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## Supplementary Material

# Comparative analysis of granulosa cell gene expression in association with oocyte competence in FSH-stimulated Holstein cows

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**Table S1. Animal selection for the microarray analysis with the information on follicle sizes, total number of aspirated follicles, number of oocytes in maturation and number of viable embryos (blastocyst)**

The percentage of embryos refers to the ratio between the number of oocytes in maturation and the number of viable embryos

| OPU Date | Cow I.D | Age at OPU | SPO Program | Coasting Duration | Follicles 1-4 mm | Follicles 5-6 mm | Follicles 7-10 mm | Follicles 11-15 mm | Follicles > 15 mm | Total Aspirated Follicles | Oocytes in Maturation | Number of Viable Embryos | Embryos (0%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pool #1 | | | | | | | | | | | | |
| 2014-02-18 | Good1 | 14 months | P150F | 30 | 0 | 1 | 6 | 3 | 0 | 10 | 5 | 4 | 80 |
| 2014-02-18 | Good2 | 14 months | P150F | 19 | 0 | 1 | 13 | 2 | 0 | 16 | 11 | 8 | 73 |
| 2014-02-04 | Good3 | 14 months | P150F | 30 | 0 | 1 | 2 | 6 | 0 | 9 | 9 | 7 | 78 |
| 2013-12-03 | Good4 | 3 years | P240F | 43 | 0 | 0 | 5 | 5 | 2 | 12 | 5 | 4 | 80 |
| **Average** | | **19.5** | - | - | **0** | **0.75** | **6.5** | **4** | **0.5** | **11.75** | **7.5** | **5.75** | **78** |
| | Pool #2 | | | | | | | | | | | | |
| 2014-10-27 | Good1 | 21 months | P180F | 43 | 1 | 3 | 8 | 5 | 0 | 17 | 12 | 9 | 75 |
| 2014-10-27 | Good2 | 3 years | P240F | 43 | 0 | 5 | 15 | 0 | 0 | 20 | 11 | 9 | 82 |
| 2014-11-10 | Good3 | 21 months | P180F | 43 | 0 | 2 | 18 | 2 | 0 | 22 | 23 | 20 | 87 |
| 2014-12-01 | Good4 | 23 months | P180F | 43 | 0 | 7 | 12 | 1 | 0 | 20 | 17 | 13 | 76 |
| **Average** | | **25.25** | - | - | **0.25** | **4.25** | **13.25** | **2** | **0** | **19.75** | **15.75** | **12.75** | **80** |
| | Pool #3 | | | | | | | | | | | | |
| 2014-02-11 | Good1 | 16 months | P150F | 30 | 0 | 6 | 14 | 0 | 0 | 20 | 12 | 10 | 83 |
| 2014-12-08 | Good2 | 15 months | P180F | 30 | 0 | 6 | 8 | 2 | 0 | 16 | 11 | 8 | 73 |
| 2014-12-15 | Good3 | 8 years | P240F | 30 | 0 | 4 | 10 | 0 | 0 | 14 | 7 | 6 | 86 |
| 2014-12-15 | Good4 | 18 months | P180F | 43 | 0 | 1 | 3 | 2 | 0 | 6 | 4 | 3 | 75 |
| **Average** | | **36.25** | - | - | **0** | **4.25** | **8.75** | **1** | **0** | **14** | **8.5** | **6.75** | **79** |
| | Pool #4 | | | | | | | | | | | | |
| 2014-10-20 | Good1 | 8 years | P240F | 30 | 0 | 0 | 8 | 2 | 0 | 10 | 5 | 5 | 100 |
| 2014-11-24 | Good2 | 16 months | P180F | 43 | 0 | 5 | 11 | 0 | 0 | 16 | 10 | 7 | 70 |
| 2014-11-24 | Good3 | 8 years | P240F | 30 | 0 | 4 | 9 | 1 | 0 | 14 | 9 | 7 | 78 |
| 2014-02-04 | Good4 | 13 months | P150F | 30 | 0 | 3 | 19 | 0 | 0 | 22 | 18 | 13 | 72 |
| **Average** | | **55.25** | - | - | **0** | **3** | **11.75** | **0.75** | **0** | **15.5** | **10.5** | **8** | **80** |
| | Pool #5 | | | | | | | | | | | | |
| 2013-12-10 | Poor1 | 12 months | P150F | 30 | 0 | 0 | 9 | 2 | 0 | 11 | 11 | 3 | 27 |
| 2014-12-08 | Poor2 | 22 months | P180F | 43 | 0 | 1 | 8 | 1 | 0 | 10 | 7 | 2 | 29 |
| 2014-10-20 | Poor3 | 13 months | P180F | 30 | 0 | 1 | 9 | 2 | 0 | 12 | 10 | 1 | 10 |
| 2014-10-27 | Poor4 | 6 years | P240F | 43 | 0 | 13 | 39 | 0 | 0 | 52 | 41 | 9 | 22 |
| **Average** | | **29.75** | - | - | **0** | **3.75** | **16.25** | **1.25** | **0** | **21.25** | **17.25** | **3.75** | **22** |
| | Pool #6 | | | | | | | | | | | | |
| 2014-11-24 | Poor1 | 22 months | P180F | 43 | 0 | 5 | 15 | 5 | 0 | 25 | 21 | 6 | 29 |
| 2014-12-01 | Poor2 | 5 years | P240F | 43 | 1 | 1 | 5 | 1 | 0 | 8 | 6 | 0 | 0 |
| 2013-12-10 | Poor3 | 13 months | P150F | 30 | 0 | 4 | 19 | 8 | 0 | 31 | 23 | 7 | 30 |
| 2014-12-15 | Poor4 | 18 months | P180F | 43 | 0 | 2 | 7 | 4 | 0 | 13 | 12 | 3 | 25 |
| **Average** | | **28.25** | - | - | **0.25** | **3** | **11.5** | **4.5** | **0** | **19.25** | **15.5** | **4** | **21** |
| | Pool #7 | | | | | | | | | | | | |
| 2014-11-10 | Poor1 | 21 months | P180F | 43 | 2 | 2 | 1 | 0 | 0 | 5 | 7 | 2 | 29 |
| 2014-12-08 | Poor2 | 3 years | P240F | 43 | 0 | 6 | 12 | 4 | 0 | 22 | 14 | 3 | 21 |
| 2014-11-10 | Poor3 | 6 years | P240F | 43 | 0 | 15 | 38 | 8 | 0 | 61 | 43 | 15 | 35 |
| 2014-11-10 | Poor4 | 15 months | P180F | 30 | 0 | 1 | 4 | 3 | 0 | 8 | 5 | 0 | 0 |
| **Average** | | **36** | - | - | **0.5** | **6** | **13.75** | **3.75** | **0** | **24** | **17.25** | **5** | **21** |
| | Pool #8 | | | | | | | | | | | | |
| 2014-10-20 | Poor1 | 3 years | P240F | 43 | 0 | 0 | 12 | 6 | 0 | 18 | 12 | 3 | 25 |
| 2013-12-10 | Poor2 | 13 months | P150F | 30 | 0 | 3 | 11 | 3 | 0 | 17 | 16 | 5 | 31 |
| 2013-12-10 | Poor3 | 16 months | P150F | 30 | 0 | 0 | 6 | 3 | 0 | 9 | 5 | 0 | 0 |
| 2014-11-24 | Poor4 | 3 years | P240F | 43 | 0 | 7 | 11 | 1 | 0 | 19 | 15 | 4 | 27 |
| **Average** | | **25.25** | - | - | **0** | **2.5** | **10** | **3.25** | **0** | **15.75** | **12** | **3** | **21** |
| ANOVA | | - | - | - | N.S | N.S | N.S | N.S | N.S | N.S | N.S | (P<0.05) | (P<0.05) |

**Table S2. List of the 72 genes differentially expressed (fc ≥ 1.5, *P* < 0.05) in the comparison of poor versus good donors with the raw symmetrical fold-change and statistical significance (*P*-value)**

| Gene symbol | Fold change | *P*-value | Gene symbol | Fold change | *P*-value |
|---|---|---|---|---|---|
| LUM | 3.627317 | 0.002474616 | JUN | -1.567378 | 0.01911778 |
| GPX6 | 2.556556 | 0.02261067 | TRPM6 | -1.593232 | 0.0300385 |
| RAB38 | 1.931243 | 0.000230169 | TMEM79 | -1.593997 | 0.03413238 |
| CARTPT | 1.925002 | 0.01329396 | ABCA3 | -1.604337 | 0.000738508 |
| IGSF11 | 1.900717 | 0.000136452 | MMP7 | -1.608459 | 0.000641934 |
| SLC38A2 | 1.83982 | 0.000765694 | SETX | -1.630486 | 0.005143528 |
| USP50 | 1.833847 | 0.01008011 | CHST4 | -1.646124 | 0.02726936 |
| CLU | 1.710803 | 0.03357212 | KIAA1737 | -1.650971 | 0.003634006 |
| MAL2 | 1.660993 | 0.000405846 | WWC1 | -1.659587 | 0.003127952 |
| HMCN1 | 1.648876 | 0.007514724 | SERPINB4 | -1.660379 | 0.01873367 |
| CDH2 | 1.641244 | 0.02838836 | RUNX1T1 | -1.676873 | 0.02851859 |
| CCNB1IP1 | 1.620082 | 0.000244699 | GIMAP6 | -1.67727 | 0.03265761 |
| TMEFF2 | 1.575506 | 0.0164174 | PLA2G6 | -1.688972 | 0.000105436 |
| ZNF391 | 1.557867 | 0.01001603 | INHA | -1.689603 | 0.01086921 |
| FEZ1 | 1.531702 | 0.004950878 | CLEC2L | -1.707389 | 0.002858025 |
| RGS7 | 1.510848 | 0.001700443 | PIGR | -1.712788 | 0.00338853 |
| FSD1 | 1.505096 | 0.03899792 | NUDT4 | -1.752517 | 0.009658898 |
| SLC37A1 | -1.503263 | 0.004494458 | C28H10orf57 | -1.75681 | 0.001520848 |
| TMUB1 | -1.50387 | 0.004922629 | ZNF295 | -1.794232 | 0.007276165 |
| UPLP | -1.507879 | 0.01948026 | FGFR2 | -1.798736 | 0.01002178 |
| RARA | -1.508098 | 0.01500485 | PLAC8 | -1.815297 | 0.008775145 |
| IFI27L2 | -1.509744 | 0.001927701 | KRAS | -1.82904 | 4.08E-05 |
| SLC30A7 | -1.519336 | 0.005060526 | VNN2 | -1.867502 | 0.02137052 |
| CHADL | -1.519963 | 0.000379435 | ABHD8 | -1.873638 | 0.001373457 |
| MECP2 | -1.525504 | 0.000928258 | MGST2 | -1.887881 | 0.01275033 |
| IMPACT | -1.526818 | 0.01920168 | PACSIN1 | -1.928247 | 9.60E-05 |
| NT5M | -1.529137 | 0.000434609 | IGLL1 | -1.969435 | 0.01641942 |
| PDE6G | -1.540464 | 0.009066276 | SERPINA1 | -2.100363 | 0.03108778 |
| EML2 | -1.540464 | 0.04889933 | BOLA | -2.104153 | 0.008118577 |
| TNRC6A | -1.54114 | 0.01155914 | BoLA | -2.244453 | 0.01292849 |
| PLAC9 | -1.542396 | 0.002436764 | DMBT1 | -2.344823 | 0.01072773 |
| OGDH | -1.543249 | 0.00050238 | PEA15 | -2.48329 | 0.007978792 |
| POFUT2 | -1.545419 | 0.0284294 | JSP.1 | -2.575469 | 0.006995262 |
| TRAPPC9 | -1.54944 | 0.005462395 | BOLA-N | -2.732387 | 0.006076131 |
| CEACAM19 | -1.553534 | 0.01446992 | LY6G6C | -2.815814 | 0.001143032 |
| TGFB3 | -1.553553 | 0.03002349 | PTP4A3 | -2.850533 | 0.002682053 |