**Supplementary Materials for**

**Integration of mouse ovary morphogenesis with developmental dynamics of the oviduct, ovarian ligaments, and rete ovarii.**

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| **Supplemental File 1a.** Ovarian and Müllerian duct phenotypes in *Pax2* and *Pax8* allelic series |

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|  |  | ***P2+/+ P8+/+*** | ***P2d/+ P8+/+*** | ***P2d/d P8+/+*** | ***P2+/+ P8d/+*** | ***P2+/+ P8d/d*** | ***P2d/+ P8d/+*** | ***P2d/d P8d/+*** | ***P2d/+ P8d/d*** |
| **Müllerian duct** | **Oviduct** | **✓** | **~** | **~** | **✓** | **~** | **~** | **X** | **X** |
| **Infundibulum** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** |
| **Rete ovarii** | **IOR** | **✓** | **✓** | **✓** | **X** | **X** | **~** | **X** | **X** |
| **CR** | **✓** | **✓** | **✓** | **~** | **X** | **~** | **~** | **X** |
| **EOR** | **✓** | **✓** | **X** | **✓** | **X** | **X** | **X** | **X** |
| **Ovary morphogenesis** | **Folding** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** | **✓** |
| **Encapsulation** | **✓** | **✓** | **✓** | **✓** | **X** | **X** | **X** | **X** |
|  |  |  |  |  |  |  |  |  |  |
|  | **Legend** | **✓** | **~** | **X** |  |  |  |  |  |
|  |  | Intact | Perturbed | Absent |  |  |  |  |  |

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| **Supplemental File 1b.** PCR Primers used in this study | | |
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| **Allele** | **Forward Primer** | **Reverse Primer** |
| *Pax2 wild-type* | AAAGTGAGGGAAGCGTAGAGAAG | ACCATAGACATTAGAGGTGCAGA |
| *Pax2del* | TGACTTTTGCAGTCCAGAGTCTCCC | ACCATAGACATTAGAGGTGCAGA |
| *Pax8 wild-type* | GAAAGTTCGAGGGAAGGGAGATC | CAGTTCTTTCAGTGGTCCCTCC |
| *Pax8del* | GAAAGTTCGAGGGAAGGGAGATC | GACCAAGTAGTCAATGGGGGCC |
| *Sf1:eGfp* | CACCATCTTCTTCAAGGACGAC | GTCACGAACTCCAGCAGGACC |
| *Sry* | GTGTCTCAAAGCCTGCTCTTC | CATGTACTGCTAGCAGCTATC |
| *Myogenin*  *(internal control)* | TTACGTCCATCGTGGACAGCAT | TGGGCTGGGTGTTAGTCTTAT |

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| **Supplemental File 1c.** Primary antibodies used in this study | | | | |
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| **Primary Antibody** | **Host Species** | **Dilution** | **Source** | **Product #** |
| AMH/MIS | Goat | 1:500 | Santa Cruz Biotechnology | sc-6886 (discontinued) |
| aSMA  (Cy3 conjugated) | Mouse | 1:1000 | Sigma | C6198 |
| aSMA  (FITC conjugated) | Mouse | 1:500 | Sigma | F3777 |
| E-Cadherin | Rat | 1:500 | Zymed (Thermo Fischer) | 13-1900 |
| ENDOMUCIN | Rat | 1:250 | Santa Cruz Biotechnology | sc-65495 |
| FOXL2 | Goat | 1:250 | Novus Biologicals | NB100-1277 |
| GATA4 | Goat | 1:250 | Santa Cruz Biotechnology | sc-1237 (discontinued) |
| GFP | Chicken | 1:1000 | Abcam | ab13970 |
| HuC/D | Human | 1:10000 | Gift from V. Lennon  (Mayo Clinic) | N/A |
| KRT8 | Rat | 1:250 | DSHB | TROMA-I |
| PAX8 | Rabbit | 1:500 | Proteintech | 10336-1-AP |
| RUNX1 | Rabbit | 1:500 | Abcam | ab92336 |
| SOX9 | Rabbit | 1:1000 | Millipore | AB5535 |
| TNC | Rabbit | 1:250 | Gift from H. Erickson  (Duke University) | N/A |
| TUJ1 | Rabbit | 1:1000 | Abcam | ab18207 |

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| **Supplemental File 1d.** Secondary antibodies used in this study | | | |
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| **Secondary Antibody** | **Dilution** | **Source** | **Product #** |
| AF647 Donkey anti-**Rabbit** | 1:500 | Jackson ImmunoResearch | 711-605-152 |
| Cy3 Donkey anti-**Goat** | 1:500 | Jackson ImmunoResearch | 705-165-147 |
| Cy3 Donkey anti-**Chicken** | 1:500 | Jackson ImmunoResearch | 703-165-155 |
| AF488 Donkey anti-**Chicken** | 1:500 | Jackson ImmunoResearch | 703-545-155 |
| AF488 Donkey anti-**Human** | 1:500 | Jackson ImmunoResearch | 709-545-149 |
| AF488 Donkey anti-**Rat** | 1:500 | Life Technologies | A-21208 |
| Cy3 Donkey anti-**Rat** | 1:500 | Jackson ImmunoResearch | 712-165-150 |
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| CF647-hydrazide probe  to label Elastin | 1:500 | Millipore Sigma | SCJ4600046 |

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