EAA training Centre of Tartu University Hospital, Estonia

Andrology Center
Tartu University Hospital
L. Puusepa 1a
50406 Tartu
Estonia

Tel.: +37 2 7319323
Fax.: +37 2 7319401
Web: http://www.kliinikum.ee/meestekliinik/
Email: meestekliinik@kliinikum.ee
margus.punab@kliinikum.ee
Facebook: https://www.facebook.com/meestekliinik

Formation of the Andrology Centre in Estonia: chronological footsteps.

1993 – Initiation of andrological service at the Tartu University Hospital (TUH) by dr. Margus Punab (specialization in gynecology 1993; residential training in andrology/urology 1993-1996): first outpatient clinic for infertile men at the Women's Clinic.

1995 – First specialized semen laboratory established by the United Laboratories of TUH.

1996 – Andrological outpatient clinic joined the central outpatient clinic (policlinic) of the TUH in the vicinity of the semen laboratory.

1997 – The Centre was involved in first international collaboration projects with Nordic colleagues

March 2005 – establishment of an independent Andrology Centre at the TUH. Andrological activities, previously scattered between different clinics (private and state owned) is now centralized into one center. The Andrology Center consists of the main unit in Tartu and the branch offices in Tallinn and Pärnu

Our unit works as a referral Centre for whole Estonia.

Present staff.

- Margus Punab, MD, PhD – director of the Center, andrologist-urologist, certified clinical andrologist by the EAA in 2004
- Olev Poolamets, MD – andrologist, head of the Tallinn branch office, affiliated member of the EAA, past president of the Nordic Association for Clinical Sexology
- Vladimir Vihljajev, MD – andrologist-sexologist
- Ruth Ladva, MD – andrologist-GP
- Kristjan Pomm, MD - andrologist-GP
- Paul Korrovits, MD, PhD – andrology resident, research assistant
- Kristel Ehala-Aleksejev, MD – PhD student, specialist of internal medicine, nutritionist
- Ülo Sõmer, MD – GP (part time in Pärnu center)

The center has five laboratory technicians, six nurses and seven secretaries.

Scientific council.

Prof. Maris Laan – Institute of Molecular and Cell Biology, University of Tartu
Prof. Vallo Tillmann - Tartu University Children's Hospital
Prof. Reet Mändar - Institute of Microbiology, University of Tartu
Docent Margus Punab – Andrology Center
The aim of council is to generate and coordinate scientific activities of the Andrology Center.

Management of patients with andrological diseases.

Table 1 summarizes the statistics about clinical activity of the unit during the years 2009-2013. The unit provides diagnosis and treatment for a full range of andrological diseases. There are three main groups of patients (Table 2): male infertility, male sexual dysfunctions and prostate diseases. The specialists of the Andrology Center have also reception hours at the Youth Counselling Centres, Haapsalu Neurological Rehabilitation Center, and Estonian Multiple Sclerosis Centre (numbers not included in the statistics of Table 1).

Andrology center has access to a full range of modern diagnostic facilities (Table 3) either in our own center or in collaboration with partners' clinics and laboratories.

Table 1. Number of visits and lab examinations per year											
	Tallinn					**Tartu**					**Pärnu**
	2009	2010	2011	2012	**2013**	2009	2010	2011	2012	**2013**	**2013**
Doctors visits	13933	13229	11451	12387	**13168**	8739	6886	6565	6619	**6798**	**1213**
Nurses visits	9248	9866	11439	10759	**11540**	2546	5255	5767	6701	**6052**	**872**
In total - visits	23181	23095	22890	23146	**24708**	11285	12141	12332	13320	**12850**	**2085**
Semen analysis	2237	2347	2530	2306	**2606**	2024	1883	1985	2350	**2427**	
Prostate secretion	2459	2718	2863	2512	**3390**	1572	2093	1994	2293	**2395**	**289**
In total lab tests	4696	5065	5393	4818	**5996**	3596	3976	3979	4643	**4822**	**289**

Table 2. Primary causes of consultation (approximate figures)	
Male infertility	20 %
Sexual dysfunction	20 %
Genitourinary tract infections and prostatitis	25 %
Prostate diseases	15 %
Male hypogonadism	10 %
Other genital diseases	5 %
Male health	5 %

Table 3 Diagnostic facilities for clinical work-up of patients with andrological diseases.

Location	Tartu	Tallinn	Pärnu
History and physical examination	Andrology Unit (AU)	AU	AU
Semen and prostate secretion analysis	AU	AU	AU
Ultrasound examination	AU	AU	AU
Uroflow test	AU	AU	AU
Vibrostimulation	AU	AU*	AU
Endocrine testing	TUH Central lab	TUH Central lab	TUH Central lab
Pathology	TUH Pathology department	TUH Pathology department	TUH Pathology department
Microbiology and STD testing	TUH Central lab	TUH Central lab	TUH Central lab
Genetic analyses	TUH Central lab	TUH Central lab	TUH Central lab
Flow cytometry	TUH Central lab	TUH Central lab	TUH Central lab
Andrological operations	TUH Clinics of	TUH Clinics of	TUH Clinics of Surgery

	Surgery	Surgery	
Urological operation	TUH Clinics of Surgery	North Estonian Regional Hospital	Pärnu Hospital, TUH Clinics of Surgery
IVF, ICSI, TESA	TUH Women`s Clinic	IVF clinics in Tallinn	TUH Women`s Clinic
Sperm cryopreservation	TUH Women's Clinic	TUH Women's Clinic West-Tallinn central Hospital	TUH Women's Clinic, West-Tallinn central Hospital
Bone density	AU / TUH Dept. of Internal Medicine	East-Tallinn Central Hospital	AU / TUH Dept. of Internal Medicine
Electron microscopy, FISH, molecular biology	Research facilities of collaborators		

Infertility work-up.

In Tartu and Tallinn offices specialized semen analysis laboratory has been established. Semen analysis is performed according to WHO (2010).

Care for infertile patients has been organized stepwise: diagnostic, conservative treatment together with lifestyle modification, assisted reproductive techniques (ART) or/and operative treatment. Decisions for ART procedures are based on collaboration with partner gynecologist. In certain indication varicocele operations were performed. Microsurgical operations in male seminal ducts were started in 1994, but with introduction of TESA, lost their actuality during some recent years.

Genetics.

Y chromosome microdeletion screening deletions are performed according to EAA recommendations. Laboratory has participated in the external EAA/EMQN quality control program.

For CF mutation screening we use extended APEX (arrayed primer extension), test which allows us to analyze 246 most common CFTR gene mutations detected in Caucasians.

Cytogentic analysis are performed in TUH Central laboratory

Chromosomes are analyzed by Trypsin –Giemsa banding technique. Other methods, such as R-, Q-, AgNOR and fluorescence in situ hybridization (FISH) methods, were used for the identification of chromosome abnormalities.

- Pathology tests are performed in collaboration with TUH Pathology department which has a wide experience in standard histological techniques, histomorphometry and immunohistochemistry.

- Hormonal analysis is performed in collaboration with the TUH Central laboratory under appropriate internal and external quality control.
- Microbiological tests are performed in collaboration with TUH Central laboratory

Male sexual dysfunction

Basic diagnostic work-up includes clinical examination, hormonal tests and test treatment course. In non-responders to pharmacological treatment Doppler ultrasound examination of penis blood vessels are performed. In selected cases also neurological test will be applied. Treatment contains elements of sexual therapy and lifestyle modification. Majority of patients get pharmacological treatment. In rare cases patients will be referred to penis prosthesis operations.

Prostate diseases

Diagnostic work-up starts with standard questionnaires (IPSS, NIH-CPSI). According to clinical indications blood tests for cancer markers, uroflowmetry and ultrasound examinations were used.
Diagnosis of prostatitis is always based on test of prostate specific material (prostate secretion, semen). Cytological and biochemical tests have been introduced to detect inflammatory process in these secretions. Conservative treatment of prostatitis and LUTS patients is performed in our unit but patients with diagnosed prostate cancer are referred to the Department of Urology.

Surgical activity

Two staff doctors have skills to perform andrological operations. The range of operations is limited to (noncancerous) diseases of penis, scrotum and includes also TESA procedures in partner IVF clinics. Patients who need for more advanced operations are referred to consultant urologists.

The Andrology Unit is involved in the following clinical training and educational programmes.

1. Andrology Residency: Our Hospital teaches a five-year residential programme in Andrology (as a subspecialist of urology) based on EAA recommendations for andrology training.
2. Current program of training consist of the following parts:

Urology	10 months
Paediatric urology	1 month
Oncology	1 month
Gynaecology	5 months
Laboratory medicine	2 months
Endocrinology	1 month
Radiology	1 month
Genetics	1 month
Andrology	33 months

2. The unit serves as training base for residents in Andrology, urology, dermato-venereology and gynaecology.

3. The unit is responsible for a two yearly 20-hour (elective) course in andrology and urological andrology included in teaching program of medical students.

4. Our clinicians give lectures on Andrology, reproductive biology, sexology at postgraduate courses organized by other departments (urology, gynaecology, internal medicine).

5. Biannually the unit organizes workshops in actual topics of andrology and sexology, open for all clinicians.

Research activities.

Major areas of research:

1. Male fertility and its risk factors
2. Male infertility
3. Genetic aspects of male infertility
4. Male aging
5. Prostatitis, leukocytospermia, oxidative stress

Major international scientific grants

1. European Commission (EU 5. framework) – Envir.Reprod.Health (QLK4-CT-1999-01422) 2002-2004
2. European Commission (EU 5. framework) – European Male Aging Study (QLRT-2001-00258) 2001-2009

Major local scientific grants

1. Oxidative stress, prostatitis and male infertility - ETF8022 - 01.01.09 - 31.12.12
2. Determinants on men´s health: psychosocial factors in men with prostate diseases – influence to the help-seeking behavior and to the utilization of screening methods – ETF7979 - 01.01.09 - 31.12.12
3. Development of novel non-invasive biomarkers for fertility and healthy pregnancy. European Regional Development Fund - 01.09.2012-31.08.2015

4. Competence Centre on Reproductive Medicine and Biology. European Regional Development Fund - 01.09.2009 to 31.08.2015
5. Causes of male factor infertility with special emphasis to the male accessory gland infection- PUT181 - Estonian Research Council – 1.01.2013-31.01.2016

Recent publications (2010-2014):

1. Alcohol and male reproductive health: a cross-sectional study of 8344 healthy men from Europe and the USA. Jensen TK, Swan S, Jørgensen N, Toppari J, Redmon B, Punab M, Drobnis EZ, Haugen TB, Zilaitiene B, Sparks AE, Irvine DS, Wang C, Jouannet P, Brazil C, Paasch U, Salzbrunn A, Skakkebæk NE, Andersson AM.
Hum Reprod. 2014 Jun 3.[Epub ahead of print]

2. Reproductive physiology in young men is cumulatively affected by FSH-action modulating genetic variants: FSHR -29G/A and c.2039 A/G, FSHB -211G/T.
Grigorova M, Punab M, Punab AM, Poolamets O, Vihljajev V, Zilaitienė B, Erenpreiss J, Matulevičius V, Laan M. PLoS One. 2014 Apr 9;9(4

3. Semen quality in middle-aged males: associations with prostate-specific antigen and age-related prostate conditions. Ausmees K, Korrovits P, Timberg G, Erm T, Punab M, Mändar R. Hum Fertil (Camb). 2014 Mar;17(1):60-6.

4. Personal values that support and counteract utilization of a screening test for prostate cancer. Aavik T, Aavik A, Punab M. Behav Med. 2014;40(1):22-8.

5. Male infertility: decreased levels of selenium, zinc and antioxidants.
Türk S, Mändar R, Mahlapuu R, Viitak A, Punab M, Kullisaar T. J Trace Elem Med Biol. 2014 Apr;28(2):179-85.

6. Late-onset hypogonadism and mortality in aging men. Pye SR, Huhtaniemi IT, Finn JD, Lee DM, O'Neill TW, Tajar A, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Rutter MK, Vanderschueren D, Wu FC; EMAS Study Group. J Clin Endocrinol Metab. 2014 Apr;99(4):1357-66.

7. Association of 25-hydroxyvitamin D, 1,25-dihydroxyvitamin D and parathyroid hormone with mortality among middle-aged and older European men. Lee DM, Vanderschueren D, Boonen S, O'Neill TW, Pendleton N, Pye SR, Ravindrarajah R, Gielen E, Claessens F, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Wu FC; European Male Ageing Study Group. Age Ageing. 2014 Jul;43(4):528-35.

8. Male infertility workup needs additional testing of expressed prostatic secretion and/or post-massage urine. Punab M, Kullisaar T, Mändar R. PLoS One. 2013 Dec 9;8(12)

9. Low prolactin is associated with sexual dysfunction and psychological or metabolic disturbances in middle-aged and elderly men: the European Male Aging Study (EMAS). Corona G, Wu FC, Rastrelli G, Lee DM, Forti G, O'Connor DB, O'Neill TW, Pendleton N, Bartfai G, Boonen S, Casanueva FF, Finn JD, Huhtaniemi IT, Kula K, Punab M, Vanderschueren D, Rutter MK, Maggi M; EMAS Study Group.
J Sex Med. 2014 Jan;11(1):240-53.

10. Decline of seminal parameters in middle-aged males is associated with lower urinary tract symptoms, prostate enlargement and bladder outlet obstruction.
Ausmees K, Korrovits P, Timberg G, Punab M, Mändar R.
Int Braz J Urol. 2013 Sep-Oct;39(5):727-40.

11. Increased levels of hydrogen peroxide and nitric oxide in male partners of infertile couples. Kullisaar T, Türk S, Kilk K, Ausmees K, Punab M, Mändar R.
Andrology. 2013 Nov;1(6):850-8.

12. The ability of three different models of frailty to predict all-cause mortality: results from the European Male Aging Study (EMAS). Ravindrarajah R, Lee DM, Pye SR, Gielen E, Boonen S, Vanderschueren D, Pendleton N, Finn JD, Tajar A, O'Connell MD, Rockwood K, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Wu FC, O'Neill TW; European Male Aging Study Group. Arch Gerontol Geriatr. 2013 Nov-Dec;57(3):360-8.

13. Comparisons of immunoassay and mass spectrometry measurements of serum estradiol levels and their influence on clinical association studies in men. Ohlsson C, Nilsson ME, Tivesten A, Ryberg H, Mellström D, Karlsson MK, Ljunggren Ö, Labrie F, Orwoll ES, Lee DM, Pye SR, O'Neill TW, Finn JD, Adams JE, Ward KA, Boonen S, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Vanderschueren D, Wu FC; EMAS Study Group, Vandenput L. J Clin Endocrinol Metab. 2013 Jun;98(6):E1097-102.

14. Semen quality and associated reproductive indicators in middle-aged males: the role of non-malignant prostate conditions and genital tract inflammation. Ausmees K, Korrovits P, Timberg G, Punab M, Mändar R. World J Urol. 2013 Dec;31(6):1411-25.

15. Age-associated changes in hypothalamic-pituitary-testicular function in middle-aged and older men are modified by weight change and lifestyle factors: longitudinal results from the European Male Ageing Study. Camacho EM, Huhtaniemi IT, O'Neill TW, Finn JD, Pye SR, Lee DM, Tajar A, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Keevil B, Lean ME, Pendleton N, Punab M, Vanderschueren D, Wu FC; EMAS Group. Eur J Endocrinol. 2013 Feb 20;168(3):445-55.

16. Study in 1790 Baltic men: FSHR Asn680Ser polymorphism affects total testes volume. Grigorova M, Punab M, Poolamets O, Sõber S, Vihljajev V, Žilaitienė B, Erenpreiss J, Matulevičius V, Tsarev I, Laan M. Andrology. 2013 Mar;1(2):293-300.

17. Active vitamin D (1,25-dihydroxyvitamin D) and bone health in middle-aged and elderly men: the European Male Aging Study (EMAS). Vanderschueren D, Pye SR, O'Neill TW, Lee DM, Jans I, Billen J, Gielen E, Laurent M, Claessens F, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Wu FC, Boonen S; EMAS Study Group. J Clin Endocrinol Metab. 2013 Mar;98(3):995-1005.

18. Sexual intercourse with leukocytospermic men may be a possible booster of oxidative stress in female partners of infertile couples. Mändar R, Kullisaar T, Borovkova N, Punab M. Andrology. 2013 May;1(3):464-8.

19. Reproductive function in middle-aged males: healthy men versus male partners of infertile couples. Ausmees K, Mändar R, Korrovits P, Zarkovski M, Timberg G, Punab M. Andrologia. 2014 Mar;46(2):118-25.

20. The association of frailty with serum 25-hydroxyvitamin D and parathyroid hormone levels in older European men. Tajar A, Lee DM, Pye SR, O'Connell MD, Ravindrarajah R, Gielen E, Boonen S, Vanderschueren D, Pendleton N, Finn JD, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Wu FC, O'Neill TW. Age Ageing. 2013 May;42(3):352-9.

21. Frailty and sexual health in older European men. Lee DM, Tajar A, Ravindrarajah R, Pye SR, O'Connor DB, Corona G, O'Connell M, Gielen E, Boonen S, Vanderschueren D, Pendleton N, Finn JD, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Wu FC, O'Neill TW; European Male Aging Study Group. J Gerontol A Biol Sci Med Sci. 2013 Jul;68(7):837-44.

22. Epidemiological evidence against a role for C-reactive protein causing leptin resistance. Rutter MK, Sattar N, Tajar A, O'Neill TW, Lee DM, Bartfai G, Boonen S, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Lowe G, O'Rahilly S, Morris RW, Wu FC, Wannamethee SG; BRHS and EMAS Study Groups.
Eur J Endocrinol. 2012 Dec 10;168(1):101-6.

23. The non-synonymous SNP, R1150W, in SCN9A is not associated with chronic widespread pain susceptibility. Holliday KL, Thomson W, Neogi T, Felson DT, Wang K, Wu FC, Huhtaniemi IT, Bartfai G, Casanueva F, Forti G, Kula K, Punab M, Vanderschueren D, Macfarlane GJ, Horan MA, Ollier W, Payton A, Pendleton N, McBeth J. Mol Pain. 2012 Sep 24;8:72.

24. Thyroid hormones and male sexual function. Corona G, Wu FC, Forti G, Lee DM, O'Connor DB, O'Neill TW, Pendleton N, Bartfai G, Boonen S, Casanueva FF, Finn JD, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Vanderschueren D, Jannini EA, Mannucci E, Maggi M; EMAS Study Group.
Int J Androl. 2012 Oct;35(5):668-79.

25. Combined effects of the variants FSHB -211G>T and FSHR 2039A>G on male reproductive parameters. Tüttelmann F, Laan M, Grigorova M, Punab M, Sõber S, Gromoll J. J Clin Endocrinol Metab. 2012 Oct;97(10):3639-47.

26. Investigating the role of pain-modulating pathway genes in musculoskeletal pain.
Holliday KL, McBeth J, Macfarlane G, Huhtaniemi IT, Bartfai G, Casanueva FF, Forti G, Kula K, Punab M, Vanderschueren D, Wu FC, Thomson W. Eur J Pain. 2013 Jan;17(1):28-34.

27. Comparison of serum testosterone and estradiol measurements in 3174 European men using platform immunoassay and mass spectrometry; relevance for the diagnostics in aging men. Huhtaniemi IT, Tajar A, Lee DM, O'Neill TW, Finn JD, Bartfai G, Boonen S, Casanueva FF, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Forti G, Wu FC; EMAS Group. Eur J Endocrinol. 2012 Jun;166(6):983-91.

28. Characteristics of androgen deficiency in late-onset hypogonadism: results from the European Male Aging Study (EMAS). Tajar A, Huhtaniemi IT, O'Neill TW, Finn JD, Pye SR, Lee DM, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Vanderschueren D, Wu FC; EMAS Group. J Clin Endocrinol Metab. 2012 May;97(5):1508-16.

29. Cohort profile: the European Male Ageing Study. Lee DM, Pye SR, Tajar A, O'Neill TW, Finn JD, Boonen S, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Wu FC; EMAS study group. Int J Epidemiol. 2013 Apr;42(2):391-401.

30. Polymorphisms in genes involved in the NF-κB signalling pathway are associated with bone mineral density, geometry and turnover in men. Roshandel D, Thomson W, Pye SR, Boonen S, Borghs H, Vanderschueren D, Huhtaniemi IT, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Wu FC, Holliday KL, O'Neill TW; EMAS Study Group. PLoS One. 2011;6(11):e28031.

31. Association of hypogonadism with vitamin D status: the European Male Ageing Study. Lee DM, Tajar A, Pye SR, Boonen S, Vanderschueren D, Bouillon R, O'Neill TW, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Wu FC; EMAS study group.
Eur J Endocrinol. 2012 Jan;166(1):77-85.

32. Oxidative stress--cause or consequence of male genital tract disorders? Kullisaar T, Türk S, Punab M, Mändar R. Prostate. 2012 Jun 15;72(9):977-83.

33. Influence of polymorphisms in the RANKL/RANK/OPG signaling pathway on volumetric bone mineral density and bone geometry at the forearm in men. Roshandel D, Holliday KL, Pye SR, Ward KA, Boonen S, Vanderschueren D, Borghs H, Huhtaniemi IT, Adams JE, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, Thomson W, ONeill TW; EMAS Study Group. Calcif Tissue Int. 2011 Dec;89(6):446-55

34. Influence of bone remodelling rate on quantitative ultrasound parameters at the calcaneus and DXA BMDa of the hip and spine in middle-aged and elderly European men: the European Male Ageing Study (EMAS). Boonen S, Pye SR, O'Neill TW, Szulc P, Gielen E, Borghs H, Verschueren S, Claessens F, Adams JE, Ward KA, Bartfai G, Casanueva F, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT,

Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Tajar A, Wu FC, Vanderschueren D; EMAS Group. Eur J Endocrinol. 2011 Dec;165(6):977-86.

35. The relationships between sex hormones and sexual function in middle-aged and older European men. O'Connor DB, Lee DM, Corona G, Forti G, Tajar A, O'Neill TW, Pendleton N, Bartfai G, Boonen S, Casanueva FF, Finn JD, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Labrie F, Lean ME, Punab M, Silman AJ, Vanderschueren D, Wu FC; European Male Ageing Study Group. J Clin Endocrinol Metab. 2011 Oct;96(10):E1577-87

36. The ESR1 (6q25) locus is associated with calcaneal ultrasound parameters and radial volumetric bone mineral density in European men. Holliday KL, Pye SR, Thomson W, Boonen S, Borghs H, Vanderschueren D, Gielen E, Huhtaniemi IT, Adams JE, Ward KA, Bartfai G, Casanueva F, Finn JD, Forti G, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Wu FC, O'Neill TW; EMAS study group. PLoS One. 2011;6(7):e22037. Epub 2011 Jul 7.

37. Genetically determined dosage of follicle-stimulating hormone (FSH) affects male reproductive parameters. Grigorova M, Punab M, Zilaitienė B, Erenpreiss J, Ausmees K, Matulevičius V, Tsarev I, Jørgensen N, Laan M. J Clin Endocrinol Metab. 2011 Sep;96(9):E1534-41.

38. Frailty in relation to variations in hormone levels of the hypothalamic-pituitary-testicular axis in older men: results from the European male aging study. Tajar A, O'Connell MD, Mitnitski AB, O'Neill TW, Searle SD, Huhtaniemi IT, Finn JD, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Rockwood K, Wu FC; European Male Aging Study Group. J Am Geriatr Soc. 2011 May;59(5):814-21

39. Influence of sexual intercourse on genital tract microbiota in infertile couples. Borovkova N, Korrovits P, Ausmees K, Türk S, Jõers K, Punab M, Mändar R. Anaerobe. 2011 Dec;17(6):414-8.

40. Seminal interleukin-6 and serum prostate-specific antigen as possible predictive biomarkers in asymptomatic inflammatory prostatitis. Korrovits P, Ausmees K, Mändar R, Punab M. Urology. 2011 Aug;78(2):442-6

41. Influence of insulin-like growth factor binding protein (IGFBP)-1 and IGFBP-3 on bone health: results from the European Male Ageing Study. Pye SR, Almusalam B, Boonen S, Vanderschueren D, Borghs H, Gielen E, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, O'Neill TW; EMAS Study Group. Calcif Tissue Int. 2011 Jun;88(6):503-10.

42. Impaired quality of life and sexual function in overweight and obese men: the European Male Ageing Study. Han TS, Tajar A, O'Neill TW, Jiang M, Bartfai G, Boonen S, Casanueva F, Finn JD, Forti G, Giwercman A, Huhtaniemi IT, Kula K, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Lean ME, Wu FC; EMAS group. Eur J Endocrinol. 2011 Jun;164(6):1003-11.

43. Elevated levels of gonadotrophins but not sex steroids are associated with musculoskeletal pain in middle-aged and older European men. Tajar A, McBeth J, Lee DM, Macfarlane GJ, Huhtaniemi IT, Finn JD, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, O'Neill TW, Wu FC; European Male Aging Study Group. Pain. 2011 Jul;152(7):1495-501.

44. Association of HTR2A polymorphisms with chronic widespread pain and the extent of musculoskeletal pain: results from two population-based cohorts. Nicholl BI, Holliday KL, Macfarlane GJ, Thomson W, Davies KA, O'Neill TW, Bartfai G, Boonen S, Casanueva FF, Finn JD, Forti G, Giwercman A, Huhtaniemi IT, Kula K, Punab M, Silman AJ, Vanderschueren D, Wu FC, McBeth J; European Male Ageing Study Group. Arthritis Rheum. 2011 Mar;63(3):810-8.

45. Alpha-1 antitrypsin phenotypes in patients with Klinefelter's syndrome. Mikelsaar R, Lissitsina J, Ausmees K, Punab M, Korrovits P, Vaidla E. J Genet. 2010 Dec;89(4):485-8.

46. The Effect of Musculoskeletal Pain on Sexual Function in Middle-aged and Elderly European Men: Results from the European Male Ageing Study. Tajar A, O'Neill TW, Lee DM, O'Connor DB, Corona G,

Finn JD, Bartfai G, Boonen S, Casanueva FF, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Purandare N, Silman AJ, Vanderschueren D, Wu FC, McBeth J. J Rheumatol. 2011 Feb;38(2):370-7.

47. Influence of age and sex steroids on bone density and geometry in middle-aged and elderly European men.Ward KA, Pye SR, Adams JE, Boonen S, Vanderschueren D, Borghs H, Gaytant J, Gielen E, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, O'Neill TW; The EMAS study group. Osteoporos Int. 2011 May;22(5):1513-23.

48. Association of cognitive performance with the metabolic syndrome and with glycaemia in middle-aged and older European men: the European Male Ageing Study. Tournoy J, Lee DM, Pendleton N, O'Neill TW, O'Connor DB, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Moseley CM, Punab M, Silman AJ, Vanderschueren D, Wu FC, Boonen S; EMAS study group. Diabetes Metab Res Rev. 2010 Nov;26(8):668-76

49. Lower vitamin D levels are associated with depression among community-dwelling European men.Lee DM, Tajar A, O'Neill TW, O'Connor DB, Bartfai G, Boonen S, Bouillon R, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Silman AJ, Vanderschueren D, Wu FC, Pendleton N. J Psychopharmacol. 2011 Oct;25(10):1320-1328.

50. Chronic widespread pain is associated with slower cognitive processing speed in middle-aged and older European men.Lee DM, Pendleton N, Tajar A, O'Neill TW, O'Connor DB, Bartfai G, Boonen S, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Silman AJ, Vanderschueren D, Moseley CM, Wu FC, McBeth J; EMAS Study Group. Pain. 2010 Oct;151(1):30-6

51. No evidence for a role of the catechol-O-methyltransferase pain sensitivity haplotypes in chronic widespread pain. Nicholl BI, Holliday KL, Macfarlane GJ, Thomson W, Davies KA, O'Neill TW, Bartfai G, Boonen S, Casanueva F, Finn JD, Forti G, Giwercman A, Huhtaniemi IT, Kula K, Punab M, Silman AJ, Vanderschueren D, Wu FC, McBeth J; European Male Ageing Study Group. Ann Rheum Dis. 2010 Nov;69(11):2009-12

52. Identification of late-onset hypogonadism in middle-aged and elderly men.Wu FC, Tajar A, Beynon JM, Pye SR, Silman AJ, Finn JD, O'Neill TW, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Boonen S, Vanderschueren D, Labrie F, Huhtaniemi IT; EMAS Group.N Engl J Med. 2010 Jul 8;363(2):123-35

53. Musculoskeletal pain is associated with very low levels of vitamin D in men: results from the European Male Ageing Study. McBeth J, Pye SR, O'Neill TW, Macfarlane GJ, Tajar A, Bartfai G, Boonen S, Bouillon R, Casanueva F, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Wu FC; EMAS Group.Ann Rheum Dis. 2010 Aug;69(8):1448-52

54. Endogenous hormones, androgen receptor CAG repeat length and fluid cognition in middle-aged and older men: results from the European Male Ageing Study. Lee DM, Ulubaev A, Tajar A, Pye SR, Pendleton N, Purandare N, O'Neill TW, O'Connor DB, Labrie F, Platt H, Payne D, Bartfai G, Boonen S, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Silman AJ, Vanderschueren D, Wu FC; EMAS study group. Eur J Endocrinol. 2010 Jun;162(6):1155-64

55. Influence of Lifestyle Factors on Quantitative Heel Ultrasound Measurements in Middle-Aged and Elderly Men. Pye SR, Devakumar V, Boonen S, Borghs H, Vanderschueren D, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, O'Neill TW; EMAS Study Group. Calcif Tissue Int. 2010 Mar;86(3):211-9.

56. Genetic variation in the RANKL/RANK/OPG signaling pathway is associated with bone turnover and bone mineral density in men. Roshandel D, Holliday KL, Pye SR, Boonen S, Borghs H, Vanderschueren D, Huhtaniemi IT, Adams JE, Ward KA, Bartfai G, Casanueva F, Finn JD, Forti G, Giwercman A, Han

TS, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, Thomson W, O'Neill TW; EMAS Study Group. J Bone Miner Res. 2010 Aug;25(8):1830-8

57. Characteristics of secondary, primary, and compensated hypogonadism in aging men: evidence from the European Male Ageing Study. Tajar A, Forti G, O'Neill TW, Lee DM, Silman AJ, Finn JD, Bartfai G, Boonen S, Casanueva FF, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Vanderschueren D, Huhtaniemi IT, Wu FC; EMAS Group. J Clin Endocrinol Metab. 2010 Apr; 95(4):1810-8

58. Effect of polymorphisms in selected genes involved in pituitary-testicular function on reproductive hormones and phenotype in aging men. Huhtaniemi IT, Pye SR, Holliday KL, Thomson W, O'Neill TW, Platt H, Payne D, John SL, Jiang M, Bartfai G, Boonen S, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Vanderschueren D, Labrie F, Wu FC; European Male Aging Study Group. J Clin Endocrinol Metab. 2010 Apr;95(4):1898-908.

59. Follicle-stimulating hormone receptor gene haplotypes and male infertility in estonian population and meta-analysis. Lend AK, Belousova A, Haller-Kikkatalo K, Punab M, Poolamets O, Peters M, Salumets A. Syst Biol Reprod Med. 2010 Feb;56(1):84-90.

60. Influence of Lifestyle Factors on Quantitative Heel Ultrasound Measurements in Middle-Aged and Elderly Men. Pye SR, Devakumar V, Boonen S, Borghs H, Vanderschueren D, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, O'Neill TW; EMAS Study Group. Calcif Tissue Int. 2010 Jan 19.

61. Gonadal sex steroid status and bone health in middle-aged and elderly European men. Vanderschueren D, Pye SR, Venken K, Borghs H, Gaytant J, Huhtaniemi IT, Adams JE, Ward KA, Bartfai G, Casanueva FF, Finn JD, Forti G, Giwercman A, Han TS, Kula K, Labrie F, Lean ME, Pendleton N, Punab M, Silman AJ, Wu FC, O'Neill TW, Boonen S; The EMAS Study Group. Osteoporos Int. 2010 Aug;21(8):1331-9.

62. Age-Related Changes in General and Sexual Health in Middle-Aged and Older Men: Results from the European Male Ageing Study (EMAS). Corona G, Lee DM, Forti G, O'Connor DB, Maggi M, O'Neill TW, Pendleton N, Bartfai G, Boonen S, Casanueva FF, Finn JD, Giwercman A, Han TS, Huhtaniemi IT, Kula K, Lean ME, Punab M, Silman AJ, Vanderschueren D, Wu FC; the EMAS Study Group. J Sex Med. 2010 Apr;7(4 Pt 1):1362-80.

63. Analysis of Polymorphisms in the SRD5A2 Gene and Semen Parameters in Estonian Men. Peters M, Saare M, Kaart T, Haller-Kikkatalo K, Lend AK, Punab M, Metspalu A, Salumets A. J Androl. 2010 Jul-Aug;31(4):372-8.

64. Increased prevalence of the -211 T allele of follicle stimulating hormone (FSH) beta subunit promoter polymorphism and lower serum FSH in infertile men. Grigorova M, Punab M, Poolamets O, Kelgo P, Ausmees K, Korrovits P, Vihljajev V, Laan M. J Clin Endocrinol Metab. 2010 Jan;95(1):100-81.