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ชุมสาย สมพงษ์ 2517. การศึกษาการเจริญเติบโตขั้นต้นของปลากัดไทย (Betta splendens) (The Early Embryonic Development of Siamese Fighting Fish Betta splendens) วิทยานิพนธ์ ปริญญามหาบัณฑิต แผนกวิชาชีววิทยา จุฬาลงกรณมหาวิทยาลัย (อัดสำเนา)

ภาคผนวก

ตารางที่ 1 แสดงค่า Longour relative ของโครโมโซมแต่ละคู่จากการศึกษาเซลล์ในระยะ Metaphase ของปลากัดไทยพวกหางและครีบสั้น 20 เซลล์

No. of cells	No. of Chromosome pairs																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	.03654	.03219	.03045	.02697	.02668	.02581	.02436	.02436	.02320	.02320	.02262	.02320	.02233	.02088	.02088	.02059	.02059	.01972	.01943	.01856	.01743
2	.03332	.03217	.03188	.02757	.02700	.02642	.02527	.02527	.02413	.02355	.02384	.02292	.02212	.02125	.02097	.02210	.01924	.02867	.02838	.01838	.01752
3	.03739	.03653	.03454	.02712	.02655	.02626	.02511	.02397	.02312	.02283	.02198	.02286	.02286	.02111	.02083	.01941	.01855	.01826	.01741	.01712	.01627
4	.03844	.03618	.03477	.02685	.02600	.02600	.02516	.02487	.02346	.02233	.02092	.02092	.02092	.02035	.02035	.02035	.02092	.01837	.01837	.01783	.01668
5	.03721	.03373	.03212	.02864	.02677	.02752	.02463	.02463	.02463	.02302	.02141	.02355	.02302	.02141	.01927	.01927	.01927	.01927	.01820	.01820	.01606
6	.03531	.03189	.03189	.02733	.02563	.02506	.02478	.02421	.02278	.02250	.02278	.02278	.02278	.02107	.02022	.02022	.02050	.02050	.01993	.01936	.01822
7	.03813	.03519	.03226	.02640	.02552	.02317	.02405	.02257	.02346	.02287	.02199	.02170	.02170	.02111	.02111	.02111	.02053	.02053	.01994	.01935	.01819
8	.03813	.03519	.03226	.02640	.02552	.02229	.02405	.02257	.02346	.02287	.02199	.02170	.02170	.02134	.02111	.02111	.02053	.02053	.01994	.01935	.01819
9	.03670	.03404	.03191	.02793	.02691	.02606	.02500	.02447	.02340	.02340	.02340	.02287	.02258	.02048	.02021	.01968	.01915	.01889	.01889	.01782	.01676
10	.03672	.03485	.03236	.02739	.02676	.02552	.02614	.02489	.02302	.02240	.02179	.02179	.02178	.02085	.02054	.01991	.01991	.02054	.01898	.01742	.01649
11	.03739	.03543	.03354	.02787	.02551	.02456	.02409	.02409	.02409	.02339	.02267	.02267	.02244	.02031	.01984	.01984	.01889	.01889	.01889	.01909	.01701
12	.03731	.03428	.03297	.02863	.02625	.02816	.02473	.02452	.02386	.02300	.02256	.02235	.02148	.02082	.02061	.02039	.01996	.01909	.01822	.01735	.01649
13	.03864	.03367	.03339	.02843	.02677	.02594	.02484	.02428	.02373	.02318	.02208	.02208	.02208	.02079	.02097	.02097	.01984	.01876	.01794	.01711	.01581
14	.03845	.03726	.03536	.02729	.02634	.02563	.02373	.02278	.02278	.02231	.02207	.02136	.02088	.01970	.01993	.01946	.01993	.01922	.01946	.01898	.01709
15	.03634	.03483	.03037	.02713	.02539	.02564	.02414	.02389	.02381	.02290	.02290	.02290	.02190	.02091	.02091	.02091	.02066	.02041	.01916	.01792	.01692
16	.03635	.03413	.02970	.02704	.02593	.02527	.02482	.02394	.02372	.02327	.02305	.02305	.02283	.02106	.02128	.02150	.01950	.01950	.01862	.01817	.01729
17	.03443	.03342	.03190	.02734	.02633	.02532	.02405	.02329	.02309	.02309	.02228	.02177	.02127	.02076	.02076	.02092	.02025	.02025	.02002	.01975	.01924
18	.03764	.03440	.03241	.02767	.02692	.02493	.02443	.02418	.02393	.02393	.02393	.02393	.02318	.02094	.02094	.02094	.01894	.01845	.01845	.01745	.01595
19	.03806	.03571	.03224	.02696	.02617	.02643	.02643	.02511	.02431	.02379	.02220	.02220	.02114	.02008	.02008	.01930	.01903	.01903	.01824	.01718	.01665
20	.03585	.03424	.03157	.02756	.02675	.02568	.02515	.02408	.02301	.02328	.02381	.02194	.02140	.02061	.02087	.02033	.01926	.01926	.01926	.01900	.01712

ตารางที่ 2 แสดงค่า Longour relative ของโครโมโซมแต่ละคู่จากการศึกษาเซลล์ในระยะ Metaphase ของปลากัดไทยพวกหางและครีบยาว 20 เซลล์

No. of cells	No. of Chromosome pairs																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	.03844	.03595	.03395	.02851	.02696	.02596	.02496	.02396	.02396	.02396	.02247	.02047	.02097	.01997	.01947	.01897	.01897	.01897	.01847	.01772	.01747
2	.03628	.03590	.03216	.02693	.02599	.02525	.02468	.02394	.02300	.02256	.02256	.02256	.02188	.02113	.02094	.02113	.02019	.01945	.01870	.01795	.01720
3	.03687	.03464	.03380	.02793	.02738	.02458	.02458	.02458	.02346	.02346	.02346	.02027	.02151	.02011	.02011	.02011	.01955	.01899	.01788	.01788	.01732
4	.03615	.03477	.03081	.02687	.02647	.02529	.02529	.02411	.02371	.02371	.02253	.02213	.02213	.02035	.02055	.02055	.01956	.01936	.01896	.01857	.01817
5	.03704	.03439	.03280	.02884	.02751	.02646	.02646	.02540	.02381	.02328	.02328	.02116	.02116	.01985	.01905	.01905	.01852	.01852	.01799	.01826	.01720
6	.03606	.03475	.03172	.02911	.02650	.02520	.02477	.02346	.02046	.02324	.02259	.02259	.02059	.02085	.02064	.02085	.01998	.01911	.01825	.01738	.01694
7	.03672	.03397	.02999	.02632	.02448	.02448	.02448	.02387	.02387	.02326	.02326	.02326	.02326	.02203	.02203	.02142	.02081	.02020	.01897	.01714	.01622
8	.03542	.03419	.03345	.02853	.02681	.02484	.02484	.02361	.02336	.02311	.02087	.02263	.02263	.02091	.02066	.01968	.01968	.01943	.01869	.01771	.01697
9	.03542	.03419	.03345	.02853	.02681	.02484	.02484	.02361	.02336	.02311	.02287	.02263	.02263	.02091	.02066	.01968	.01968	.01943	.01869	.01771	.01697
10	.03797	.03523	.03203	.02608	.02356	.02379	.02379	.02379	.02379	.02333	.02333	.02311	.02196	.02127	.02150	.02127	.01921	.02012	.01876	.01830	.01784
11	.04038	.03750	.03626	.02761	.02617	.02514	.02452	.02390	.02349	.02307	.02266	.02266	.02143	.02066	.01978	.01854	.01813	.01772	.01752	.01690	.01566
12	.03747	.03365	.03230	.02647	.02512	.02468	.02467	.02423	.02378	.02423	.02333	.02356	.02333	.02064	.01953	.01974	.01974	.01884	.01884	.01884	.01705
13	.04047	.03742	.03529	.02612	.02447	.02447	.02424	.02353	.02259	.02283	.02259	.02165	.02218	.01976	.01976	.01976	.01906	.01882	.01882	.01835	.01788
14	.04028	.03776	.03602	.03095	.02440	.02344	.02459	.02324	.02401	.02324	.02246	.02227	.02150	.02092	.02014	.01975	.01936	.01898	.01821	.01782	.01569
15	.03779	.03505	.03341	.02738	.02629	.02615	.02574	.02410	.02410	.02300	.02246	.02246	.02191	.02191	.02027	.01917	.01999	.01890	.01752	.01752	.01643
16	.03827	.03656	.03189	.02551	.02466	.02400	.02338	.02338	.02296	.02275	.02275	.02253	.02275	.02168	.02147	.02041	.02041	.01977	.01913	.01829	.01744
17	.03385	.03337	.02902	.02660	.02515	.02515	.02467	.02418	.02321	.02321	.02321	.02321	.02321	.02224	.02176	.02128	.02080	.02128	.01983	.01934	.01547
18	.03772	.03559	.03366	.02786	.02553	.02515	.02398	.02360	.02321	.02360	.02321	.02321	.02167	.02012	.02051	.02012	.02934	.02934	.01857	.01779	.01625
19	.03720	.03501	.03282	.02654	.02626	.02516	.02462	.02407	.02407	.02352	.02298	.02298	.02243	.02133	.02079	.01969	.01915	.01942	.01860	.01724	.01637
20	.03489	.03376	.03236	.02926	.02589	.02476	.02476	.02476	.02476	.02360	.02308	.02195	.02138	.02026	.02026	.02026	.01970	.01970	.01913	.01801	.01745

ตารางที่ 3 แสดงค่า Centromeric index ของโครโมโซมแต่ละคู่จากการศึกษาเซลล์ในระยะ Metaphase ของปลากัดไทยพวกหางและครีบสั้น 20 เซลล์

No. of cells	No. of Chromosome pairs																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	.08571	.08629	.08193	.07958	.08261	.08427	.07143	.07619	.07250	.08000	.08204	.07125	.07402	.07222	.07778	.08171	.07183	.07353	.07763	.08125	.08333
2	.08536	.08393	.08109	.07917	.08298	.08370	.07273	.07727	.07230	.08000	.08313	.07000	.07274	.07297	.07808	.08000	.07313	.07538	.07813	.07969	.08360
3	.08474	.08281	.08100	.07895	.07958	.08261	.07273	.07619	.07037	.08000	.08313	.06875	.07250	.06892	.07673	.07941	.07231	.07500	.07376	.08000	.08245
4	.08234	.08360	.08294	.08001	.08043	.08261	.07303	.07500	.07230	.07975	.08108	.07105	.07879	.07222	.07778	.08056	.07295	.07538	.07846	.08095	.08480
5	.08778	.08256	.08167	.08318	.08100	.08333	.07391	.07609	.07283	.08025	.08000	.06932	.07327	.07125	.07778	.08195	.07222	.07500	.07647	.08088	.08167
6	.08547	.08571	.08214	.07917	.07999	.08182	.07387	.07766	.07250	.07875	.08125	.07125	.07500	.07164	.07777	.08310	.07222	.07500	.07857	.07941	.08125
7	.08694	.08333	.08185	.08113	.08161	.08228	.07355	.07662	.07000	.07949	.08267	.06892	.07568	.06944	.07778	.08056	.07147	.07429	.07647	.07879	.08063
8	.08652	.08333	.08185	.08113	.08161	.08153	.07316	.07662	.07000	.07949	.08267	.06892	.07568	.06944	.07778	.08056	.07143	.07429	.07647	.07879	.08063
9	.08620	.08438	.08250	.08191	.08218	.08367	.07342	.07826	.07367	.08182	.08407	.06975	.07471	.07269	.07764	.08108	.07083	.07465	.07746	.07911	.08095
10	.08561	.08393	.08269	.07955	.08139	.08292	.07262	.07752	.07027	.07914	.08143	.06857	.07142	.07166	.07576	.08125	.07188	.07273	.07705	.07857	.08113
11	.08598	.08400	.08240	.07696	.08057	.08077	.07059	.07647	.07255	.07880	.08333	.06979	.07265	.06862	.07619	.08048	.07250	.07500	.07850	.07895	.08195
12	.08779	.08353	.08421	.08258	.08347	.08448	.07368	.07788	.07273	.08209	.08158	.07184	.07476	.07292	.07790	.08192	.07391	.07727	.07976	.08000	.08378
13	.08719	.08689	.08136	.08060	.08042	.08299	.07218	.07500	.07094	.07857	.08000	.07000	.07125	.06974	.07764	.08158	.07222	.07647	.07846	.08000	.08181
14	.08705	.08536	.08503	.08001	.08018	.08238	.07100	.07500	.07292	.08192	.08497	.07001	.07273	.07143	.07619	.08293	.07262	.07531	.07805	.08125	.08195
15	.08697	.08429	.08280	.08074	.08135	.08252	.07320	.07604	.07292	.07826	.08130	.06739	.07273	.07143	.07857	.08213	.07108	.07560	.07794	.08333	.08529
16	.08720	.08400	.08209	.08197	.08291	.08596	.07321	.07778	.07383	.07811	.08366	.07212	.07282	.07263	.07813	.08246	.07500	.07727	.07976	.08293	.08461
17	.08823	.08485	.08176	.08148	.07981	.08200	.07474	.07718	.07283	.07935	.08182	.06977	.07381	.07073	.07683	.08072	.07125	.07775	.07850	.08205	.08290
18	.08808	.08550	.08232	.08198	.08148	.08200	.07347	.07630	.07292	.08021	.08261	.07174	.07554	.07143	.07857	.08214	.07105	.07434	.07976	.08146	.08438
19	.08486	.08479	.08479	.07943	.08182	.08384	.07347	.07895	.07391	.08113	.08333	.06905	.07250	.07105	.07895	.08356	.07222	.07778	.07971	.08153	.08413
20	.08583	.08359	.08391	.08156	.08100	.08333	.07227	.07555	.07094	.08048	.08316	.07079	.07250	.07273	.07821	.08158	.07222	.07361	.07778	.08028	.08125

ตารางที่ 4 แสดงค่า Centromeric index ของโครโมโซมแต่ละคู่จากการศึกษาเซลล์ในระยะ Metaphase ของปลากัดไทยพวกหางและครีบยาว 20 เซลล์

No. of cells	No. of Chromosome pairs																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	.08311	.08195	.08162	.08000	.08056	.08269	.07200	.07500	.07188	.08125	.08222	.06709	.07381	.07000	.07949	.08158	.07105	.07500	.07705	.07999	.08235
2	.08763	.08646	.08605	.08056	.08201	.08223	.07424	.07969	.07236	.08000	.08334	.06750	.07693	.07345	.07857	.08409	.07037	.07692	.07800	.07917	.08261
3	.08787	.08226	.08431	.08000	.07837	.08182	.07386	.07727	.07143	.08095	.08333	.07090	.07537	.06944	.07778	.08195	.07059	.07286	.07813	.08125	.08065
4	.08525	.08295	.08298	.08088	.07910	.08125	.07344	.07788	.07333	.08000	.08159	.06786	.07500	.07282	.07885	.08077	.07172	.07449	.07813	.08298	.08478
5	.08428	.08307	.08387	.07982	.08174	.08000	.07400	.07500	.07224	.08182	.08182	.07125	.07250	.07066	.07639	.08000	.07429	.07714	.07647	.07971	.08154
6	.08615	.08438	.08356	.08135	.08360	.08362	.07281	.07778	.07222	.08225	.08462	.07115	.07692	.07396	.07790	.07916	.07174	.07273	.07857	.08000	.08462
7	.08500	.08379	.08367	.08024	.08000	.08000	.07000	.07949	.07179	.08158	.08421	.06842	.07368	.06944	.07778	.07971	.07059	.07273	.07740	.07857	.08491
8	.08403	.08274	.08235	.08103	.07982	.08218	.07327	.07604	.07370	.08298	.08388	.06957	.07174	.07060	.07857	.08000	.07000	.07215	.07895	.08056	.08261
9	.08571	.08113	.08173	.08069	.08095	.08333	.07143	.07821	.07241	.08000	.08333	.06667	.06944	.07188	.07500	.07969	.07997	.07000	.07500	.08148	.08462
10	.08554	.08508	.08284	.07984	.08058	.08269	.07212	.07885	.07019	.08235	.08431	.07030	.07396	.06889	.07872	.08280	.07143	.07273	.08048	.08250	.08462
11	.08776	.08571	.08522	.08284	.08346	.08360	.07396	.07931	.07279	.08125	.08364	.07636	.07692	.07455	.07813	.07890	.07273	.07441	.08394	.07857	.08421
12	.08629	.08400	.08333	.07966	.08214	.08181	.07273	.07778	.07170	.08148	.08464	.06981	.07173	.07391	.07817	.08409	.07273	.07381	.07619	.07976	.08421
13	.08489	.08239	.08199	.08198	.08173	.08462	.07185	.07600	.07000	.08248	.08542	.06848	.07128	.07024	.07738	.08214	.07000	.07000	.07750	.07949	.08290
14	.08670	.08719	.08656	.08059	.08176	.08264	.07402	.07833	.07067	.07833	.08448	.07216	.07477	.07221	.07885	.08235	.07500	.07550	.07980	.08416	.08516
15	.08406	.08125	.08197	.07900	.07813	.07778	.06916	.07500	.07045	.07619	.08048	.06952	.07000	.07250	.07705	.07857	.07120	.07248	.07500	.07500	.08000
16	.08778	.08605	.08400	.08000	.07931	.08230	.07364	.07589	.07222	.08131	.08412	.07076	.07383	.07059	.07922	.08333	.07396	.07528	.07889	.08025	.08417
17	.08571	.08550	.08332	.08274	.08077	.08077	.07354	.08000	.07292	.07916	.08438	.06875	.07500	.07283	.07777	.07841	.07327	.07273	.07441	.08000	.08500
18	.08409	.08682	.08507	.08054	.07879	.07846	.07500	.07705	.07333	.08033	.08333	.07000	.07500	.07308	.07735	.07692	.07000	.07200	.07500	.08004	.08250
19	.08529	.08281	.08333	.08040	.07917	.08043	.07111	.07955	.07159	.08139	.08333	.07262	.07435	.07436	.07895	.08195	.07143	.07326	.07647	.08095	.08505
20	.08548	.08500	.08261	.08077	.08043	.08182	.07273	.07727	.07273	.08095	.08536	.07053	.07368	.07222	.08056	.08333	.07143	.07143	.07941	.08125	.08065

ประวัติการศึกษา

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