

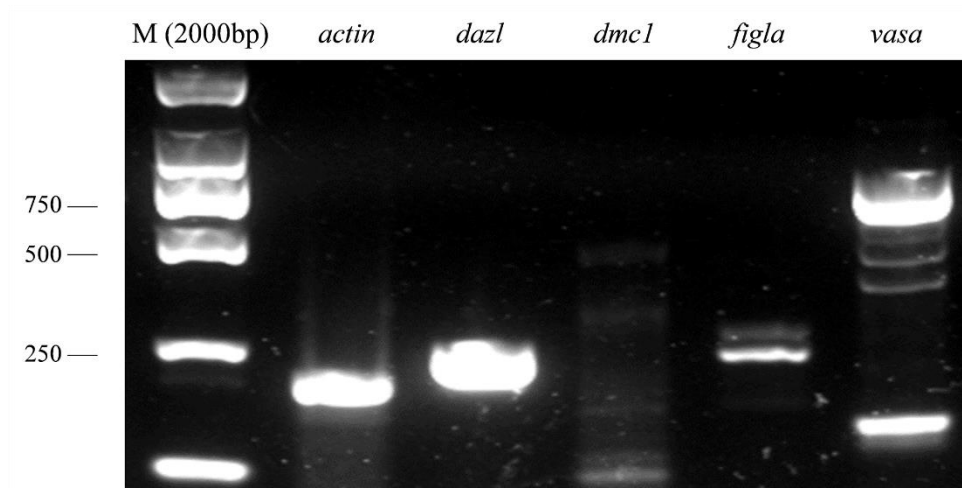
# Characterization of the *in vitro* cultured ovarian cells in the Asian yellow pond turtle (*Mauremys mutica*)

Xiaoli Liu<sup>1</sup>, Fang Liu<sup>1</sup>, Haoyang Xu<sup>1</sup>, Yanping Yang<sup>1</sup>, Yakun Wang<sup>1</sup>, Xiaoyou Hong<sup>1</sup>, Wei Li<sup>1</sup>,

Lingyun Yu<sup>1</sup>, Chen Chen<sup>1</sup>, Hongyan Xu<sup>1,2\*</sup>, Xinpeng Zhu<sup>1\*</sup>

<sup>1</sup> Key Laboratory of Tropical and Subtropical Fishery Resources Application and Cultivation, Ministry of Agriculture and Rural Affairs, Pearl River Fisheries Research Institute, Chinese Academy of Fishery Sciences, Guangzhou, China, 510380

<sup>2</sup> Key Laboratory of Freshwater Fish Reproduction and Development (Ministry of Education), College of Fisheries, Southwest University, Chongqing, China, 402460



**Figure S1. The alteration of marker genes expression in the YTO2 cells induced by Dimethyl sulfoxide (DMSO).** The cultured YTO2 cells were exposed to RA (at the concentration of 30 nM, 300 nM and 1  $\mu$ M) for 24 hours, and the total RNA of treated and control YTO2 cells were extracted for PCR analysis. The result showed that two germ cell markers, *dazl* and *vasa* were highly expressed in YTO2 cells. Meiotic marker, *figla* was moderate in YTO2 cells, while *dmc1* was weakly expressed in YTO2 cells.

**Table S1.** Summary statistics of sequencing data

Sample	Raw Reads	Clean Reads	Total mapped reads	Multiple mapped	Uniquely mapped	Q30	GC
YTO2-1	51.63	50.27	47,466,	2,158,288(4.29	45,308,652(90.1	94.40	50.34
	M	M	940(94.42%)	%)	2%)	%	%
YTO2-2	57.68	55.93	51,743,669(92.5	2,308,517(4.13	49,435,152(88.3	93.85	50.04
	M	M	2%)	%)	9%)	%	%
Average	54.66	53.1M	49,605,305(93.4	2,233,402(4.21	47,371,902(89.2	94.13	50.19
	M		7%)	%)	6%)	%	%

**Note:** "M": million

**Table S3. Detail of the genes discussed in the text.**

	gene symbol	YTO2_1	YTO2_1	description
	<i>ddx4</i>	0.9989007	0.5831704	probable ATP-dependent RNA helicase DDX4 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>dazl</i>	0	0.0479189	deleted in azoospermia like
	<i>dnd1</i>	0.1647492	0.033431	dead end protein homolog 1 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>piwil1</i>	0.0302911	0	piwi-like protein 1 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>piwil2</i>	0.4835382	0.5066843	N-acetylglucosamine-1-phosphodiester alpha-N-acetylglucosaminidase [ <i>Platysternon megacephalum</i> ]
	<i>mre11</i>	5.2246185	4.9816236	double-strand break repair protein MRE11 [ <i>Gopherus evgoodei</i> ]
	<i>rad50</i>	5.3908906	4.7497469	putative E3 ubiquitin-protein ligase UNKL [ <i>Platysternon megacephalum</i> ]
	<i>dmc1</i>	0.038648	0.1764557	DNA meiotic recombinase 1 [ <i>Columba livia</i> ]
	<i>nanos1</i>	49.407998	47.05324	nanos homolog 1 [ <i>Gopherus evgoodei</i> ]
germline genes	<i>msh2</i>	15.116453	15.79862	DNA mismatch repair protein Msh2 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>sycp3</i>	0.818219	0.9735595	synaptonemal complex protein 3 isoform X2 [ <i>Pelodiscus sinensis</i> ]
	<i>figla</i>	0.0484598	0	factor in the germline alpha [ <i>Gopherus evgoodei</i> ]
	<i>slbp2</i>	14.051173	15.336126	histone RNA hairpin-binding protein isoform X2 [ <i>Terrapene carolina triunguis</i> ]
	<i>sycp3</i>	0.818219	0.9735595	synaptonemal complex protein 3 isoform X2 [ <i>Pelodiscus sinensis</i> ]
	<i>dmrt2</i>	0.5492919	0.6611758	glutathione peroxidase 3 [ <i>Platysternon megacephalum</i> ]
	<i>tdrd7</i>	6.5820831	5.9375251	tudor domain-containing protein 7 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>nr5a1</i>	1.7878892	1.9545177	steroidogenic factor-1 [ <i>Mauremys reevesii</i> ]
	<i>fancd2</i>	1.4835573	1.1372781	E3 ubiquitin-protein ligase makorin-1 [ <i>Platysternon megacephalum</i> ]
	<i>gdnf</i>	5.635788	5.2670267	glial cell line-derived neurotrophic factor isoform X1 [ <i>Pelodiscus sinensis</i> ]
	<i>rad51</i>	7.5428651	7.5601774	DNA repair protein RAD51 homolog 1 isoform X1 [ <i>Gopherus evgoodei</i> ]
	<i>ybx2</i>	0.4647819	0.9902947	Y-box-binding protein 2 [ <i>Chelonoidis abingdonii</i> ]

<i>slbp2</i>	14.051173	15.336126	histone RNA hairpin-binding protein isoform X2 [ <i>Terrapene carolina triunguis</i> ]
<i>CD73</i>	0.924619	1.3923687	piezo-type mechanosensitive ion channel component 2 [ <i>Platysternon megacephalum</i> ]
<i>CD90</i>	14.143935	14.089554	thy-1 membrane glycoprotein [ <i>Gopherus evgoodei</i> ]
<i>CD105</i>	39.570159	44.321225	endoglin [ <i>Gopherus evgoodei</i> ]
<i>CD61</i>	123.3671	110.73413	integrin beta-3 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
<i>itgb1</i>	647.04905	601.6362	integrin beta-1 isoform X2 [ <i>Terrapene carolina triunguis</i> ]
<i>itgb6</i>	0.572165	0.272592	integrin beta-6 isoform X1 [ <i>Gopherus evgoodei</i> ]
<i>ccnb1</i>	14.683519	16.874192	G2/mitotic-specific cyclin-B1 [ <i>Gopherus evgoodei</i> ]
<i>ccna2</i>	4.7820979	4.3544695	cyclin-A2 [ <i>Terrapene carolina triunguis</i> ]
<i>cdc20</i>	7.2003414	7.1340291	cell division cycle protein 20 homolog isoform X1 [ <i>Chelonoidis abingdonii</i> ]
<i>plk3</i>	9.9738124	8.9912434	serine/threonine-protein kinase PLK3 [ <i>Gopherus evgoodei</i> ]
<i>PCNA</i>	61.554016	63.951863	proliferating cell nuclear antigen [ <i>Chrysemys picta bellii</i> ]
<i>mcm4</i>	11.339022	12.343582	DNA replication licensing factor MCM4 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
<i>kif22</i>	0	0.0397332	kinesin-like protein KIF22 [ <i>Chelonoidis abingdonii</i> ]
<i>pcbp2</i>	154.21063	181.24115	poly(rC)-binding protein 2 isoform X1 [ <i>Chrysemys picta bellii</i> ]
<i>cdk1</i>	19.904881	21.141359	V-type proton ATPase subunit H [ <i>Platysternon megacephalum</i> ]
<i>siva1</i>	70.218628	95.768722	apoptosis regulatory protein Siva [ <i>Gopherus evgoodei</i> ]
<i>prmt1</i>	132.51878	146.87333	ankyrin repeat and SOCS box protein 6 [ <i>Platysternon megacephalum</i> ]
<i>bub3</i>	38.874586	41.352736	hypothetical protein [ <i>Bos mutus</i> ]
<i>cdc26</i>	30.183873	30.669669	anaphase-promoting complex subunit CDC26 [ <i>Chelonoidis abingdonii</i> ]
<i>ccnb3</i>	6.0731504	6.6491214	G2/mitotic-specific cyclin-B3 isoform X1 [ <i>Gopherus evgoodei</i> ]
<i>vdac2</i>	103.51996	113.82122	voltage-dependent anion-selective channel protein 2 [ <i>Chrysemys picta bellii</i> ]
<i>rbx1</i>	72.067248	72.661155	E3 ubiquitin-protein ligase RBX1 [ <i>Chrysemys picta bellii</i> ]
<i>mcm7</i>	18.724784	20.915789	DNA replication licensing factor MCM7 [ <i>Aquila chrysaetos chrysaetos</i> ]
<i>orc3</i>	2.8809614	2.9410185	origin recognition complex subunit 3 isoform X1 [ <i>Chrysemys picta bellii</i> ]

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	<i>plk1</i>	10.011971	13.180602	long-chain-fatty-acid--CoA ligase 5 [ <i>Platysternon megacephalum</i> ]
	<i>sod2</i>	79.734609	99.011703	mitochondrial manganese superoxide dismutase [ <i>Mauremys reevesii</i> ]
	<i>skp1</i>	213.20533	217.14728	hypothetical protein [ <i>Chiloscyllium punctatum</i> ]
	<i>hsd17b4</i>	29.329903	28.233718	peroxisomal multifunctional enzyme type 2 isoform X1 [ <i>Gopherus evgoodei</i> ]
	<i>hacd4</i>	4.3065705	4.9599243	very-long-chain (3R)-3-hydroxyacyl-CoA dehydratase 1 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>hacd1</i>	31.329618	33.640823	histone deacetylase 1 [ <i>Serinus canaria</i> ]
	<i>acaal</i>	24.13113	23.833942	tudor domain-containing protein 3 [ <i>Platysternon megacephalum</i> ]
somatic cell genes	<i>foxl2</i>	0.1823301	0.1664933	forkhead box protein L2-like [ <i>Chelonoidis abingdonii</i> ]
	<i>dmrt1</i>	0.135677	0.0743354	doublesex- and mab-3 related transcription factor 1 [ <i>Mauremys reevesii</i> ]
	<i>amh</i>	0.1437601	0.0492275	muellerian-inhibiting factor [ <i>Chelonoidis abingdonii</i> ]
	<i>sox9</i>	0.2062153	0.437351	transcription factor SOX-9 [ <i>Terrapene carolina triunguis</i> ]
	<i>sox8</i>	1.5522183	2.0818006	transcription factor SOX-8 [ <i>Gopherus evgoodei</i> ]
	<i>fgf9</i>	0.1754756	0.0300439	fibroblast growth factor 9 [ <i>Taeniopygia guttata</i> ]
	<i>zfp2</i>	3.8079592	3.6224704	zinc finger protein ZFPM2 isoform X1 [ <i>Terrapene carolina triunguis</i> ]
	<i>map3k4</i>	4.2931003	4.2351543	mitogen-activated protein kinase kinase kinase 4 isoform X3 [ <i>Chelonoidis abingdonii</i> ]
	<i>fst</i>	124.24083	117.7703	focadhesin [ <i>Platysternon megacephalum</i> ]
	<i>rspo1</i>	0.5257559	0.6837644	R-spondin-1 isoform X2 [ <i>Chrysemys picta bellii</i> ]
	<i>wnt4</i>	0.0214522	0	protein Wnt-4 isoform X1 [ <i>Chrysemys picta bellii</i> ]
	<i>spa17</i>	3.5580618	4.6328568	sperm surface protein Sp17 [ <i>Chelonoidis abingdonii</i> ]
	<i>hsd17b2</i>	0.9849342	0.5231117	glyoxylate reductase/hydroxypyruvate reductase-like [ <i>Platysternon megacephalum</i> ]
	<i>hsd17b1</i>	4.2491867	5.5861127	estradiol 17-beta-dehydrogenase 1 [ <i>Chelonia mydas</i> ]
	<i>spata7</i>	2.1791562	2.2913765	spermatogenesis-associated protein 7 isoform X1 [ <i>Chelonoidis abingdonii</i> ]
	<i>cyp11b</i>	0.7464259	0.6389934	cytochrome P450 11B, mitochondrial-like [ <i>Gopherus evgoodei</i> ]
	<i>srd5a1</i>	1.0513777	1.2160727	3-oxo-5-alpha-steroid 4-dehydrogenase 1 isoform X1 [ <i>Chrysemys picta bellii</i> ]
	<i>h2a</i>	1.5864369	2.0349979	histone h2a [ <i>Lynx pardinus</i> ]

	<i>sox2</i>	0.6942051	0.6909597	transcription factor SOX-2 [ <i>Platysternon megacephalum</i> ]
	<i>pou5f3</i>	1.785611	1.1401359	POU domain, class 5, transcription factor 3 isoform X1 [ <i>Gopherus evgoodei</i> ]
	<i>klf5</i>	8.50921	7.6180349	Krueppel-like factor 5 [ <i>Gopherus evgoodei</i> ]
	<i>nanog</i>	0	0.0195826	homeobox protein NANOG-like [ <i>Chrysemys picta bellii</i> ]
	<i>tcl1</i>	0.0766445	0.104981	protein p13 MTCP-1-like [ <i>Terrapene carolina triunguis</i> ]
	<i>esrrb</i>	0.0349382	0.0063807	steroid hormone receptor ERR2 [ <i>Pogona vitticeps</i> ]
	<i>sall4</i>	4.2018325	3.0057385	sal-like protein 4 [ <i>Terrapene carolina triunguis</i> ]
	<i>tcf7l1</i>	18.121512	17.817572	transcription factor 7-like 1 isoform X1 [ <i>Terrapene carolina triunguis</i> ]
cell	<i>mycn</i>	0	0.0469822	N-myc proto-oncogene protein-like [ <i>Chelonoidis abingdonii</i> ]
pluripotency	<i>fbxo15</i>	0	0.014479	F-box only protein 15 isoform X1 [ <i>Chrysemys picta bellii</i> ]
genes	<i>zfx</i>	8.8903313	10.045974	zinc finger X-chromosomal protein [ <i>Chelonoidis abingdonii</i> ]
	<i>FoxD3</i>	0	0.0173177	LOW QUALITY PROTEIN: forkhead box protein D3 [ <i>Chrysemys picta bellii</i> ]
	<i>hmga2</i>	3.3744901	3.0543597	high mobility group protein HMGI-C isoform X1 [ <i>Pelodiscus sinensis</i> ]
	<i>nr6a1</i>	0.1653544	0.1342152	nuclear receptor subfamily 6 group A member 1 isoform X4 [ <i>Chrysemys picta bellii</i> ]
	<i>stat3</i>	18.482631	16.937332	signal transducer and activator of transcription 3 isoform X1 [ <i>Chelonia mydas</i> ]
	<i>lef1</i>	1.1641186	1.6724626	lymphoid enhancer-binding factor 1 isoform X2 [ <i>Chelonoidis abingdonii</i> ]
	<i>tcf7</i>	3.0303746	2.7500818	transcription factor 7 isoform X1 [ <i>Gopherus evgoodei</i> ]
	<i>tcf7l1</i>	18.121512	17.817572	transcription factor 7-like 1 isoform X1 [ <i>Terrapene carolina triunguis</i> ]
	<i>tcf7l2</i>	5.1539342	6.1445973	transcription factor 7-like 2 isoform X15 [ <i>Chrysemys picta bellii</i> ]