

EAA Andrology Training Centre  
Centre Report

**2023**



Division of Andrology and Endocrinology, Teaching Hospital “Policlinico-San Marco”, Department of Clinical and Experimental Medicine, University of Catania, Via S. Sofia 78, Building 4, 95123 Catania, Italy. Tel: +39-95-3782641; +39-95-3782311; Fax: +39-95-3781180; E-mail: [acaloger@unict.it](mailto:acaloger@unict.it); endocrinologia@policlinico.unict.it

## **CENTRE REPORT**

## History of Centre

The University of Catania Medical School founded the Andrology Centre in 1982.

The need for an excellence clinical and research centre was due to the increase in the prevalence of andrological and sexological diseases since, at that time, there was no University Centre in the whole Sicily and the regions southern to Naples.

Numerous scholarships and awards from the **National Research Council** and the Ministry of University and Research to date have supported the activities of the Centre.

The Centre is equipped with a clinical unit for andrological and endocrinological diseases, a laboratory for semen analysis, molecular biology and flow cytometric analysis and sperm banking. To meet the needs of patients with andrological diseases and couple infertility, the Centre collaborates with the IVF Unit and the Unit of Urology of the same the teaching hospital of the University of Catania.

The Andrology Centre is a reference point for all patients in Sicily being accredited by the European Academy of Andrology since 2006.

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## Organization of Centre

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Prof. Aldo E. Calogero directs and coordinates all the clinical activities, research projects and teaching events of the Centre. He carried on his research activities at the Developmental Endocrinology Branch, National Institute of Child Health and Human Development (Dir. Dr. DL. Loriaux), at the Neuroendocrinology Branch, National Institute of Mental Health (Dir. Dr. PW. Gold) of the National Institutes of Health in Bethesda, MD, USA, and NURTURE, Department of Obstetrics and Gynecology, University of Nottingham, UK.

The senior Staff members are Prof. S. La Vignera, supervisor for ultrasonography, and metabolic diseases and Prof. R.A. Condorelli supervisor for blood endothelial microparticles (EMP) and endothelial progenitor cells (EPC) evaluation and sperm biofunctional parameters characterization and thyroid diseases. Additional staff includes: L. Cimino, L.M. Mongioì, R. Cannarella, F. Barbagallo, M. Compagnone, M.C. Magagnini specialists in Endocrinology and Metabolic diseases, Dr. N. Barone and Dr. N. Burrello, respectively, biologist and embryologist, the nurses, Dr. C. Costa and Dr. C. Leone, the PhD students in “Translational Biomedicine” and the clinical fellows of the post-graduate School of Endocrinology of the University of Catania.

The services provided by our Centre include: outpatient clinic, sperm analysis (performed according with the WHO 2020 criteria), biochemical seminal plasma markers, seminal WBC subpopulations and biofunctional sperm parameters by flow cytometry, scrotal didymal and epididymal ultrasonography, Doppler flussimetry for varicocele, genetic testing (evaluation of AZF deletion and FISH for sperm aneuploidy, FSH $\beta$ , FSHR and androgen receptor polymorphisms), evaluation of blood EPC and EMP, preparation and evaluation of histological

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testicular section. The other services, including ART, are provided in collaboration with the Clinical Units of the Hospital.

*See the ORGANIZATIONAL CHART, presented at the end of this report.*

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## Educational activities

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### Clinical and Laboratory diagnostic training program

- Andrology patient clinic;
  - Standard sperm analysis (WHO, 2021);
  - Biochemical seminal plasma markers;
  - Microscopy evaluation of cytologic and histologic testicular preparations;
  - Uro-genital tract ultrasound (testicular-epididymis, prostate and seminal vesicles);
  - Biofunctional sperm parameters (mitochondrial function, apoptosis and chromatin/DNA integrity) by flow cytometry;
  - Evaluation of endothelial progenitor cells and endothelial microparticles by flow cytometry;
  - Evaluation of Yq microdeletions and FSH $\beta$ , FSHR and androgen receptor polymorphisms (in selected cases);
  - Evaluation of sperm aneuploidy rate.
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## Research activities

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Publications with impact factor are listed at the end.

Main research projects in andrology

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### Male accessory gland infections (MAGI) and infertility

We have developed several lines of research to better understand the role of MAGI on male infertility:

- *Seminal fluid pro-inflammatory cytokine levels in selected categories of patients with MAGI*
- *Seminal fluid pro-inflammatory cytokine levels in patients with MAGI sustained by specific microorganisms*
- *Understanding the mechanisms through which MAGI cause male infertility*
- *Role of anti-inflammatory/antioxidant compounds on sperm fertilizing ability during IVF in patients with MAGI*

### *MAGI and sexual dysfunctions*

#### **Genetics of male infertility**

We have developed several lines of research to better understand the role of the genetics on male infertility:

- *Gene “hunting” in patients with azoospermia*
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- *Frequency of DNA mutations in patients with oligo-astheno-teratozoospermia*
  - *Sperm aneuploidy in patients with testicular tumors (longitudinal study)*

### **Biofunctional sperm parameters and male infertility**

We have developed several lines of research to better understand the role of the biofunctional sperm parameters in idiopathic male infertility evaluating mitochondrial membrane potential, degree of chromatin compactness, externalization of phosphatidylserine, late apoptosis, viability, DNA fragmentation, evaluation of leukocyte subpopulation, determination of mitochondrial superoxide levels and degree of lipid peroxidation. Main research projects:

- *Role of biofunctional sperm parameters on idiopathic infertility*
- *Effects of metabolic diseases (diabetes mellitus, obesity, metabolic syndrome etc.) and related oxidative stress on biofunctional sperm parameters and infertility*
- *Varicocele and sperm DNA fragmentation*
- *Environmental pollution and sperm parameter*
- *In vitro studies: effects of nicotine and cigarette smoking on sperm function*
- *Role of antibiotics, anti-inflammatory drugs, and antioxidants on sperm parameters*
- *Relationship between Testicular Volume and Conventional or Nonconventional Sperm Parameters.*

### **Andrological ultrasonography and its application in several endocrinological and andrological diseases**

Scrotal didymal and epididymal ultrasonography and transrectal prostate-vesicular ultrasonography applied to andrological diseases have led to different lines of research in this field:

- *Relevance of ultrasound examination in acquired premature ejaculation and MAGI*
- *Usefulness of the ultrasound evaluation in patients affected by human papilloma virus and MAGI*
- *Ultrasound evaluation in patients with diabetes mellitus*

### **Late-onset hypogonadism and different therapeutic approaches**

#### **Impact of the FSHB gene polymorphism on male gonadal function**

#### **Evaluation of blood endothelial progenitor cells and endothelial microparticles and andrological diseases**

- *Functional characterization of platelets in patients with arterial erectile dysfunction*
  - *Endothelial progenitor cells and erectile dysfunction: a brief review on diagnostic significance and summary of our experience*
  - *Arterial dysfunction in patients with diabetes mellitus: effects of the treatments with PDE5i*
  - *Circulating endothelial progenitor cells and endothelial microparticles in patients with arterial erectile dysfunction and metabolic syndrome*
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**Impact of thyroid disease on testicular function**

**miRNA expression in Klinefelter syndrome**

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**Clinical activities**

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The clinical activities of the Division of Andrology aim at reaching a correct diagnosis and at establishing a proper treatment. The main clinical activities include:

- Male infertility;
- Other reproductive problems: cryptorchidism, varicocele, sexually transmitted diseases, gonadal toxin exposure (including phitodrugs, heavy metals, anabolizing steroids);
- Diagnosis and treatment of hypogonadism including late-onset hypogonadism;
- Erectile and sexual dysfunction;
- Andrological diseases in systemic medical illnesses [diabetes mellitus, metabolic syndrome, obesity, chronic liver infectious (HBV or HCV-related) or alcoholic diseases, irritable bowel syndrome];
- Men who question their fertility status despite the absence of a current partner: they have an evaluation of their fertility potential.

#### **Clinical diagnostic tests performed within the Division**

- Scrotal didymal and epididymal ultrasonography (Prof. A.E. Calogero; Prof. S. La Vignera)
- Transrectal prostate-vesicular ultrasonography (Prof. S. La Vignera);
- Standard sperm analysis (WHO, 2010) (Dr. N. Barone; Dr. N. Burrello);
- Biochemical seminal plasma markers;
- Biofunctional sperm parameters (mitochondrial function, apoptosis and chromatin/DNA integrity) by flow cytometry (Prof. RA Condorelli)
- Seminal WBC subpopulations by flow cytometry (Prof. RA Condorelli)
- Genetic tests: evaluation of AZF deletion and FISH for sperm aneuploidy (Dr. N. Barone; Dr. N. Burrello); evaluation of SNP FSH $\beta$  -211 G/T (rs 10835638), FSHR c. -29 G/A (rs 1394205), FSHR c. 2039 A/G (p. Asp680Ser) (rs 6166)
- Doppler flussimetry for varicocele (Prof. S. La Vignera);
- Evaluation of blood endothelial progenitor cells and endothelial microparticles by flow cytometry (Prof. RA Condorelli; Prof. S. La Vignera);
- Histological testicular section preparation (Dr. N. Barone) and evaluation (Prof. S. La Vignera)

**Name and address of Centre**

Division of Andrology and Endocrinology, Teaching Hospital "Policlinico-San Marco",  
 Department of Clinical and Experimental Medicine, University of Catania, Via S. Sofia 78,  
 Building 4, 95123 Catania, Italy. Tel: +39-95-3782641; +39-95-3782311; Fax: +39-95-  
 3781180; E-mail: [acaloger@unict.it](mailto:acaloger@unict.it); endocrinologia@policlinico.unict.it

**Type of Centre**

University   
 University Hospital   
 Private Centre

Other (please  
 specify) \_\_\_\_\_

**1. Director**

Prof. Aldo E. Calogero

Academician  Affiliated Member  Clinical Andrologist

**2a. Clinical responsible**

Academician  Affiliated Member  Clinical Andrologist

**2b. Clinical responsible**

Academician  Affiliated Member  Clinical Andrologist

**2c. Clinical responsible**

Academician  Affiliated Member  Clinical Andrologist



**3. Present Staff (Senior Scientists)**

- 1) Name Prof. Aldo E. Calogero  
 Degree MD  
 Speciality Endocrinology  
 Academician  Affiliated Member  Clinical Andrologist
- 2) Name Prof. Sandro La Vignera  
 Degree MD, PhD  
 Speciality Endocrinology and Ph.D in Andrology  
 Academician  Affiliated Member  Clinical Andrologist
- 3) Name Prof. Rosita A. Condorelli  
 Degree MD, PhD  
 Speciality Endocrinology  
 Academician  Affiliated Member  Clinical Andrologist

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

MD/Biologists/Chemists

- 1) Name Dr. Nunziata Barone  
 Degree Ph.D.  
 Speciality Evolutionist Biology  
 Full time/part time Full time  
 Academician  Affiliated Member  Clinical Andrologist
- 2) Name Dr. Nunziatina Burrello  
 Degree Ph.D.  
 Speciality Embriology  
 Full time/part time Full time  
 Academician  Affiliated Member  Clinical Andrologist

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

- 1) Name Dr. Laura Cimino  
Dr. Laura M. Mongioi  
Dr. Michele Compagnone  
Dr. Rossella Cannarella  
Dr. Federica Barbagallo  
Dr. Maria Cristina Magagnini

**Nurses**

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1) Name Concetta Costa  
2) Name Caterina Leone

**Clinical fellows of the post-graduate School of Endocrinology**

- Dr. Andrea Crafa
- Dr. Carmelo Gusmano
- Dr. Marta Marino
- Dr. Vincenzo Garofalo
- Dr. Claudia Leanza
- Dr. Roberto Palazzolo
- Dr. Cristina Petralia
- Dr. Rubulotta Michele

**Laboratory Technicians**

1) Name ///  
2) Name ///  
3) Name ///

**Administrative Personnel**

1) Name ///  
2) Name ///  
3) Name ///

#### 4. Clinical Activity

##### A. Outpatients: Consultations per year in the last 3 years

	2020	2021	2022
New patients	1000	1560	2000
Follow-up patients	3000	3280	3850

\*The number of new patients from 1000 to 2000 is due to Covid

Type of patients in the last years (%)	2020	2021	2022
Infertility	24.8	27.0	27.0
Erectile dysfunction	24.4	25.1	25.5
Hypogonadotropic Hypogonadism	3.7	3.5	4.9
Klinefelter	1.3	1.3	1.4
Gynaecomastia	1.2	1.3	1.9
Varicocele	8.2	7.5	7.1
Cryptorchidism	1.2	1.3	1.4
Male sex accessory gland infections	26.5	25.4	21.8
Testicular tumours	1.7	2.2	2.1
Disorders of gender identity	1.2	0.9	1.1
Other (mainly: LUTS-ED, ejaculatio precox, LOH, systemic diseases and male infertility, IPP, haemospermia, HPV, CBAVD)	5.6	4.5	5.7

##### B. Ultrasound (testis, penile, prostate) \*

	2020	2021	2022
Total	100	170	265
Controls	70	122	206

\* performed at the Department of Radiology

##### C. Andrological surgery procedures

\*Andrological surgical procedures are sent to the Urology Clinic of the same Teaching Hospital "Policlinco-San Marco", University of Catania

	2020	2021	2022
Testicular biopsies	///	///	///
Varicocele ligation	///	///	///
Prostate biopsies	///	///	///
BPH	///	///	///
Prostate cancer	///	///	///
Vasectomy	///	///	///
Vaso-vasostomy	///	///	///
Other	///	///	///

## 5. A. Andrology laboratory activity

	2020	2021	2022
Semen analyses	400	780	1095
Sperm antibodies	0	0	0
Seminal markers	10	0	0

## 5. B. Andrology laboratory activity

Sperm banking donors Yes  No

Sperm banking cancer patients Yes  No

\*the bank is currently unavailable due to administrative problems

<i>If yes:</i>			
	2020	2021	2022
Number of samples			

5. C. Histopathological evaluation of biopsies Yes  No

5. D. Reproductive Hormones Assays Yes  No

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

Reproductive Hormones Assays  
(FSH, LH, testosterone, SHBG, prolactin)

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

5

*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)

Evaluation of the following SNPs: FSH $\beta$  -211 G/T (rs 10835638), FSHR c. -29 G/A (rs 1394205), FSHR c. 2039 A/G (p. Asp680Ser) (rs 6166)

CFTR gene mutations and AR polymorphisms in collaboration with the Division of Medical Genetics, Teaching Hospital "Policlinico-San Marco", University of Catania

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

**IVF Unit** Yes  No

*If yes* please specify: IVF Unit, Teaching Hospital “Policlinco-San Marco”, University of Catania

Urology Clinic Yes  No

Endocrine Clinic (our Clinic Unit also includes the endocrinological unit as mentioned above) polymor Yes  No

Genetics Lab/Unit Yes  No

Pediatric Unit Yes  No

Central Hospital Laboratory Yes  No

Private Centres Yes  No

*If yes* please specify: UMR, Catania, Italy

#### Other public Centers:

- Prof. Sebastiano Cimino, Clinica Urologica, Teaching Hospital “Policlinico-San Marco”, for the surgical aspects of andrology;
- Prof. Mario Salmeri, Section of Microbiology, Department of Bio-Medical Sciences, University of Catania, for the microbiological aspects of male and female urogenital apparatus;
- Prof. Vittorio Calabrese, Department of Chemical Sciences, University of Catania;
- Division of Angiology, Teaching Hospital “Policlinico-Vittorio Emanuele”;
- IRCCS “Oasi Maria Santissima”, Troina (Enna) for genetic mechanisms of reproductive physiopathology.

#### International collaborations

- None

#### 7. Clinical teaching activity

Duration of training (years):

Teaching of andrology is continuous and extends to all students of the graduate school, PhD students and students within the department. Awareness is raised through training courses and the possibility of activities abroad at EAA centres

	Number
A: Trainees in the last five years	5
B: Trainees who passed EAA-ESAU\exam for Clinical Andrologist in the last 5yrs	0
C: Trainees working in the centre preparing to pass the EAA-ESAU examination	0
D: PhD Students	8
E: Medical Students	150/year
F: Other students (MSc)	10

**8. Formal Andrology teaching program** Yes  No

*If yes:* specify duration (years/months): Years  Months  3

Andrology is taught to: a) students of Catania Medical School, as part of the Endocrine course (Prof. A.E. Calogero; Prof. S. La Vignera; Prof. Rosita A. Condorelli); b) students of the course in Obstetrics (Prof. A.E. Calogero); c) students of the course in Motor Sciences (Prof.ssa R.A. Condorelli); d) students of the course in Biology (Prof. A.E. Calogero; Prof. S. La Vignera; Prof. Rosita A. Condorelli); e) students of the course in Biology (Prof. A.E. Calogero; Prof. S. La Vignera; Prof. Rosita A. Condorelli); students of the course in Nursing Sciences (Prof. S. La Vignera); f) physicians of the post-graduate School of specialty in Endocrinology, University of Catania (Prof. A.E. Calogero; Prof. S. La Vignera; Prof. Rosita A. Condorelli); g) physicians of the post-graduate school of specialty in Radiodiagnostic, University of Catania (Prof. A.E. Calogero); h) physician of the post-graduate school of specialty in Biochemistry (Prof. S. La Vignera); i) physician of the post-graduate school of specialty in Neurology (Prof. S. La Vignera); l) physician of the post-graduate school of specialty in Dermatology (Prof. Rosita A. Condorelli).

	<b>Hours of formal teaching per year</b>	<b>Professional training (weeks/months)</b>
Medical Students	45	0.5 week/student
PhD Students	120	11 months/year for 4 years
Post Graduate students	40	10 months/year for 4 years
Trainees	///	///
Other degrees (please specify)		

## 9. Research Activity

The main lines of research are listed with one publication per field (with IF). The full list of publications (years 2018 - 2022) are presented at the end of this report.

We have developed several lines of research to better understand the role of MAGI on male infertility and sexual dysfunctions:

- Impact of seminal low-risk human papillomavirus infection on sperm parameters of adult men. Cannarella R, Aversa A, Condorelli RA, De Cristofaro S, Greco E, Grillo A, Calogero AE, La Vignera S. *Aging Male*. 2022Dec;25(1):1722. doi:10.1080/13685538.2021.2023126. PMID: 34978266 IF. 2.398

We have developed several lines of research to better understand the role of the genetics on male infertility:

- Congenital adrenal hyperplasia, disorders of sex development, and infertility in patients with POR gene pathogenic variants: a systematic review of the literature. Gusmano C, Cannarella R, Crafa A, Barbagallo F, La Vignera S, Condorelli RA, Calogero AE. *J Endocrinol Invest*. 2023 Jan;46(1):1-14. doi: 10.1007/s40618-022-01849-9. Epub 2022 Jul 17. PMID: 35842891 Free PMC article. Review. IF. 5.4

We have developed several lines of research to better understand the role of the biofunctional sperm parameters in idiopathic male infertility:

- The Impact of a Very Short Abstinence Period on Conventional Sperm Parameters and Sperm DNA Fragmentation: A Systematic Review and Meta-Analysis. Barbagallo F, Cannarella R, Crafa A, Manna C, La Vignera S, Condorelli RA, Calogero AE. *J Clin Med*. 2022 Dec 8;11(24):7303. doi: 10.3390/jcm11247303. PMID: 36555920 Free PMC article. Review. IF. 4.964

Scrotal didymal and epididymal ultrasonography and transrectal prostate-vesicular ultrasonography applied to andrological diseases have led to different lines of research in this field:

- 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. 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, Shaer O, Weidner W, Maseroli E, Cipriani S, Baldi E, Degl'Innocenti S, Danza G, Caldini AL, Terreni A, Boni L, Krausz C, Maggi M. *Andrology*. 2022 Sep;10(6):1150-1171. doi: 10.1111/andr.13217. Epub 2022 Jul 19. PMID: 35735741 Free PMC article. IF. 4.456

**10. Research Funding**

Please specify the amount of available funds in the last 3 years and their source (Government, European Union, University, Local Government, Pharmaceutical Industries, Banks, Foundations....)

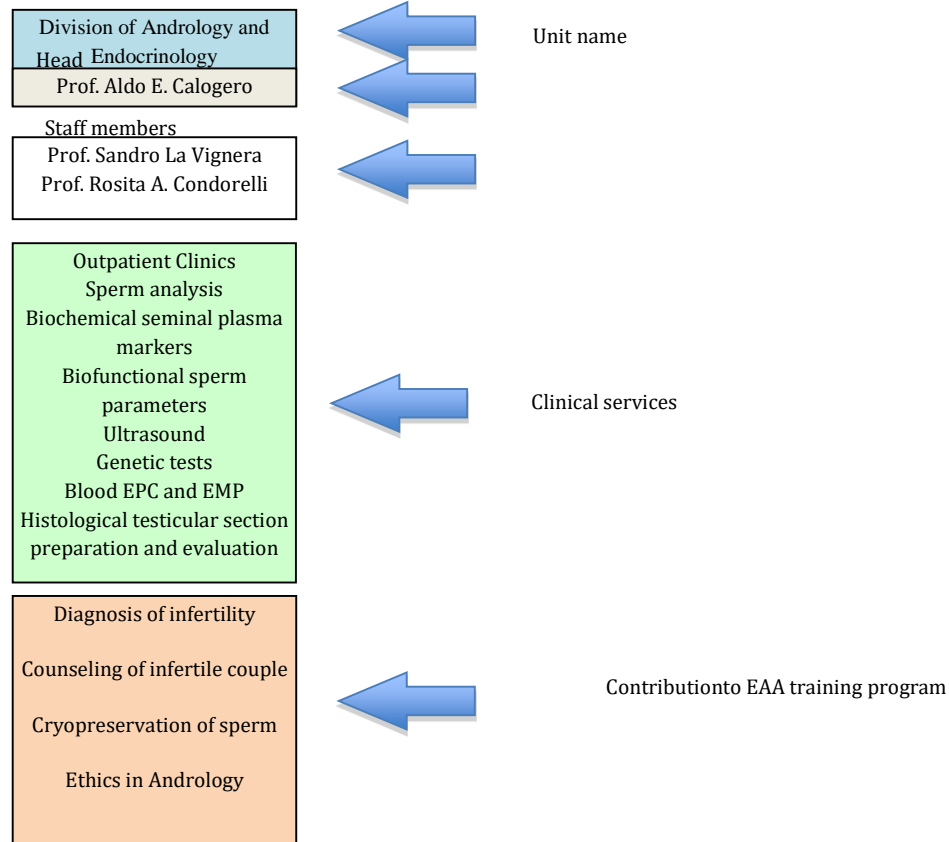
<b>Year</b>	2020
<b>Total amount (€)</b>	12000 euro
<b>Funding Source(s)</b>	Private Drug Company
<b>Year</b>	2021
<b>Total amount (€)</b>	34.000 euro
<b>Funding Source(s)</b>	Minister of Istruction, University and Research Private Drug Company
<b>Year</b>	2022
<b>Total amount (€)</b>	86.000 euro
<b>Funding Source(s)</b>	Minister of Istruction, University and Research Private Drug Company

*Insert any additional funding below if required*



## ORGANIZATION CHARTS

### Organization charts legend: Department / Unit Structure



**CENTRE PHOTOS**

*Please, include at least one high resolution photos*

**FULL LIST OF PUBLICATIONS (with IF) of staff members from the last 5 years**

- Impact of Antioxidant Therapy on Natural Pregnancy Outcomes and Semen Parameters in Infertile Men: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Agarwal A, Cannarella R, Saleh R, Harraz AM, Kandil H, Salvio G, Boitrelle F, Kuroda S, Farkouh A, Rambhatla A, Zini A, Colpi G, Gül M, Kavoussi P, Hamoda TAA, Ko E, Calik G, Toprak T, Pinggera GM, Park HJ, Ghayda RA, Minhas S, Busetto GM, Bakırcıoğlu ME, Kadioglu A, Chung E, Russo GI, Calogero AE, Ambar RF, Jayasena CN, Shah R. *World J Mens Health*. 2023 Jan;41(1):14-48. doi: 10.5534/wjmh.220067. Epub 2022 Sep 7. PMID: 36102104 Free PMC article.
- Globozoospermia: A Case Report and Systematic Review of Literature. Crafa A, Condorelli RA, La Vignera S, Calogero AE, Cannarella R. *World J Mens Health*. 2023 Jan;41(1):49-80. doi: 10.5534/wjmh.220020. Epub 2022 Jul 6. PMID: 36047070 Free PMC article.
- Congenital adrenal hyperplasia, disorders of sex development, and infertility in patients with POR gene pathogenic variants: a systematic review of the literature. Gusmano C, Cannarella R, Crafa A, Barbagallo F, La Vignera S, Condorelli RA, Calogero AE. *J Endocrinol Invest*. 2023 Jan;46(1):1-14. doi: 10.1007/s40618-022-01849-9. Epub 2022 Jul 17. PMID: 35842891 Free PMC article. Review.
- Consensus and Diversity in the Management of Varicocele for Male Infertility: Results of a Global Practice Survey and Comparison with Guidelines and Recommendations. Shah R, Agarwal A, Kavoussi P, Rambhatla A, Saleh R, Cannarella R, Harraz AM, Boitrelle F, Kuroda S, Hamoda TAA, Zini A, Ko E, Calik G, Toprak T, Kandil H, Gül M, Bakırcıoğlu ME, Parekh N, Russo GI, Tadros N, Kadioglu A, Arafa M, Chung E, Rajmil O, Dimitriadis F, Malhotra V, Salvio G, Henkel R, Le TV, Sogutdelen E, Vij S, Alarbid A, Gudeloglu A, Tsujimura A, Calogero AE, El Meliegy A, Crafa A, Kalkanli A, Baser A, Hazir B, Giulioni C, Cho CL, Ho CCK, Salzano C, Zylbersztejn DS, Tien DMB, Pescatori E, Borges E, Serefoglu EC, Saïs-Hamza E, Huyghe E, Ceyhan E, Caroppo E, Castiglioni F, Bahar F, Gokalp F, Lombardo F, Gadda F, Duarsa GWK, Pinggera GM, Busetto GM, Balercia G, Cito G, Blecher G, Franco G, Liguori G, Elbardisi H, Keskin H, Lin H, Taniguchi H, Park HJ, Ziouziou I, de la Rosette J, Hotaling J, Ramsay J, Molina JMC, Lo KL, Bocu K, Khalafalla K, Bowa K, Okada K, Nagao K, Chiba K, Hakim L, Makarounis K, Hehemann M, Peña MR, Falcone M, Bendayan M, Martinez M, Timpano M, Altan M, Fode M, Al-Marhoon MS, Sadighi Gilani MA, Soebadi MA, Gherabi N, Sofikitis N, Kahraman O, Birowo P, Kothari P, Sindhvani P, Javed Q, Ambar RF, Kosgi R, Ghayda RA, Adriansjah R, Condorelli RA, La Vignera S, Micic S, Kim SHK, Fukuhara S, Ahn ST, Mostafa T, Ong TA, Takeshima T, Amano T, Barrett T, Arslan U, Karthikeyan VS, Atmoko W, Yumura Y, Yuan Y, Kato Y, Jezek D, Cheng BK, Hatzichristodoulou G, Dy J, Castañé ER, El-Sakka AI, Nguyen Q, Sarikaya S, Boeri L, Tan R, Moussa MA, El-Assmy A, Alali H, Alhathal N, Osman Y, Perovic D, Sajadi H, Akhavizadegan H, Vučinić M, Kattan S, Kattan MS, Mogharabian N, Phuoc NHV, Ngoo KS, Alkandari MH, Alsuhaibani S, Sokolakis I, Babaei M, King MS, Diemer T, Gava MM, Henrique R, Silva RSE,

Paul GM, Mierzwa TC, Glina S, Siddiqi K, Wu H, Wurzacher J, Farkouh A, Son H, Minhas S, Lee J, Magsanoc N, Capogrosso P, Albano GJ, Lewis SEM, Jayasena CN, Alvarez JG, Teo C, Smith RP, Chua JBM, Jensen CFS, Parekattil S, Finelli R, Durairajanayagam D, Karna KK, Ahmed A, Evenson D, Umemoto Y, Puigvert A, Çeker G, Colpi GM; Global Andrology Forum. *World J Mens Health*. 2023 Jan;41(1):164-197. doi: 10.5534/wjmh.220048. Epub 2022 Jun 13. PMID: 35791302 Free PMC article.

- Reply to Ducreux, B.; Fauque, P. Comment on "Cannarella et al. DNA Methylation in Offspring Conceived after Assisted Reproductive Techniques: A Systematic Review and Meta-Analysis. *J. Clin. Med.* 2022, *11*, 5056". Cannarella R, Crafa A, Calogero AE. *J Clin Med*. 2022 Dec 29;12(1):254. doi: 10.3390/jcm12010254. PMID: 36615055 Free PMC article.
- The Impact of a Very Short Abstinence Period on Conventional Sperm Parameters and Sperm DNA Fragmentation: A Systematic Review and Meta-Analysis. Barbagallo F, Cannarella R, Crafa A, Manna C, La Vignera S, Condorelli RA, Calogero AE. *J Clin Med*. 2022 Dec 8;11(24):7303. doi: 10.3390/jcm11247303. PMID: 36555920 Free PMC article. Review.
- Impact of seminal low-risk human papillomavirus infection on sperm parameters of adult men. Cannarella R, Aversa A, Condorelli RA, De Cristofaro S, Greco E, Grillo A, Calogero AE, La Vignera S. *Aging Male*. 2022 Dec;25(1):17-22. doi: 10.1080/13685538.2021.2023126. PMID: 34978266
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