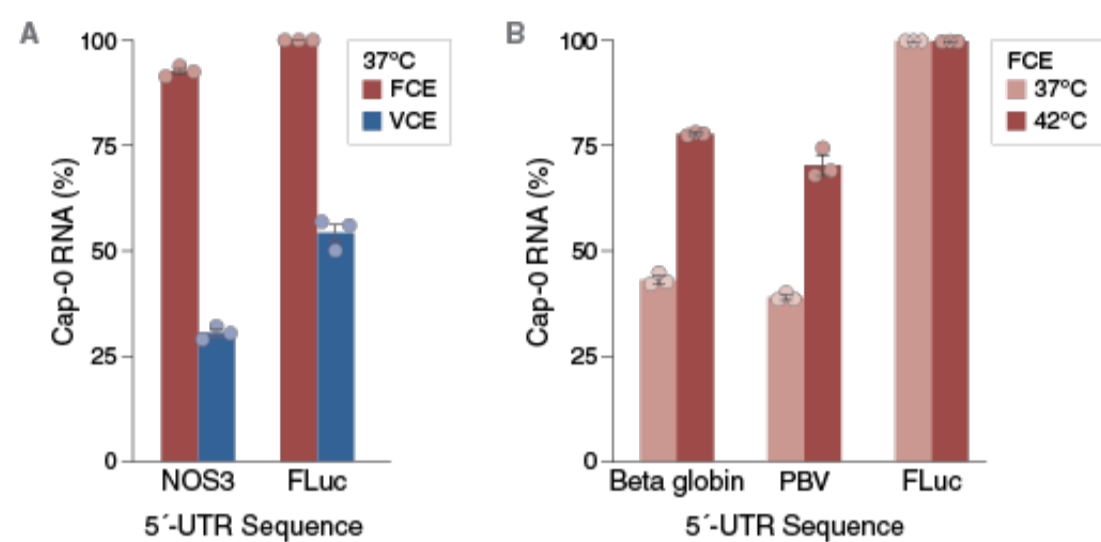


New product:
Faustovirus Capping Enzyme to support mRNA therapeutic manufacturing needs

Faustovirus Capping Enzyme (FCE), an enzyme discovered here at NEB, combines high activity and a broad temperature range to support mRNA therapeutic manufacturing needs. This single-subunit enzyme contains all the enzymatic activities to achieve a Cap-0 structure, a critical step in eukaryotic mRNA maturation. Additionally, a Cap-1 structure can be easily generated in a one-pot reaction when using FCE in conjunction with **mRNA Cap 2'-O-Methyltransferase**. An alternative to Vaccinia Capping System, FCE offers a robust capping solution with minimal optimization required.

- Experience improved capping efficiency, even on difficult substrates
- Achieve robust capping with less enzyme
- Set up reactions under a broad temperature range (20-55°C), for added flexibility
- Feel good about choosing FCE, as product is manufactured using environmentally friendly biological processes
- Benefit from no licensing fees from NEB for the use of FCE

FCE offers increased capping efficiency and workflow optimization



A. mRNA capping by FCE and Vaccinia Capping Enzyme (VCE) at 37°C. 200 µg (~350 picomoles, 7 µM) of a 1.77 kb FLuc transcript having 5'-UTR sequences as indicated were treated with a limiting amount of FCE (25 units, 1 picomole, 20 nM in 50 µl) or VCE (10 units, 1 picomole, 20 nM in 50 µl) for 1 hour at 37°C. Note that this is less than our recommended amount of enzyme highlighting the increased capping efficiency of FCE vs VCE and the potential benefits of workflow optimization.

B. mRNA capping by FCE at 37°C and 42°C. 200 µg (~350 picomoles, 7 µM) of a 1.77 kb FLuc transcript having 5'-UTR sequences as indicated were treated with a limiting amount (25 units, 1 picomole or 20 nM) of FCE for 1 hour at 37°C or 42°C. Note that this is less than our recommended amount of enzyme highlighting the potential benefits of workflow optimization. All capping reactions were performed in 50 µl reactions containing 0.1 mM SAM, and 0.5 mM GTP, 1X FCE Capping Buffer for FCE reactions or 1X Capping Buffer for VCE reactions. Following capping reactions, mRNA capping was measured using targeted RNase H cleavage and LC-MS.



The extent of 5' cap incorporation is one of the critical quality attributes in mRNA manufacturing. [Learn more](#) about measuring capping efficiency in this new publication from NEB researchers.

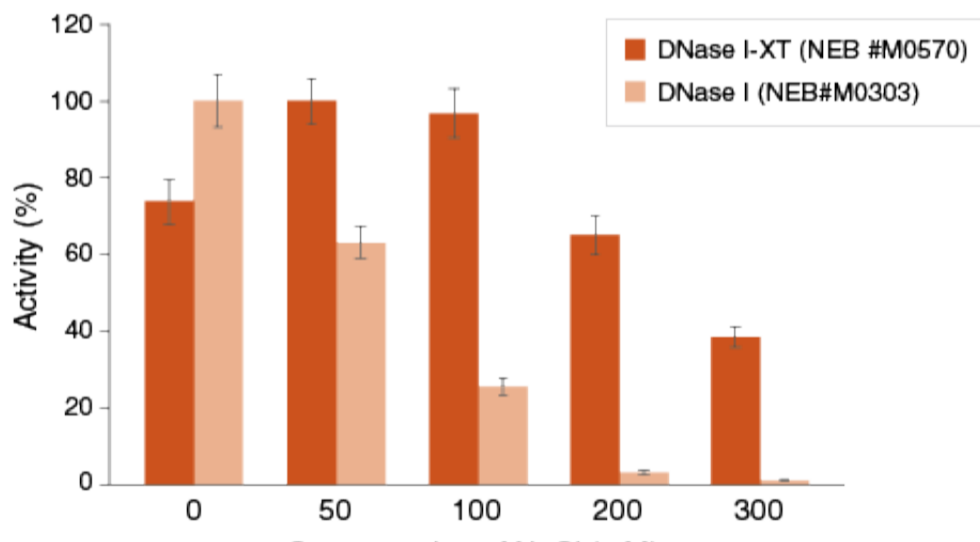
[View Product Details](#)

Featured product:
DNase I-XT – Robust removal of DNA

An engineered variant of DNase I, **DNase I-XT** is a salt-tolerant DNA endonuclease that nonspecifically cleaves DNA to release di-, tri- and oligonucleotide products with 5'-phosphorylated and 3'-hydroxylated ends.

- Use in reactions containing higher amounts of salt, such as IVT and RNA preps
- Add directly to your IVT reaction, with no dilution required
- Efficiently removes DNA from IVT reactions and RNA preps
- RNase-free enzyme tolerates a wide range of salt conditions (up to 300 mM)

DNase I-XT efficiently degrades DNA at salt concentrations > 100 mM



An equimolar comparison of the DNase activity of DNase I (NEB #M0303) and DNase I-XT (NEB #M0570) illustrates the increased salt-tolerance of DNase I-XT. DNase activity was measured by an increase in fluorescence from a quenched 35 nt hairpin dsDNA substrate in 1X DNase I Reaction Buffer with increasing salt concentration (as indicated). While DNase I activity steadily decreases with increasing salt concentrations, DNase I-XT remains active in solutions containing up to 300 mM salt.

[Learn More](#)

We want you to help us create the NEB calendar 2023!

We are looking for nature-themed photography for inclusion in the NEB calendar 2023. Please submit your work for consideration, by supplying a high-resolution image, along with your contact information, **by September 15th**.*



If your work is selected for inclusion in the calendar, you will, of course, be credited in the calendar and celebrated online and on social media. You will also receive the following:

- 500 € in NEB product credit or 500 € to donate to the charity of your choice
- 10 copies of the calendar featuring your work to hand out to your nearest and dearest

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