

FOUNDATION™ ssDNA Scaffold

Scaffold Recommendations

Guild BioSciences put this Scaffold Recommendations document together to help scientists working in the nanoscience research field get the best results from their experiments with FOUNDATION™ ssDNA scaffold. The following tips will help ensure quality and repeatable experiments.

Storage:

- All scaffold should be stored at -20°C when not in use. Keep a working stock at 4°C. Researchers must be very careful when aliquoting scaffold into new tubes. There is potential for contamination if not performed in an **aseptic manner**. Always label aliquoted tubes with original tube Lot #.
- Freeze–thaw cycles can damage the scaffold creating linear instead of circular scaffold which will result in lower complete and correct structures. Try to minimize freeze-thaw cycles as much as possible. Your scaffold will arrive at room temperature. This is the best time to perform any dilutions.

Experimentation:

- Always use aseptic techniques when performing experiments. This will minimize the chance of contamination.
- Always mix scaffold prior to use.
- Always have a scaffold only control when folding and running gels.

Gel Electrophoresis:

- The amount of scaffold and nanostructure loaded on a gel lane is critical. Too little and bands on the gel won't be visible. Too much and structures may collect in wells, smear during electrophoresis or get tangled creating false bands on the gel.
- For the scaffold control lane, Guild BioSciences recommends adding 2 µL of the 100 nM stock to a control lane. For nanostructures, it can depend on the size and shape of the structure. Generally, 10 µL of folded structures from reactions with 20 nM (final concentration) of scaffold and 10-fold excess staples yields a reliable result.
- Gels and buffer should contain Magnesium (ex: 10 – 12 mM MgCl₂)

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Scaffold sizes:

- Why does Guild BioSciences offer multiple sizes of its FOUNDATION™ ssDNA Scaffold? Different lengths allow researchers to tailor final structure size for desired applications. All scaffolds are based the M13mp18 sequence with additional nucleotides inserted into the ssDNA for longer lengths. Guild BioSciences currently offers M13mp18 (7249), 7308, 7560 and 8064.

This document will be updated as we identify additional helpful tips from interactions with customers. For the most up-to-date version of this document please visit: https://www.guldbiosciences.com/foundation_ssDNA.

If you need additional assistance please reach out to Guild BioSciences at info@guldbiosciences.com or 1-843-573-0095.

GOOD LUCK ON YOUR RESEARCH!

~Guild BioSciences' FOUNDATION™ ssDNA Scaffold Team

References:

Castro, C., Kilchherr, F., Kim, D. *et al.* A primer to scaffolded DNA origami. *Nat Methods* **8**, 221–229 (2011). <https://doi.org/10.1038/nmeth.1570>