Bevan Lab standard internal solutions for electrophysiology

K-MeSO4 Internal Solution (chloride reversal = -83 mV)

	[] (M)	MW	g/100 ml
KCH3SO4	0.1300	150.2	1.9526
NaCl	0.0038	58.44	0.0222
MgCl2	0.0010	203.31	0.0203
HEPES	0.0100	238.31	0.2383
Phosphocreatine	0.0050	453.4	0.2267
Na4EGTA	0.0001	468.3	0.0047
	ATP and GTP are added on the day of the experiment		
Na3GTP	0.0004		20 µl/ml of 20 mM stock
Mg1.5ATP	0.0020		20 µl/ml of 100 mM stock

pH to 7.3 with 1 M KOH; dilute to 290 mmol/kg

For Ca2+ imaging leave out Na4EGTA

K-Gluconate Internal Solution-Bevan (chloride reversal = -83 mV)

	[] (mM)	MW	g/100 ml
K-Gluconate	0.1400	234.25	3.2795
NaCl	0.0038	58.44	0.0222
MgCl2	0.0010	203.31	0.0203
HEPES	0.0100	238.31	0.2383
Na4-EGTA	0.0001	468.3	0.0047
	ATP and GTP are added on the day of the experiment		
Na3GTP	0.0004		20 µl/ml of 20 mM stock
Mg1.5ATP	0.0020		20 µl/ml of 100 mM stock

pH to 7.3 with 1 M KOH; dilute to 290 mmol/kg

CsMeSO3 QX314

	[] (M)	MW	g/L	g/0.02913L	g/0.05826L
CsMeSO3	0.1200	228	27.36	0.7970	1.5940
NaCl	0.0028	58.44	0.16	0.0048	0.0095
HEPES	0.0100	238.3	2.38	0.0694	0.1388
TEA-Cl	0.0050	165.7	0.83	0.0241	0.0483
Na4EGTA	0.0004	468.3	0.19	0.0055	0.0109
QX314 HBr	0.0050	343.31	1.72	0.0500	0.1000
Phosphocreatine	0.0050	453.4	2.27	0.0660	0.1321
Spermine*	0.0001	202.34	1 mL	29.12 µL	58.26 µL
	ATP and GTP are added on the day of the experiment				
Na3GTP	0.0004		20 µl/ml of 20 mM stock		
Mg1.5ATP	0.0040		40 µl/ml of 100 mM stock		

pH to 7.3 with 1 M CsOH; dilute to 290 mmol/kg

Spermine stock solution

	[] (M)	MW	g/L	g/100mL	g/10mL
*** Spermine**	0.1	202.34	20.23	2.0234	0.2023

CsCl QX314 Internal Solution

	[] (M)	MW	g/L	g/0.02913L	g/0.05826L
CsCl	0.1350	168.4	22.73	0.6622	1.3245
NaCl	0.0036	58.44	0.21	0.0061	0.0123
MgCl2.6H20	0.0010	203.31	0.20	0.0059	0.0118
HEPES	0.0100	238.3	2.38	0.0694	0.1388
Na4EGTA	0.0001	468.3	0.05	0.0014	0.0027
QX314 HBr	0.0100	343.31	3.43	0.1000	0.2000
	ATP and GTP are added on the day of the experiment				
Na3GTP	0.0004		20 µl/ml of 20 mM stock		
Mg1.5ATP	0.0020		20 µl/ml of 100 mM stock		

pH to 7.3 with 1 M CsOH; dilute to 290 mmol/kg

HEPES-buffered SIF

	[] (M)	MW	g/1000 ml
NaCl	0.1400	58.44	8.1816
Glucose	0.0230	180.16	4.1437
HEPES	0.0150	238.31	3.5747
KCl	0.0030	74.55	0.2237
MgCl2	0.0015	203.31	0.3050
CaCl2	0.0016	147.02	0.2352

pH to 7.2 with 1 M NaOH; dilute to 300–310 mmol/kg