

### Practical details...

#### BEFORE SENDING SAMPLES

Check gestational age conditions

- ≥ 8 weeks of gestation  
(based on ultrasound report)
- ≥ 10 weeks of amenorrhoea

Inform laboratory  
prior to dispatch :

+33.1.34.40.20.80  
smgenetique@lab-cerba.com

#### SAMPLING OF MATERNAL BLOOD

- Collect whole blood (3 x 7 ml) on a serum tube with separating gel

- Leave 30 minutes at room temperature until complete clotting then centrifuge for 10 min at around 4000 rpm.

NEVER OPEN THE TUBES

The following documents **MUST BE** enclosed with all requests

- Ultrasound report (1st ultrasound dating: gestational age and number of fetuses)

- Test requisition form: "Fetal sex determination from maternal blood"

- Certificate of medical counseling and signed patient's informed consent.

Thanks to recent progress in molecular genetics, it is now possible to carry out analyses using circulating cell-free fetal DNA in maternal blood.

Laboratoire Cerba has extended its human genetic diagnostic range to include a test allowing fetal sex determination in a sample of maternal blood.

Fetal sex may also be determined in non-invasive and reliable fashion using fetal ultrasound. However, the latter method is not normally used before the second trimester of pregnancy since ultrasound is not sufficiently reliable during the first trimester. Fetal sex determination using circulating cell-free fetal DNA in maternal blood thus has the advantage of being non-invasive and of being easy to perform at an earlier stage of pregnancy.

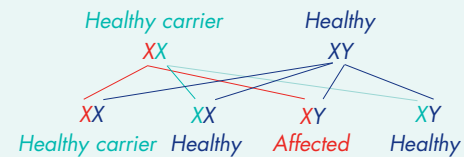
#### NON INVASIVE FETAL SEX DETERMINATION and X-LINKED DISORDERS

Rapid determination of fetal gender is essential for early prenatal diagnosis of genetic diseases involving the X-chromosome (hemophilia, Duchenne muscular dystrophy, mental retardation, etc.).

##### X-linked genetic disorders:

- Haemophilia : 1/5.000 males
- Duchenne's muscular dystrophy: 1/3.500 males
- X-related mental retardation: 1/1.500 males

ORPHANET Data



##### Value of the test

Until recently, chorionic villus sampling (CVS) provided the only means of early fetal sex determination (from 11 weeks) through chromosomal analysis or molecular genetic analysis in the case of male fetuses.

The problems associated with this invasive procedure (numbers of resulting miscarriages, sampling errors, etc) are detrimental to female fetuses, which are unaffected by X-linked disorders.

Early non-invasive determination of fetal sex from circulating cell-free fetal DNA in maternal blood is thus clearly beneficial in the management of female carriers of these genetic diseases.

##### Technical aspect

The test involves analysis of circulating cell-free fetal DNA extracted from a simple sample of maternal blood as of the second month of pregnancy (10 weeks).

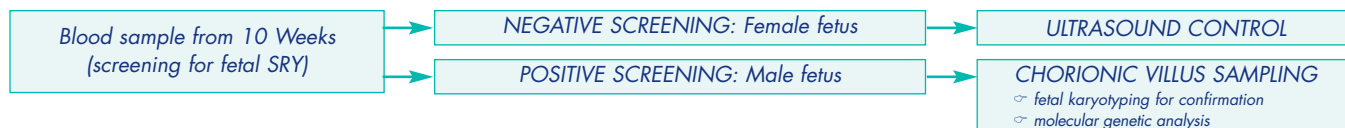
##### Principle

Fetal sex may be determined in through the detection in maternal serum of specific Y chromosome genetic sequences and more particularly that of the sex-determining gene, or sex-determining region Y chromosome (SRY).

##### Management

As a consequence, a new strategy for the prenatal diagnosis of X-linked disorders was defined.

For a female fetus, ultrasound monitoring alone is performed, with CVS being used solely for male fetuses. This new approach has now been adopted by the majority of medical genetics centers:



#### NON INVASIVE FETAL SEX DETERMINATION and CONGENITAL ADRENAL HYPERPLASIA (from 6 weeks)

Determination of fetal sex at this early stage of pregnancy is also extremely useful in the management of couples at risk for congenital adrenal hyperplasia. In such settings, treatment with corticosteroids is generally initiated very soon after the start of pregnancy in order to avoid potential virilization of female fetuses. However, the long-term consequences of such treatment are not known. This approach is unnecessary and may be avoided for male fetuses. This situation in fact constitutes one of the most common indications for early fetal sex determination in maternal blood.