

TABLE 13. *Intracellular buffering power*

Preparation	Buffering Power, mmol · pH ⁻¹ · liter ⁻¹	Method	pH _i	Temperature, °C	Comments	Ref.
Squid giant axon	~20	Homog	~7	21	Estimated from titration curve	420
	9	NH ₃	7.3–7.8	22		42
	11	NH ₃	6.5	22		‡
Snail neuron	25	CO ₂	6.8–7.4	RT	pH _i range estimated from figures Microiontophoresis of HCO ₃ ⁻ Microiontophoresis of H ⁺ Pressure injection of HCl	429
	29.5	CO ₂	7.0–7.5	RT		430
	11	Inj	7.0–7.5	RT		430
	11	Inj	7.0–7.5	RT		430
	10	Inj	~7.3	18–20		283
Crayfish neuron	25	CO ₂	7.0–7.2	21		301
Barnacle photoreceptor	15	CO ₂	~7.3	20		57a
Rat brain, whole	18.5	Homog	7.1	37	Calculated from d log Pco ₂ /dpH	408
Crab muscle	47	CO ₂	7.0–7.3	20		9
Barnacle muscle	27.7	NH ₃	7.3	22	Least-squares β vs. pH _i fit	37
	28.5	CO ₂	6.9–7.5	22		37
	37.3	NH ₃	6.8	22		44
Frog sartorius muscle	35	CO ₂	6.85–7.05	25–26		35
Cat uterine muscle	36	Homog	6.8	0	*	140
Cat gastrocnemius muscle	58	Homog	6.8	0	*	140
Rat diaphragm muscle	67	Homog	6.3–7.1	37		171
Rat skeletal muscle	68	Homog	?	37.5	†	247
Mouse soleus muscle	43	CO ₂	6.8–7.2?	37		10
Pigeon breast muscle	77	Homog	6.3–7.3?	40	*	264
Pigeon leg muscle	65	Homog	6.3–7.3?	40	*	264
Chicken breast muscle	118	Homog	6.3–7.3?	40	*	264
Chicken leg muscle	55	Homog	6.3–7.3?	40	*	264
Cat cardiac muscle	23	Homog	6.8	0	*	140
Rat cardiac muscle	51	Homog	?	37.5	†	247
Sheep Purkinje fibers	35	CO ₂	6.8–7.2?	35		122
Ferret ventricular muscle	69	CO ₂	6.8–7.2?	35		122
Rat ventricular muscle	77	CO ₂	6.8–7.2?	35		122
Pigeon cardiac muscle	64	Homog	6.3–7.3?	40	*	264
Chicken cardiac muscle	58	Homog	6.3–7.3?	40	*	264
Salamander proximal tubule	36	NH ₃	6.7–7.4	22		40
<i>Xenopus</i> embryo	18	CO ₂	6.3–7.7	18–22		441

* Assume intracellular water 64% of tissue wet wt. † Assume intracellular water 85% of tissue water. ‡ Russell and Boron, unpublished data. Homog, homogenate; inj, microinjection; RT, room temperature.