

**Table S9D.** Transporters in the NP-SAG (*Co. Nitromaritima* sp. NP) genome.

Function TC	ORF Name	Family ID	Transporter Family	Subfamily	Substrate/Function
3.A.1	NspL16_00034	ABC	The ATP-binding Cassette (ABC) Superfamily		binding phosphonate
3.A.1	NspL16_00035	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
3.A.1	NspL16_00036	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	cell division
2.A.64	NspL16_00059	Tat	The Twin Arginine Targeting (Tat) Family		protein export
3.A.1	NspL16_00085	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
3.A.1	NspL16_00086	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	efflux (antimicrobial peptide?)
2.A.66	NspL16_00124	MOP	The Multidrug/Oligosaccharidyl-lipid/Polysaccharide (MOP) Flippase Superfamily	MVF	virulence factor MvIN
9.A.19	NspL16_00136	MgtE	The Mg <sup>2+</sup> Transporter-E (MgtE) Family		magnesium ion
3.A.1	NspL16_00167	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipid A
2.A.7	NspL16_00171	DMT	The Drug/Metabolite Transporter (DMT) Superfamily		drug/metabolite?
3.A.1	NspL16_00193	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	daunorubicin
4.A	NspL16_00196	SSPTS	Sugar Specific PTS	EnzymelIA	fructose
4.A	NspL16_00198	GPTS	General PTS	Enzymel	
3.A.1	NspL16_00205	ABC	The ATP-binding Cassette (ABC) Superfamily	binding protein	oligopeptide
3.A.1	NspL16_00206	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00207	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00208	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	glycine betaine
2.A.21	NspL16_00234	SSS	The Solute: Sodium Symporter (SSS) Family		sodium ion:proline symporter
2.A.66	NspL16_00238	MOP	The Multidrug/Oligosaccharidyl-lipid/Polysaccharide (MOP) Flippase Superfamily	PST	polysaccharide export
1.A.46	NspL16_00242	Bestrophin	The Anion Channel-forming Bestrophin (Bestrophin) Family		Bestrophin anion channel
3.A.15	NspL16_00265	MTB	The Outer Membrane Protein Secreting Main Terminal Branch (MTB)		
2.A.1	NspL16_00399	MFS	The Major Facilitator Superfamily (MFS)		nitrate
3.A.1	NspL16_00412	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	glycine betaine
2.A.9	NspL16_00455	Oxa1	The Cytochrome Oxidase Biogenesis (Oxa1) Family		60 KD inner membrane protein OxaA homolog
2.A.47	NspL16_00469	DASS	The Divalent Anion:Na <sup>+</sup> Symporter (DASS) Family		sodium ion:dicarboxylate/sulfate
2.A.1	NspL16_00486	MFS	The Major Facilitator Superfamily (MFS)		multidrug efflux
3.A.1	NspL16_00490	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00491	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00492	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	phosphonate
9.A.6	NspL16_00499	ATP-E	The ATP Exporter (ATP-E) Family		
2.A.64	NspL16_00521	Tat	The Twin Arginine Targeting (Tat) Family		protein export
3.A.10	NspL16_00533	H <sup>+</sup> -PPase	The H <sup>+</sup> -translocating Pyrophosphatase (H <sup>+</sup> -PPase) Family		proton (vacuolar)
3.A.1	NspL16_00556	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	toluene tolerance
2.A.22	NspL16_00560	NSS	The Neurotransmitter:Sodium Symporter (NSS) Family		sodium ion:solute symporter
3.A.1	NspL16_00571	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
3.A.1	NspL16_00572	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	lipoprotein releasing
3.A.1	NspL16_00573	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	lipoprotein releasing
3.A.1	NspL16_00579	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	iron-hydroxamate
3.A.1	NspL16_00647	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00648	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	dipeptide/oligopeptide
3.A.1	NspL16_00672	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	leucine/valine
3.A.6	NspL16_00680	IIIIS	The Type III (Virulence-related) Secretory Pathway (IIIIS) Family		
2.A.50	NspL16_00692	GUP	The Glycerol Uptake (GUP) Family		glycerol:proton symporter
2.A.1	NspL16_00733	MFS	The Major Facilitator Superfamily (MFS)		multidrug efflux?
2.A.28	NspL16_00743	BASS	The Bile Acid:Na <sup>+</sup> Symporter (BASS) Family		sodium ion?
2.A.19	NspL16_00752	CaCA	The Ca <sup>2+</sup> :Cation Antiporter (CaCA) Family		sodium ion:calcium ion antiporter
2.A.41	NspL16_00759	CNT	The Concentrative Nucleoside Transporter (CNT) Family		sodium ion:nucleoside symporter
1.A.30	NspL16_00764	Mot/Exb	The H <sup>+</sup> - or Na <sup>+</sup> -translocating Bacterial Flagellar Motor 1ExbBD Outer Membrane Transport Energizer (Mo		
1.B.6	NspL16_00766	OOP	The OmpA-OmpF Porin (OOP) Family		
2.A.1	NspL16_00767	MFS	The Major Facilitator Superfamily (MFS)		Acetyl-CoA:CoA antiporter
2.A.64	NspL16_00777	Tat	The Twin Arginine Targeting (Tat) Family		protein export
3.A.1	NspL16_00812	ABC	The ATP-binding Cassette (ABC) Superfamily	ABC+ membrane	multidrug
1.B.6	NspL16_00822	OOP	The OmpA-OmpF Porin (OOP) Family		
1.A.30	NspL16_00823	Mot/Exb	The H <sup>+</sup> - or Na <sup>+</sup> -translocating Bacterial Flagellar Motor 1ExbBD Outer Membrane Transport Energizer (Mo		
3.A.1	NspL16_00824	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	glycine betaine
3.A.1	NspL16_00825	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	phosphate
2.A.4	NspL16_00827	CDF	The Cation Diffusion Facilitator (CDF) Family		cation efflux
9.A.10	NspL16_00836	ILT	The Iron/Lead Transporter (ILT) Superfamily		iron ion
2.A.25	NspL16_00860	AGCS	The Alanine or Glycine:Cation Symporter (AGCS) Family		sodium ion:alanine symporter
1.A.30	NspL16_00874	Mot/Exb	The H <sup>+</sup> - or Na <sup>+</sup> -translocating Bacterial Flagellar Motor 1ExbBD Outer Membrane Transport Energizer (Mo		
3.A.1	NspL16_00878	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	cobalt
1.A.1	NspL16_00887	VIC	The Voltage-gated Ion Channel (VIC) Superfamily		potassium ion channel
2.A.6	NspL16_00894	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily	HAE3	multidrug/solvent efflux (HAE3 subfamily)
3.A.1	NspL16_01010	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	efflux (antimicrobial peptide?)
3.A.1	NspL16_01011	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	efflux (antimicrobial peptide?)
3.A.1	NspL16_01012	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
2.A.6	NspL16_01013	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily		multidrug efflux
9.A.4	NspL16_01028	YggT	The YggT or Fanciful K <sup>+</sup> Uptake-B (FkuB; YggT) Family		?
3.A.1	NspL16_01045	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	? (Fe-S assembly/SufBCD system)
3.A.1	NspL16_01046	ABC	The ATP-binding Cassette (ABC) Superfamily	ABC	? (Fe-S assembly/SufBCD system)
3.A.1	NspL16_01047	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	? (Fe-S assembly/SufBCD system)
3.A.1	NspL16_01057	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	phosphate
3.A.1	NspL16_01058	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	phosphonate
3.A.1	NspL16_01059	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	branched-chain amino acid
3.A.1	NspL16_01060	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	branched-chain amino acid
3.A.1	NspL16_01061	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	branched-chain amino acid
3.A.1	NspL16_01062	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	urea
2.A.20	NspL16_01078	PIT	The Inorganic Phosphate Transporter (PIT) Family		phosphate
2.A.6	NspL16_01082	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily	HME	cobalt/zinc/cadmium ion efflux (HME subfamily)
3.A.7	NspL16_01099	IVSP	The Type IV (Conjugal DNA-Protein Transfer or VirB) Secretory Pathway (IVSP) Family		
1.A.11	NspL16_01109	Amt	The Ammonia Transporter Channel (Amt) Family		ammonium
2.A.64	NspL16_01115	Tat	The Twin Arginine Targeting (Tat) Family		protein export
2.A.1	NspL16_01185	MFS	The Major Facilitator Superfamily (MFS)		multidrug efflux?
2.A.40	NspL16_01200	NCS2	The Nucleobase:Cation Symporter-2 (NCS2) Family		xanthine/uracil
2.A.6	NspL16_01217	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily	SecDF	protein export (SecDF)
3.A.1	NspL16_01223	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	lipoprotein releasing
2.A.21	NspL16_01250	SSS	The Solute: Sodium Symporter (SSS) Family		sodium ion:proline symporter
3.A.1	NspL16_01276	ABC	The ATP-binding Cassette (ABC) Superfamily	ABC+ membrane	multidrug
2.A.23	NspL16_01292	DAACS	The Dicarboxylate/Amino Acid:Cation (Na <sup>+</sup> or H <sup>+</sup> ) Symporter (DAACS) Family		proton/sodium ion:glutamate/aspartate symporter
2.A.1	NspL16_01301	MFS	The Major Facilitator Superfamily (MFS)		multidrug efflux
3.A.1	NspL16_01303	ABC	The ATP-binding Cassette (ABC) Superfamily	binding protein	?
3.A.15	NspL16_01316	MTB	The Outer Membrane Protein Secreting Main Terminal Branch (MTB)		
3.A.15	NspL16_01317	MTB	The Outer Membrane Protein Secreting Main Terminal Branch (MTB)		
3.A.15	NspL16_01318	MTB	The Outer Membrane Protein Secreting Main Terminal Branch (MTB)		

3.A.1	NspL16_01333	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	lipoprotein releasing
3.A.1	NspL16_01334	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
3.A.1	NspL16_01338	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipid A
3.A.15	NspL16_01342	MTB	The Outer Membrane Protein Secreting Main Terminal Branch (MTB)		
2.A.49	NspL16_01401	CIC	The Chloride Carrier/Channel (CIC) Family		chloride ion channel
3.A.3	NspL16_01404	P-ATPase	The P-type ATPase (P-ATPase) Superfamily		zinc/cadmium/cobalt ion
2.A.1	NspL16_01437	MFS	The Major Facilitator Superfamily (MFS)		multidrug efflux
3.A.6	NspL16_01446	IIISP	The Type III (Virulence-related) Secretory Pathway (IIISP) Family		
3.A.6	NspL16_01447	IIISP	The Type III (Virulence-related) Secretory Pathway (IIISP) Family		
3.A.6	NspL16_01448	IIISP	The Type III (Virulence-related) Secretory Pathway (IIISP) Family		
3.A.6	NspL16_01449	IIISP	The Type III (Virulence-related) Secretory Pathway (IIISP) Family		
3.A.6	NspL16_01450	IIISP	The Type III (Virulence-related) Secretory Pathway (IIISP) Family		
2.A.6	NspL16_01479	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily	HAE3	multidrug/solvent efflux (HAE3 subfamily)
2.A.64	NspL16_01481	Tat	The Twin Arginine Targeting (Tat) Family		protein export
3.A.1	NspL16_01514	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	phosphonate
9.A.40	NspL16_01550	HCC	The HlyC/CorC (HCC) Family		hemolysin C (HlyC) homolog
9.A.40	NspL16_01551	HCC	The HlyC/CorC (HCC) Family		hemolysin C (HlyC) homolog
3.A.1	NspL16_01576	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	iron-hydroxamate
3.A.1	NspL16_01577	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	phosphonate
3.A.1	NspL16_01578	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	cobalamin/Fe3+-siderophores
2.A.37	NspL16_01593	CPA2	The Monovalent Cation:Proton Antiporter-2 (CPA2) Family		potassium/sodium ion:proton antiporter
3.A.1	NspL16_01599	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	lipoprotein
2.A.43	NspL16_01607	LCT	The Lysosomal Cystine Transporter (LCT) Family		
2.A.6	NspL16_01676	RND	The Resistance-Nodulation-Cell Division (RND) Superfamily	HAE3	multidrug/solvent efflux (HAE3 subfamily)
3.A.1	NspL16_01701	ABC	The ATP-binding Cassette (ABC) Superfamily	binding protein	oligopeptide
2.A.50	NspL16_01739	GUP	The Glycerol Uptake (GUP) Family		glycerol:proton symporter
9.A.19	NspL16_01851	MgtE	The Mg2+ Transporter-E (MgtE) Family		magnesium ion
1.A.23	NspL16_01854	MscS	The Small Conductance Mechanosensitive Ion Channel (MscS) Family		small-conductance mechanosensitive ion channel
1.A.23	NspL16_01882	MscS	The Small Conductance Mechanosensitive Ion Channel (MscS) Family		small-conductance mechanosensitive ion channel
1.A.1	NspL16_01931	VIC	The Voltage-gated Ion Channel (VIC) Superfamily		potassium ion channel
3.A.1	NspL16_01946	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	?
1.A.34	NspL16_02023	EVE1-C	The Envelope Virus E1 Channel (EVE1-C) Family		
9.A.19	NspL16_02034	MgtE	The Mg2+ Transporter-E (MgtE) Family		magnesium ion
2.A.21	NspL16_02062	SSS	The Solute:Sodium Symporter (SSS) Family		sodium ion:proline symporter
2.A.47	NspL16_02166	DASS	The Divalent Anion:Na+ Symporter (DASS) Family		sodium ion:dicarboxylate/sulfate
2.A.21	NspL16_02188	SSS	The Solute:Sodium Symporter (SSS) Family		sodium ion:proline symporter
3.A.1	NspL16_02217	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	molybdate
3.A.1	NspL16_02218	ABC	The ATP-binding Cassette (ABC) Superfamily	membrane	molybdate
3.A.1	NspL16_02219	ABC	The ATP-binding Cassette (ABC) Superfamily	binding	molybdenate
2.A.44	NspL16_02239	FNT	The Formate-Nitrite Transporter (FNT) Family		formate/nitrite
3.A.1	NspL16_02263	ABC	The ATP-binding Cassette (ABC) Superfamily	ABC	? (Uup homolog/duplicated ATPase)