

EAA Andrology Training Centre
Centre Report

2019

Centre identification

**EAA Andrology Centre Bonn
University of Bonn
Venusberg -Campus 1**

53127 Bonn

Germany

CENTRE REPORT

History of Centre

-Andrology-

The history of andrology at the Department of Dermatology of the University of Bonn dates back to the late fifties and early sixties of the last century after the appointment of R. Doepfmer who was one of the most famous andrologists in Germany at that time. After his sudden death in 1965 major andrological activities were re-established not before 1978 when H.W. Kreysel from Hamburg took up the chair of dermatology. In 1993 G.Haidl became head of the Andrological Unit at the Department of Dermatology.

The centre has been first acknowledged as EAA Training Centre in 2003.

ISO 9001: 2008 certification was approved by TUEV Sued , which was confirmed 2011 and 2014 for the entire clinic. The department has set up a process-based approach and an electronic quality management system as the basis of its operations.

Approval as Institution for cryobanking by the local government authorities in 2016

-Urology-

The Department of Urology in Bonn was one of the first independent departments of Urology in Germany and was founded in the year 1967 with Prof. Dr. W. Vahlensieck being the first chair of the department. In 1994, Prof. Dr. S. C. Müller was elected chief of the department. From the beginning urologic andrology was one of the main stays of the department and Prof. Dr. H. Porst, Prof. Dr. H. van Ahlen and many other renowned urological andrologists were trained here. Since 1994, urologic andrology was integrated in an interdisciplinary team of andrology including reproductive medicine, endocrinological medicine and dermatological andrology. The fruitful collaboration over - meanwhile 20 years has resulted in improvements of patient care as well as interdisciplinary research. The former chair, Prof. Müller has retired last year and Prof. Dr. Ritter has been elected as his successor half a year ago.

-Endocrinology-

Endocrinology has played a central role since the founding of the Institute of Clinical Biochemistry 34 years ago: the internationally renowned endocrinologists Prof. Heinz Breuer, Prof. Frank Bidlingmaier and Prof. Lothar Siekmann were directors of the institute. In 1987, D. Klingmüller became head of the Endocrinology Unit of the Institute of Clinical Biochemistry. Prof. Klingmüller has officially retired already 10 years ago but due to problems in finding a suitable successor he is still active in the department and the cooperation works still very well.

-Gynecology-

The IVF programme was established at the Woman Hospital of the University of Bonn by Prof. Krebs and Prof. Diedrich in 1984. This IVF programme was one of the first in Germany and was soon nationally and internationally recognised. Several scientific meetings and workshops were organized in Bonn, the most famous being the founding meeting of the ESHRE (European Society for Human Reproduction and Embryology) in 1986. In 1994 the IVF programme and the section of Gynecological Endocrinology (former head: Prof. W. Nocke) were combined to the Department of Gynecological Endocrinology and Reproductive Medicine. The head of this Department became Prof. H. van der Ven, who is a member of the EAA (since 2000) and other societies (e.g. ESHRE, ASRM, SGI).

Prof. van der Ven and nearly his entire team have retired last year, now Prof. Dr. Nicole Sänger has become chair of the Department of Gynecological Endocrinology and Reproductive Medicine.

Organization of Centre**Organization of Centre**

The Bonn EAA centre consists of The Andrology Unit within the Department of Dermatology (Prof. G. Haidl), the Urological Clinic (Prof. M. Ritter), the Department of

Gynecological Endocrinology and Reproductive Medicine (Prof. N. Sanger and the Department of Endocrinology (Prof. Klingmuller)

Close cooperation existis with the Institute of Human Genetics (Prof. Noethen), the Radiologic Clinic (Prof. Schild) and the Psychosomatic Clinic (Dr. Hocke)

Thus, andrological patients have access to all medical requirements within short distance

Educational activities

There are regular meetings of the members of the centre, acknowledgement as "Androloge" by the medical authorities has been obtained by 2 colleagues within the last three years. On March 2 and 3, 2017 an EAA educational course on "Immunology in Andrology" took place in Bonn, organized as joint congress by the Bonn and Halle EAA centers, the follow-up course is planned for September 2020. A course on semen analysis has been organized at The Gynecological Department on November 9, 2019 and on November 20, 2019 a course on Update in Urology with andrological topics will be conducted.

Use as much space, as required

Research activities

Current research activities focus on immunological mechanisms involved in male in- and subfertility. In this context adaptive immune responses have been studied in testis with azoospermia. Thereby an immunological pattern pointing to autoimmunity in regard to an adaptive Th17 immune response could be demonstrated. Subsequently, Th17 associated cytokines and chemokines have been and are currently investigated in the ejaculate of subfertile men testing the hypothesis that Th17 immunity is not only involved in azoospermia but also in much earlier occurring chronic inflammation (CI) (Duan et al., 2011; Chen et al., 2016). In this regard we could already demonstrate that several cytokines such as IL-6 are not only detected in CI but are also associated with decreased sperm DNA-Integrity (Haidl F et al., 2015). Moreover we demonstrated that the cellular

sources of pro-inflammatory cytokines such as IL-6 are macrophages rather than neutrophils in ejaculate with CI (Fathy et al., 2014). As IL-6 binds to its receptor IL-6R we conducted investigation of this structure on sperms. In this regard we could demonstrate that IL-6R is expressed on the mid-piece of sperms and that its expression correlates to seminal IL-6. Subsequently, activation of IL-6R on sperm led to a slight but significant decrease of sperm motility (Djourabchi et al., in press). Ongoing research pinpoints IL-17 and Th17 associated chemokine CCL20 in ejaculates with CI. The main interest is to reveal how these cytokines influence sperm functions. In this context we could demonstrate that CCL20 – released by follicles – is involved in sperm chemotaxis and that CCL20 saturated sperms as well as sperms from seminal plasma with high CCL20 concentration lack chemotaxis (Duan et al., in submission).

Further research activities deal with late onset hypogonadism (LOH) and its status in daily routine in general medicine. For this reason we conducted a multi-center longitudinal cohort study recruiting males presenting at general practitioners for either routine check-up or for seeking treatment for all kinds of diseases. Recruited subjects are tested for total and free serum testosterone levels after taking detailed medical history as well as filling out LOH questionnaire. As a member of dermatology our department also investigates the role of testosterone in dermatological autoimmune diseases such as psoriasis as testosterone has a suppressive immunological effect. In this regard we could demonstrate that low testosterone levels inversely correlate with psoriasis severity. This study could show that psoriasis patients are more likely to suffer from hypogonadism and disease severity correlates inverse to serum testosterone (Allam et al., 2019).

Moreover, ongoing projects also focus on expression of several immune receptors on sperms.

Beyond laboratory projects we took action to establish a German-Chinese research cooperation by organizing a scientific workshop in 2020 supported by the German as well as Chinese state research department.

To date we have 3 medical students working on these projects.

Use as much space, as required

Clinical activities

-Andrology-

The Andrological unit at the Department of Dermatology sees more than 600 new patients with andrological problems each year. Most of them come for male infertility, in addition, patients with erectile dysfunction, hypogonadism and delayed puberty are treated as well as patients with gynaecomastia and with questions around problems of the aging male. For patients with malignant tumors the possibility of cryopreservation prior to chemotherapy is offered.

All modern diagnostic techniques are available including ultrasonography of the genital organs or colour duplex sonography. The laboratory tests are listed below. Seminal fluid analysis is performed according to WHO guidelines, an internal quality control system is operated for semen analysis as well as attendance at an external quality control programme run by the German Society of Andrology. The Department of Dermatology offers all necessary sperm function tests, endocrinological laboratory tests are performed in the central laboratory of the university hospital.

Medical treatment and cryoconservation are carried out at the Dermatological Clinic, TESE, mikroTESE, MESA, treatment of varicoceles and further urological-andrological surgical procedures are performed at the Department of Urology. Sclerotherapy of varicoceles occurs at the Department of Radiology.

In cooperation with the Department of Urology, the Department of Endocrinology and the Department of Gynecological Endocrinology and Reproductive Medicine as well as the Institute of Human genetics the whole spectrum of Andrology and Reproductive Medicine is covered.

In addition, our centre is particularly interested in immunological and inflammatory aspects of male infertility, our scientific work is carried out in the human system exclusively.

-Urology-

Patients with andrological diseases are seen on an outpatient basis within a specialized andrological clinic (1 x / week). Patients are referred from urologists and andrologists mainly for operative procedures and for the treatment of erectile dysfunction. The department provides full andrological work-up including noctile tumescence assessment, cavernosography, duplex ultrasound, pharmacodynamic ultrasound duplex evaluation. Endocrinological work-up and differentiated ejaculate analysis are performed in collaboration with the institute of biochemistry and the andrological division of the department of dermatology. The work up of infectious diseases is performed in collaboration with the institute of microbiology and the department of dermatology. Treatment of varicoceles is performed on an outpatient basis (antegrade sclerotherapy). Microsurgical procedures and other surgical procedures are performed as in-patient procedures

-Endocrinology-

Approximately 2000 patients with hypothalamus and pituitary disorders are receiving treatment at the Endocrinology Unit. A complete endocrinological function diagnosis is on offer. Additionally, radiologists are available for catheter examinations for localisation diagnosis. Tumour surgery is carried out at the Clinic of Neurosurgery. This close co-operation includes the long-term treatment of patients. Hormone replacement therapy is an important aspect. Approximately some 300 male patients receive androgen substitution. Patients who desire to have children receive stimulation therapy with GnRH or hCG/hMG.

-Gynecology-

In the fertility unit approximately 500 spermiogrammes, 1000 intrauterine inseminations and 700 IVF/ICSI cycles are performed per year. This is a total of 2000 spermiogrammes, more than 60 % for reduced male fertility. All modern laboratory techniques for assisted reproductive technologies are available including semen analysis, semen preparation, IVF culture, sperm microinjection (ICSI), cryopreservation of ejaculated and epididymal spermatozoa, testicular tissue, oocytes and embryos. For severe male factor infertility molecular diagnostic of Y chromosome microdeletions and investigation of oocyte activation potential is available. Furthermore, centralized cryobanking service comprising cryopreserved ovarian tissue for fertility protection as well as oocyte cryopreservation (social freezing) started in 2005. Since then ovarian tissue samples from 1629 patients were submitted by 118 collaborating centers for cryopreservation. The number of incoming tissue samples steadily increased over the first seven years and reached a plateau in 2012 with close to 200 samples per year.

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Name and address of Centre

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Type of Centre

University	<input type="checkbox"/>
University Hospital	<input checked="" type="checkbox"/>
Private Centre	<input type="checkbox"/>

 Other (please specify)

1. Director

 Prof. Dr. G. Haidl

 Academician
 Affiliated Member
 Clinical Andrologist
2a. Clinical responsible

 Prof. Dr. Nicole Sanger (Dept. of Gynecological
Endocrinology and Reproductive Medicine)

 Academician
 Affiliated Member
 Clinical Andrologist
2b. Clinical responsible

 Prof. Dr. M. Ritter (Dept. of Urology)

 Academician
 Affiliated Member
 Clinical Andrologist
2c. Clinical responsible

 Prof. Dr. D. Klingmuller (Endocrinology)

 Academician
 Affiliated Member
 Clinical Andrologist

3. Present Staff (*Senior Scientists*)

1) Name J. P. Allam
Degree Prof. Dr.
Speciality Andrology, Immunology

Academician Affiliated Member Clinical Andrologist

2) Name S. Hauser
Degree MD., PhD
Speciality Urology, Operative Andrology

Academician Affiliated Member Clinical Andrologist

Insert any additional staff below (if required)

MD/Biologists/Chemists

1) Name A. Schallmoser
 Degree Biologist, M. Sci
 Speciality Director of IvF Laboratories and Cryobank
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

2) Name B. Vasilevska
 Degree Biologist
 Speciality Embryology
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

3) Name C. Faerber
 Degree _____
 Speciality Biologist
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

4) Name _____
 Degree _____
 Speciality _____
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

5) Name _____
 Degree _____
 Speciality _____
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

6) Name _____
 Degree _____
 Speciality _____
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

7) Name _____
 Degree _____
 Speciality _____
 Full time/part time _____

Academician Affiliated Member Clinical Andrologist

8) Name _____
Degree _____
Speciality _____
Full time/part time _____

Academician Affiliated Member Clinical Andrologist

9) Name _____
Degree _____
Speciality _____
Full time/part time _____

Academician Affiliated Member Clinical Andrologist

10) Name _____
Degree _____
Speciality _____
Full time/part time _____

Academician Affiliated Member Clinical Andrologist

11) Name _____
Degree _____
Speciality _____
Full time/part time _____

Academician Affiliated Member Clinical Andrologist

12) Name _____
Degree _____
Speciality _____
Full time/part time _____

Academician Affiliated Member Clinical Andrologist

Insert any additional staff below (*if required*)

Specialists

- 1) Name Dr. T. Hornung (Andrology)
2) Name Dr. T. Cunha(Andrology)
3) Name _____
4) Name _____
5) Name _____

PhD Students

- 1) Name S. Chen, grant by Chinese scholarship council (- 2017)
2) Name _____
3) Name _____

Nurses

- 1) Name W. Grossmeiler (Andrology unit)
2) Name Fluctuation between different nurses at the
Gynecological Dept.)
3) Name _____

Laboratory Technicians

- 1) Name I. Oltermann (Andrology)
2) Name M. Schloesser (Andrology)
3) Name V. Kistler (Andrology)
Katharina Wollersheim (Gynecology)

Administrative Personnel

- 1) Name _____
2) Name _____
3) Name _____

4. Clinical Activity

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

	2016	2017	2018
New patients	1249	1274	1248
Follow-up patients	1555	1522	1615

Type of patients in the last years (%)	2016	2017	2018
Infertility	80	80	80
Erectile dysfunction	6	6	6
Hypogonadotropic Hypogonadism	5	5	5
Klinefelter	3	3	3
Gynaecomastia	2	2	2
Varicocele	50 (with infertility)	50 (with infertility)	50 (with infertility)
Cryptorchidism	10 (with infertility)	10 (with infertility)	10 (with infertility)
Male sex accessory gland infections	45 (with infertility)	45 (with infertility)	45 (with infertility)
Testicular tumours	1	1	1
Disorders of gender identity	0	0	0
Other	3	3	3

B. Ultrasound (testis, penile, prostate) *

	2016	2017	2018
Total	1035	1053	1074
Controls	315	323	344

* performed at the Department of Urology

C. Andrological surgery procedures

	2016	2017	2018
Testicular biopsies	67	54	74
Varicocele ligation	18	16	13
Prostate biopsies	69	72	74
BPH	129	136	132
Prostate cancer	29	31	34
Vasectomy	11	10	10
Vaso-vasostomy	1	0	1
Other (Varicocele embolization at the Dept. of Radiology)	38	41	35

5. A. Andrology laboratory activity

	2016	2017	2018
Semen analyses	1886	1847	1683
Sperm antibodies	699	795	657
Seminal markers	3201	3080	3010

5. B. Andrology laboratory activity

Sperm banking donors Yes No Sperm banking cancer patients Yes No **If yes:**

	2016	2017	2018
Number of samples	15	11	10

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) 712 each,

Inhibin B.: 493, Tumour markers: 219

5. E. Y chromosome microdeletions according to EAA/EMQN guidelines Yes No ?**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 (Dept. of Human Genetics, University of Bonn) Yes No Blood karyotyping Yes No **If no**, specify if available in another lab of the same hospital (Dept. of Human Genetics, University of Bonn) Yes No

Other genetic tests (please specify) CFTR-screening (Dept. of Human Genetics, University of Bonn)

FISH sperm

Pre-implantation genetic diagnosis

Amniotic fluid karyotyping

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

IVF Unit Part of the centre

Yes No

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

Urology Clinic part of the centre

Yes No

Endocrine Clinic part of the centre

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):

Continuously
since 1993

	Number
A: Trainees in the last five years	1
B: Trainees who passed EAA-ESAU\exam for Clinical Andrologist in the last 5 yrs	0 (1 planned for 2020)
C: Trainees working in the centre preparing to pass the EAA-ESAU examination	1
D: PhD Students	1
E: Medical Students	4
F: Other students (MSc)	

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	32	16 hours/month for 7 months
PhD Students		
Post Graduate students	3 hours/week	20 hours/month
Trainees	10 - 12	30 hours/week
Other degrees (please specify)		

9. Research Activity (maximum 1 page)

Please shortly describe the main research topics of the center and list the most relevant papers in peer review journals (with IF) related to these activities.

The full list of publications (years 2010 - 2015) are presented at the end of this report.

Current research activities focus on immunological mechanisms involved in male in- and subfertility. In continuation of our research regarding action of different cytokines we investigated binding of IL-6 to its receptor IL-6R. We could demonstrate that IL-6R is expressed on the mid-piece of sperms and that its expression correlates to seminal IL-6. Subsequently, activation of IL-6R on sperm led to a slight but significant decrease of sperm motility (Djourabchi et al., in press). Ongoing research pinpoints IL-17 and Th17 associated chemokine CCL20 in ejaculates with inflammatory signs and to look how these cytokines influence sperm functions. In this context we could demonstrate that CCL20 – released by follicles – is involved in sperm chemotaxis and that CCL20 saturated sperms as well as sperms from seminal plasma with high CCL20 concentration lack chemotaxis (Duan et al., in submission).

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Moreover, ongoing projects also focus on expression of several immune receptors on sperms.

To date we have 3 medical students working on these projects

Beyond laboratory projects we established a German-Chinese research cooperation by organizing a scientific workshop in 2020 supported by the German as well as Chinese

state research department, which will also plan as second EAA Educational Course on Immunology in Andrology after the first in March 2017 .

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Use as much space, as required

10. Research Funding

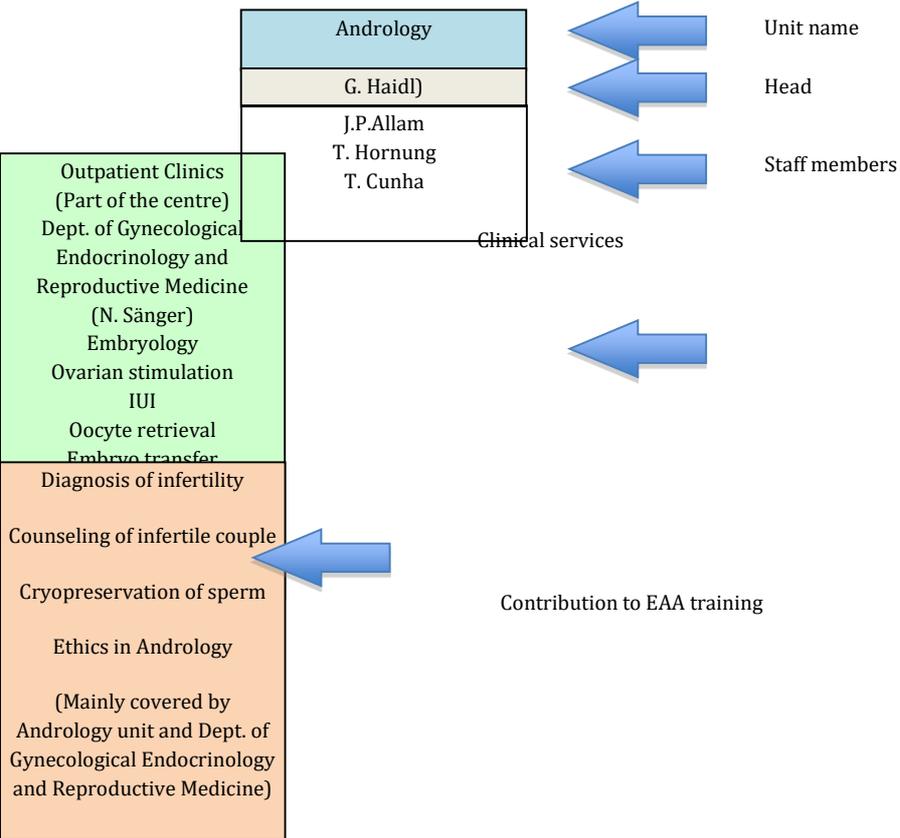
Please specify the amount of available funds in the last 3 years and their source (Government, European Union, University, Local Government, Pharmaceutical Industries, Banks, Foundations....)

Year	2018-2021
Total amount (€)	280.000 €
Funding Source(s)	Government
Year	2018-2021
Total amount (€)	80.000 €
Funding Source(s)	Pharmaceutical Industries
Year	2020
Total amount (€)	60.000 €
Funding Source(s)	Government

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

1: Allam JP, Bunzek C, Schnell L, Heltzel M, Weckbecker L, Wilsmann-Theis D, Brendes K, Haidl G, Novak N. Low serum testosterone levels in male psoriasis patients correlate with disease severity. *Eur J Dermatol*. 2019 Aug 1;29(4):375-382. doi: 10.1684/ejd.2019.3605. PubMed PMID: 31625919. (IP: 3.094)

2: Agarwal A, Parekh N, Panner Selvam MK, Henkel R, Shah R, Homa ST, Ramasamy R, Ko E, Tremellen K, Esteves S, Majzoub A, Alvarez JG, Gardner DK, Jayasena CN, Ramsay JW, Cho CL, Saleh R, Sakkas D, Hotaling JM, Lundy SD, Vij S, Marmar J, Gosalvez J, Sabanegh E, Park HJ, Zini A, Kavoussi P, Micic S, Smith R, Busetto GM, Bakircioğlu ME, Haidl G, Balercia G, Puchalt NG, Ben-Khalifa M, Tadros N, Kirkman-Browne J, Moskovtsev S, Huang X, Borges E, Franken D, Bar-Chama N, Morimoto Y, Tomita K, Srinivasan VS, Ombelet W, Baldi E, Muratori M, Yumura Y, La Vignera S, Kosgi R, Martinez MP, Evenson DP, Zylbersztejn DS, Roque M, Cocuzza M, Vieira M, Ben-Meir A, Orvieto R, Levitas E, Wisner A, Arafa M, Malhotra V, Parekattil SJ, Elbardisi H, Carvalho L, Dada R, Sifer C, Talwar P, Gudeloglu A, Mahmoud AMA, Terras K, Yazbeck C, Nebojsa B, Durairajanayagam D, Mounir A, Kahn LG, Baskaran S, Pai RD, Paoli D, Leisegang K, Moein MR, Malik S, Yaman O, Samanta L, Bayane F, Jindal SK, Kendirci M, Altay B, Perovic D, Harlev A. Male Oxidative Stress Infertility (MOSI): Proposed Terminology and Clinical Practice Guidelines for Management of Idiopathic Male Infertility. *World J Mens Health*. 2019 Sep;37(3):296-312. doi: 10.5534/wjmh.190055. Epub 2019 May 28. Review. PubMed PMID: 31081299; PubMed Central PMCID: PMC6704307. (IP: 1.981)

3: Lustig L, Allam JP. Guest editors foreword. *Andrologia*. 2018

Dec;50(11):e13186. doi: 10.1111/and.13186. PubMed PMID: 30569648.

(IP: 1.840)

4: Haidl G, Haidl F, Allam JP, Schuppe HC. Therapeutic options in male genital tract inflammation. *Andrologia*. 2019 Apr;51(3):e13207. doi: 10.1111/and.13207.

Epub 2018 Nov 26. Review. PubMed PMID: 30474250.

(IP: 1.840)

5: Allam JP, Ochsendorf FR, Köhn FM. [What does dermatology have to do with andrology?]. *Hautarzt*. 2018 Dec;69(12):970-971. doi: 10.1007/s00105-018-4301-8.

German. PubMed PMID: 30406810.

(IP: 0.784)

6: Grobe W, Allam JP, Haidl G. [Skin diseases and fertility/hormone disorders].

Hautarzt. 2018 Dec;69(12):991-995. doi: 10.1007/s00105-018-4302-7. Review.

German. PubMed PMID: 30397747.

(IP: 0.784)

7: Colpi GM, Francavilla S, Haidl G, Link K, Behre HM, Goulis DG, Krausz C, Giwercman A. European Academy of Andrology guideline Management of oligo-astheno-teratozoospermia. *Andrology*. 2018 Jul;6(4):513-524. doi:

10.1111/andr.12502. Review. PubMed PMID: 30134082.

(IP: 3.106)

8: Müller S, Allam JP, Bunzek CG, Clemons TE, Holz FG, Charbel Issa P. SEX

STEROIDS AND MACULAR TELANGIECTASIA TYPE 2. *Retina*. 2018 Jan;38 Suppl 1:S61-S66.

doi: 10.1097/IAE.0000000000001789. PubMed PMID: 28837534.

(IP: 3.815)

9: Duan YG, Chen S, Haidl G, Allam JP. Detection of invariant natural killer T cells in ejaculates from infertile patients with chronic inflammation of genital tract. *Am J Reprod Immunol*. 2017 Aug;78(2). doi: 10.1111/aji.12671. Epub 2017 Apr 3. PubMed PMID: 28371089.

(IP: 3.091)

10: Forat S, Huettel B, Reinhardt R, Fimmers R, Haidl G, Denschlag D, Olek K. Methylation Markers for the Identification of Body Fluids and Tissues from Forensic Trace Evidence. *PLoS One*. 2016 Feb 1;11(2):e0147973. doi: 10.1371/journal.pone.0147973. eCollection 2016. Erratum in: *PLoS One*. 2016;11(5):e0156472. PubMed PMID: 26829227; PubMed Central PMCID: PMC4734623.

(IP: 2.776)

11: Schuppe HC, Haidl G, Ochsendorf F. [Not Available]. *Hautarzt*. 2015 Dec;66(12):890-1. doi: 10.1007/s00105-015-3713-y. German. PubMed PMID: 26501349.

(IP: 0.784)

12: Allam JP, Haidl G, Novak N. [Semen allergy]. *Hautarzt*. 2015 Dec;66(12):919-23. doi: 10.1007/s00105-015-3710-1. Review. German. PubMed PMID: 26490774.

(IP: 0.784)

13: Chen SJ, Duan YG, Haidl G, Allam JP. Predomination of IL-17-producing tryptase-positive/chymase-positive mast cells in azoospermic chronic testicular inflammation. *Andrologia*. 2016 Aug;48(6):617-25. doi: 10.1111/and.12487. Epub 2015 Sep 29. PubMed PMID: 26420243.

(IP: 1.840)

14: Kühborth K, Haidl G, Allam JP. [Penile dermatoses]. *Urologe A*. 2015 May;54(5):684-9. doi: 10.1007/s00120-015-3798-z. Review. German. PubMed PMID: 25987335.

(IP: 0.437)

15: Haidl G. Commentary on "Awareness of and attitudes toward infertility and its treatment: a cross-sectional survey of men in a United States primary care population". *Asian J Androl*. 2015 Jan-Feb;17(1):162. doi:

10.4103/1008-682X.142142. PubMed PMID: 25432499; PubMed Central PMCID: PMC4291864.

(IP: 3.259)