FAQ: Sample quality: Which is the best buffer composition?

Is my buffer suitable for MST measurements?
Which substances can I use to improve my sample?

Potential buffer problems:

- **Sticking** to capillaries and/or reaction tubes
- **Aggregation/Precipitation** of your protein

To evaluate if your buffer is suitable for MST measurements, please perform the pretest according to the instructions given in our Monolith Starting Guide. Also refer to the Starting Guide for example pictures.

We recommend first trying the MST buffer containing 50 mM Tris-HCl pH 7.8, 150 mM NaCl, 10 mM $MgCl_2$, 0.05 % Tween-20 for your MST measurements.

To prevent sticking or aggregation, try the following substances:

- BSA (0.5 mg/ml)
- Tween-20 or Tween-80 (0.05 %)
- Pluronic F-127 (0.05 %)
- Brij 35 (0.01 %)
- DDM (0.05 %)
- NP-40 (0.05 - 0.1 %)
- Triton X-100 (0.05 %)
- Polylysin-PEG
- Igepal CA-630

If you encounter aggregation and precipitation of your protein, it might be necessary to optimize your buffer with regard to several different aspects:

- type of buffer substance (Tris, HEPES, Phosphate, …)
- pH
- concentration and type of salt (NaCl, KCl,…)
- co-factors (ATP, metal ions,…)
- reducing agents (DTT, TCEP,…)
- detergents (as listed above)
- additives (ions, polymers, sugars, arginine, urea, alcohols,…)

Please note: the lists above are not complete and just give an overview which parameters might be optimized. Moreover, the final buffer composition is unique to your protein and very much depends on the nature of your protein!