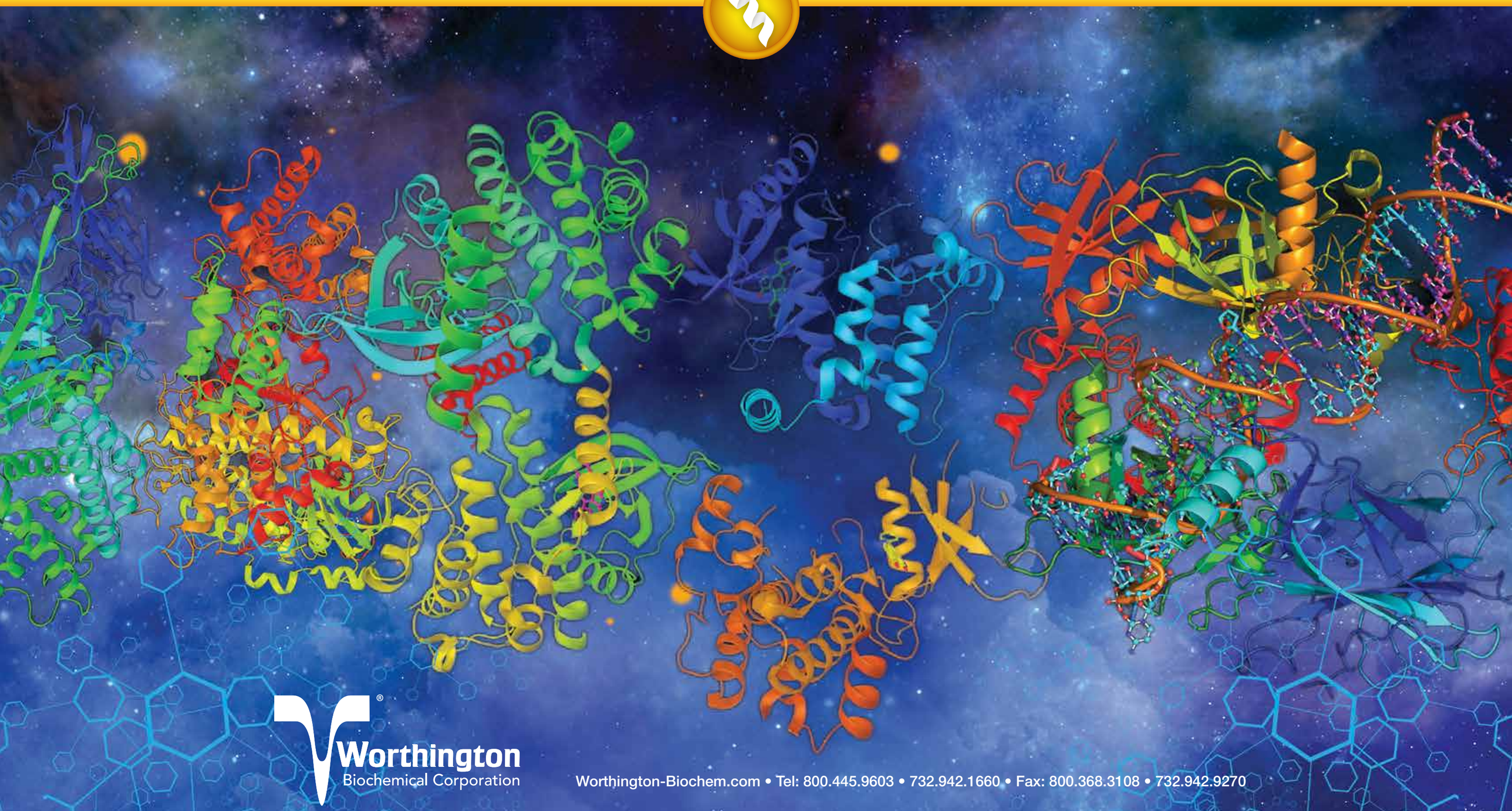
Proteases – Helping Define The Unknown Sequences



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Worthington Protease Products, Specifications and Applications Table

Enzyme	Specificity	Molecular Weight KDa	pH Optimum	Extinction Coefficient E1%, 280nm	Common Substrates	Activators	Inhibitors	Product Code/ Applications
Partially Purified for Tissue Dissociation and Protein Digestion								
Collagenase	-Pro-X-†-Gly-Pro-Y- X = neutral Y = nonspecific	68-130	6.3-7.5	13.20 (ColH, Theoretical) 13.40 (ColG, Theoretical)	Collagen FALGPA Wünsch	Ca^{2+}, Zn^{2+}	a2-macroglobulin Cysteine, histidine DTT, 2-mercapto EDTA, EGTA Hg^{2+} & other heavy metal ions *o*-phenanthroline	Tissue dissociation/ Primary cell isolation applications (see Tissue Dissociation Guide for specific references)
Elastase	Elastin, -X-†-Y- X = uncharged, nonaromatic Y = nonspecific	25.9	8.0-8.5	21.8 (Theoretical)	Casein Denatured collagen Elastin, Fibrin Suc-Ala3-NA	None required	a-antitrypsin DFP a2-macroglobulin PMSF	**ES/ESL**, suspension/ lyo powder, Tissue Dissociation/ Primary cell isolation applications (see Tissue Dissociation Guide for specific references)
Neutral Protease (Dispase®)	-X-†-Leu/Phe-†-Y- X/Y = nonspecific	36.0	5.9-7.0	13.96 (Theoretical)	BAEE Casein	Ca^{2+}, Mg^{2+}, Mn^{2+}, Fe^{2+}, and Al^{3+}	EDTA, EGTA Hg^{2+} & other heavy metal ions *o*-phenanthroline	**NPRO/NPRO2**, Tissue Dissociation/ Primary cell isolation and cell harvesting applications (see Tissue Dissociation Guide for specific references)
Papain	-X-†-Y- X = nonspecific but Arg, Lys and Phe preferred Y = nonspecific	23.0	6.0-7.0	22.88 (Theoretical)	BAEE	Cysteine EDTA Reducing agents GSH, NBS	AEBSF, Antipain Cystatin, Leupeptin a2-macroglobulin Hg^{2+} & other heavy metal ions DFP, PMSF TLCK, TPCK, E-64	**PAP/PAPL**, suspension/lyo powder, Neural tissue dissociation/ primary cell isolation applications (see Tissue Dissociation Guide for specific references) Antibody cleavage RBC modification
Pepsin	-X-†-Y- X = nonspecific but aromatic & hydrophobic preferred Y ≠ Ala, Gly, Val	34.6	1.0-4.0 unstable ≥5	14.39 (Theoretical)	Casein Hemoglobin	None required	Pepstatin A Diazoketones Epoxides	**PM**, Collagen bioprocessing/ purification Antibody cleavage
Proteinase K	-X-†-Y- X = nonspecific but aliphatic, aromatic & hydrophobic preferred Y = nonspecific	28.9	7.5-12	12.6 (Theoretical)	Casein Hemoglobin Keratin	Ca^{2+} Active in 0.5-1% SDS	DFP EGTA PMSF	**PROKR, PROKRS**, DNA/RNA purification
Trypsin	-X-†-Y- X = Arg, Lys Y = nonspecific	23.8	7.5-8.5	14.3	BAEE Casein TAME	Ca^{2+} Lanthanide	Aprotinin, Benzamidine DFP, EDTA, Leupeptin a2-macroglobulin PMSF, TLCK Trypsin Inhibitors (LBI, OI, SI/SIC)	Protein Digestion/ Sequencing (purified) Tissue dissociation/ Primary cell isolation applications (see Tissue Dissociation Guide for specific references)

Enzyme	Specificity	Molecular Weight KDa	pH Optimum	Extinction Coefficient E1%, 280nm	Common Substrates	Activators	Inhibitors	Product Code/ Applications
Proteases For Protein Sequencing								
Carboxy-peptidase B	H2-N-Rn-Y-†-X-COOH X = basic amino acids (Arg, Lys, Orn) Y = nonspecific	34.3	7.0-9.0	21.4 (Folk 1971)	Hippuryl-L-arginine	None required	EDTA Hg^{2+} & other heavy metal ions EDTA, EGTA *o*-phenanthroline	**COBC/**, Sequence analysis by successive cleavage of C-terminal basic amino acids Insulin production
Carboxy-peptidase Y	H2-N-Rn-Y-†-X-COOH X ,Y= non-specific, prefers aromatic	64.0	4.5-6.0	15.0 (Hayashi *et al.* 1973, and Kuhn *et al.* 1973)	ATEE Bz-Phe-Ala-Leu Z-Phe-Ala	None required	APCK, Aprotinin DFP 4-Hydroxymercu-ribenzoate PMSF	**COY,** C-terminal sequencing & Modification/labeling of peptides and proteins
Chymotrypsin TLCK treated	-X-†-Y- X = aromatic Y = nonspecific	25.6	7.8-8.0	20.57 (Theoretical)	ATEE BTEE	None required	a-antitrypsin Aprotinin DFP, PMSF, TPCK a2-macroglobulin	**CDSEQ, CDTLCK**, Sequence analysis Peptide synthesis, mapping/finger-printing
Endo-Arg-C (Clostripain)	-Arg-†-Y- Y = nonspecific	53	7.4-7.8	16.57 (Theoretical)	BAEE	Ca^{2+} Reducing agents	EDTA, TLCK, Tris Hg^{2+} & other heavy metal ions	**CPSEQ, CP,** Peptide mapping & synthesis Sequence analysis Hydrolysis/ condensation of amide bonds
Endo-Glu-C (Staph. Protease V8)	-Glu-†-Y- (NH4 buffers pH 4, 7.8) -Asp-†-Y- (PO4 buffer pH 7.8)	27.0	4.0 & 7.8	4.26 (Houmard 1976)	Casein Z-Phe-Leu-Glu-4NA	None required	DFP F-, Cl-, Br-, CH3COO- NO3- a2-macroglobulin	**STSEQ, STAP**, Peptide mapping & sequence analysis
Endo-Lys-C	-Lys-+-Y- Y= nonspecific	30.0	7.0-9.0	18.63 (Theoretical)	N-p-Tosyl-Gly-Pro-Lys pNA	None required	DFP, TLCK, Aprotinin, Leupeptin	**LYS-C, LYSEQ**, Peptide mapping and sequence analysis
SequENZ® Trypsin, Sequencing Grade, Modified	-X-†-Y- X = Arg, Lys Y = nonspecific	23.8	7.5-8.5	14.3	BAEE Casein TAME	Ca^{2+} Lanthanide	Aprotinin, Benzamidine DFP, EDTA, Leupeptin a2-macroglobulin PMSF, TLCK Trypsin Inhibitors (egg white, lima bean, pancreatic, soybean)	**TRSEQZ**, Modified Sequencing Grade, chemically modified to reduce autolysis Peptide mapping & sequence analysis Cleavage fusion proteins
Trypsin, Sequencing Grade, Native								**TRSEQII**, Sequencing Grade, Native, Peptide mapping & sequence analysis Cleavage fusion proteins
Trypsin, TPCK Treated								**TRTPCK, TPCK Treated**, Peptide mapping & sequence analysis Cleavage fusion proteins