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MC-01 Identification of genes in blastocoel fluid associated with successful IVF outcomes of women of advanced maternal age

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Presenter Information

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Identification of genes in Blastocoel Fluid associated with successful IVF outcomes of Women of Advanced Maternal Age



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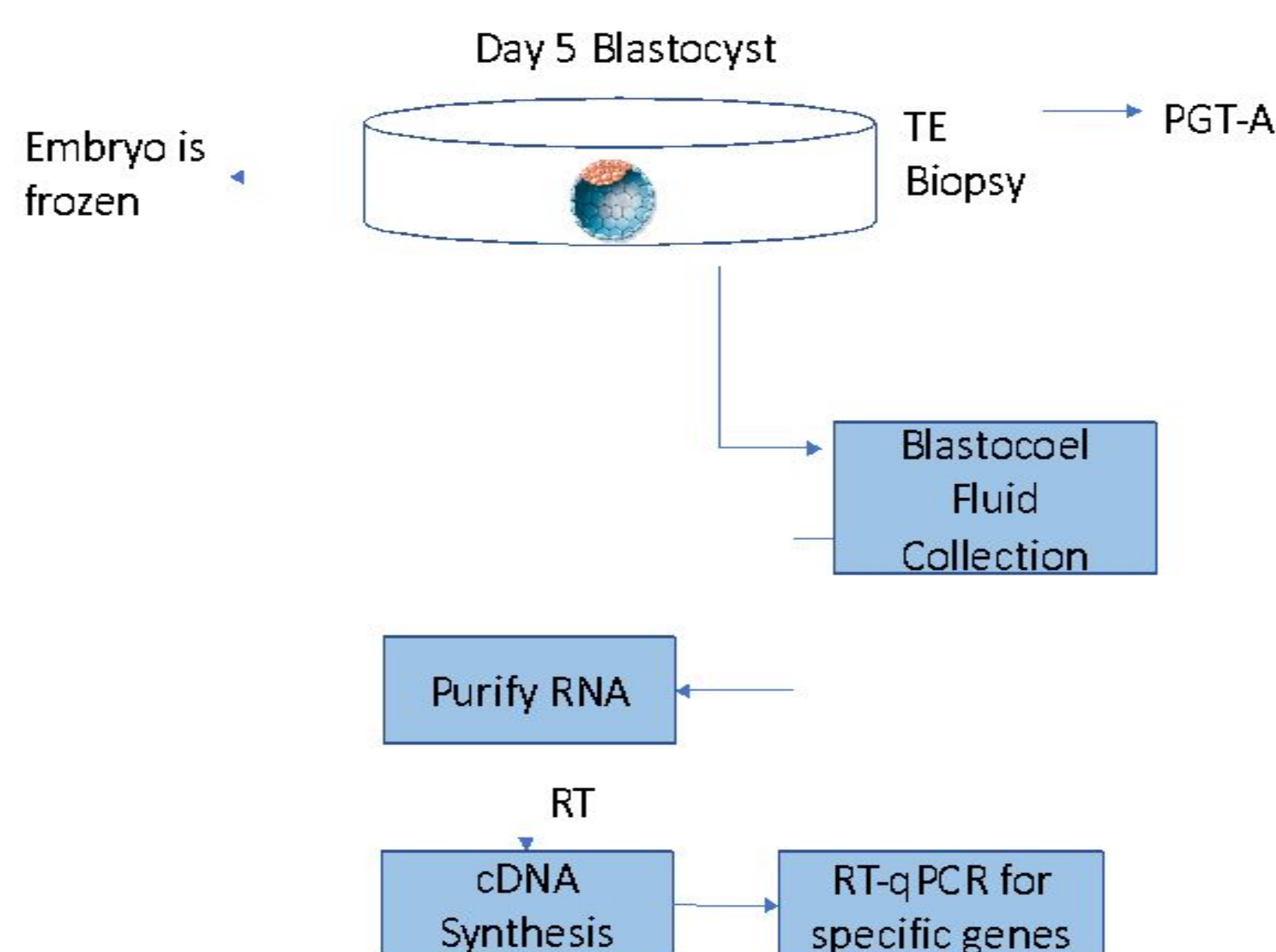


INTRODUCTION

A patient may seek the use of IVF technology when they are struggling to become pregnant. To improve IVF outcomes, there's much research focused on identifying markers to allow embryologists to transfer embryos with the greatest chance of a successful pregnancy. Women of advanced maternal age, which is thirty-five years and older have a lower chance of success on a first attempt with IVF, women at the age of 40 have a 9% chance of a live birth with IVF. This study aims to identify an additional biomarker during preimplantation development that's associated with successful implantation in AMA patients.

METHODS

Blastocoel fluid-conditioned media was collected from day-5 IVF-embryos. RT-qPCR was then used to assess expression of GAPDH, BCL2L12, DRAP1, SHARPIN and CUL2.



RESULTS

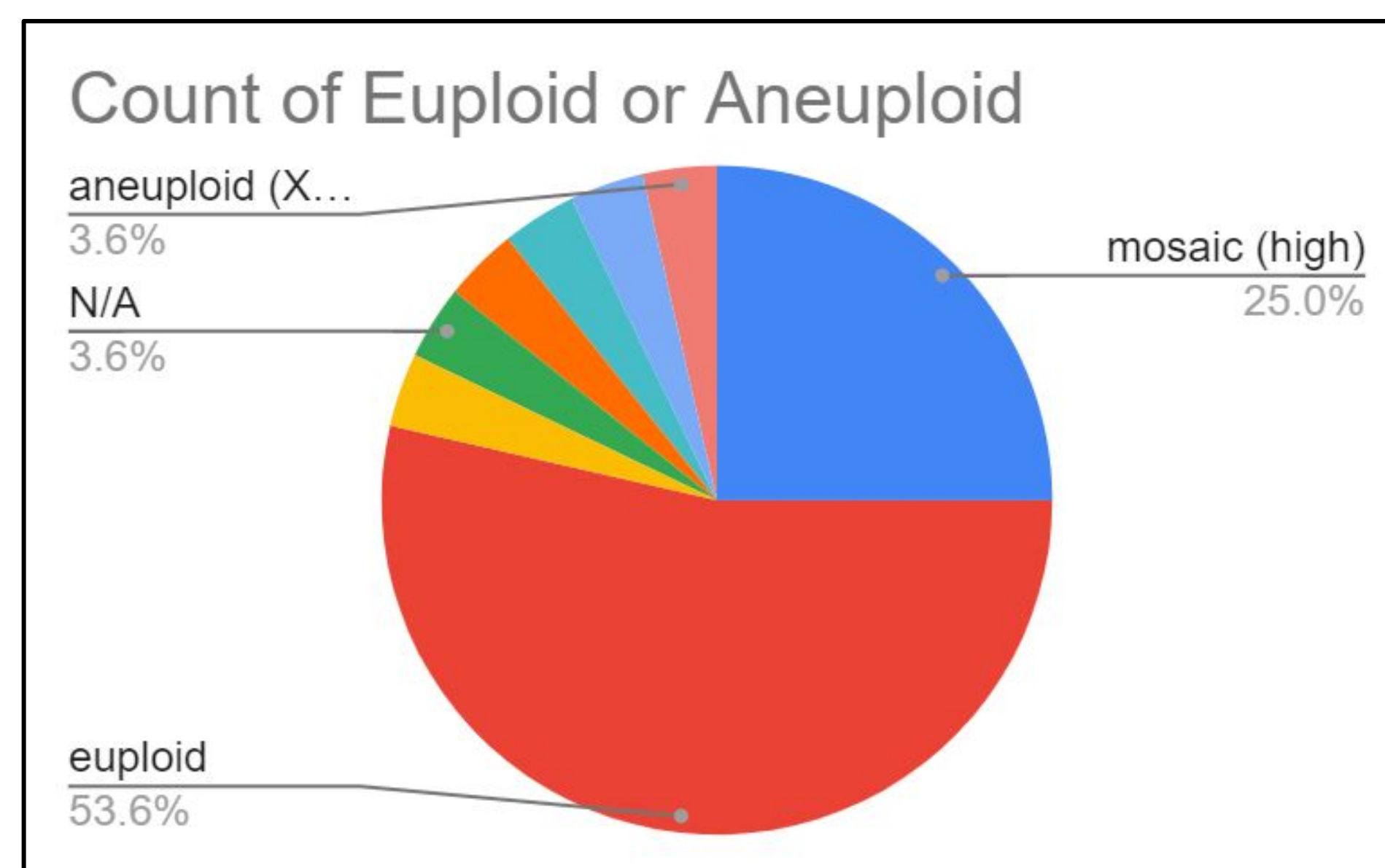


Figure 1. Pie chart represents the ploidy status of the samples we analyzed. Euploid equates to no chromosomal alterations.

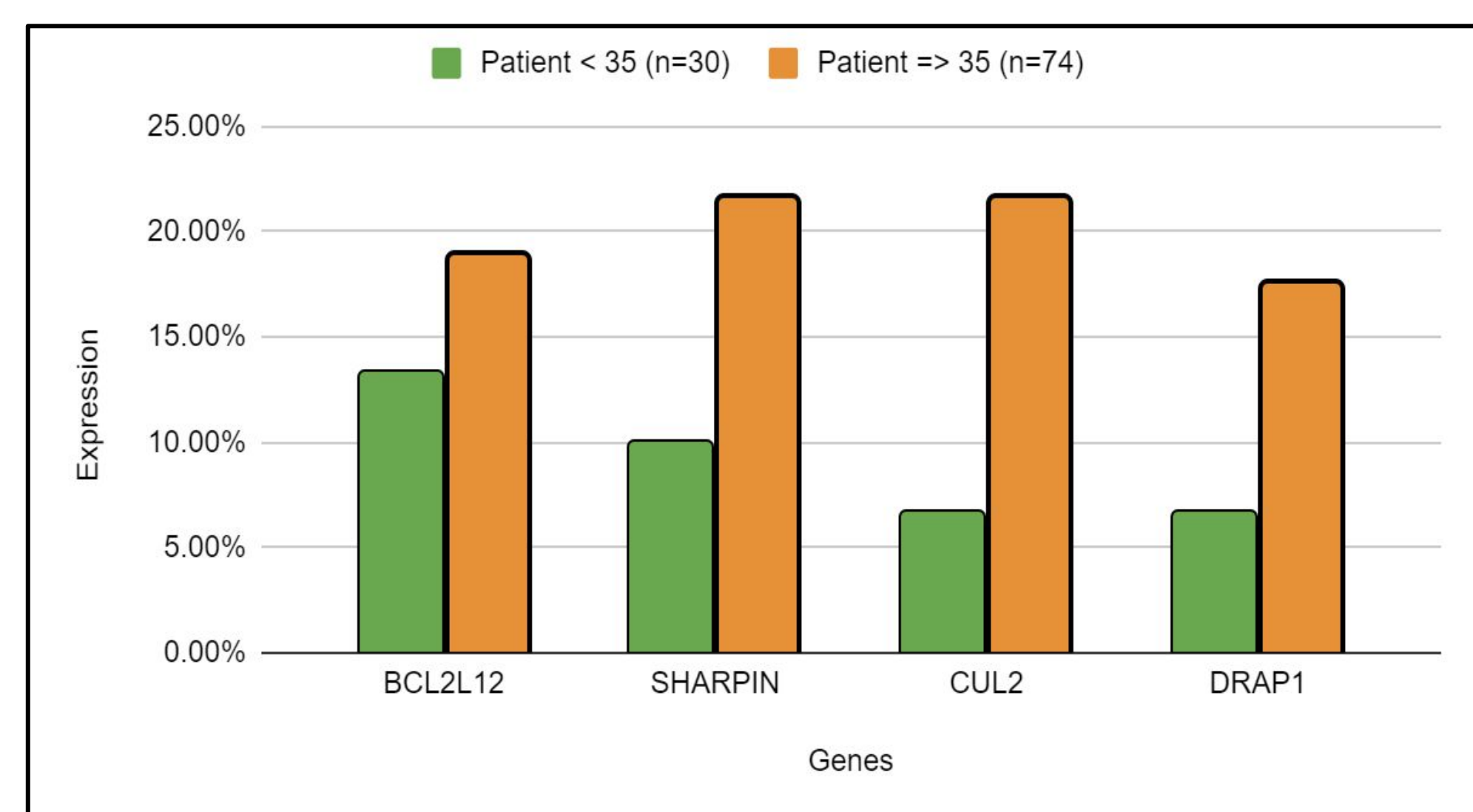


Figure 2. Media from IVF embryos from AMA patients show higher gene expression than media from patients of younger age.

Sample ID	BCL2L12	DRAP1	SHARPIN	CUL2
1895 A				10.02
1911 A		9.93		
2282 B		9.58		
2731 B			9.95	
2074 A	7.52	9.97		
2074 B		9.61	9.90	
2332 A	9.15	7.90		
1942 A		10.08		
1943 B				9.95
2041 A	9.94		9.86	
1885 A	8.98	9.60	8.54	9.78
1885 B	8.86		8.65	9.67
1889 A	7.48	7.46	9.07	9.03
1889 B	7.75	8.52	8.03	8.89
1891 A	7.20	7.27	7.64	7.29
1891 B	7.02	6.86		7.89
1897 A	7.66		1.77	
1897 B	6.85	8.19	7.80	8.19
1901 B		9.85	9.90	9.43
1902 A			7.97	8.81
1902 B			3.09	8.78
1907 A			8.64	8.65
1907 B	8.95		3.31	3.04
1902 A	9.69			
1902 B				9.70
1921 A			9.85	
1921 B	9.82			
2288B	3.34		9.62	
2284B				9.89
2597B				9.21
2594A	9.03			9.55
2594B			9.22	
2310A	9.81			
2550A				9.95
2550B			9.94	
2670A	9.71			
2457A		0.28		
2336A			9.79	
2336B			9.90	
2339A			9.94	
2340A	9.64		9.49	
2340B				9.73
2323B			9.11	
2579A	8.90		8.93	
2579B			2.31	9.68
2587A				3.05

Patient ID	BCL2L12	DRAP1	SHARPIN	CUL2
2661 A	1.8			
2661 B		1.715268915		
2035 A			2.78061407	2.844131399
2035 B	0.8			
2425 A			2.599996073	
2017 A				1.730320415
2618 A		2.77218523	2.144236659	
2447 A	0.9			
2447 B	0.9			
2007B	1.5			6.647645394
2009A				2.368504006
2009B	2.4			
2018A			1.725503935	
2018B			1.216462212	
2020A				2.428710005
2021A			7.761757408	2.241168318
2021B			5.52510454	5.171093266
2022A				2.149053139
2024A			2.010278311	7.804202638
2024B	3.8			
2557B				2.136710909

Figure 4. Heat map of gene expression in patients below 35. 21 of 48 of our samples lowly expressed the 4 genes that we observed compared to the AMA samples.

Figure 3. Heat map of gene expression in AMA patients. 46 of 116 of our AMA samples highly expressed the 4 genes that we observed: BCL2L12, DRAP1, SHARPIN, and CUL2.

CONCLUSIONS

Analysis of expression of genes: SHARPIN, BCL2L12, DRAP1, and CUL2 in blastocoel fluid was associated with successful implantation outcomes in AMA patients in this preliminary analysis. Determining which genes are expressed in the media from AMA patients with successful implantation outcomes may lead to better selection of embryos for those who are of advanced maternal age.

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