

Table S1. List of the genes included in the One4Two® panel. For each gene are reported the mutation rate, the clinical phenotype (with regard to infertility-related issues), and the information provided within the proposed test.

Gene	Mutation Rate*	Phenotype	Information provided
<i>CFTR</i>	0.00003802	- Cystic Fibrosis (Obstructive azoospermia and male infertility) - Congenital Bilateral Absence of the Vas Deferens (CBAVD)	- Genetic cause of infertility - Partners' carrier status
<i>DMD</i>	0.0001005	Duchenne muscular dystrophy	- Partners' carrier status
<i>F5</i>	0.00005807	Thrombophilia	- Genetic cause of infertility
<i>F2</i>	0.00002507	Thrombophilia	- Genetic cause of infertility
<i>F13A1</i>	0.00002477	Thrombophilia	- Genetic cause of infertility
<i>F13B</i>	0.0000162	Thrombophilia	- Genetic cause of infertility
<i>MTHFR</i>	0.00002512	Thrombophilia	- Genetic cause of infertility
<i>SERPINE1</i>	0.00001494	Thrombophilia	- Genetic cause of infertility
<i>ITGB3</i>	0.00002679	Bleeding disorder	- Genetic cause of infertility
<i>FGF</i>	0.0000136	Thrombophilia	- Genetic cause of infertility
<i>APOE</i>	0.00001669	Vascular alterations	- Genetic cause of infertility
<i>APOB</i>	0.0001188	Vascular alterations	- Genetic cause of infertility
<i>ACE</i>	0.00004902	Vascular alterations	- Genetic cause of infertility
<i>FSHR</i>	0.00001783	Ovarian dysgenesis/Ovarian hyperstimulation syndrome	- Genetic cause of infertility - Personalized treatment
<i>GNRHR</i>	0.000008214	Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>LHB</i>	0.000006597	Hypogonadotropic hypogonadism	- Genetic cause of infertility - Personalized treatment
<i>LHCGR</i>	0.00001819	Hypogonadotropic hypogonadism	- Genetic cause of infertility - Personalized treatment
<i>AR</i>	0.00002504	Androgen insensitivity syndrome/infertility	- Genetic cause of infertility
<i>FSHB</i>	0.000003384	Primary ovarian insufficiency/Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>INHBA</i>	0.00001418	Ovarian functions alterations	- Genetic cause of infertility
<i>INHBB</i>	0.00001529	Ovarian functions alterations	- Genetic cause of infertility
<i>FMR1</i>	0.00001966	Fragile X/Premature ovarian failure	- Genetic cause of infertility - Partners' carrier status
<i>FMR1NB</i>	0.000009015	Fragile X	- Partners' carrier status
<i>HLA-A</i>	0.00001097	Histocompatibility	- Genetic cause of infertility
<i>HLA-B</i>	0.000009771	Histocompatibility	- Genetic cause of infertility
<i>GALT</i>	0.00001281	Primary ovarian insufficiency	- Genetic cause of infertility
<i>AGT</i>	0.00001559	Thrombophilia/Seminal alterations	- Genetic cause of infertility
<i>FOXL2</i>	0.000008008	Premature ovarian failure	- Genetic cause of infertility
<i>BMP15</i>	0.00001267	Gonadal dysgenesis	- Genetic cause of infertility
<i>ZP1</i>	0.00002076	Oocyte maturation defects	- Genetic cause of infertility
<i>HESX1</i>	0.00000491	Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>NR5A1</i>	0.00001804	Gonadal dysgenesis	- Genetic cause of infertility
<i>POU1F1</i>	0.000008047	Hypopituitarism	- Genetic cause of infertility
<i>SRY</i>	0.000004782	Gonadal dysgenesis	- Genetic cause of infertility
<i>ZFY</i>	0.0000199	Spermatogenic impairment	- Genetic cause of infertility
<i>EIF1AY</i>	0.000002559	Spermatogenic impairment	- Genetic cause of infertility
<i>KAL1</i>	0.0000205	Kallmann syndrome	- Genetic cause of infertility
<i>SF1</i>	0.00002021	Gonadal dysgenesis	- Genetic cause of infertility
<i>DAZ</i>	0.00002663	Spermatogenic impairment	- Genetic cause of infertility
<i>WT1</i>	0.00001554	Gonadal development alterations	- Genetic cause of infertility
<i>FGF8</i>	0.00001017	Hypogonadotropic hypogonadism	- Genetic cause of infertility

<i>FGFR1</i>	0.00003177	Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>PROK2</i>	0.000003081	Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>PROKR2</i>	0.0000158	Hypogonadotropic hypogonadism	- Genetic cause of infertility
<i>INSL3</i>	0.000006032	Cryptorchidism	- Genetic cause of infertility
<i>RXFP2</i>	0.00001967	Cryptorchidism	- Genetic cause of infertility
<i>CATSPER1</i>	0.00003128	Spermatogenic failure	- Genetic cause of infertility
<i>HBB</i>	0.000003856	Thalassemia	- Partners' carrier status
<i>HBA1</i>	0.000003834	Thalassemia	- Partners' carrier status
<i>HBA2</i>	0.000003017	Thalassemia	- Partners' carrier status
<i>F8</i>	0.00006063	Haemophilia A	- Partners' carrier status
<i>F9</i>	0.00001277	Haemophilia B	- Partners' carrier status
<i>BRCA1</i>	0.00004618	Hereditary breast and ovarian cancers	- Personalized treatment
<i>BRCA2</i>	0.00008061	Hereditary breast and ovarian cancers	- Personalized treatment

*evaluated for reported missense variants and based on Varsome database (<https://varsome.com/>); n.r.: not reported.