

## < Supplementary Materials >

### ***De novo* genome assembly of the sea star *Patiria pectinifera* (Muller & Troschel, 1842) using Oxford Nanopore Technology and Illumina platforms**

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**Table S1.** Statistics on sequencing data generated for *Patiria pectinifera* genome assembly.

Platform	Number of bases	Number of reads	N50	Mean read length	Max read length
PromethION	59,829,552,714	13,848,344	9,618	4,320	184,534
Illumina	23,688,630,548	156,878,348	-	-	151

**Table S2.** Statistics for the gene annotation in the *Patiria pectinifera* genome.

	ARCS
Gene Length Sum (bp)	301,691,716
Gene Count	17,334
Exon Length Sum (bp)	32,514,475
Exon Count	152,041
CDS Length Sum (bp)	28,716,363
CDS Count	149,103
Blast nrDB	17,082
Uniprot/Swiss-prot Annotations	10,003
Gene Ontology Annotations	12,698
KEGG Annotations	7,880
InterProScan Annotations	14,323
Pfam Annotations	8,915
TmHMM Annotation	4,833
EggNOG Annotations	11,351
1 > Databases	15,444

**Table S3.** Statistics for repetitive elements identified in the *Patiria pectinifera* genome.

Repeat classes		<i>Patiria pectinifera</i>			<i>Patiria miniata</i>			<i>Acanthaster planci</i>			<i>Asterias rubens</i>		
Class		Count	Masked (bp)	Masked (%)	Count	Masked (bp)	Masked (%)	Count	Masked (bp)	Masked (%)	Count	Masked (bp)	Masked (%)
<b>DNA</b>		5,842	1,414,531	0.28%	11,180	4,496,481	0.74%	4,720	861,563	0.22%	6,929	996,285	0.24%
	Academ-1	6,381	1,548,125	0.31%	9,567	2,469,193	0.41%	217	92,387	0.02%	2,119	390,471	0.09%
	Academ-2				113	25,242	0.00%	103	34,658	0.01%			
	CMC-Chapaev	179	31,562	0.01%	28	20,141	0.00%	49	37,880	0.01%	204	81,897	0.02%
	CMC-Chapaev-3							39	6,808	0.00%			
	CMC-EnSpm	3,568	788,869	0.16%	14,405	2,357,774	0.39%	3,406	443,177	0.12%	1,282	352,582	0.08%
	CMC-Transib	112	63,609	0.01%	260	127,681	0.02%				133	63,830	0.02%
	Crypton-A	7,104	1,229,456	0.25%	10,067	2,225,128	0.37%	1,566	189,501	0.05%	4,921	1,120,538	0.27%
	Crypton-H	217	53,309	0.01%				21	3,144	0.00%			
	Crypton-V				155	26,112	0.00%	1,024	309,958	0.08%	53	76,018	0.02%
	Ginger-2	487	72,622	0.01%	300	33,133	0.01%	96	16,755	0.00%	143	16,039	0.00%
	IS3EU	1,379	259,094	0.05%	3,115	691,400	0.11%	1,065	246,171	0.06%	112	25,050	0.01%
	Kolobok-Hydra				76	73,050	0.01%	160	9,154	0.00%	1,203	266,627	0.06%
	Kolobok-T2	519	67,377	0.01%	2,800	733,899	0.12%				591	196,527	0.05%
	MULE-MuDR	12,440	1,419,288	0.28%	8,728	1,247,743	0.21%	4,785	850,142	0.22%	3,583	1,008,590	0.24%
	Maverick	1,759	2,099,196	0.42%	83	44,470	0.01%	3,533	2,357,883	0.61%	95	27,179	0.01%
	Merlin				469	1,354,891	0.22%	151	16,439	0.00%	70	39,685	0.01%
	P	1,673	261,065	0.05%	84	7,602	0.00%	598	161,948	0.04%			
	PIF-HarbS							50	12,925	0.00%			
	PIF-Harbinger	2,984	795,620	0.16%	6,176	1,130,592	0.19%	856	196,383	0.05%	585	214,993	0.05%
	PIF-ISL2EU	1,456	296,592	0.06%	388	41,966	0.01%	225	61,738	0.02%			
	PiggyBac	2,229	369,359	0.07%	2,453	411,604	0.07%	973	238,323	0.06%	124	77,680	0.02%
	Sola-1	526	167,598	0.03%	794	543,870	0.09%						
	Sola-2	2,566	910,762	0.18%	7,303	1,743,007	0.29%	1,385	253,554	0.07%	1,035	395,430	0.09%
	Sola-3	575	324,419	0.07%	530	198,438	0.03%						
	TcMar				315	109,136	0.02%	82	10,996	0.00%			
	TcMar-ISRm11	3,036	897,913	0.18%	3,991	1,172,210	0.19%	635	212,453	0.06%	2,898	535,955	0.13%

	TcMar-Pogo	1,090	176,618	0.04%	1,222	219,124	0.04%	1,784	356,747	0.09%			
	TcMar-Tc1	836	171,274	0.03%	1,387	366,669	0.06%	2,852	694,948	0.18%	1,791	444,841	0.11%
	TcMar-Tc2	1,764	588,844	0.12%	2,453	1,321,984	0.22%	398	78,205	0.02%	1,021	239,109	0.06%
	TcMar-Tigger	672	82,491	0.02%	1,246	173,104	0.03%	125	26,001	0.01%	2,790	326,569	0.08%
	Zator	21,186	4,697,247	0.94%	25,915	5,374,268	0.88%	2,952	800,419	0.21%	3,757	594,697	0.14%
	hAT	1,796	445,049	0.09%	3,309	846,634	0.14%	660	203,167	0.05%	4,502	615,434	0.15%
	hAT-Ac	14,719	2,552,176	0.51%	22,749	4,341,455	0.71%	8,785	1,852,322	0.48%	872	144,164	0.03%
	hAT-Blackjack	9,506	2,087,488	0.42%	13,474	3,556,665	0.58%	1,273	307,401	0.08%	1,807	215,700	0.05%
	hAT-Charlie	307	132,632	0.03%	1,083	125,200	0.02%	96	11,690	0.00%	141	37,816	0.01%
	hAT-Tag1	1,126	236,550	0.05%	658	81,605	0.01%	549	139,311	0.04%	1,127	343,055	0.08%
	hAT-Tip100	11,476	2,143,618	0.43%	14,410	2,491,353	0.41%	4,683	889,240	0.23%	474	158,854	0.04%
	hAT-hAT19										121	53,802	0.01%
	hAT-hAT5	1,834	270,129	0.05%	1,580	259,614	0.04%	1,529	235,249	0.06%	137	21,201	0.01%
	hAT-hAT6	223	17,690	0.00%	74	10,678	0.00%				634	145,022	0.03%
	hAT-hATw							225	59,577	0.02%			
	hAT-hATx							117	80,220	0.02%			
LINE		379	212,180	0.04%	684	124,394	0.02%	50	19,469	0.01%	207	30,266	0.01%
	CR1	3,817	744,857	0.15%	6,777	1,592,001	0.26%	2,444	680,758	0.18%	12,730	2,016,198	0.48%
	CR1-Zenon	176	35,563	0.01%	288	63,806	0.01%	29	3,882	0.00%	348	55,888	0.01%
	CRE-Ambal										89	35,551	0.01%
	Dong-R4				31	9,898	0.00%	31	17,282	0.00%	1,078	361,595	0.09%
	I	1,003	418,202	0.08%	79	62,374	0.01%	320	270,663	0.07%			
	I-Jockey	1,582	584,744	0.12%	5,227	1,267,329	0.21%	398	95,268	0.02%	1,723	446,875	0.11%
	L1	648	319,984	0.06%	4,272	1,392,875	0.23%	277	158,678	0.04%	125	14,468	0.00%
	L1-Tx1	4,401	857,499	0.17%	3,995	650,067	0.11%	4,207	661,147	0.17%	821	241,507	0.06%
	L2	15,073	2,522,280	0.51%	15,985	3,175,169	0.52%	24,494	3,065,837	0.80%	29,576	5,562,663	1.33%
	Penelope	5,876	1,459,695	0.29%	10,020	3,022,512	0.50%	4,025	1,112,629	0.29%	4,735	1,172,310	0.28%
	Proto2	36	9,023	0.00%									
	R1-LOA							60	16,639	0.00%			
	R2-NeSL				79	82,180	0.01%	31	12,560	0.00%			
	R2-Hero	42	25,193	0.01%	93	45,198	0.01%				58	10,344	0.00%

LTR	RTE-BovB	5,016	1,208,223	0.24%	4,232	1,908,876	0.31%	886	422,426	0.11%	4,496	942,329	0.23%
	RTE-RTE	154	65,408	0.01%	192	79,225	0.01%				3,470	396,606	0.09%
	RTE-X	83	31,805	0.01%							160	38,526	0.01%
	Rex-Babar	1,558	438,686	0.09%	2,033	668,434	0.11%	1,032	338,850	0.09%	2,729	508,000	0.12%
		535	29,732	0.01%							1,120	126,732	0.03%
	Caulimovirus	473	80,692	0.02%	1,158	297,713	0.05%				45	12,436	0.00%
	Copia	2,119	911,159	0.18%	3,536	1,182,038	0.19%	1,607	402,589	0.10%	982	233,442	0.06%
	DIRS	2,971	926,812	0.19%	4,116	1,788,789	0.29%	2,821	1,432,384	0.37%	4,535	1,677,849	0.40%
	ERV1	6	1,228	0.00%				83	26,488	0.01%	1,818	161,034	0.04%
	ERV4	456	202,562	0.04%	308	105,863	0.02%						
	ERVK	318	315,880	0.06%	178	53,951	0.01%	107	51,570	0.01%	242	90,872	0.02%
	Gypsy	26,838	12,583,090	2.52%	38,894	18,447,746	3.03%	9,707	2,109,810	0.55%	12,198	4,600,868	1.10%
	Ngaro	2,147	685,548	0.14%	3,022	949,388	0.16%	2,013	828,352	0.22%	8,339	944,640	0.23%
	Pao	413	643,911	0.13%	1,802	637,566	0.10%	1,719	434,557	0.11%	147	49,204	0.01%
	unknown	68,069	12,102,146	2.43%	39,097	8,378,310	1.38%	379	117,367	0.03%	37,338	3,193,495	0.76%
RC													
SINE	Helitron	10,292	2,999,931	0.60%	12,574	3,186,280	0.52%	730	112,229	0.03%	1,754	486,564	0.12%
		1,033	91,436	0.02%							942	79,756	0.02%
	5S-Deu-L2	1,498	316,119	0.06%							21,524	2,470,497	0.59%
	Alu										191	19,230	0.00%
	B2							975	252,265	0.07%			
	MIR	19,648	4,151,487	0.83%	25,988	4,942,793	0.81%	3,648	704,284	0.18%	48,491	7,043,830	1.69%
	tRNA	1,648	182,875	0.04%	1,395	524,043	0.09%				21,134	2,307,199	0.55%
	tRNA-Core	230	50,698	0.01%	6,037	419,663	0.07%	83	55,624	0.01%	260	17,538	0.00%
	tRNA-Deu	490	32,025	0.01%							9,297	1,052,915	0.25%
	tRNA-Deu-CR1	4,848	952,426	0.19%	4,631	956,186	0.16%						
	tRNA-Deu-L2	3,353	799,056	0.16%	5,888	1,176,235	0.19%				10,477	1,258,137	0.30%
	tRNA-L2										6,416	834,202	0.20%
	tRNA-Meta	7,111	818,500	0.16%	12,740	2,036,071	0.33%				14,584	1,888,649	0.45%
	tRNA-Rex	352	61,973	0.01%							2,133	482,172	0.12%
	tRNA-V	2,948	458,897	0.09%	2,925	454,839	0.07%	4,326	859,152	0.22%	1,215	152,951	0.04%

	tRNA-V-CR1										3,861	391,943	0.09%
	tRNA-V- Core-L2										1,412	126,453	0.03%
<b>Unknown</b>		722,482	155,455,390	31.17%	869,929	205,609,124	33.80%	399,290	80,015,764	20.86%	802,360	133,214,604	31.90%
	Total interspersed	1,042,396	230,717,756	46.26%	1,262,468	306,115,365	50.32%	517,539	106,636,960	27.79%	1,120,635	183,986,722	44.06%
Low_complexity		479,257	0		11,676	598,998	0.10%	6,311	294,823	0.08%	10,343	515,457	0.12%
Satellite		3,734	1,209,123	0.24%	4,554	1,332,430	0.22%	781	216,766	0.06%	15,756	2,023,338	0.48%
Simple_repeat		2,908,314	0		80,191	4,228,331	0.70%	34,867	1,490,287	0.39%	72,594	3,422,698	0.82%
rRNA		124	82,458	0.02%	153	271,329	0.04%	159	99,740	0.03%	56	14,416	0.00%
tRNA		7,580	1,004,033	0.20%	12,265	1,665,294	0.27%	4,333	549,940	0.14%	12,538	1,583,110	0.38%
Total		1,121,079	236,556,532	47.43%	1,371,307	314,211,747	51.65%	563,990	109,288,516	28.48%	1,231,922	191,545,741	45.87%