



Editorial

Biomarkers in reproductive health



There is no doubt that reproductive health matters: fertility and infertility clearly affect us as a society. Multidisciplinary teams are a key feature of assessing reproductive health and this special issue reflects that with contributions from both clinicians and laboratorians. The field of fertility is also among the best for using laboratory tests to guide diagnosis and treatment selection. Indeed, measurements of glycoproteins, hormones, and steroids are part of multiple decision algorithms for the diagnosis of hypogonadism, amenorrhea, hirsutism, and infertility. From brain to gonads, from hormones to cells, from immunoassays to mass spectrometry, the area of reproductive health is extremely broad and a fantastic source for multiple innovations. New biomarkers and development of assays with enhanced performance offer more perspectives for a better understanding of pathophysiological processes, identification of new therapeutic targets, and personalized care.

There are also numerous challenges in the field and the quote from Marie Curie, "I was taught the way of progress is neither swift nor easy" certainly applies here.

In this special issue of Clinical Biochemistry, we will review the role of *Biomarkers in Reproductive Health* and have the opportunity to focus on specific areas of reproductive medicine presented by several experts.

The article from Mélodie Vander Borgh and Christine Wyns opens this special issue with definitions for infertility, subfertility and sterility, an overview of the epidemiology and impact of infertility around the world, as well as factors influencing fertility of couples [1].

A second article from Laura Smy and Joely Straseski will discuss the evolution of estrogen testing in an extensive review [2]. Measurement of estrogens is important for the diagnosis and monitoring the health of women, men, and children with challenges such as the need to measure a broad range of concentrations and potential cross-reactivity with other steroid-like structures. The authors also present the latest trends and challenges for immunoassays and mass spectrometry-based assays for the measurement of estrogens.

Polycystic ovary syndrome (PCOS) is often associated with infertility and its prevalence is increasing. The article by Oranite Goldrat and Anne Delbaere will present an update on PCOS with highlights on its prevalence across ethnic groups, its physiopathology, and current research related to its genetic origin, diagnosis, and new biological biomarkers that may aid in future PCOS investigations [3].

A disrupted androgen profile is a hallmark of women with PCOS and increased concentrations of androstenedione are commonly observed. Josef van Helden and Ralf Weiskirchen present the evaluation of a novel automated androstenedione assay as an example of the changing landscape of androgen testing [4]. Their evaluation presents the analytical performance of the assay and a comparison to mass spectrometry, but also assesses its diagnostic performance in PCOS populations.

The article from Michel Rossier and colleagues opens the discussion on male fertility and analysis on sperm and seminal plasma [5]. Their study focuses on the relationship between sperm quality and steroid profiles in blood

and semen in men. They also present the perspectives of new biomarker profiles for individual exposure to endocrine disruptors.

Following that discussion is an article from Usha Punjabi and colleagues about sperm DNA fragmentation [6]. Sperm DNA damage has been implicated in both male aging and fertility and their work highlights the prevalence of sperm DNA fragmentation in a large cohort of patients, both in the total and vital fractions.

To close this special issue, the article from Damien Gruson brings us back to the brain and neurohormones and presents the biochemistry and evolving role of oxytocin [7]. Oxytocin has several functions in reproductive health and its potential role in human attachment and love is growing. This article also discusses the different assays for oxytocin testing.

In this special issue you will therefore learn more about some trends in biomarkers in reproductive health and we thank the experts for their contributions.

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Christine Wyns^{a,b}, Joely Straseski^c, Damien Gruson^{b,d,*}

^a Department of Gynecology-Andrology, Cliniques Universitaires Saint-Luc, Avenue Hippocrate 10, 1200 Brussels, Belgium

^b Institut de Recherche Expérimentale et Clinique (IREC), Université Catholique de Louvain, Avenue Mounier 52, 1200 Brussels, Belgium

^c Department of Pathology, University of Utah Health Sciences Center, Salt Lake City, UT 84108, USA

^d Department of Clinical Biochemistry, Cliniques Universitaires Saint-Luc, Avenue Hippocrate 10, 1200 Brussels, Belgium

E-mail address: damien.gruson@uclouvain.be (D. Gruson).

* Corresponding author at: Department of Clinical Biochemistry, Cliniques Universitaires Saint-Luc, Avenue Hippocrate 10, 1200 Brussels, Belgium.