

Cesium Based Solution

Concen (mM)	Chemical	MW	Mass (mg, in 50ml)
125	Cesium Gluconate*		
5	TEA-Cl	165	41.3
10	HEPES	238	119
8	NaCl	58	23.2
5	QX314-Cl	299	74.7
4	Mg ²⁺ -ATP	507	101.4
2.5	CsCl	168	21
0.3	Na ₃ GTP	567	8.5
1	EGTA	380	19
10	P-Creatine	453	250

* In 40ml H₂O, add 2.45 g 49-53% Gluconic acid (Sigma G1951), then add 1.875 g CsOH (50-50% wt in H₂O, Sigma 232041)

Let sit 20min to achieve stable pH, then use CsOH to adjust pH to 7.2;

Add the rest chemicals, re-adjust pH to 7.2; Bring the total volume close to 50ml, measure the osmolarity, then adjust the volume to obtain 290mOsm

Then, use 10ml of the 50ml total volume to contain 0.3% biocytin (30mg->10ml; [Cs-Gluc+B](#))

Alternatively, use another 10ml to contain 0.05mM Alexa594 red dye (dilute from 10mM stock solution; [Cs-Gluc+594](#))

The remaining 30-40ml solution will be [Cs-Gluc](#) connect to syringe filter and aliquots three types of solution into 0.5ml tubes, each two drops (~150ul)

Potassium Based Solution

Concen (mM)	Chemical	MW	Mass (mg, in 50ml)
130	K ⁺ - Gluconate*	234	1521
4	KCl	74.5	15
2	NaCl	58	5.9
4	Mg ²⁺ -ATP	507	101.4
0.3	Na ₃ GTP	567	8.5
1	EGTA	380	19
10	HEPES	238	119
14	P-Creatine	453	315

•In ~46ml ddH₂O, dissolve the chemicals in the order listed individually, let sit 20min,

•use KOH/HCl to adjust pH to 7.2;

Bring the total volume close to 50ml, measure the osmolarity, then adjust the volume to obtain 290mOsm

Then, use 10ml of the 50ml total volume to contain 0.3% biocytin (30mg->10ml; K-Gluc+B)

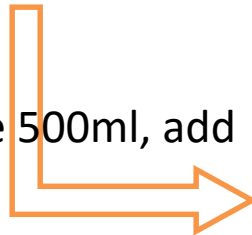
Alternatively, use another 10ml to contain 0.05mM Alexa594 red dye (dilute from 10mM stock solution; K-Gluc+594)

The remaining 30-40ml solution will be K-Gluc connect to syringe filter and aliquots three types of solution into 0.5ml tubes, each two drops (~150ul)

High sucrose cutting stock solution

Concen (mM)	Chemical	MW	Mass (g, in 2 liter s)
50	NaCl	58	5.8
2.5	KCl	74.5	0.373
0.5	CaCl ₂	111	1ml 1M stock
7	MgCl ₂ ·6H ₂ O	203	2.842
1.25	NaH ₂ PO ₄	120	0.3
25	NaHCO ₃	84	4.2
10	Glucose	180	3.6

Take 500ml, add



Cutting solution

150	Sucrose	342	25.65
3.1	Na Pyruvate	110	0.17