

EAA Andrology Training Centre
Centre Report

2025

Unità Operativa Complessa di Andrologia Medica

Ospedale Civile San Salvatore

Università di L'Aquila

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CENTRE REPORT

History of Centre

Andrology in L'Aquila is a more than 30 years' experience. Among the scientific events organized in L'Aquila in this area, is worth mentioning the International Congress "Oligozoospermia: Recent progress in Andrology", held in 1980; this was a key event in promoting Andrology as new basic and clinical medical science. Twenty years later L'Aquila hosted the European Academy of Andrology (EAA) "1st European Congress of Andrology".

The "Complex Unit of Medical Andrology" of the University Hospital of L'Aquila was instituted in 2000. A bank for male gamete cryopreservation is operative since 2003. In the past two years, the biobank premises have been expanded and completely renovated in space and equipment in line with Italian regulations of the National Transplant Center. The Unit was certified as EAA training centre in 2005 (see report in Int J Androl 2006 vol.29, supplement 1, pag. 154-159), and since 2008 it was certified as Abruzzo reference centre for Andrology and Male Gametes Cryopreservation. In 2016 it was certified "Centre of Excellence" in Andrology and Sexual Medicine by the Italian Society of Andrology and Sexual Medicine. Since 2022, the L'Aquila Andrology Unit is the only public center in Abruzzo recognized by the Istituto Superiore di Sanità for the management of people with gender incongruence.

Organization of Centre

The L'Aquila EAA centre consists of the Complex Unit of Medical Andrology within the University Hospital of L'Aquila. The Unit includes medical clinic for outpatients with andrological and endocrinological disorders, a seminology laboratory and the bank for male gamete cryopreservation. Within the Andrology Unit, there is also an outpatient service for diabetes and metabolism dedicated to the management of patients with diabetes mellitus, dyslipidemia, obesity, and cardiovascular diseases. The presence of this service allows for an integrated and multidisciplinary approach to the management of outpatients with vasculopathic erectile dysfunction and functional hypogonadism secondary to obesity. Furthermore, the Unit is the only public center in Abruzzo recognized by the Istituto Superiore di Sanità for the management of people with gender incongruence.

Close cooperation exists within the L'Aquila University Hospital with the Clinical Pathology Service (for hormonal determinations and bacterial culture of semen, including search for Chlamydia and Ureaplasma in urethral swab and molecular genetic tests), the Medical Genetics Unit (for cytogenetic tests, including Y deletions analysis), the Urology Unit (for Micro-TESE and Surgical Andrology), the Unit of Operative Radiology (for scleroembolization of spermatic vein), the ART centre of Obstetrics and Gynaecology Unit, the Paediatric Unit (for handling young boys with defects of hypothalamus-pituitary-gonadal axis) and psychiatric service (for the management of sexual dysfunction and diagnosis of gender incongruence). Thus, patients have access to all medical requirements within short distance.

The Andrology Unit also cooperates with the Spinal Unit of San Raffaele Sulmona Institute for the management of sexual and reproductive dysfunctions of men with spinal cord injuries.

Educational activities

Current activities

Post-graduate School of Endocrinology. In 1981 a Postgraduate School of Andrology was instituted at the University of L'Aquila. In 1986 it was replaced by the Postgraduate School of Endocrinology. Postgraduate students spend at least 2 years of the course in the Andrology Unit.

Pre-graduate course of Andrology for medical students at the University of L'Aquila.
Pre-graduate course of Andrology for students in Reproductive Biotechnologies at the University of Teramo (professional training in andrology at the Andrology Unit of L'Aquila).

Previous activities

Course on Management of Male Infertility (2013, February). A 2 days Course reserved to 80 doctors from different area of Russia Federation, actively involved in Andrology clinics, and selected by FARMAMED, a pharmaceutical institution of Russia.

MASTER in Quality Management and Safety in Handling and Storage of Human Cells and Tissues (2012-2013 and 2013-2014).

Postgraduate course in Quality Management and Safety in Handling and Storage of Human Cells and Tissues (2014).

Master's degree in adolescent medicine (2022-2023).

Research activities

In the field of **erectile dysfunction (ED)** and its relationship with cardiovascular risk, we explored the molecular mechanisms involved in the inhibition of circulating angiogenic cells (CACs) in subjects with ED and explored the role of PDE5i on CACs and endothelial function (Int J Androl 2012,35:645; Asian J Androl 2014,16:290; J Sex Med 2016,13:1063). The correlates of ED have been assessed in spinal cord injured men (J Sex Med 2012,9:830; J Sex Med. 2020 May;17(5):911-918; J Clin Med. 2021 May 13;10(10):2090). In this population we carried out a network meta-analysis to identify the best medical treatment for ED (Andrology. 2025 Feb;13(2):314-322) and quantified the overall infection rate of penile prosthesis implants (Int J Impot Res. 2024 May;36(3):206-213). The network meta-analysis approach was also applied to assess the effectiveness of nutraceutical treatments in the clinical management of erectile dysfunction (J Sex Med. 2024 Oct 31;21(11):1054-1063). The prevalence of ED and other sexual dysfunction was investigated in Klinefelter syndrome (J Sex Med. 2021 Jun;18(6):1053-1064), in men with homosexual orientation (J Sex Med. 2019 May;16(5):624-632) and in men with hyperuricemia (Andrology. 2022 Jan;10(1):72-81). The relationship between cannabis consumption and sexuality was also investigated in large study involving ≈5000 men (Andrology. 2024 Jan;12(1):9-19). Finally, we reviewed all medical treatment strategies for Peyronie's disease in light of the available evidence and current guidelines (Sex Med Rev. 2024 Sep 25;12(4):747-753).

In the field of **male infertility**, interest has been focused on the relationship of seminal leucocytes with sperm pathophysiology (oxidative stress, DNA damage, apoptosis) (Fertil Steril 2011,95:2676; Andrology 2016,4:808), seminal levels of endocannabinoids (Andrology 2017,5:87), semen quality and ART outcomes (Andrology, 2020;8:125-135.). Studies have been also carried out on the relevance of both morphological and functional mitochondrial modifications in spermatozoa of subjects with asthenozoospermia (Fertil Steril 2011, 95:641; Fertil Steril 2011, 95: 2315). Expertise in the field of immunological infertility is documented by the publication of various reviews by invitation (MALE AUTOIMMUNE INFERTILITY In:

WKH Krause & RK Naz: IMMUNE INFERTILITY, Ed. Springer-Verlag, Berlin pp.145-153, 2009, and an updated 2nd Edition in 2017; INFERTILITY: IMMUNOLOGICAL ASPECTS In: eLS, John Wiley & Sons, Ltd: Chichester, 2012) and by a large retrospective analysis of over 10,000 men (the largest published so far) assessing the prevalence of anti-sperm antibodies and the relationship of degree of sperm autoimmunization to semen parameters and post-coital test outcome (Hum Reprod 2019,34:834) as well as the relationship between natural and intrauterine insemination-assisted live births and the degree of sperm autoimmunization (Hum Reprod. 2020 Jun 1;35(6):1288-1295). Attention has been also focused on the effect of varicocele repair on male reproductive outcomes (J Endocrinol Invest. 2019 Oct;42(10):1215-1221; Andrologia 2018,50:e13118; J Endocrinol Invest 2017,40:1145), as well as on the clinical significance of epididymal ultrasound in the diagnosis of excretory and secretory azoospermia, and in oligozoospermia (Andrology 2013,1:133; Hum Reprod 2014,7:1368). Moreover, we also carried out a comprehensive evaluation of the risk of testicular cancer (Front Endocrinol 2019,10:164), as well as clinical and seminal features (Hum Reprod. 2021 Mar 18;36(4):891-898) in men with testicular microlithiasis. As far as the treatment of male infertility is concerned, we coordinated the guidelines on the FSH use from the Italian Society of Andrology and Sexual Medicine (SIAMS) (J Endocrinol Invest. 2018 Sep;41(9):1107-1122) and carried out the largest network meta-analysis on the efficacy of nutraceutical interventions (Andrology. 2024 Mar;12(3):538-552). The impact of advancing age on semen quality was also investigated in a large cohort of over 2500 men (Arch Gynecol Obstet. 2024 Jun;309(6):2843-2852). Finally, we took part in the multicenter study promoted by the EAA aimed at standardizing ultrasound examinations in the field of andrology (Andrology. 2021 Mar;9(2):559-576; Andrology. 2022 Sep;10(6):1150-1171; Andrology. 2022 Oct;10 Suppl 2(Suppl 2):118-132).

In the field of **physiology and physiopathology of human spermatozoon** we explored the role of endocannabinoid system (Endocrinology 2010,151:5882; Andrology 2014,2:502; Nat Rev Urol. 2021 Jan;18(1):19-32) and arachidonic acid pathways (Int J Mol Sci. 2023 May 3;24(9):8207). We also demonstrated the involvement of mitochondrial dysfunction in the inhibitory effect on sperm motility exerted by the seminal plasma from men with spinal cord injury (Andrology 2013,1: 456-63; Antioxidants (Basel). 2021 Apr 28;10(5):695) and the protective role of lactobacilli on sperm oxidative damage (Fertil Steril 2011, 95:2485; PLoS One 2013,8:e83136). We carried out the first studies assessing the effects *in vitro* of the plasticizer molecules bisphenol A (Reprod Toxicol 2016,66:61; Front Endocrinol (Lausanne). 2020 Jun 12;11:353; Front Endocrinol (Lausanne). 2020 Oct 8;11:597609; Biochem Pharmacol. 2022 Mar;197:114896), and bisphenol S and F (Reprod Toxicol. 2021 Aug;103:58-63) on human spermatozoa. We also demonstrated the expression of ACE2 receptor and its isoform short-ACE2 in human spermatozoa (Int J Mol Sci. 2022 Mar 28;23(7):3694).

Hypogonadism and its correlates have been addressed in men with spinal cord injury, who exhibit a high prevalence of biochemical androgen deficiency (Andrology 2014,2:721; J Spinal Cord Med 2016,25:1; J Spinal Cord Med 2016,39:246; Arch Phys Med Rehabil 2016,97:726; Spinal Cord 2018,56:494; Arch Phys Med Rehabil 2017,98:940; J Endocrinol Invest 2019,42:167; J Endocrinol Invest. 2020 Nov;43(11):1599-1606; Spinal Cord. 2025 Feb;63(2):80-85), as well as in men with vitamin D deficiency (Endocrine. 2021 Apr;72(1):49-61). We also assessed the intervention strategies for androgen deficiency (Andrology. 2020 Nov;8(6):1551-1566; Expert Rev Clin Pharmacol. 2021 Sep;14(9):1091-1103; Andrology. 2023

Sep;11(6):1067-1076). More recently we first identified a negative association between iodine exposure and testosterone levels in a large cohort from the NHANES (JAMA Netw Open. 2023 Dec 1;6(12):e2348573). Finally, we reviewed the effectiveness of medical strategies in preventing bicalutamide-induced breast events in patients with prostate cancer (J Endocrinol Invest. 2025 Jul;48(7):1659-1668).

In recent years, our area of clinical and research interest has included **gender incongruence** with neurobiology analyses (J Sex Med. 2020 Mar;17(3):543-550) and studies on the effects of gender affirming hormone therapy on coagulation (Front Endocrinol (Lausanne). 2021 Nov 9;12:741866; Thromb Res. 2024 Mar 4;236:170-178), bone metabolism (Calcif Tissue Int. 2024 Nov;115(5):624-635), renal function (Front Endocrinol (Lausanne). 2025 Jun 12;16:1537838), liver function (J Endocrinol Invest. 2025 Jan;48(1):161-171), heart activity (Eur J Endocrinol. 2025 Oct 1;lvaf201. doi: 10.1093/ejendo/lvaf201) and anthropometric-cardiovascular profile (Transgend Health. 2024 Dec 16;9(6):466-483).

Clinical activities

1. Andrology Clinic: The Medical Andrology Unit is mainly active in the evaluation and management of infertile patients and those with sexual dysfunctions. Patients with primary or secondary hypogonadism, boys with delayed puberty and patients with other endocrine diseases are also seen. The Andrology Unit also includes an outpatient diabetes and metabolism service, enabling integrated, multidisciplinary care for patients with metabolic disorders, vasculopathic erectile dysfunction, and obesity-related hypogonadism. In the 2023 the Andrology Unit has been recognized regional reference centre for the management of congenital hypogonadotropic hypogonadism.

2. Seminology laboratory: **Conventional semen analysis** is performed according to the World Health Organization recommended procedures (2021). Nevertheless, IgG-MAR-test continue to be performed as screening test for immunological infertility on all ejaculates in the context of the standard semen analysis. In the presence of a positive IgG-MAR-test, IgA-MAR test is also performed in the same ejaculate, and sperm-agglutinating activity is titrated in serum and seminal plasma. Laboratory participates to external quality assessment for semen analysis UK NEQAS (Birmingham).

Sperm **DNA fragmentation** (TUNEL assay) is assessed using flow cytometry in cases of ART failure and recurrent pregnancy loss. DNA fragmentation testing is also offered to patients with idiopathic male infertility in order to identify those most likely to respond to FSH treatment (specifically, those with more than 15% of spermatozoa showing DNA fragmentation).

Moreover, flow cytometry is employed for quantifying and phenotyping seminal leukocytes by using monoclonal antibodies (anti-CD45, anti-CD14 and anti-HDL-DR) and the Flow-Count™ Fluorospheres kit.

Computer-Assisted Semen Analysis (CASA) is performed for an objective assessment of sperm motility in selected cases (i.e., on evaluating effectiveness of treatments).

For research purpose, CASA and flow cytometry analyses are carried out to assess mitochondrial membrane potential, mitochondrial ROS generation, membrane lipid peroxidation, DNA 8OHdG, caspase activation, sperm tyrosine phosphorylation during capacitation and anti-sperm antibody load on sperm surface.

Transmission electron microscopy (TEM) can be offered to ascertain genetic conditions of total sperm immotility with preserved sperm vitality.

3. Centre for male gamete cryopreservation: A bank for male gamete cryopreservation is operative since 2003. Sperm cryopreservation is offered mainly to patients with malignant diseases before chemotherapy or radiotherapy but also to patients with severe oligozoospermia or intermittent presence of motile spermatozoa in the semen (as backup for ICSI), to patients with hypothalamo-pituitary hypogonadism after gonadotrophin treatment and to patients undergoing pelvic surgery and to AMAB transgender subjects before starting gender affirming hormone treatment. Cryopreservation of testicular sperm is also routinely performed after TESE/Micro-TESE.

4. Testicular sperm extraction: Up to December 2018, TESE has been performed by Andrology Unit staff in azoospermic patients. Starting from January 2019, micro-TESE is performed in cooperation with the Urology Unit of the Hospital. Specimens are immediately transferred to Andrology laboratory for sperm extraction and histology.

5. Medically assisted ejaculation procedures: Penile vibratory stimulation (PVS) is offered to spinal cord injured men for semen evaluation and/or cryopreservation.

6. Ultrasonography: Ultrasonographic examinations are performed with a duplex scanner equipped with colour flow imaging (General Electric, Healthcare, WI, USA). Scrotal color-Doppler ultrasound (CDU) as diagnostic tool in patients with poor semen quality, in those with an increased risk of malignancy and in those with evidence of varicocele at physical examination. Penile CDU, both at the baseline and 10 and 30 minutes following intracavernous injection of 10 µg of the vasoactive drug prostaglandin E1, is offered to men with erectile dysfunction associated to vascular diseases or vascular risk factors. This is also offered in men with Peyronie's disease. Penile examination is associated to ultrasound determination of common carotid arteries intima-media thickness as an objective evaluation of preclinical atherosclerosis of large arteries. Trans-rectal CDU is performed as a diagnostic tool in patients with azoospermia or severe oligozoospermia to screen possible obstructions of the distal seminal tract. This is also offered to men with persistent leucocytospermia or possible prostate-vesiculitis after general and physical examination. Transvaginal sonography is performed by the ART staff to monitor follicular development.

7. The activity of the ART centre of Obstetrics and Gynaecology Unit, discontinued after the 2009 earthquake (intrauterine inseminations continued to be offered at the Andrology Unit), restarted from 2019. A strict co-operation exists with the Andrology Unit. Female outpatients are visited by gynecologist within the Andrology Unit.

8. Since 2022, the L'Aquila Andrology Unit is the only public center in Abruzzo recognized by the Istituto Superiore di Sanità (ISS) for the management of people with gender incongruence. The center works in close cooperation with the hospital's mental health service, and after the diagnosis of gender incongruence, gender affirming hormone therapy can be prescribed to AFAB and AMAB transgender people free of charge at the endocrinology outpatient office of our Andrology center based on Italian legislation (Law #164/82).

Name and address of Centre

 Unità Operativa Complessa di Andrologia Medica

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 Università di L'Aquila
 67100 Coppito, L'Aquila, Italy
 Tel: +39 862 368338
 Fax: +39 862 368342

Type of Centre

University

University Hospital

Private Centre

X

Other (please specify)

1. Director

 Arcangelo Barbonetti

Academician

☐

Affiliated Member

☐

Clinical Andrologist

☒

3. Present Staff (*Senior Scientists*)

1) Name Arcangelo Barbonetti
 Degree Associate professor
 Speciality Endocrinology, Andrology

Academician ☐ Affiliated Member ☐ Clinical Andrologist ☒

2) Name Marco Giorgio Baroni
 Degree Full professor
 Speciality Endocrinology, Diabetology

Insert any additional staff below (*if required*)**Biologists**

1)	Name	<u>Giuliana Cordeschi</u>
	Degree	<u>Dr.</u>
	Speciality	<u>Biologist, funzionario tecnico University of L'Aquila</u>
	Full time	<u></u>
2)	Name	<u>Camilla Tonni</u>
	Degree	<u>Dr.</u>
	Speciality	<u>Reproductive biotechnologist</u>

Insert any additional staff below (*if required*)**PhD Students**

1) Name	<u>Daniele Tienforti, M.D., PhD, FECSM</u>
2) Name	<u>Luca Spagnolo, M.D., PhD</u>
3) Name	<u>Maria Totaro, M.D., PhD</u>

Nurses

1) Name	<u>Anna Spaziani</u>
2) Name	<u>Rita Nannicola</u>

4. Clinical Activity

A. Outpatients: Consultations per year in the last 4 years

	2021	2022	2023	2024
New patients	1290	1276	1018	1215
Follow-up patients	1171	1659	1460	1512

Type of patients in the last years (%)	2021	2022	2023	2024
Infertility	≈ 30%	≈ 30%	≈ 30%	≈ 30%
Erectile dysfunction	≈ 25%	≈ 25%	≈ 25%	≈ 25%
Hypogonadism	≈ 25%	≈ 25%	≈ 25%	≈ 25%
Klinefelter	≈ 1%	≈ 1%	≈ 1%	≈ 1%
Gynaecomastia	<1%	<1%	<1%	<1%
Varicocele	Included in "infertility"	Included in "infertility"	Included in "infertility"	Included in "infertility"
Testicular tumours	<1%	<1%	<1%	<1%
Disorders of gender identity	<1%	<1%	<1%	<1%
Other	≈ 15-20%	≈ 15-20%	≈ 15-20%	≈ 15-20%

B1. Male ultrasound (testis, penile, prostate)

	2021	2022	2023	2024
Total	276	196	191	269

B2. Female ultrasound (transvaginal ultrasonography)

	2021	2022	2023	2024
Total	484	272	152	100

C. Andrological surgery procedures

	2021	2022	2023	2024
mTESE	13	4*	3*	9
Varicocele scleroembolization (Performed at the Interventional Radiology Unit)	35	32	38	28
Prostate biopsies				
BPH				
Prostate cancer				
Vasectomy				
Vaso-vasostomy				

*The numbers refers to the months: January-April 2022 and May-December 2023 only. This is due to the suspension of the activities to carry out earthquake-resistant consolidation construction work. On average, 1-2 mTESE are performed per month.

5. A. Andrology laboratory activity

	2021	2022	2023	2024
Semen analyses	779	763	613	674
Sperm antibodies: in our lab MAR test is an integral part of standard semen analysis				

5. B. Andrology laboratory activity

Sperm banking donors Yes ☐ No ☒

Sperm banking cancer patients Yes ☒ No ☐

If yes:				
	2021	2022	2023	2024
Number of samples	180	55*	62*	101

**Low numbers due to the suspension of the activities to carry out earthquake-resistant consolidation construction work.*

5. C. Histopathological evaluation of biopsies Yes ☒ No ☐

5. D. Reproductive Hormones Assays Yes ☐ No ☒

** Reproductive hormones assays are performed in the campus*

If yes please specify type of assays and number of samples in the last year:

5. E. Y chromosome microdeletions according to EAA/EMQN guidelines Yes ☐ No ☒

** Reproductive hormones assays are performed in the campus*

If yes number of tests in the past year

Participation to the EAA quality control scheme? Yes ☐ No ☒

If no, specify if available in another lab of the same hospital Yes ☐ No ☒

Blood karyotyping Yes ☒ No ☐

If no, specify if available in another lab of the same hospital Yes ☐ No ☐

Other genetic tests (please specify)

6. Collaborations with other Clinical Units of the University/Hospital

IVF Unit

Yes

☒

No

☐

If yes please specify: Children, Endocrinology, IVF, Urology, Genetics, Pathology, Psychiatry

Urology Clinic

Yes

☒

No

☐

Endocrine Clinic

Yes

☒

No

☐

Genetics Lab/Unit

Yes

☒

No

☐

Paediatric Unit

Yes

☒

No

☐

Central Hospital Laboratory

Yes

☒

No

☐

Private Centres

Yes

☐

No

☒

If yes please specify:

7. Clinical teaching activity

Duration of training (years):

2 years of Reproductive Medicine and Andrology out of 5 years of Postgraduate School of Endocrinology

	Number
A: Trainees in the last five years	5
B: Trainees who passed EAA-ESAU\exam for Clinical Andrologist in the last 5 yrs	2
C: Trainees working in the centre preparing to pass the EAA-ESAU examination	2
D: PhD Students	3
E: Medical Students	80/yr
F: Other students (MSc): Students of Biotechnologies of Reproduction	25/yr

8. Formal Andrology teaching program

Yes

☒

No

☐

If yes: specify duration (years/months):

Years

Months

	Hours of formal teaching per year	Professional training (weeks/months)
Medical Students	20	1 week
PhD Students		
Post Graduate students	30	11 months
Trainees		
Students of Biotechnologies of Reproduction	25	1 week

9. Research Activity (main topics of the last 5 years)

Sexual dysfunction

Continuing our traditional research on erectile dysfunction (ED), in the last 5 years, correlates of ED have been assessed in spinal cord injured men (J Sex Med. 2020;17:911; J Clin Med. 2021;10:2090). In this population we carried out a network meta-analysis to identify the best medical treatment for ED (Andrology. 2025 Feb;13(2):314-322) and quantified the overall infection rate of penile prosthesis implants (Int J Impot Res. 2024 May;36(3):206-213). The network meta-analysis approach was also applied to assess the effectiveness of nutraceutical treatments in the clinical management of erectile dysfunction (J Sex Med. 2024 Oct 31;21(11):1054-1063). The prevalence of ED and other sexual dysfunction was investigated in Klinefelter syndrome (J Sex Med. 2021;18:1053), in men with homosexual orientation (J Sex Med. 2019;16:624) and in men with hyperuricemia (Andrology. 2022;10:72). The relationship between cannabis consumption and sexuality was also investigated in large study involving ~5000 men (Andrology. 2024;12:9). Finally, we reviewed all medical treatment strategies for Peyronie's disease in light of the available evidence and current guidelines (Sex Med Rev. 2024 Sep 25;12(4):747-753).

Male infertility

Our interest has been focused on the relationship of seminal leukocytes with semen quality and ART outcomes (Andrology. 2020;8:125). Continuing our traditional research on the field of immunological infertility, in a recent retrospective analysis of over 10,000 men (the largest published so far), we assessed the relationship between natural and intrauterine insemination-assisted live births and the degree of sperm autoimmunization (Hum Reprod. 2020;35:1288). Moreover, we carried out a comprehensive evaluation of clinical and seminal features of men with testicular microlithiasis (Hum Reprod. 2021;36:891). Recently, our interest has been focused on the treatment of male infertility: we carried out the largest network meta-analysis on the efficacy of nutraceutical interventions (Andrology. 2024;12:538). In a large cohort of over 2500 men, we demonstrated that advancing male age exhibits an independent association with a decrease in the percentage of motile and morphologically normal spermatozoa, with greater evidence from the age of > 40 years (Arch Gynecol Obstet. 2024 Jun;309(6):2843-2852). Finally, we took part in the multicenter study promoted by the EAA aimed at standardizing ultrasound examinations in the field of andrology (Andrology. 2021 Mar;9(2):559-576; Andrology. 2022 Sep;10(6):1150-1171; Andrology. 2022 Oct;10 Suppl 2(Suppl 2):118-132).

Physiology and physiopathology of human spermatozoon

Over the past five years we have continued to deal with 1) the role of mitochondrial dysfunction (Antioxidants. 2021;10:695) and endocannabinoid system (Nat Rev Urol. 2021;18:19) in sperm biology and function; 2) the effects of the plasticizer bisphenols on human spermatozoa (Front Endocrinol. 2020;11:353; Front Endocrinol. 2020;11:597609; Reprod Toxicol. 2021;103:58; Biochem Pharmacol. 2022;197:114896). We also reviewed the role of arachidonic acid pathways (Int J Mol Sci. 2023 May 3;24(9):8207) and demonstrated the expression of ACE2 receptor and its isoform short-ACE2 in human spermatozoa (Int J Mol Sci. 2022;23:3694).

Hypogonadism and other endocrine disorders in men with spinal cord injury (SCI)

Continuing our clinical research on androgen deficiency in men with spinal cord injury, we demonstrated significant and independent associations of testosterone, level of the lesion and age with prostate volume (J Endocrinol Invest. 2020;43:1599). In this population, we recently explored the involvement of irisin in the pathophysiology linking androgen deficiency to metabolic syndrome (Spinal Cord. 2025 Feb;63(2):80-85). We contributed to clarify the clinical significance of the association between

hypovitaminosis D and androgen deficiency through a large systematic literature review with meta-analysis (Endocrine. 2021;72:49). As for the treatment of hypogonadism, we produced a critical comparative analysis of available guidelines on testosterone replacement therapy (Andrology. 2020;8:1551), with special reference to the patient with metabolic disorders (Expert Rev Clin Pharmacol. 2021;14:1091), and evaluated the therapeutic efficacy of selective estrogen receptor modulators, especially in the obese hypogonadal patient (Andrology. 2023;11:1067). More recently we first identified a negative association between iodine exposure (as assessed by urinary iodine concentration) and both total and calculated free testosterone levels in a large cohort from the NHANES (JAMA Netw Open. 2023;6:e2348573). Finally, we reviewed the effectiveness of medical strategies in preventing bicalutamide-induced breast events in patients with prostate cancer (J Endocrinol Invest. 2025 Jul;48(7):1659-1668).

In recent years, our area of clinical and research interest has included **gender incongruence**. In this field we revealed a significant association between longer CAG repeats in the androgen receptor and transgender identity of AMAB people (J Sex Med. 2020;17:543). We also assessed the effects of gender affirming hormone therapy (GAHT) on bone metabolism (Calcif Tissue Int. 2024 Nov;115(5):624-635) renal function (Front Endocrinol (Lausanne). 2025 Jun 12;16:1537838), liver function (J Endocrinol Invest. 2025 Jan;48(1):161-171) and heart activity (Eur J Endocrinol. 2025 Oct 1;lvaf201. doi: 10.1093/ejendo/lvaf201) in AFAB people and on coagulation parameters in both AMAB (Front Endocrinol. 2021;12:741866) and AFAB people (Thromb Res. 2024;236:170-178). The changes in anthropometric-cardiovascular profile under testosterone-based GAHT was also evaluated (Transgend Health. 2024 Dec 16;9(6):466-483).

10. Research Funding

- Funding from University of L'Aquila to support annual projects in the last 3 years: Euro 20000.
- 2019 "From chronic inflammation to metabolic disorders: study of the gut-liver axis in the pathophysiology of adipose tissue dysfunction". Euro 34527.
- 2020-2021. Research funding from the Department of MeSVA, University of L'Aquila, for the project entitled "Understanding and combating the risk of death in diabetic patients: use of the ENFORCE prediction model with the implementation of inflammatory biomarkers." Euro 5700.
- 2022. Research funding from the Department of MeSVA, University of L'Aquila, for the project entitled "Regulation of body fat accumulation and glucose metabolism: study of genetic, molecular, nutritional, and therapeutic mechanisms in relation to cardiometabolic risk." Euro 2700.
- 2022. Research funding from the Italian Ministry of Health – PNRR: M6/C2_CALL 2022, for the project entitled "Tryptophan-related metabolic pathways and mortality rate in people with diabetes." Euro 1000000.
- 2023. Research funding FFO-PSD-MESVA Call, Department of MeSVA, University of L'Aquila, Italy, for the project entitled "Pathogenesis of NAFLD: assessing the role of angiopoietin-like protein 3 (ANGPTL3) as a new vitamin D receptor (VDR) target gene in the molecular signaling involved in liver steatosis." Euro 12000.
- 2023. PRIN-PNRR 2022 grant no. P20222CB2B, entitled "Elucidating molecular mechanisms underlying the protection against fatty liver disease." Euro 60000.

- 2023. EU4Health Programme (EU4H) Call: EU4H-2022-PJ-3 Project: 101128983 — PROVIDE. Grant entitled: Prediction and pReventiOn of cardioVascular disease In DiabEtes (PROVIDE). PI (524.00 Euro)

ORGANIZATION CHARTS

Organization charts legend: Department / Unit Structure

Name of the Centre Complex Unit of Medical Andrology
Director of the Unit: Prof. Marco Giorgio Baroni Director of the EAA training center: Prof. Arcangelo Barbonetti
Staff members: Please, see pages 8-10
Clinical activities: Andrological outpatient clinics Endocrinological outpatients clinics Infertility outpatient clinic (couples) Gender incongruence outpatient clinics Diabetes and metabolic disorders outpatient clinic Seminology Ultrasound Cryopreservation of sperm mTESE*
Contribution to EAA training: Infertility investigation, infertility management and fertility preservation Management of andrological disorders Andrological ultrasound

FULL LIST OF PUBLICATIONS of staff members from the last 5 years

- 1: Cofini V, Piccardi L, Benvenuti E, Di Pangrazio G, Cimino E, Mancinelli M, Muselli M, Petrucci E, Picchi G, Palermo P, Tobia L, Barbonetti A, Desideri G, Guido M, Marinangeli F, Fabiani L, Necozone S. The I-KAPCAM-AI-Q: a novel instrument for evaluating health care providers' AI awareness in Italy. *Front Public Health*. 2025 Sep 18;13:1655659. doi: 10.3389/fpubh.2025.1655659. PMID: 41048310; PMCID: PMC12488581.
- 2: Tienforti D, Terrana G, Spagnolo L, Fusco B, Baroni MG, Barbonetti A. Endocrine Regulation of Cardiac Repolarization: Early QTc Shortening after Testosterone in Healthy AFAB Adults. *Eur J Endocrinol*. 2025 Oct 1:lvaf201. doi: 10.1093/ejendo/lvaf201. Epub ahead of print. PMID: 41029991.
- 3: Tienforti D, Spagnolo L, Piscitani L, Tonni C, Donatelli V, Cordeschi G, Baroni MG, Barbonetti A. Effects of gender affirming hormone therapy with testosterone on renal function of assigned female at birth transgender people: a meta-analysis. *Front Endocrinol (Lausanne)*. 2025 Jun 12;16:1537838. doi: 10.3389/fendo.2025.1537838. PMID: 40575258; PMCID: PMC12198172.
- 4: Palazzi S, Sentinelli F, Zugaro A, Morgante S, Santarelli L, Melanzi S, De Mutiis A, Piersanti D, Macerola B, Iezzi M, Mercuri P, Ferranti A, Tienforti D, Cavallo MG, Barbonetti A, Baroni MG. Real-World Analysis of Short-Term Effectiveness of Oral Semaglutide: Impact on Glycometabolic Control and Cardiovascular Risk. *Pharmaceuticals (Basel)*. 2025 Jun 8;18(6):856. doi: 10.3390/ph18060856. PMID: 40573252; PMCID: PMC12195834.
- 5: Spagnolo L, Tienforti D, Moretto C, Tonni C, Donatelli V, Ferranti A, Puocci G, Capuano C, Barbonetti A. Prevention of bicalutamide-induced breast events in patients with prostate cancer: a meta-analysis of randomized controlled trials. *J Endocrinol Invest*. 2025 Jul;48(7):1659-1668. doi: 10.1007/s40618-025-02583-8. Epub 2025 Apr 17. PMID: 40244528; PMCID: PMC12313775.
- 6: Tienforti D, Castellini C, Di Giulio F, Spagnolo L, Muselli M, Fisher AD, Vignozzi L, Baroni MG, Barbonetti A. Metabolic Features of Assigned Female at Birth Transgender People on Gender-Affirming Hormone Therapy: A Meta-analysis. *Transgend Health*. 2024 Dec 16;9(6):466-483. doi: 10.1089/trgh.2023.0040. PMID:39735373; PMCID: PMC11669637.
- 7: Venditti C, Carnicelli V, Gizzi V, Tonni C, Tienforti D, Spagnolo L, Felzani G, Maccarrone M, Baroni MG, Barbonetti A. Does irisin mediate metabolic effects of androgen deficiency? A cross-sectional study in men with chronic spinal cord injury. *Spinal Cord*. 2025 Feb;63(2):80-85. doi: 10.1038/s41393-024-01056-8. Epub 2024 Dec 26. PMID: 39725702.
- 8: Barchetta I, Zampieri M, Cimini FA, Dule S, Sentinelli F, Passarella G, Oldani A, Karpach K, Bacalini MG, Baroni MG, Reale A, Cavallo MG. Association Between Active DNA Demethylation and Liver Fibrosis in Individuals with Metabolic-Associated Steatotic Liver Disease (MASLD). *Int J Mol Sci*. 2025 Jan 31;26(3):1271. doi: 10.3390/ijms26031271. PMID: 39941038; PMCID: PMC11818491.

- 9: Barchetta I, Dule S, Cimini FA, Sentinelli F, Oldani A, Passarella G, Filardi T, Venditti V, Bleve E, Romagnoli E, Morano S, Lenzi A, Melander O, Baroni MG, Cavallo MG. Circulating Proneurotensin Levels Predict Impaired Bone Mineralisation in Postmenopausal Women With Type 2 Diabetes Mellitus. *Diabetes Metab Res Rev*. 2025 Jan;41(1):e70018. doi: 10.1002/dmrr.70018. PMID: 39655684; PMCID: PMC11629440.
- 10: Totaro M, Barchetta I, Sentinelli F, Cimini FA, Palazzi S, D'Alessandro F, Spagnolo L, Dule S, Barbonetti A, Cavallo MG, Baroni MG. Waist circumference, among metabolic syndrome components, predicts degraded trabecular bone score: a retrospective study of a female population from the 2005-2008 NHANES cohorts. *Front Endocrinol (Lausanne)*. 2024 Nov 21;15:1476751. doi: 10.3389/fendo.2024.1476751. PMID: 39640886; PMCID: PMC11617190.
- 11: Tienforti D, Marinelli L, Vervalcke J, Spagnolo L, Antolini F, Bichiri A, Baroni MG, Motta G, T'Sjoen G, Barbonetti A. Short-Term Changes in Bone Metabolism Among Transgender Men Starting Gender-Affirming Hormone Therapy: A Systematic Review and Meta-analysis. *Calcif Tissue Int*. 2024 Nov;115(5):624-635. doi: 10.1007/s00223-024-01296-z. Epub 2024 Oct 2. PMID: 39356296; PMCID: PMC11531450.
- 12: Baldassarre MPA, Di Dalmazi G, Coluzzi S, Carrieri F, Febo F, Centorame G, Cassino P, Piacentino L, Baroni MG, Consoli A, Formoso G. Oral Semaglutide in Routine Clinical Practice: Characteristics of People with Type 2 Diabetes Started on the Drug and Changes in Their Clinical Parameters after 24 Weeks of Treatment. *J Clin Med*. 2024 May 23;13(11):3054. doi: 10.3390/jcm13113054. PMID: 38892765; PMCID: PMC11172469.
- 13: Santi D, Greco C, Barbonetti A, Simoni M, Maggi M, Corona G. Weight Loss as Therapeutic Option to Restore Fertility in Obese Men: A Meta-Analytic Study. *World J Mens Health*. 2025 Apr;43(2):333-343. doi: 10.5534/wjmh.240091. Epub 2024 Aug 21. PMID: 39344112; PMCID: PMC11937353.
- 14: Barbonetti A, Tienforti D, Antolini F, Spagnolo L, Cavallo F, Di Pasquale AB, Maggi M, Corona G. Nutraceutical interventions for erectile dysfunction: a systematic review and network meta-analysis. *J Sex Med*. 2024 Oct 31;21(11):1054-1063. doi: 10.1093/jsxmed/qdae123. PMID: 39279185.
- 15: Tienforti D, Savignano G, Spagnolo L, Di Giulio F, Baroni MG, Barbonetti A. Biochemical liver damage during gender affirming therapy in trans adults assigned female at birth: a meta-analysis. *J Endocrinol Invest*. 2025 Jan;48(1):161-171. doi: 10.1007/s40618-024-02418-y. Epub 2024 Jun 22. PMID: 38909133; PMCID: PMC11729134.
- 16: Tienforti D, Hoxha M, Di Pasquale AB, Rizza V, Barbonetti A. Analysis of evidence on nutraceutical interventions for Peyronie's disease: a guideline-based critical review. *Sex Med Rev*. 2024 Sep 25;12(4):747-753. doi: 10.1093/sxmrev/qeae038. PMID: 38807529.

- 17: Barbonetti A. Hormones and sexuality: navigating the complex terrain of the interplay between endocrinology and sexual function. *Int J Impot Res.* 2024 Jun;36(4):303-304. doi: 10.1038/s41443-024-00904-8. PMID: 38755317.
- 18: Tienforti D, Felzani G, Di Pasquale AB, Barbonetti A. Which PDE5 inhibitor is the most effective in the treatment of erectile dysfunction in men with spinal cord injury? A systematic review and network meta-analysis. *Andrology.* 2025 Feb;13(2):314-322. doi: 10.1111/andr.13642. Epub 2024 Mar 30. PMID:38554048.
- 19: Castellini C, Cordeschi G, Tienforti D, Barbonetti A. Relationship between male aging and semen quality: a retrospective study on over 2500 men. *Arch Gynecol Obstet.* 2024 Jun;309(6):2843-2852. doi: 10.1007/s00404-024-07448-8. Epub 2024 Mar 29. PMID: 38551703; PMCID: PMC11147833.
- 20: Tienforti D, Pastori D, Barbonetti A. Effects of gender affirming hormone therapy with testosterone on coagulation and hematological parameters in transgender people assigned female at birth: A systematic review and meta-analysis. *Thromb Res.* 2024 Apr;236:170-178. doi: 10.1016/j.thromres.2024.02.029. Epub 2024 Mar 4. PMID: 38457996.
- 21: Di Giulio F, Castellini C, Palazzi S, Tienforti D, Antolini F, Felzani G, Baroni MG, Barbonetti A. Correlates of metabolic syndrome in people with chronic spinal cord injury. *J Endocrinol Invest.* 2024 Aug;47(8):2097-2105. doi:10.1007/s40618-023-02298-8. Epub 2024 Jan 29. PMID: 38285309; PMCID:PMC11266227.
- 22: Copetti M, Baroni MG, Buzzetti R, Cavallo MG, Cossu E, D'Angelo P, Cosmo S, Leonetti F, Morano S, Morviducci L, Napoli N, Prudente S, Pugliese G, Savino AF, Trischitta V. Validation in type 2 diabetes of a metabolomic signature of all-cause mortality. *Diabetes Metab Res Rev.* 2024 Feb;40(2):e3734. doi: 10.1002/dmrr.3734. Epub 2023 Oct 15. PMID: 37839040.
- 23: Mantovani A, Morieri ML, Aldigeri R, Palmisano L, Masulli M, Bonomo K, Baroni MG, Cossu E, Cimini FA, Cavallo G, Buzzetti R, Mignogna C, Leonetti F, Bacci S, Trevisan R, Pollis RM, Cas AD, de Kreutzenberg SV, Targher G. MASLD, hepatic steatosis and fibrosis are associated with the prevalence of chronic kidney disease and retinopathy in adults with type 1 diabetes mellitus. *Diabetes Metab.* 2024 Jan;50(1):101497. doi: 10.1016/j.diabet.2023.101497. Epub 2023 Nov 20. PMID: 37992857.
- 24: Barbonetti A, Castellini C, Di Giulio F, Antolini F, Tienforti D, Muselli M, Baroni MG. Iodine Intake and Testosterone. *JAMA Netw Open.* 2023 Dec 1;6(12):e2348573. doi: 10.1001/jamanetworkopen.2023.48573. PMID: 38117501; PMCID: PMC10733805.
- 25: Barchetta I, Cimini FA, Sentinelli F, Chiappetta C, Di Cristofano C, Silecchia G, Leonetti F, Baroni MG, Cavallo MG. Reduced Lipopolysaccharide-Binding Protein (LBP) Levels Are Associated with Non-Alcoholic Fatty Liver Disease (NAFLD) and Adipose Inflammation in Human Obesity. *Int J Mol Sci.* 2023 Dec 6;24(24):17174. doi: 10.3390/ijms242417174. PMID: 38139003; PMCID: PMC10742626.
- 26: Csermely A, Mantovani A, Morieri ML, Palmisano L, Masulli M, Cossu E, Baroni MG, Bonomo K, Cimini FA, Cavallo G, Buzzetti R, Mignogna C, Leonetti F, Bacci S,

- Trevisan R, Pollis RM, Aldigeri R, Cas AD, de Kreutzenberg SV, Targher G. Association between different modalities of insulin administration and metabolic dysfunction-associated fatty liver disease in adults with type 1 diabetes mellitus. *Diabetes Metab.* 2023 Nov;49(6):101477. doi: 10.1016/j.diabet.2023.101477. Epub 2023 Sep 12. PMID: 37708990.
- 27: Barbonetti A, Tienforti D, Castellini C, Giulio FD, Muselli M, Pizzocaro A, Vena W, Baroni MG, Pivonello R, Isidori AM, Maggi M, Corona G. Effect of antioxidants on semen parameters in men with oligo-astheno-teratozoospermia: a network meta-analysis. *Andrology.* 2024 Mar;12(3):538-552. doi: 10.1111/andr.13498. Epub 2023 Jul 26. PMID: 37495550.
- 28: Cambuli VM, Baroni MG. Intelligent Insulin vs. Artificial Intelligence for Type 1 Diabetes: Will the Real Winner Please Stand Up? *Int J Mol Sci.* 2023 Aug 24;24(17):13139. doi: 10.3390/ijms241713139. PMID: 37685946; PMCID: PMC10488097.
- 29: Mantovani A, Morieri ML, Palmisano L, Masulli M, Cossu E, Baroni MG, Bonomo K, Cimini FA, Cavallo G, Buzzetti R, Mignogna C, Leonetti F, Bacci S, Trevisan R, Pollis RM, Aldigeri R, Cas AD, de Kreutzenberg SV, Targher G. Hepatic steatosis with significant fibrosis is associated with an increased 10-year estimated risk of cardiovascular disease in adults with type 1 diabetes mellitus. *Cardiovasc Diabetol.* 2023 Aug 10;22(1):204. doi: 10.1186/s12933-023-01945-x. PMID: 37563618; PMCID: PMC10416459.
- 30: Di Giulio F, Castellini C, Tienforti D, Felzani G, Baroni MG, Barbonetti A. Independent association of hypovitaminosis d with non-alcoholic fatty liver disease in people with chronic spinal cord injury: a cross-sectional study. *J Endocrinol Invest.* 2024 Jan;47(1):79-89. doi: 10.1007/s40618-023-02124-1. Epub 2023 Jun 5. PMID: 37273143.
- 31: Santi D, Lotti F, Sparano C, Rastrelli G, Isidori AM, Pivonello R, Barbonetti A, Salonia A, Minhas S, Krausz C, Vignozzi L, Maggi M, Corona G. Does an increase in adipose tissue 'weight' affect male fertility? A systematic review and meta-analysis based on semen analysis performed using the WHO 2010 criteria. *Andrology.* 2024 Jan;12(1):123-136. doi: 10.1111/andr.13460. Epub 2023 Jun 5. PMID: 37226894.
- 32: Dei Cas A, Aldigeri R, Mantovani A, Masulli M, Palmisano L, Cavalot F, Bonomo K, Baroni MG, Cossu E, Cavallo G, Cimini FA, Buzzetti R, Mignogna C, Leonetti F, Bacci S, Trevisan R, Morieri ML, Pollis RM, Targher G, Vigili de Kreutzenberg S. Sex Differences in Cardiovascular Disease and Cardiovascular Risk Estimation in Patients With Type 1 Diabetes. *J Clin Endocrinol Metab.* 2023 Aug 18;108(9):e789-e798. doi: 10.1210/clinem/dgad127. PMID: 36881927.
- 33: Maddaloni E, Coraggio L, Amendolara R, Baroni MG, Cavallo MG, Copetti M, Cossu E, D'Angelo P, D'Onofrio L, Cosmo S, Leonetti F, Morano S, Morviducci L, Napoli N, Prudente S, Pugliese G, Park K, Holman RR, Trischitta V, Buzzetti R; SUMMER Study in Diabetes Group. Association of osteocalcin, osteoprotegerin, and osteopontin with cardiovascular disease and retinopathy in type 2 diabetes. *Diabetes Metab Res Rev.* 2023 Jul;39(5):e3632. doi: 10.1002/dmrr.3632. Epub 2023 Mar 20. PMID: 36880127.

- 34: Hoxha M, Barbonetti A, Zappacosta B. Arachidonic Acid Pathways and Male Fertility: A Systematic Review. *Int J Mol Sci.* 2023 May 3;24(9):8207. doi: 10.3390/ijms24098207. PMID: 37175913; PMCID: PMC10178949.
- 35: Sentinelli F, Barchetta I, Cimini FA, Dule S, Bailetti D, Cossu E, Barbonetti A, Totaro M, Melander O, Cavallo MG, Baroni MG. Neurotensin Gene rs2234762 C>G Variant Associates with Reduced Circulating Pro-NT Levels and Predicts Lower Insulin Resistance in Overweight/Obese Children. *Int J Mol Sci.* 2023 Mar 30;24(7):6460. doi: 10.3390/ijms24076460. PMID: 37047432; PMCID: PMC10095103.
- 36: Dule S, Barchetta I, Cimini FA, Passarella G, Dellanno A, Filardi T, Venditti V, Bleve E, Bailetti D, Romagnoli E, Morano S, Baroni MG, Cavallo MG. Reduced High-Density Lipoprotein Cholesterol Is an Independent Determinant of Altered Bone Quality in Women with Type 2 Diabetes. *Int J Mol Sci.* 2023 Mar 30;24(7):6474. doi: 10.3390/ijms24076474. PMID: 37047445; PMCID: PMC10095189.
- 37: Barbonetti A, Rastrelli G, Sparano C, Castellini C, Vignozzi L, Maggi M, Corona G. Is marijuana a foe of male sexuality? Data from a large cohort of men with sexual dysfunction. *Andrology.* 2024 Jan;12(1):9-19. doi: 10.1111/andr.13382. Epub 2023 Jan 20. PMID: 36617843.
- 38: Tienforti D, Castellini C, Di Giulio F, Totaro M, Dalmazio G, Spagnolo L, Muselli M, Corona G, Baroni MG, Barbonetti A. Selective modulation of estrogen receptor in obese men with androgen deficiency: A systematic review and meta-analysis. *Andrology.* 2023 Sep;11(6):1067-1076. doi: 10.1111/andr.13373. Epub 2023 Jan 18. PMID: 36604313.
- 39: Di Bonito P, Valerio G, Licenziati MR, Di Sessa A, Miraglia Del Giudice E, Morandi A, Maffei C, Baroni MG, Chiesa C, Pacifico L, Manco M. Uric acid versus metabolic syndrome as markers of fatty liver disease in young people with overweight/obesity. *Diabetes Metab Res Rev.* 2022 Oct;38(7):e3559. doi: 10.1002/dmrr.3559. Epub 2022 Jul 5. PMID: 35728124; PMCID: PMC9787784.
- 40: Tienforti D, Totaro M, Spagnolo L, Di Giulio F, Castellini C, Felzani G, Baroni MG, Francavilla S, Barbonetti A. Infection rate of penile prosthesis implants in men with spinal cord injury: a meta-analysis of available evidence. *Int J Impot Res.* 2024 May;36(3):206-213. doi: 10.1038/s41443-022-00632-x. Epub 2022 Oct 18. PMID: 36257985.
- 41: Lotti F, Frizza F, Balercia G, Barbonetti A, Behre HM, Calogero AE, Cremers JF, Francavilla F, Isidori AM, Kliesch S, La Vignera S, Lenzi A, Marcou M, Pilatz A, Poolamets O, Punab M, Godoy MFP, Quintian C, Rajmil O, Salvio G, Shaeer O, Weidner W, Maseroli E, Cipriani S, Baldi E, Degl'Innocenti S, Danza G, Caldini AL, Terreni A, Boni L, Krausz C, Maggi M. The European Academy of Andrology (EAA) ultrasound study on healthy, fertile men: An overview on male genital tract ultrasound reference ranges. *Andrology.* 2022 Oct;10 Suppl 2(Suppl 2):118-132. doi: 10.1111/andr.13260. PMID: 35930758; PMCID: PMC9828651.
- 42: Lotti F, Frizza F, Balercia G, Barbonetti A, Behre HM, Calogero AE, Cremers JF, Francavilla F, Isidori AM, Kliesch S, La Vignera S, Lenzi A, Marcou M, Pilatz A, Poolamets O, Punab M, Godoy MFP, Quintian C, Rajmil O, Salvio G, Shaeer O,

- Weidner W, Maseroli E, Cipriani S, Baldi E, Degl'Innocenti S, Danza G, Caldini AL, Terreni A, Boni L, Krausz C, Maggi M. The European Academy of Andrology (EAA) ultrasound study on healthy, fertile men: Prostate-vesicular transrectal ultrasound reference ranges and associations with clinical, seminal and biochemical characteristics. *Andrology*. 2022 Sep;10(6):1150-1171. doi: 10.1111/andr.13217. Epub 2022 Jul 19. PMID: 35735741; PMCID: PMC9544532.
- 43: Pezzilli S, Tohidirad M, Biagini T, Scarale MG, Alberico F, Mercuri L, Mannino GC, Garofolo M, Filardi T, Tang Y, Giuffrida F, Mendonca C, Andreozzi F, Baroni MG, Buzzetti R, Cavallo MG, Cossu E, D'Angelo P, De Cosmo S, Lamacchia O, Leonetti F, Morano S, Morviducci L, Penno G, Pozzilli P, Pugliese G, Sesti G, Mazza T, Doria A, Trischitta V, Prudente S. Contribution of rare variants in monogenic diabetes-genes to early-onset type 2 diabetes. *Diabetes Metab*. 2022 Sep;48(5):101353. doi: 10.1016/j.diabet.2022.101353. Epub 2022 Apr 26. PMID: 35487478.
- 44: Formoso G, Baroni MG. Semaglutide in routine clinical practice: interesting news from real-world evidence. *J Endocrinol Invest*. 2022 Aug;45(8):1599-1600. doi: 10.1007/s40618-022-01810-w. Epub 2022 May 6. PMID: 35524036.
- 45: Ramal-Sanchez M, Castellini C, Cimini C, Taraschi A, Valbonetti L, Barbonetti A, Bernabò N, Barboni B. ACE2 Receptor and Its Isoform Short-ACE2 Are Expressed on Human Spermatozoa. *Int J Mol Sci*. 2022 Mar 28;23(7):3694. doi: 10.3390/ijms23073694. PMID: 35409054; PMCID: PMC8998905.
- 46: Pallotti F, Barbonetti A, Rastrelli G, Santi D, Corona G, Lombardo F. The impact of male factors and their correct and early diagnosis in the infertile couple's pathway: 2021 perspectives. *J Endocrinol Invest*. 2022 Oct;45(10):1807-1822. doi: 10.1007/s40618-022-01778-7. Epub 2022 Mar 29. PMID: 35349114; PMCID: PMC8961097.
- 47: Tienforti D, Di Giulio F, Spagnolo L, Castellini C, Totaro M, Muselli M, Francavilla S, Baroni MG, Barbonetti A. Chronic urticaria and thyroid autoimmunity: a meta-analysis of case-control studies. *J Endocrinol Invest*. 2022 Jul;45(7):1317-1326. doi: 10.1007/s40618-022-01761-2. Epub 2022 Feb 18. PMID 35181847; PMCID: PMC9184403.
- 48: Pezzilli S, Mazza T, Scarale MG, Tang Y, Andreozzi F, Baroni MG, Buzzetti R, Cavallo MG, Cossu E, D'Angelo P, De Cosmo S, Lamacchia O, Leonetti F, Morano S, Morviducci L, Penno G, Pozzilli P, Pugliese G, Sesti G, Doria A, Trischitta V, Prudente S. Pathogenic variants of MODY-genes in adult patients with early-onset type 2 diabetes. *Acta Diabetol*. 2022 May;59(5):747-750. doi: 10.1007/s00592-021-01847-y. Epub 2022 Feb 3. PMID: 35112188.
- 49: Iacobellis G, Baroni MG. Cardiovascular risk reduction throughout GLP-1 receptor agonist and SGLT2 inhibitor modulation of epicardial fat. *J Endocrinol Invest*. 2022 Mar;45(3):489-495. doi: 10.1007/s40618-021-01687-1. Epub 2021 Oct 13. PMID: 34643917.
- 50: Barchetta I, Baroni MG, Melander O, Cavallo MG. New Insights in the Control of Fat Homeostasis: The Role of Neurotensin. *Int J Mol Sci*. 2022 Feb 17;23(4):2209. doi: 10.3390/ijms23042209. PMID: 35216326; PMCID: PMC8876516.

- 51: Cimini FA, Barchetta I, Bertoccini L, Ceccarelli V, Baroni MG, Melander O, Cavallo MG. High pro-neurotensin levels in individuals with type 1 diabetes associate with the development of cardiovascular risk factors at follow-up. *Acta Diabetol.* 2022 Jan;59(1):49-56. doi: 10.1007/s00592-021-01783-x. Epub 2021 Aug 29. PMID: 34455471; PMCID: PMC8758622.
- 52: Navarra S, Solini A, Baroni MG, Frova L, Grande E. A long-term nationwide study on chronic kidney disease-related mortality in Italy: trends and associated comorbidity. *J Nephrol.* 2022 Mar;35(2):505-515. doi: 10.1007/s40620-021-01132-9. Epub 2021 Aug 6. PMID: 34357572.
- 53: Bailetti D, Sentinelli F, Prudente S, Cimini FA, Barchetta I, Totaro M, Di Costanzo A, Barbonetti A, Leonetti F, Cavallo MG, Baroni MG. Deep Resequencing of 9 Candidate Genes Identifies a Role for ARAP1 and IGF2BP2 in Modulating Insulin Secretion Adjusted for Insulin Resistance in Obese Southern Europeans. *Int J Mol Sci.* 2022 Jan 22;23(3):1221. doi: 10.3390/ijms23031221. PMID: 35163144; PMCID: PMC8835579.
- 54: Castellini C, Muselli M, Parisi A, Totaro M, Tienforti D, Cordeschi G, Giorgio Baroni M, Maccarrone M, Necozone S, Francavilla S, Barbonetti A. Association between urinary bisphenol A concentrations and semen quality: A meta-analytic study. *Biochem Pharmacol.* 2022 Mar;197:114896. doi: 10.1016/j.bcp.2021.114896. Epub 2021 Dec 28. PMID: 34968490.
- 55: Cimini FA, Barchetta I, Zuliani I, Pagnotta S, Bertoccini L, Dule S, Zampieri M, Reale A, Baroni MG, Cavallo MG, Barone E. Biliverdin reductase-A protein levels are reduced in type 2 diabetes and are associated with poor glycometabolic control. *Life Sci.* 2021 Nov 1;284:119913. doi: 10.1016/j.lfs.2021.119913. Epub 2021 Aug 26. PMID: 34453944.
- 56: Di Bonito P, Licenziati MR, Campana G, Chiesa C, Pacifico L, Manco M, Miraglia Del Giudice E, Di Sessa A, Baroni MG, Marzuillo P, Valerio G. Prevalence of Mildly Reduced Estimated GFR by Height- or Age-Related Equations in Young People With Obesity and Its Association with Cardiometabolic Risk Factors. *J Ren Nutr.* 2021 Nov;31(6):586-592. doi: 10.1053/j.jrn.2020.11.005. Epub 2021 Feb 25. PMID: 33642186.
- 57: Barchetta I, Bertoccini L, Sentinelli F, Bailetti D, Marini G, Cimini FA, Ceccarelli V, Struck J, Schulte J, Loche S, Cossu E, Melander O, Cavallo MG, Baroni MG. Circulating pro-neurotensin levels predict bodyweight gain and metabolic alterations in children. *Nutr Metab Cardiovasc Dis.* 2021 Mar 10;31(3):902-910. doi: 10.1016/j.numecd.2020.11.025. Epub 2020 Dec 5. PMID: 33549442.
- 58: Orsi E, Penno G, Solini A, Bonora E, Fondelli C, Trevisan R, Vedovato M, Cavalot F, Morano S, Baroni MG, Nicolucci A, Pugliese G; Renal Insufficiency And Cardiovascular Events (RIACE) Study Group. Independent association of atherogenic dyslipidaemia with all-cause mortality in individuals with type 2 diabetes and modifying effect of gender: a prospective cohort study. *Cardiovasc Diabetol.* 2021 Jan 30;20(1):28. doi: 10.1186/s12933-021-01224-7. PMID: 33516215; PMCID: PMC7847015.

- 59: Di Bonito P, Valerio G, Licenziati MR, Campana G, Del Giudice EM, Di Sessa A, Morandi A, Maffei C, Chiesa C, Pacifico L, Baroni MG, Manco M. Uric acid, impaired fasting glucose and impaired glucose tolerance in youth with overweight and obesity. *Nutr Metab Cardiovasc Dis.* 2021 Feb 8;31(2):675-680. doi: 10.1016/j.numecd.2020.10.007. Epub 2020 Oct 13. PMID: 33272808.
- 60: Totaro M, Palazzi S, Castellini C, Parisi A, D'Amato F, Tienforti D, Baroni MG, Francavilla S, Barbonetti A. Risk of Venous Thromboembolism in Transgender People Undergoing Hormone Feminizing Therapy: A Prevalence Meta-Analysis and Meta-Regression Study. *Front Endocrinol (Lausanne).* 2021 Nov 9;12:741866. doi: 10.3389/fendo.2021.741866. PMID: 34880832; PMCID: PMC8647165.
- 61: Parisi A, Totaro M, Castellini C, D'Andrea S, Tienforti D, Palazzi S, D'Amato F, Muselli M, Francavilla S, Barbonetti A. Men with spinal cord injury have a smaller prostate volume than age-matched able-bodied men: a meta-analysis of case-control studies. *Spinal Cord.* 2021 Nov;59(11):1210-1215. doi: 10.1038/s41393-021-00712-7. Epub 2021 Sep 25. Erratum in: *Spinal Cord.* 2021 Nov;59(11):1219. doi: 10.1038/s41393-021-00718-1. PMID: 34564710.
- 62: Totaro M, Dimarakis S, Castellini C, D'Andrea S, Parisi A, D'Amato F, Tienforti D, Palazzi S, Baroni MG, Francavilla S, Barbonetti A. Erectile dysfunction in hyperuricemia: A prevalence meta-analysis and meta-regression study. *Andrology.* 2022 Jan;10(1):72-81. doi: 10.1111/andr.13088. Epub 2021 Aug 16. PMID: 34347943.
- 63: Stampacchia G, Gerini A, Morganti R, Felzani G, Marani M, Massone A, Onesta MP, Capecci W, Andretta E, Campus G, Marchino C, Cicioni V; Research Partners. Pain characteristics in Italian people with spinal cord injury: a multicentre study. *Spinal Cord.* 2022 Jul;60(7):604-611. doi: 10.1038/s41393-021-00656-y. Epub 2021 Jun 28. PMID: 34183775.
- 64: Barchetta I, Dule S, Bertocchini L, Cimini FA, Sentinelli F, Bailetti D, Marini G, Barbonetti A, Loche S, Cossu E, Cavallo MG, Baroni MG. The single-point insulin sensitivity estimator (SPISE) index is a strong predictor of abnormal glucose metabolism in overweight/obese children: a long-term follow-up study. *J Endocrinol Invest.* 2022 Jan;45(1):43-51. doi: 10.1007/s40618-021-01612-6. Epub 2021 Jun 17. PMID: 34142364; PMCID: PMC8741725.
- 65: Castellini C, Di Giammarco N, D'Andrea S, Parisi A, Totaro M, Francavilla S, Francavilla F, Barbonetti A. Effects of bisphenol S and bisphenol F on human spermatozoa: An in vitro study. *Reprod Toxicol.* 2021 Aug;103:58-63. doi: 10.1016/j.reprotox.2021.05.011. Epub 2021 Jun 2. PMID: 34089804.
- 66: Corona G, Rastrelli G, Vignozzi L, Barbonetti A, Sforza A, Mannucci E, Maggi M. The Role of testosterone treatment in patients with metabolic disorders. *Expert Rev Clin Pharmacol.* 2021 Sep;14(9):1091-1103. doi: 10.1080/17512433.2021.1938548. Epub 2021 Jun 21. PMID: 34085587.
- 67: Barbonetti A, D'Andrea S, Castellini C, Totaro M, Muselli M, Cavallo F, Felzani G, Necozone S, Francavilla S. Erectile Dysfunction Is the Main Correlate of Depression

- in Men with Chronic Spinal Cord Injury. *J Clin Med*. 2021 May 13;10(10):2090. doi: 10.3390/jcm10102090. PMID: 34068060; PMCID: PMC8152485.
- 68: Barbonetti A, D'Andrea S, Vena W, Pizzocaro A, Rastrelli G, Pallotti F, Condorelli R, Calogero AE, Pasquali D, Ferlin A, Foresta C, Jannini EA, Maggi M, Lenzi A, Pivonello R, Isidori A, Garolla A, Francavilla S, Corona G; KING, Klinefelter Italian Group. Erectile Dysfunction and Decreased Libido in Klinefelter Syndrome: A Prevalence Meta-Analysis and Meta-Regression Study. *J Sex Med*. 2021 Jun;18(6):1053-1064. doi: 10.1016/j.jsxm.2021.03.078. Epub 2021 May 20. PMID: 34023236.
 - 69: Castellini C, D'Andrea S, Cordeschi G, Totaro M, Parisi A, Di Emidio G, Tatone C, Francavilla S, Barbonetti A. Pathophysiology of Mitochondrial Dysfunction in Human Spermatozoa: Focus on Energetic Metabolism, Oxidative Stress and Apoptosis. *Antioxidants (Basel)*. 2021 Apr 28;10(5):695. doi: 10.3390/antiox10050695. PMID: 33924936; PMCID: PMC8145012.
 - 70: D'Andrea S, Martorella A, Castellini C, Cordeschi G, Totaro M, Parisi A, Francavilla F, Necozone S, Francavilla S, Barbonetti A. Clinical and seminal parameters associated with testicular microlithiasis and its severity in males from infertile couples. *Hum Reprod*. 2021 Mar 18;36(4):891-898. doi: 10.1093/humrep/deaa354. PMID: 33406236.
 - 71: Lotti F, Frizza F, Balercia G, Barbonetti A, Behre HM, Calogero AE, Cremers JF, Francavilla F, Isidori AM, Kliesch S, La Vignera S, Lenzi A, Marcou M, Pilatz A, Poolamets O, Punab M, Peraza Godoy MF, Rajmil O, Salvio G, Shaeer O, Weidner W, Maseroli E, Cipriani S, Baldi E, Degl'Innocenti S, Danza G, Caldini AL, Terreni A, Boni L, Krausz C, Maggi M. The European Academy of Andrology (EAA) ultrasound study on healthy, fertile men: Scrotal ultrasound reference ranges and associations with clinical, seminal, and biochemical characteristics. *Andrology*. 2021 Mar;9(2):559-576. doi: 10.1111/andr.12951. Epub 2021 Jan 19. PMID: 33244893.
 - 72: Cimini FA, Barchetta I, Ceccarelli V, Chiappetta C, Di Biasio A, Bertocchini L, Sentinelli F, Leonetti F, Silecchia G, Di Cristofano C, Baroni MG, Velotti F, Cavallo MG, Granzyme B Expression in Visceral Adipose Tissue Associates With Local Inflammation and Glyco-Metabolic Alterations in Obesity. *Front Immunol*. 2020 Nov 18;11:589188. doi: 10.3389/fimmu.2020.589188. PMID: 33312176; PMCID: PMC7708321.
 - 73: Ceccarelli V, Barchetta I, Cimini FA, Bertocchini L, Chiappetta C, Capoccia D, Carletti R, Di Cristofano C, Silecchia G, Fontana M, Leonetti F, Lenzi A, Baroni MG, Barone E, Cavallo MG. Reduced Biliverdin Reductase-A Expression in Visceral Adipose Tissue is Associated with Adipocyte Dysfunction and NAFLD in Human Obesity. *Int J Mol Sci*. 2020 Nov 29;21(23):9091. doi: 10.3390/ijms21239091. PMID: 33260451; PMCID: PMC7730815.
 - 74: Barchetta I, Cimini FA, Bertocchini L, Ceccarelli V, Spaccarotella M, Baroni MG, Cavallo MG. Effects of work status changes and perceived stress on glycaemic control in individuals with type 1 diabetes during COVID-19 lockdown in Italy. *Diabetes Res Clin Pract*. 2020 Dec;170:108513. doi: 10.1016/j.diabres.2020.108513. Epub 2020 Oct 16. PMID: 33075424; PMCID: PMC7566668.

- 75: Barchetta I, Chiappetta C, Ceccarelli V, Cimini FA, Bertocchini L, Gaggini M, Cristofano CD, Silecchia G, Lenzi A, Leonetti F, Baroni MG, Gastaldelli A, Cavallo MG. Angiopoietin-Like Protein 4 Overexpression in Visceral Adipose Tissue from Obese Subjects with Impaired Glucose Metabolism and Relationship with Lipoprotein Lipase. *Int J Mol Sci*. 2020 Sep 29;21(19):7197. doi: 10.3390/ijms21197197. PMID: 33003532; PMCID: PMC7582588.
- 76: Sentinelli F, Bertocchini L, Incani M, Pani MG, David F, Bailett D, Boi A, Barchetta I, Cimini FA, Mannino AC, Lenzi A, Cavallo MG, Loche S, Cossu E, Baroni MG. Association of Apelin Levels in Overweight-obese Children with Pubertal Development, but Not with Insulin Sensitivity: 6.5 Years Follow up Evaluation. *Endocr Res*. 2020 Nov;45(4):233-240. doi: 10.1080/07435800.2020.1804929. Epub 2020 Aug 13. PMID: 32791927.
- 77: Di Bonito P, Pacifico L, Licenziati MR, Maffei C, Morandi A, Manco M, Del Giudice EM, Di Sessa A, Campana G, Moio N, Baroni MG, Chiesa C, De Simone G, Valerio G; CARITALY Study on the behalf of the Childhood Obesity Study Group of the Italian Society of Pediatric Endocrinology and Diabetology. Elevated blood pressure, cardiometabolic risk and target organ damage in youth with overweight and obesity. *Nutr Metab Cardiovasc Dis*. 2020 Sep 24;30(10):1840-1847. doi: 10.1016/j.numecd.2020.05.024. Epub 2020 Jun 1. PMID: 32736956.
- 78: Barchetta I, Cavallo MG, Baroni MG. COVID-19 and diabetes: Is this association driven by the DPP4 receptor? Potential clinical and therapeutic implications. *Diabetes Res Clin Pract*. 2020 May;163:108165. doi: 10.1016/j.diabres.2020.108165. Epub 2020 Apr 23. PMID: 32333966; PMCID: PMC7177127.
- 79: Di Bonito P, Valerio G, Licenziati MR, Miraglia Del Giudice E, Baroni MG, Morandi A, Maffei C, Campana G, Spreghini MR, Di Sessa A, Morino G, Crinò A, Chiesa C, Pacifico L, Manco M. High uric acid, reduced glomerular filtration rate and non-alcoholic fatty liver in young people with obesity. *J Endocrinol Invest*. 2020 Apr;43(4):461-468. doi: 10.1007/s40618-019-01130-6. Epub 2019 Oct 21. PMID: 31637675.
- 80: Bonito PD, Licenziati MR, Baroni MG, Maffei C, Morandi A, Manco M, Miraglia Del Giudice E, Sessa AD, Campana G, Moio N, Gilardini L, Chiesa C, Pacifico L, Simone G, Valerio G; CARITALY Study on the behalf of the Childhood Obesity Study Group of the Italian Society of Pediatric Endocrinology and Diabetology. The American Academy of Pediatrics hypertension guidelines identify obese youth at high cardiovascular risk among individuals non-hypertensive by the European Society of Hypertension guidelines. *Eur J Prev Cardiol*. 2020 Jan;27(1):8-15. doi: 10.1177/2047487319868326. Epub 2019 Aug 6. PMID: 31387383.
- 81: Maccarrone M, Rapino C, Francavilla F, Barbonetti A. Cannabinoid signalling and effects of cannabis on the male reproductive system. *Nat Rev Urol*. 2021 Jan;18(1):19-32. doi: 10.1038/s41585-020-00391-8. Epub 2020 Nov 19. PMID: 33214706.

- 82: Barbonetti A, D'Andrea S, Bernabò N, Volle DH. Editorial: Bisphenols and Male Reproductive Health. *Front Endocrinol (Lausanne)*. 2020 Oct 8;11:597609. doi: 10.3389/fendo.2020.597609. PMID: 33133026; PMCID: PMC7579993.
- 83: D'Andrea S, Martorella A, Coccia F, Castellini C, Minaldi E, Totaro M, Parisi A, Francavilla F, Francavilla S, Barbonetti A. Relationship of Vitamin D status with testosterone levels: a systematic review and meta-analysis. *Endocrine*. 2021 Apr;72(1):49-61. doi: 10.1007/s12020-020-02482-3. Epub 2020 Sep 3. PMID: 32880851.
- 84: D'Andrea S, Berardicurti O, Berardicurti A, Felzani G, Francavilla F, Francavilla S, Giacomelli R, Barbonetti A. Clinical features and prognosis of COVID-19 in people with spinal cord injury: a case-control study. *Spinal Cord Ser Cases*. 2020 Aug 4;6(1):69. doi: 10.1038/s41394-020-0319-0. PMID: 32753638; PMCID: PMC7400746.
- 85: Castellini C, Totaro M, Parisi A, D'Andrea S, Lucente L, Cordeschi G, Francavilla S, Francavilla F, Barbonetti A. Bisphenol A and Male Fertility: Myths and Realities. *Front Endocrinol (Lausanne)*. 2020 Jun 12;11:353. doi: 10.3389/fendo.2020.00353. PMID: 32595601; PMCID: PMC7304337.
- 86: Barbonetti A, Castellini C, D'Andrea S, Minaldi E, Totaro M, Francavilla S, Francavilla F. Relationship between natural and intrauterine insemination-assisted live births and the degree of sperm autoimmunisation. *Hum Reprod*. 2020 Jun 1;35(6):1288-1295. doi: 10.1093/humrep/deaa070. PMID: 32358600.
- 87: Lotti F, Frizza F, Balercia G, Barbonetti A, Behre HM, Calogero AE, Cremers JF, Francavilla F, Isidori AM, Kliesch S, La Vignera S, Lenzi A, Marcou M, Pilatz A, Poolamets O, Punab M, Peraza Godoy MF, Rajmil O, Salvio G, Shaeer O, Weidner W, Maseroli E, Cipriani S, Baldi E, Degl'Innocenti S, Danza G, Caldini AL, Terreni A, Boni L, Krausz C, Maggi M. The European Academy of Andrology (EAA) ultrasound study on healthy, fertile men: clinical, seminal and biochemical characteristics. *Andrology*. 2020 Sep;8(5):1005-1020. doi: 10.1111/andr.12808. Epub 2020 Jun 1. PMID: 32353207.
- 88: D'Andrea S, Spaggiari G, Barbonetti A, Santi D. Endogenous transient doping: physical exercise acutely increases testosterone levels-results from a meta-analysis. *J Endocrinol Invest*. 2020 Oct;43(10):1349-1371. doi: 10.1007/s40618-020-01251-3. Epub 2020 Apr 15. PMID: 32297287.
- 89: D'Andrea S, Castellini C, Minaldi E, Totaro M, Felzani G, Francavilla S, Francavilla F, Barbonetti A. Testosterone, level of the lesion and age are independently associated with prostate volume in men with chronic spinal cord injury. *J Endocrinol Invest*. 2020 Nov;43(11):1599-1606. doi: 10.1007/s40618-020-01243-3. Epub 2020 Apr 4. PMID: 32248510.
- 90: D'Andrea S, Minaldi E, Castellini C, Cavallo F, Felzani G, Francavilla S, Francavilla F, Barbonetti A. Independent Association of Erectile Dysfunction and Low Testosterone Levels With Life Dissatisfaction in Men With Chronic Spinal Cord Injury. *J Sex Med*. 2020 May;17(5):911-918. doi: 10.1016/j.jsxm.2020.01.018. Epub 2020 Feb 20. PMID: 32089485.

- 91: Barbonetti A, D'Andrea S, Francavilla S. Testosterone replacement therapy. *Andrology*. 2020 Nov;8(6):1551-1566. doi: 10.1111/andr.12774. Epub 2020 Mar 9. PMID: 32068334.
- 92: D'Andrea S, Castellini C, Paladino V, Totaro M, Felzani G, Francavilla S, Francavilla F, Barbonetti A. Metabolic syndrome is the key determinant of impaired vaginal lubrication in women with chronic spinal cord injury. *J Endocrinol Invest*. 2020 Jul;43(7):1001-1007. doi: 10.1007/s40618-020-01185-w. Epub 2020 Jan 25. PMID: 31983040.
- 93: D'Andrea S, Pallotti F, Senofonte G, Castellini C, Paoli D, Lombardo F, Lenzi A, Francavilla S, Francavilla F, Barbonetti A. Polymorphic Cytosine-Adenine-Guanine Repeat Length of Androgen Receptor Gene and Gender Incongruence in Trans Women: A Systematic Review and Meta-Analysis of Case-Control Studies. *J Sex Med*. 2020 Mar;17(3):543-550. doi: 10.1016/j.jsxm.2019.12.010. Epub 2020 Jan 8. PMID: 31926901.
- 94: Minaldi E, D'Andrea S, Castellini C, Martorella A, Francavilla F, Francavilla S, Barbonetti A. Thyroid autoimmunity and risk of post-partum depression: a systematic review and meta-analysis of longitudinal studies. *J Endocrinol Invest*. 2020 Mar;43(3):271-277. doi: 10.1007/s40618-019-01120-8. Epub 2019 Sep 24. PMID: 31552596.
- 95: Castellini C, D'Andrea S, Martorella A, Minaldi E, Necozone S, Francavilla F, Francavilla S, Barbonetti A. Relationship between leukocytospermia, reproductive potential after assisted reproductive technology, and sperm parameters: a systematic review and meta-analysis of case-control studies. *Andrology*. 2020 Jan;8(1):125-135. doi: 10.1111/andr.12662. Epub 2019 Jun 28. PMID: 31250986.

Contributions in book and monographs

1. Barbonetti A, D'Andrea S, Totaro M, Parisi A, Salacone P, Francavilla S. Fertility Preservation. A. Garolla, G. Corona (eds). *Klinefelter's Syndrome. From a Disabling Condition to a Variant of Normalcy*. Springer International Publishing, 2020: pp. 181-189.
2. Barbonetti A, Castellini C, Francavilla S, Francavilla F, D'Andrea S. Metabolic syndrome in spinal cord injury: Impact on health. R. Rajendram, VR Preedy and CR Martin R (eds). *The Neuroscience of spinal cord injury: Cellular, molecular, physiological, and behavioral aspects of spinal cord injury*. ELSEVIER, Academic press, 2022: pp 377-388.
3. BARBONETTI – COCCIA: *LEZIONI DI ENDOCRINOLOGIA* – 1^a edizione 2023 – isbn 978-88-9385-349-1 – Società Editrice Esculapio – Bologna.