**Supplementary Table 3.** Mutations in *PTK7, MEGF8* and *DVL3* in the SSC (rows 1-5, proband IDs are masked) or the Database of Genomic Variants (rows 6-8, Kamisnsky et al., Genet Med. 2011:777-84.). The mouse mutant chuzhoi is listed in the bottom row for comparison.

<table>
<thead>
<tr>
<th>Proband</th>
<th>mutation</th>
<th>BMI-Z</th>
<th>height-Z</th>
<th>neonatal and other phenotypes</th>
<th>FSIQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>11256.p1 (M)</td>
<td>PTK7 nonsense</td>
<td>3.2</td>
<td>1.8</td>
<td>greater than 8 ear infections vision corrected clumsy</td>
<td>102</td>
</tr>
<tr>
<td>11726.p1 (M)</td>
<td>PTK7 R562Q</td>
<td>4.3</td>
<td>.8</td>
<td>respiratory difficulty frequent otitis media normal hearing vision</td>
<td>92</td>
</tr>
<tr>
<td>13808.p1 (M)</td>
<td>PTK7 R276H</td>
<td>3.0</td>
<td>.8</td>
<td>neonatal genital abnormality, broken bones neonatal heart problems, abnormal eeg frequent strep throat normal hearing vision</td>
<td>40</td>
</tr>
<tr>
<td>11798.p1 (M)</td>
<td>MEGF8 Q1962G</td>
<td>2.0</td>
<td>-0.2</td>
<td>poor suck, lethargic, floppy, feeding difficulties, respiratory difficulties</td>
<td>114</td>
</tr>
<tr>
<td>11242.p1 (M)</td>
<td>DVL3 frameshift</td>
<td>2.5</td>
<td>0.24</td>
<td>poor suck, physical anomalies, feeding difficulties, genital abnormalities</td>
<td>94</td>
</tr>
<tr>
<td>nsv530893</td>
<td>PTK7 CNVdel (7.8 Mb) de novo</td>
<td></td>
<td></td>
<td>abnormality of cardiac morphology; Abnormality of the skeletal system; Dandy-Walker malformation; seizure</td>
<td></td>
</tr>
<tr>
<td>nsv529573</td>
<td>PTK7 CNVdel 2.2Mb</td>
<td></td>
<td></td>
<td>intellectual disability</td>
<td></td>
</tr>
<tr>
<td>nsv530894</td>
<td>PTK7 CNVdel 4.9 Mb</td>
<td></td>
<td></td>
<td>developmental delay and/or other significant developmental or morphological phenotypes</td>
<td></td>
</tr>
<tr>
<td><strong>mouse</strong></td>
<td><em>chuzhoi</em> p.L491.Q492insAN P</td>
<td></td>
<td></td>
<td>heterozygote overtly normal, multiple congenital anomalies in homozygote</td>
<td></td>
</tr>
</tbody>
</table>
**Supplementary Table 4.** Phenotypes associated with *de novo MUC5B* mutations in the Simons Simplex Collection.

<table>
<thead>
<tr>
<th>Proband (sex)</th>
<th>Mutation</th>
<th>BMI-Z</th>
<th>height-Z</th>
<th>neonatal phenotype</th>
<th>FSIQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>11078.p1 (M)</td>
<td>nonsense</td>
<td>2.93</td>
<td>.99</td>
<td>stiff infant lethargic/overly sleepy large head circ</td>
<td>29</td>
</tr>
<tr>
<td>14183.p1 (M)</td>
<td>T1671M</td>
<td>3.01</td>
<td>3.47</td>
<td>feeding clumsy broken bones &gt;8 otitis</td>
<td>100</td>
</tr>
<tr>
<td>12779.p1 (M)</td>
<td>P4997L</td>
<td>1.91</td>
<td>1.15</td>
<td>feeding vision corrected</td>
<td>99</td>
</tr>
<tr>
<td>13983.p1 (F)</td>
<td>P3887T</td>
<td>-1.75</td>
<td>.28</td>
<td>feeding</td>
<td>40</td>
</tr>
<tr>
<td>11653.p1 (M)</td>
<td>del(15) no frame shift V2574A T3883M</td>
<td>-.43</td>
<td>-.77</td>
<td>stiff infant</td>
<td>36</td>
</tr>
<tr>
<td>11247.p1 (M)</td>
<td>P4997L</td>
<td>-0.6</td>
<td>+0.4</td>
<td>kidney or urinary</td>
<td>128</td>
</tr>
<tr>
<td>11957.p1 (M)</td>
<td>C4174F</td>
<td>1.6</td>
<td>-2.0</td>
<td>physical anomalies, respiratory</td>
<td>77</td>
</tr>
<tr>
<td>12447.p1 (M)</td>
<td>H4050Q</td>
<td>0.4</td>
<td>-0.5</td>
<td>lethargic</td>
<td>53</td>
</tr>
</tbody>
</table>