TABLE 2. Membrane proteins of plasma membranes and endoplasmic reticulum

Protein[a]	Cell	Method of isolation	Molecular weight (native)	Chemical composition	Molecular weight (subunits)	Amino acid composition	Refs.
1. Spectrin or tektin A	human erythrocyte	EDTA or salt-free H_2O	460,000	—	2 chains: 220,000 240,000	+	27–30
"Actomyosin"	(most animal cells)	EDTA	~500,000	—	2 chains: ~230,000 ~40,000	+	31–34
Acetyl cholinesterase	(most animal cells)	detergent, DIFP			90,000	no	35
2. Major glycoprotein	(most animal cells)	phenol extraction, detergent	~10^6	65% carbohydrate	31,000 to 50,000	+	36–40
3. Minor glycoprotein	(most animal cells)	detergent		8% carbohydrate	100,000	+	41–43
Lipoprotein	(most animal cells)	sonication in 1-butanol	163,000 (lipid-free)	94% lipid	80,000	+	44
Glycoproteins	human platelets	trypsin	120,000 26,000	70% carbohydrate		+	45
Histocompatibility antigens	mouse spleen, human lymphocytes	papain	57,000 35,000	9% carbohydrate 8% carbohydrate		+	46–48
Histocompatibility antigens	human lymphocytes	sonication or detergent	34,600	—		no	49
4. $(Na^+ + K^+)$-ATPase	canine renal medulla, rabbit kidney, low brain	detergent	membrane bound	30% lipid	2 chains 90,000 55,000	+	50–52
5. Ca^{2+}-ATPase	sarcoplasmic recticulum	detergent	membrane bound	30% lipid	102,000	+	14, 53
6. Calsequestrin	sarcoplasmic recticulum	detergent	42,000	—	44,000	+	54
Cytochrome b_5	liver microsomes	lipase detergent	25,000		10,000 (fragment)	+ (sequence 3-D structure)	55–57
Cytochrome b_5 reductase	calf liver microsomes	snake venom	35,000	1 FAD		no	58
Cytochrome c reductase	pig liver microsomes	lipase	60,000–90,000	2 FAD		no	59
Acetylcholinesterase	electric eel	toluene extraction	260,000	—	$4 \times 64{,}000$ $\alpha_2\beta_2$	+	59a
Rhodopsin	frog retina, cow retina	detergent	membrane bound	1 retinal, 4% carbohydrate	40,000	+	60–63
7. Basic protein	bovine spinal cord myelin, human brain myelin	acid extraction	18,000	methylarginine	18,000	+ (sequence)	64, 65
8. Proteolipid	myelin: bovine, human, dog	chloroform-methanol or triton-salt	150,000	protein bound fatty acids	25,000	+	3, 66–69
ATPase	*M. lysodeikticus*	hypotonic washes	$s_{20,w} = 14.5$		$s_{20,w} = 3.55$ in SDS	no	70
ATPase	*S. faecalis*	hypotonic washes	385,000		6 β6	+	71
Nectin	*S. faecalis*	hypotonic washes	37,000		each = 32,000	no	72
9. Phosphokinase	*S. aureus*	butanol		lipid necessary for activity	17,000	+	73
10. Phosphotransferase enzyme II	*E. coli*	urea + 1-butanol. II-A (soluble) + IIB		phosphatidylglycerol for activity	IIB = 36,000	no	74, 75
Lactose permease	*S. aureus*	detergent			30,000	no	76
Rhodopsin-like protein	*Halobacterium halobium*	detergent		1 retinal; 25% lipid	26,000	+	17
11. Phospholipase A1	*E. coli*	SDS-butanol	60,000	active without lipid (?)	29,000	no	77
Cytochrome b_1	*E. coli*	sonication	500,000	8 heme residues	60,000	no	78
Galactosyltransferase	*S. typhimurium*	sonication	23,000	1–6% carbohydrate; requires phosphatidyl-ethanolamine for activity	23,000	+	78a

[a] The numbers on the left-hand side indicate proteins discussed in the text.

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