

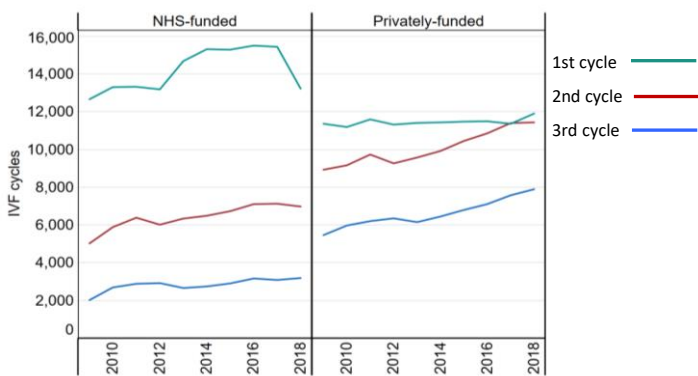
You have been offered a new test which has recently become available as part of routine fertility care in the UK. Before you proceed with the test it is important that you understand why it is being offered and what we are looking for. This leaflet is intended to make you aware of the potential benefits as well as any limitations, based on the information available at this time.

### The female reproductive system

- The female reproductive system is regulated by a number of hormones including follicle stimulating hormone (FSH) and luteinising hormone (LH).
- The role of these hormones in the regular monthly cycle is to release one mature egg from the ovary.
- During IVF treatment your doctor will prescribe drugs containing these hormones, but at higher amounts than the body would normally produce. This is to produce several eggs and is known as ovarian stimulation.

### Current IVF success rates in the UK

- Live birth rates from IVF have steadily increased over the years, to 23% by 2018 – a fantastic result.
- The number of people having their first treatment cycle remains fairly constant yet the numbers of people having a second or third cycle is increasing – see diagram below;



- This is likely due to not achieving a live birth from the first cycle.

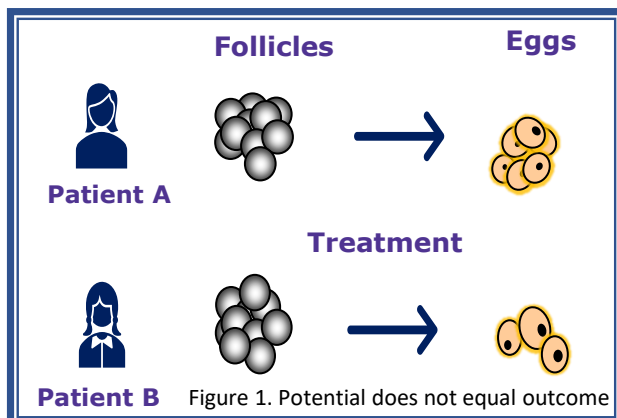
In the example to the right - patients have the same ovarian potential (numbers of follicles as shown by blood tests and scans) but they do not achieve the same number of eggs after treatment with the same drugs. **This may be due to genetic differences.**

### Genetic testing in fertility - Background

- For any drug to work our body needs to recognise them, and to respond. This happens through receptors which are found on cells.
- Receptors for fertility drugs are found on cells in the ovaries.
- Many studies have been carried out looking at the differences in these receptors and we now know some types of receptors respond better than others to specific fertility treatments.
- The receptor problem we have most information on and we know is most likely to cause fewer eggs to develop during IVF treatment is known as the FSH 680 receptor change, or polymorphism.
- Differences in receptors are caused by genetics.

### Current IVF treatment: Ovarian stimulation

- The current best practice in IVF is to look at hormone levels in the blood and/or an ultrasound scan of the ovaries before treatment starts.
- These tests give a good idea of the number of follicles in the ovaries and how many eggs may be achieved after treatment. This is known as ovarian potential.
- Current tests do not take your genetic profile into account.
- We know that two patients with the same ovarian potential may not respond to treatment equally, and these differences may be based on individual genetics.



### What are the risks of polymorphism testing?

- The receptor polymorphism test requires a small amount of blood which can be taken alongside other tests at the clinic.
- The test works by PCR (something you will have likely heard lots about with reference to Covid 19).
- PCR testing is not a new technique, it is well understood and very reliable.
- Genetic tests do not change over time – your results can be used if you require further fertility treatment in the future.
- As this genetic test is looking at one specific area of DNA the information cannot be used to identify you, we will not discover anything other than the type of FSH receptors you have and this information will not be shared.
- As with any test, the results do not guarantee success in terms of a definite live birth.

### Will the results of this test help with my IVF treatment?

- The genetic test results in combination with the information on your ovarian potential will help create a much better understanding of how you are likely to respond to treatment.
- This result will also help the doctor to choose the most appropriate medication and dose for your treatment, offering a personalised treatment approach.
- The more information we have the better decisions we can make.

**Whilst genetic testing in routine fertility care is new to the UK, the research behind this test and the impact of the results on treatment has been conducted over a 10 year period. Personalised medicine is not a new concept but the techniques to allow it are. Information on your genetic make-up and how you might respond to IVF treatment aims to ensure you get the right treatment first time, instead of relying on lessons from the first cycle of treatment.**

**The FSH polymorphism test has been created by experts in molecular biology with direction from fertility professionals. Furthermore, all testing is carried out in specialist genetic laboratories by clinical and biomedical scientists with many years of experience in this area.**

**Please take the time to read the information provided. For further information please speak to your Healthcare Professional or visit: [www.pmorph.com](http://www.pmorph.com) or email [info@pmorph.com](mailto:info@pmorph.com)**

### What is the FSH receptor polymorphism test looking for?

- This test looks at a specific piece of DNA which makes your FSH receptors in your ovaries.
- It will tell us what your receptors look like and this gives a good idea of how you may respond to treatment.
- Results show if you have no copies, one copy or two copies of the problem receptor.
- The doctor can make decisions on your treatment based on your receptor type.

### What is the likelihood of having a problem with my FSH receptors?

- Much research has been carried out and the chance of having a receptor problem is greater than 50% in a fertility setting.
- The chance of having the type of FSH receptor also depends on ethnicity<sup>1</sup> – see table below:

	FSHR Polymorphism (%)		
Ethnic Group	0 copies	1 copy	2 copies
Caucasian	29.6	48.9	21.5
Asian	50.7	38.8	10.4
Northern Indian	27.3	51.5	21.2
African-American	33.8	47.7	18.5
Mediterranean	26.3	51.4	22.3

Table adapted from Kuijper *et al* (2010)

\*The chances of a poorer response to IVF treatment increases with the number of copies of the problem receptor you have.