

2009

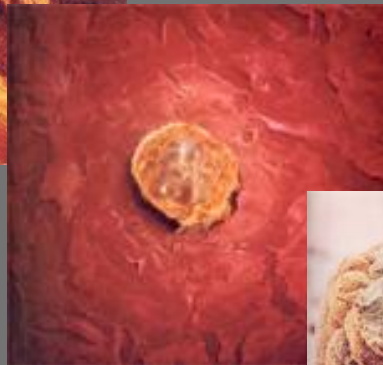
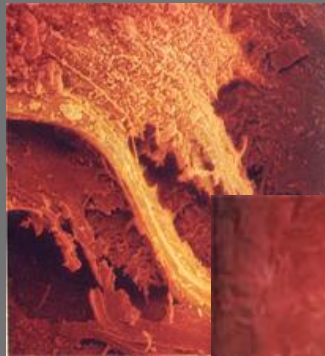
Institute for Human Reproduction

Copenhagen Fertility Center

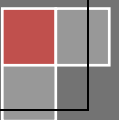
Synopsis (short version)

The Section for Human Reproduction is involved in education, teaching, training and research within mammalian reproduction.

Within in the years 1999 to 2008 funding has been raised for research, more than 23 research protocols approved, 50 papers published in peer reviewed journals, numerous oral presentations, lectures etc., and have formal collaboration with many international IVF centres in the World. Furthermore 6 patents has been acquired during this period and 2 thesis (1 doctors and 1 Ph.D.) has been obtained.



Illustrationen shows the first attachment and
implantation by human blastocyst in vitro
from the thesis by Svend Lindenberg
photographer Lennart Nilsson



**THE UNIT HAS SUPPORTED RESEARCH,
TREATMENT AND EDUCATION**



SECTION FOR HUMAN REPRODUCTION.



VISION.

The Section for Human Reproduction has the vision to generate knowledge in human reproductive biology and hereby be a leading institution for forwarding new treatments to benefit infertile couples. This is carried out through research projects, teaching and collaboration.

INTRODUCTION.

The Section for Human Reproduction in Copenhagen was founded in 1999 as a result of a long lasting scientific collaboration and research between the Department of Obstetrics and Gynaecology, Section for Reproductive Biology and IVF at Herlev Hospital and The Ciconia Fertility clinics and pharmaceutical industries. Today it consists of a collaboration between the Copenhagen University, Nordica Fertility Clinic Copenhagen and several pharmaceutical - medical industries including veterinary medicine



PRIMARY RESEARCH AREAS.

- In vitro maturation techniques for human immature oocytes with the object of devising new and simple non-hormonal treatments to substitute conventional in-vitro fertilisation treatments with ovarian hyperstimulation. In this area of artificial reproductive techniques this institution is one of the world's leading, and is now launching international clinical multi-centre trials. More than 75 international fertility clinics are now enrolled in this program, sharing the same data base for collection of data and QC
- Oocyte morphology/quality check and registration procedure for optimising artificial reproductive technologies such as IVF and ICSI. This work has lead to devising instruments and optimising clinical procedures for selection of human embryos prior to embryo transfer.
- Sperm and oocyte apoptosis studies. Following this research better selection criteria for unexplained fertility and oligospermic men have been introduced prior to IVF/ICSI.



- Clinical phase I, II and III pharmaceutical trials.
- Stem cell biology with respect to repair of human organ functions. This activity has up to today just provided us with the first ethical commite approveal to start this activity. In collaboration with Sahlgrenska University Hospital in Göteborg and Karolinska Sjukhuset in Stockholm.
- Oxygen tension in ovarian bloodflow, uterine bloodflow and in culture conditions has an impact for the viability and quality of the embryo, implantation and fetal development. Studies both in vivo and in vitro cultures are in progress. Agreement and license agreement with a British firm has been established with our department

The Section is responsible for postgraduate education and training in human reproductive biology including in-vitro maturation techniques for clinical treatments i.e.

- International and national universities and pharmaceutical companies
- Interne database and e- learning

We highly appreciate the many visitors from more than 20 different countries visiting our clinic every year, especially the collegues coming for training and research.

Members of the staff are GCP-educated and has passed the national boards of examines. The section has been through a FDA audit training program and test by the pharmaceutical industries, including accreditations twice for EU tissue regulative.

FUNDRAISING

Fundraising from external sources is a vital part of the units work



The in vitro maturation project (see patency later) has been running since 1998 and up to now been very successful. We are one of the leading centres in the World for this research and many international visitors have been through our unit. Moreover several international known centres are now involved in our mulicenter research.

ONGOING RESEARCH COLLABOPRATION WITH:

- The Capital Region of Denmark
- Nunc
- Ruskind Limited
- MediCult A/S
- Salinator Bioscience, Lund

- Det Farmaceutiske Universitet, København
- Low Cost IVF Foundation (Geneva)
- Centro de Investigación Príncipe Felipe C/E.P. Valencia (Spain)

VISITING SCIENTIFIC STAFF 2007- 2008

- Edurne Novella Post Doc in Nordica, Valenca IVI clinic (IVM project)
- Prof.Dr Salam Omar Jibrel MD Head of OB-GYN Department Bahrain Specialist Hospital Manama, Bahrain (Cryo biology)
- Lec. Ph.D Gail Jones Researcher, Monash University (IVM project)
- Dr. Sören von Otte, Lübeck IVF Clinic (IVM project)
- Associate Professor cand. Med. Vet Ph.D Nicolai Jarløv, Hørsholm Hestepraksis, Denmark
- Associated Professor Finn Hald, Head of Department for Reproductive Biology, Brødstrup, Denmark
- More than 60 doctors, embryologist on the Fertility School

LATEST FERTILITY SCHOOL PROGRAM.

Fertility School 3. – 6. September

Monday 3. September

09.00 – 10.00

Evaluation of the participants and their present knowledge

10.00 – 11.00

A through presentation of the follicular genesis, meiosis and the impact ART is doing Svend Lindenberg

11.00 – 12.00

From oocyte to embryo

Mette Munk

12.00 – 13.00 Lunch

13.00 – 14.30

Pitfalls in Transfer technique

Use of full bladder Suzan Lenz

14.30 – 15.00 Coffee

15.00- 16.00 Ultrasound monitoring

Different stimulation protocols.

Understand follicular size and correlation with the endometrium

Scanning of the testis. Size and

eccopattern explains low count

Epididymal changes and correlations with infection Suzan Lenz

16.00 – 17.00 Early pregnancy

Diagnosis and problems in ART

What can we use the ultrasound and

hCG for in early pregnancy

CVS and amniocentesis

Fibroids in ART Steen Smith-Jensen

Tuesday 4. September

09.00 – 10.00 Questions and explanations to what happened yesterday Mette Munk

Svend Lindenberg

10.00 – 12.00 Specific stimulation protocols Long, short, crash, IVM, coasting ovarian hyper stimulation Svend Lindenberg

OPU and ET Mette Munk

12.00 – 13.00 Lunch

13.00 – 15.30 Svend Lindenberg will go through patient handling, logistics, distance stimulation ICSI Freezing

and thawing procedure Mette Munk

15.30 – 16.00 Does the

hysteroscopic procedure help in ART

Claus Christoffersen

Wednesday 5. September

09.00 – 09.30 Questions and explanations to what happened yesterday Mette Munk

09.30 – 10.00 Endometriosis:

experimental models and new

therapies Edurne Novella-Maestre

10.00 – 12.00 IVM Mette Munk

12.00 – 13.00 Lunch

13.00 – 14.00 Acupuncture in ART

Vickie Budden

14.00 – 15.00 Hands on in the lab

and in the clinics Svend Lindenberg

Mette Munk

16.00 – 17.00 The importance of the endometrium in ART Ursula Bentin-Ley, Dansk Fertilitetsklinik.

Thursday 6. September

09.00 – 09.30 Questions and explanations to what happened yesterday Mette Munk

09.30 – 10.00 Organon

Malene Bjørnum. Product manager.

10.00 – 12.00 QC and follow-up

Mette Munk

12.00 – 13.00 Lunch

13.00 – 15.00 ART marketing

CMS systems, rational handling

Karl Erik Bagger

Faculty:

Svend Lindenberg, Professor dr. Med.

Mette Munk, Senior

Embryologist, Lab. Dir.

Steen Schmidt-Jensen, Associate

Professor Dr. Med.

Suzan Lenz, Dr. Med.

Claus Christoffersen, Specialist

Vickie Budden, Acupuncturist

Ursula Bentin-Ley, Dr. Med. Dansk

fertilitetsklinik

Edurne Novella-Maestre. IVI Clinic ,

Valencia

Karl Erik Bagger, Fercom Aps

PUBLICATIONS 1999 – 2008



Gabrielsen A, Bhatnager P, Petersen K, Lindenberg S.
Influence of zona pellucida thickness of human embryos on clinical pregnancy outcome following in vitro fertilization treatment.
Journal of Assisted Reproduction and Genetics, Vol. 17, No. 6, 2000.

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The impact of the Zona Pellucida Thickness Variation of human embryos before transfer on pregnancy outcome. A randomized prospective study.
Journal of IVF, published 2001.

Hildebrandt N, Høst E, Mikkelsen AL.
Pain experience during transvaginal aspiration of immature oocytes for IVF.
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DNA strand breaks in human sperm cells: A comparison between men with normal and oligozoospermic sperm samples.
Acta Obstetrica et Gynecologica Scandinavia 1999; 78: 336-339.

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Sperm morphology and IVF: Embryo quality in relation to sperm morphology following the WHO and Krüger's strict criteria.
Acta Obstetrica et Gynecologica Scandinavica 1999; 78: 526-529.

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DNA strand breaks in human spermatozoa; A possible factor, to be considered in couples suffering from unexplained infertility.
Acta Obstetrica et Gynecologica Scandinavica 1999; 78: 622-625.

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DNA strand breaks in human spermatozoa: Correlation with fertilization in vitro in oligozoospermic men and in men with unexplained infertility.
Acta Obstetrica et Gynecologica Scandinavia 2000; 79: 189-193.

Høst E, Lindenberg S, Smidt-Jensen S.
The role of DNA strand breaks in human spermatozoa used for IVF and ICSI.
Acta Obstetrica et Gynecologica Scandinavia 2000; 79: 559-563.

Høst E, Mikkelsen AL, Smidt-Jensen S, Lindenberg S.
Apoptosis in human cumulus cells in relation to maturation stage and cleavage of the corresponding oocyte.
Acta Obstetrica et Gynecologica Scandinavia 2000; 79: 936-940.

Høst E, Ernst E, Smidt-Jensen S, Lindenberg S.
Morphology of spermatozoa used in IVF and ICSI from oligozoospermic men. Reproductive Biomedicine Online 2001, vol. 3, no. 3: 212-215.

Høst E, Gabrielsen A, Lindenberg S, Smidt-Jensen S.
Apoptosis in human cumulus cells in relation to Zona Pellucida Thickness Variation, maturation stage and cleavage of corresponding oocyte after introcytoplasmic sperm injection. Fertility and Sterility, vol. 77, no. 3, 511-515, March 2002.

Mikkelsen AL, Smith SD, Lindenberg S.
In vitro maturation of human oocytes from regular menstruating women may be successful without FSH priming.
Human Reprod. 1999; 14:1847-1851.

Mikkelsen AL, Smith S, Lindenberg S.
Impact of oestradiol and inhibin A concentrations on pregnancy rate in in-vitro oocyte maturation.
Human Reprod. 2000; 14, no. 8: 1685-1690.

Mikkelsen AL, Lindenberg S, Smith S.
Possible factors affecting the development of oocytes in in-vitro maturation.
Human Reprod. 2000; 15 (suppl. 5): 11-17.

Mikkelsen AL, Andersson A-M, Skakkebaek, NE, Lindenberg S.
Basal concentrations of oestradiol may predict the outcome of in-vitro maturation in regularly menstruating women.
Human Reprod. 2001; 16, no. 5: 862-867.

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Morphology of in-vitro matured oocytes: impact on fertility potential and embryo quality. Human Reprod. 2001; 16, no. 8: 1714-1718.

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Incidence of apoptosis in granulosa cells from immature human follicles.
Reproduction 2001; 122: 481-486.

Mikkelsen AL, Lindenberg S.
Benefit of FSH priming of women with PCOS to the in vitro maturation procedure and the outcome: a randomized prospective study. Reproduction 2001; 122: 587-592.

Mikkelsen AL, Høst E, Blaabjerg J, Lindenberg S.
Maternal serum supplementation in culture medium benefits maturation of immature human oocytes.
 Reproductive Biomedicine Online 2001; vol.3, no.2: 112-116.

Mikkelsen AL, Lindenberg S.
The impact of a dominant follicle on maturation and fertility potential of immature oocytes in unstimulated cycles.
 Reproductive Biomedicine Online, 2001; vol. 3, no. 3: 199-204.

Smith SD, Mikkelsen AL, Lindenberg S.
Development of human oocytes matured in vitro for 28 or 36 hours.
 Fertil Steril. 2000; 73: 541-544.

E.Høst, A.Gabrielsen, S.Lindenberg, S.Smidt-Jensen.
Apoptosis in human cumulus cells in relation to the zona pellucida thickness variation, maturation stage and cleavage of the corresponding oocyte after ICSI.
 Fertil. Steril 2002 Mar 77(3):511-5.

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Factors affecting the development of oocytes in IVM.
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The time interval between FSH administration and aspiration, impact on the development of human oocytes and the incidence of apoptosis in granulosa cells from immature human follicles.
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Morphology of spermatozoa used in IVF and ICSI from oligozoospermic men.
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Incidence of apoptosis in granulosa cells from immature human follicles.
 Reproduction. 2001 Sep;122(3):481-6.

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 Hum Reprod. 2004 Oct;19(10):2258-2262. Epub 2004 Aug 19.

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Embryonale stamceller - hvorfor skal vi vide noget om dem?
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In vitro steroidogenesis and gonadotropin responsiveness in human granulosa cells from immature follicles of normal and polycystic ovary syndrome (PCOS) ovaries.
 Submitted to Endocrinology 2004.

The impact of oxygentension on embryodevelopment after freezing and thawing.
 Acta Obstet Gynecol. 2004
 Petersen A, Mikkelsen AL, Lindenberg S.

Hjollund NH, Bonde JP, Ernst E, Lindenberg S, Andersen AN, Olsen J.
Spontaneous abortion in IVF couples--a role of male welding exposure.
 Hum Reprod. 2005 Mar 10;

Hjollund NH, Bonde JP, Ernst E, Lindenberg S, Andersen AN, Olsen J.
Pesticide exposure in male farmers and survival of in vitro fertilized pregnancies. Hum Reprod. 2004 Jun;19(6):1331-7.

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Strategies in human IVM and their Clinical outcome.
 RBMOnline. 2005; 10: 593-599.

Lindenberg S, Mikkelsen A.L., Blaabjerg J.
Avanceret Fertilitetsbehandling.
 Hospital Health Care 5/2004.

Hver 5. Kvinde har PCO. Helse 9. 2003
 Hanne Udengaard, Svend Lindenberg

Mikkelsen AL, Ravn SH, Munk M., Lindenberg S.
Health status and development of children born after in vitro maturation of immature oocytes.
 Submitted RBMOnline
 Petersen A, Mikkelsen AL, Lindenberg S.

The impact of oxygen tension on developmental competence of post-thaw human embryos.
 Acta Obstet Gynecol Scand. 2005 Dec;84(12):1181-4.
 DM Ottesen, Johnny Hindkjær, Svend Lindenberg, Hans Jakob Ingerslev.

Reproductive outcome using a GnRH antagonist (cetorelix) for luteolysis and follicular synchronization in poor responder IVF/ICSI patients treated with a flexible GnRH antagonist protocol.
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 Andersen C, Lindenberg S.

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 Ottesen LD, Hindkjaer J, Lindenberg S, Ingerslev HJ.
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 Svend Lindenberg, Hanne Udegaard, Best Practice vol. 1, 2007

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Male hormonal contraception: the first double-blind placebo-controlled trial

Ellen Mommers, Ph.D., Wendy M. Kersemaekers, Ph.D., Jörg Elliesen, M.D., Ph.D., Marc Kepers, M.Sc., Dan Apter, M.D., Ph.D., Hermann M. Behre, M.D., Prof., Jennifer Beynon, M.D., Pierre M. Bouloux, M.D., Prof., Antonietta Constantino, M.D., Hans-Peter Gergershausen, M.D., Lars Grønlund, M.D., Doris Heger-Mahn, M.D., Ph.D., Ilpo Huhtaniemi, M.D., Prof., Evert L. Koldewijn, M.D., Ph.D., Corinna Lange, M.D., Svend Lindenberg, M.D., Prof., M. Cristina Meriggiola, M.D., Ph.D., Eric Meuleman, M.D., Prof., Peter F.A. Mulders, M.D., Ph.D., Eberhard Nieschlag, M.D., Prof., Antti Perheentupa, M.D., Ph.D., Andrew Solomon, M.D., Ph.D., Leena Väisälä, M.D., Frederick C. Wu, M.D., Prof., Michael Zitzmann, M.D., Ph.D. J Clin Endocrinol Metab. 2008 Jul;93(7):2572-80.

A randomized dose-response trial of a single injection of corifollitropin alfa to sustain multifollicular growth during controlled ovarian stimulation.

Corifollitropin Alfa Dose-finding Study Group Hum Reprod. 2008 Nov;23(11):2484-92.
Collaborators: Abyholm T, Andersen AN, Balen AH, Braat DD, Devroey P, D'Hooghe TH, Felberbaum R, Fauser BJ, Fridström M, Hillensjö T, Keck C, Kurunmäki H, Lindenberg S, Ombelet W, Tapanainen J, Varila E, Wramsby H, Koper NP, de Haan AF, Struys MJ.

Effect of maturation in vitro on spindle morphology in human oocytes from PCO patient. A prospective comparative study on PCO patients with male factor.

Svend Lindenberg, Mette Munk, Lotte Elborg, Hanne Tinggaard, Edurne Novella, Steen Smidth Jensen, Frederikke Lindenberg. Submitte 2008

Hypobar oxygentension and gamete culture in human IVF. A prospective randomized trial using Ac-Tive culture incubators.

Svend Lindenberg, Mette Munk, Hane Tinggaard Lindum. Submittet 2008

CHAPTERS IN BOOKS

Mikkelsen AL. Oocyte maturation in vivo and in-vitro. Chapter in the book: Advances in Fertility and Sterility. 2001

Mikkelsen AL. In vitro maturation of human ova. Chapter in the book. Advances in Fertility and Reproductive medicine. 2004. International Congress Series 1266.

Mikkelsen AL. In vitro maturation. Kapitell i nordisk lærebog om IVF.

Lindenberg S. **Endometrial Cavity Fluid Collection Aspiration at time of ET.** Dr. Gautam Allahbadia's forthcoming monogram on

"EMBRYO TRANSFER" 2006 Rotunda - The Center For Human Reproduction India

Gabrielsen A, Lindenberg S. **The Human Zona Pellucida and Markers of Viability.** Handbook on choosing the right embryo. Ed Kay Ellder & Jacque Cohen, Medical Publishing Devison of Taylor Francis, to be published in 2007

S.Lindenberg: **In vitro maturation in the future.** In: Advances in fertility studies and reproductive medicine, IFFS, 2007, Editor TF Krüger, Z van der Spuy, RD Kempers.

POSTERS/LECTURES:

Bangsbøll S, Mikkelsen AL, Lindenberg S. **Karyotyping of male patients before ICSI.** Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Gabrielsen A, Lindenberg S, Petersen S **Assessment of embryo morphology in selection for embryos transfer and freezing in 26 Nordisk Scandinavian clinics: Impact on implantation rates** Poster. IVF kongres i Kuusamo, Finland, januar 1999.

Gabrielsen A. **Embryo morfologi. Har zona analyse betydning for graviditet.** Foredrag. Dansk Fertilitetsselskabs årsmøde, Odense, Danmark 1999

Gabrielsen A. **PGD – en undersøgelse af 63 biopserede embryoner med dårlig embryo score.** Foredrag. Dansk Fertilitetsselskabs årsmøde, Odense, Danmark 1999

Gabrielsen A, Munk M. **Hvad betyder modning, kernetransplantation, cytoplasmadonation** Foredrag. Organon's fertilitetsskole, Herlev, Danmark 1999

Gabrielsen A, Munk M. **Hvad betyder modning, kernetransplantation, cytoplasmadonation** Foredrag. Organon's fertilitetsskole, Skejby, Danmark 1999

Gabrielsen A. **Mandlig infertilitet i dag** Foredrag. Organon's fertilitetsskole, Herlev, Danmark 1999

Gabrielsen A **Assisted Hatching** Foredrag. Dansk Fertilitetsselskabs årsmøde, Odense, Danmark 2000

Gabrielsen A, Palmstiarna M.

Embryokvalitet

Embryoscore, ZPTV, symmetri i embryoner

Foredrag. Organon's fertilitetsskole, Skejby, Danmark 2000

Gabrielsen A, Palmstiarna M.

Embryokvalitet

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Foredrag. Organon's fertilitetsskole, Herlev, Danmark 2000

Gabrielsen A, Lindenberg S, Bhatnager PR, Petersen K.

Influence of zona pellucida thickness of human embryos on clinical pregnancy outcome following IVF treatment

Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Hildebrandt N

The pain conception during IVM oocyte pick-up procedure.

Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Hildebrandt N

The pain conception during IVM oocyte pick-up procedure

Poster. Forskningsdagen Københavns Amtssygehus i Herlev, October, 2000.

Høst E, Lindenberg S, Smidt-Jensen S, Ernst E.

DNA strand breaks in human spermatozoa.

Poster. 16th Annual Meeting of the European Society of Human Reproduction and Embryology, Bologna, Italy June 25th to 28th, 2000.

Høst E, Lindenberg S, Smidt-Jensen S, Ernst E.

DNA strand breaks in human spermatozoa.

Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Høst E, Mikkelsen AL, Lindenberg S, Smidt-Jensen, S.

Apoptosis in human cumulus cells.

Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Høst, E.

Time interval between FSH administration and aspiration of immature human oocytes for in vitro maturation, impact on the development of oocytes and the incidence of apoptosis in granulosa cells.

Poster. 14th Nordic IVF Congress in Lillehammer, Norway, January 2002.

Høst, E.

IVF- hvorfor og hvordan ?

Foredrag. Logeforeningen "The Inner Circle", Møn, September 2002.

Høst, E.

Udførelse og tolkning af testosteronmåling.

Foredrag. Andropauseseminar, Skejby Sygehus, 1. Oktober, 2002.

Høst, E.

Apoptosis in spermatozoa in men with schistosomiasis.

Foredrag. Uro-Genital Schistosomiasis and sexually transmitted infections: The Madagascar Study, Rigshospitalet, 16.-17. december, 2002

Lindenberg S, Mikkelsen AL.

Novel approaches: in vitro maturation of oocytes and follicles.

Foredrag. The Bertarelli Foundation First Global Conference. Maryland USA. 1999.

Mikkelsen AL, Smith SD, Lindenberg S.

In vitro maturation of human oocytes. The impact of FSH priming and time interval for maturation.

Foredrag. XII Nordic IVF-Congress Kuusamo, Finland, January, 1999. (invited speaker).

Mikkelsen AL, Smith SD, Lindenberg S.

Factors affecting in vitro maturation of human oocytes.

Foredrag. The 2nd International Alpha Congress. Copenhagen, Denmark. 1999.

Mikkelsen AL, Smith SD, Lindenberg S.

In vitro maturation of human oocytes. The impact of FSH priming and time interval for maturation.

Poster. 15th Annual meeting of ESHRE. Tours, Frankrig 1999 (selected for presentation).

Mikkelsen AL, Smith SD, Lindenberg S.

In vitro maturation of human oocytes.

Foredrag ved staff-meeting, KASHerlev, 1999.

Mikkelsen AL.

In vitro maturation of oocytes.

Foredrag. XXXII NFOG, Oslo, May 2000.

Mikkelsen AL, Lindenberg S.

Timing of aspiration promotes pregnancy rate in IVM: the impact of the concentration of oestradiol and inhibin A.

Foredrag. ESHRE 16th Annual meeting. Bologna, June 2000.

Mikkelsen AL, Lindenberg S.

Timing of aspiration promotes pregnancy rate in IVM

Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

Mikkelsen AL.

In vitro maturation of human oocytes.

Foredrag. XVI FIGO World Congress, Washington: Plenary: Reproductive Medicine, Egg and embryo, August 2000.

Mikkelsen AL, Lindenberg S.

Timing of aspiration promotes pregnancy rate in IVM

Poster. Forskningsdagen Københavns Amtssygehus i Herlev, October, 2000.

Mikkelsen AL. **Clinical aspects of IVM.** Invited speaker. XIV Nordic IVF Congress. Lillehammer 2002.

Mikkelsen AL, Høst E, Blåbjerg J and Lindenberg S **Time interval between FSH administration and aspiration of immature human oocytes for in-vitro maturation, impact on the development of oocytes and the incidence of apoptosis in granulosa cells. A prospective randomized study.** 18th Annual meeting ESHRE Wien 2002.

Mikkelsen AL, Ravn SH, Lindenberg S. **Evaluation of newborns delivered after in vitro maturation.** 19th Annual meeting ESHRE Madrid 2003.

Mikkelsen AL. **Clinical aspects of IVM.** XV Nordic IVF Meeting Helsingør, Denmark 2003.

Mikkelsen AL. **Evaluation of newborns delivered after in vitro maturation.** XV Nordic IVF Meeting Helsingør, Denmark 2003. Invited speaker.

Mikkelsen AL. **In vitro maturation.** IFFS 18th world congress on Fertility and Sterility, Montreal May 2004. Invited speaker in the Trilogy: Current developments in assisted reproduction.

IVF lecture Sweden. Inviteret foredragsholder. **Clinical aspects of in vitro maturation of human oocytes.** 2 dage i Stockholm og Gøteborg.

Mikkelsen AL. **Strategies in human IVM and their clinical outcome.** Invited speaker in the Symposium: Assisted Conception and Reproductive Biology: Two perspectives One Vision. Bologna November 2004. Invited speaker.

Mikkelsen AL. **In vitro maturation.** First World congress on in vitro maturation. Montreal 2004. Invited speaker.

Mikkelsen AL. **Children born after IVM.** International symposium on In vitro maturation. Berlin 2004. Invited speaker.

Mikkelsen AL. 7th world congress on Controversies in Obstetrics and Gynecology and Infertility. Athen 2005. Invited speaker til 2 foredrag.

Mikkelsen AL. Second world congress on In vitro maturation. Montreal 2005. Invited speaker.

Munk M
IVF-Manual and Quality Check.
Foredrag. Dansk Fertilitets Selskabs årsmøde, Denmark 1999.

Munk M
Etablering af en forskningsenhed.
Foredrag. Dansk Fertilitets Selskabs årsmøde, Denmark 2000.

Munk M
The impact of ZPTV in human embryos on pregnancy in IVM cycles.
Poster. 13th Nordic IVF Congress in Reykjavik Iceland in August 2nd – 5th, 2000.

TEACHING.

Mikkelsen AL. ESHRE Campus Workshop. GRECOT meeting. **Harvesting and freezing of ovarian and testicular tissue.** Invited speaker and participant in the workshop for 2 days. November 2003

Mikkelsen AL. VF lecture Sweden. Inviteret foredragsholder. **Clinical aspects of in vitro maturation of human oocytes.** 2 dage i Stockholm og Gøteborg.

Mikkelsen AL. ESHRE embryology Pre-congress Course on **In vitro culture conditions for Human Gametes and embryos: Present and Future.** Deltog med emnet. In vitro maturation of human oocytes. Clinical experience. Berlin 2004

Mikkelsen AL. **Strategies in human IVM and their clinical outcome.** Invited speaker in the Symposium: Assisted Conception and Reproductive Biology: Two perspectives One Vision. Bologna November 2004.

Mikkelsen AL. IVF doctors in the laboratory. Nordisk IVF kursus for IVF læger. Raanæs, Sverige. 2002 – 2004 i alt 4 kurser for nordiske læger. kursusarrangør og underviser.

Mikkelsen AL. IVM Workshop forelæser og underviser på i alt 3 internationale kurser om IVM.

A.L.Mikkelsen, S.Lindenberg, H.J.Out, T. Gar-Geva, D.L.Healy, A.L.Leader, F.J. Rodriques-Escudero, J.A. Garcia-Velasco, A.Pellicer. **Comparable pregnancy rates in a randomized prospective study comparing Puregon 100 IU ND Puregon 200 IU in a fixed-dose regime in IVF treatment.** Nordic IVF Congress, Kuusamo, Finland 1999.

Munk M
Etiske dilemmaer ved reagensglasbehandling.
Foredrag. Nordisk Medicinsk laboratorie Kongres, Denmark 2001.10.30

Mikkelsen AL, Høst E, Blåbjerg J and Lindenberg S **Time interval between FSH administration and aspiration of immature human oocytes for in-vitro maturation, impact on the development of oocytes and the incidence of apoptosis in granulosa cells. A prospective randomized study.** 18th Annual meeting ESHRE Wien 2002.

Mikkelsen AL, Ravn SH, Lindenberg S. **Evaluation of newborns delivered after in vitro maturation.** 19th Annual meeting ESHRE Madrid 2003.

Mikkelsen AL. **Clinical aspects of IVM. XV Nordic IVF Meeting Helsingør, Denmark 2003.**

Mikkelsen AL. **Evaluation of newborns delivered after in vitro maturation. XV Nordic IVF Meeting Helsingør, Denmark 2003. Invited speaker.**

Mikkelsen AL. **In vitro maturation. IFFS 18th world congress on Fertility and Sterility, Montreal May 2004.** Invited speaker in the Trilogy: Current developments in assisted reproduction.

Mikkelsen AL. **Follow-up of children after in vitro maturation. First International Symposium on In vitro maturation of oocytes.** Berlin 2004. Foredrag

A.L.Mikkelsen, S.Smidt, S.Lindenberg. **In vitro maturation of human oocytes. The impact of FSH-priming and time interval for maturation.** Nordic IVF Congress, Kuusamo, Finland 1999.

Ø.Lidegaard, A.L.Mikkelsen, M.Melgaard, K.Brøndum-Nielsen, S.Lindenberg.
Severe male infertility. Impact of genetic factors on diagnosis and counselling. Nordic IVF Congress, Kuusamo, Finland 1999.

A.L.Mikkelsen, S. Smith, S.Lindenberg. **In vitro maturation of human oocytes.** Annual meeting of ESHRE, Tours, France, 1999.
A.L.Mikkelsen, S.Lindenberg, H.J.Out, T. Gar-Geva, D.L.Healy, A.L.Leader, F.J. Rodriques-Escudero, J.A. Garcia-Velasco, A.Pellicer. **Comparable pregnancy rates in a randomized prospective study comparing Puregon 100 IU ND Puregon 200 IU in a fixed-dose regime in IVF treatment.** Annual meeting of ESHRE, Tours, France, 1999.

S.Lindenberg, A.L. Mikkelsen. **Novel approaches: in vitro maturation of oocytes and follicles.** The Bertarelli Foundation First Global Conference, Maryland USA. 1999.

A.L.Mikkelsen, S.Lindenberg. **Factors affecting in vitro maturation of human oocytes.** The 2th International Alpha Congress, Copenhagen 1999.

A.Gabrielsen, S.Lindenberg, K.Petersen. **Assesment of embryomorphology in selection for embryo transfer and freezing in 26 Nordic clinics.** Nordic IVF Congress, Kuusamo, Finland 1999.

A.L.Mikkelsen, S.Lindenberg. **Timing of aspiration promotes pregnancy rate in IVM. the impact of the concentration of estradiol and inhibin A.** 16th Annual meeting (ESHRE), Bologna, 2000.

S.Bangsbøll, A.L.Mikkelsen, S.Lindenberg. **Karyotyping of male patients before ICSI.** Nordic IVF Congress Island 2000.

E.Høst, S.Lindenberg, S. Smith-Jensen, E. Ernst. **DNA strand breaks in human spermatozoa.** Nordic IVF Congress Island 2000.

A. Gabrielsen, S.Lindenberg, P.R. Bhatnager, K. Petersen. **Influence of zona thickness variation of human embryos on clinical pregnancy outcome.** Nordic IVF Congress Island 2000.

E.Høst, A.L.Mikkelsen, S.Lindenberg, S.Smidt-Jensen. **Apoptosis in human cumulus cells in relation to maturation stage and cleavage of the corresponding oocyte.** Nordic IVF Congress Island 2000.

E.Høst, S.Lindenberg, S. Smith-Jensen, E. Ernst. **DNA strand breaks in human spermatozoa.** 16th Annual meeting (ESHRE), Bologna, 2000.

S.Lindenberg. **Videnregnskab i en moderne gynækologisk afdeling.** DSOG efterårsmøde 17 – 18 November 2000

S.Lindenberg. **Videnregnskab.** Professor tiltrædelsesforelæsning ved Københavns Universitet december 2000.

S.Lindenberg. **Præimplantatoriskdiagnostik, terapeutisk kloning.** DSOG forårsmøde 28 april 2001

S.Lindenberg. **Videnregnskab, et instrument i sygehusledelse.** Indkaldt foredragsholder ved afdelingledelser og sygehusledelsen Skejby Universitetssygehus 2000.

S. Lindenberg. **Novel approaches: In Vitro Maturation of oocytes and follicles.**The Bertarelli Foundation Global Conference. Improving the treatment of infertility – Towards avoiding high order multiple gestation.The National Institute of Health, Bethesda, Maryland USA, November 19-22, 1999.

S.Lindenberg.**Presentation af Øresundsregionens stamcelle projekt.** Nordiskt Stamcellsmöte i Gøteborg. 11 juni 2000.

S.Lindenberg. **Forventninger til afdelingsledelse og niveauet under afdelingsledelse på Amtssygehuset i Herlev: opgaver, kvalifikationer og værdier.** ALF-møde og seminar for Herlev Amtssygehus, 20.01.2001

A.L.Mikkelsen, S.Lindenberg. Morphology of in-vitro matured oocytes: impact of fertility potential and embryo quality. 17th Annal meeting of the ESHRE, Lausanne, July 2001.

Svend Lindenberg. Symposium Womens Health Care 2004, Novo, Herlev Amtssygehus. **How to handle low responders in ART programs**

Svend Lindenberg. Symposium Womens Health Care 2004, Novo, Herlev Amtssygehus. **The advanced fertility treatment in the near future**

Svend Lindenberg. **What is so interesting about in vitro maturation ?** First International Symposium on In Vitro Maturation of Oocytes. Berlin june 26. 2004

Svend Lindenberg, Ole Hartling. **Stamcelleforskning og prænatal diagnostik.** Wyeth Undervisning for praktiserende læger 4 april 2005. Christianhavn

Svend Lindenberg, Invites speaker **New insights in stimulation protocols for Ovulation Induction.** Turkish German Fertility Society, Antalya 18. Marts 2005.

Svend Lindenberg. **Fertilitetsbehandling under de nye EU regler.** Fertilitetsklub møde for speciallæger. Glostrup Park Hotel 12. Nov. 2004

Svend Lindenberg. **Future in IVM, a new modality in ART.** Sjöberg-Symposium, Universitetssygehuset Malmø 3. Marts 2005

Svend Lindenberg. **IVM training, background, techniques and results of modern IVM treatment.** Herlev University Hospital. International Training Course in IVM. 11 marts 2005, 13, april 2005, 9 maj 2005, 14 December 2005.10.11

Svend Lindenberg invited speaker. **A review and teaching session for 2 days in IVM at the taipee University Center.** Invited by Taiwanese Society for reproductive Medicine. 12. September 2005

Svend Lindenberg invited speaker. **IVM in all aspects.** The Jordanian Society for Fertility and Genetics, Workshop at Fahrar Hospital 7-9/9 2005

P.Humaidan, L. Bugum, M. Bugum, F. Hald, I Agerholm, J Blåberg, C.Yding Andersen, S.Lindenberg, ESHRE, Copenhagen 2005 **CRASH-A better protocol for stimulation of the low responder patient ?**

Lindenberg S. **IVM, Why, history, recommended criteria. IVM –** Workshop Universitätsfrauenklinik Lübeck, 28. noveber 2005

Lindenberg S. **IVM, the golden standard and future. IVM –** Workshop Universitätsfrauenklinik Lübeck, 29. noveber 2005

Lindenberg S. **Stamcelleforskning.** Key Note lecture, Forskningsdag ved Amtssygehuset i Herlev November 27. 2005

Mikkelsen AL, Ravn SH, Munk M. Lindenberg S. **Health status and development of children born after in vitro maturation of immature oocytes** Poster, Forskningsdag ved Amtssygehuset i Herlev November 27. 2005

A. Petersen, A.L. Mikkelsen, S. Lindenberg Poster, Forskningsdag ved Amtssygehuset i Herlev November 27. 2005 **Oxygen tension and embryo development**

S.Lindenberg, C. Hnida. **Sperm preparation by filter , A new method.** Poster, Forskningsdag ved Amtssygehuset i Herlev November 27. 2005

H.Udengaard, Marianne Sandberg, H. Skensved, S. Lindenberg. **Transport IVF en ny og hensigtsmæssig behandlingsform.** Forskningsdag ved Amtssygehuset i Herlev November 27. 2005

Svend Lindenberg: **IVM satus of the art.** The Second World Congress on Mild Approaches in Assisted Reproduction, London 2006

DM Ottosen, Johnny Hindkjær, Svend Lindenberg, Hans Jakob Ingerslev. **Murine pre-embryoxygen consumption and developmental competence** ESHRE Lyon, 2007

Svend Lindenberg, **In vitro fertilisation in the future**. IFFS meeting Durban , SA 2007

Since then more than 14 international invited session in ART given by Svend Lindenberg

Erik Høst, DNA **Strand Breaks in Human Spermatozoa, A possible new tool in ART**, Thesis, Copenhagen University, Denmark, Submittet January 2009.

ADWARDS:

Svend Lindenberg has been awarded with the "**Commercialization Price awards**" 2005 from the county major, Copenhagen

PATENT AQUIRED INTERNATIONAL:

1 ASSAY TO INDICATE THE PRESENCE OF NON-FERTILISABLE OVA

Inventor: LINDENBERG SVEND (DK); MIKKELSEN ANNE LIS (DK) Applicant: MEDI CULT AS (DK)
 EC: IPC: G01N33/68 ; G01N33/74
 Publication info: SK19152000 - 2001-12-03

2 IN VITRO FERTILISATION

Inventor: LINDENBERG SVEND (DK) Applicant: KOEBENHAVNS AMTS SYGEHUS HERLEV (DK); LINDENBERG SVEND (DK)
 EC: C12N5/06B4F; C12N5/06B2E; (+1) IPC: C12N5/06 ; C12N5/08 ; (+1)
 Publication info: WO03106662 - 2003-12-24

3 Assay to indicate the presence of non-fertilizable ova

Inventor: LINDENBERG SVEND (DK); MIKKELSEN ANNE LIS (DK) Applicant: MEDI CULT AS (DK)
 EC: C12N5/06B4F; G01N33/68T; (+1) IPC: G01N33/533
 Publication info: US6649344 - 2003-11-18

4 A METHOD FOR IN VITRO MATURATION OF HUMAN GAMETES

Inventor: BERTHEUSSEN KJELL (DK); SMITH STEVEN DALE (DK); (+2) Applicant: MEDI CULT AS (DK)
 EC: C12N5/06B4F IPC: C12N5/08
 Publication info: US2002115211 - 2002-08-22

5 In vitro maturation of human oocytes in one day

Inventor: SMITH STEVEN DALE (DK); LINDENBERG SVEND (DK); (+2) Applicant:
 EC: C12N5/06B4F; G01N33/74B IPC: A01K67/027
 Publication info: US2001028878 - 2001-10-11

6 Assay to indicate the presence of non-fertilizable ova

Inventor: LINDENBERG SVEND (DK); MIKKELSEN ANNE LIS (DK) Applicant: MEDI CULT AS (DK)
 EC: IPC: G01N33/68 ; G01N33/74
 Publication info: CZ20004629 - 2001-06-13

7 Agent: Browdy And Neimark, P.I.I.c. 624 Ninth Street, Nw - Washington, DC, US

Inventor: Svend Lindenberg

Applicaton #: 20050239040 **Class:** 435002000 (USPTO)

Related Patents: Chemistry: Molecular Biology And Microbiology, Maintaining Blood Or Sperm In A Physiologically Active State Or Compositions Thereof Or Therefor Or Methods Of In Vitro Blood Cell Separation Or Treatment

Brief Patent Description - Full Patent Description - Patent Application Claims

WEB SITE ACTIVITIES:

www.lindenberg.dk

The first interactive website for patients established 1996

Fertilitets Info

Hjemmesiden *Fertilitets Info* svarer på spørgsmål og deler viden om alle former for ufrivillig barnløshedsbehandling.

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- «Cheaper and Safer Alternative to IVF? Interview med Svend Lindenberg på BBC Radio 4»
- Hvad sker der når man er ægdonor efter den nye lov? - [Læs mere her](#)
- Se TV Lorry om Ægdonation, Vil du være ægdonor? Læs ovenfor og [tryk her](#)
- Den nye vejledning til Fertilitetsbehandling er nu

Artikler

- Har IVF-æg kromosomfejl?
- Assisted hatching
- Er ICSI farlig?
- Crash-IVF hvad er det?
- Hvad er polycystisk ovariesyndrom?
- Uforklarlig infertilitet
- Livsstil, alkohol, vitaminer, fedme, kaffe, røg!
- Hvad sker der efter ægoplægning?
- Hvad har alder med barnløshed at gøre?
- Rygning og graviditet
- Nygravid efter fertilitetsbehandling
- Hvorfor kan man ikke måle med en graviditetstest tidligere?
- Får man cancer af IVF behandlingen
- Løsgens Bord Special om PCO
- Hvordan skal man spise, når man har PCO?
- "Viden om" på DR2 - Ældre kvinder i barnløshedsbehandling

www.fertilityschool.com

A training site for ART specialist

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Welcome to **fertilityschool.com**, an interactive e-learning platform and training facility for medical doctors and other specialists within artificial reproductive treatment.

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Ongoing educational programme with 14 sessions

Fertilityschool.com is an ongoing and flexible educational programme consisting of 14 independent sessions. You can either attend all sessions according to your order of preference, or select one or more individual sessions in accordance with your background and priorities. Each session deals with a specific issue within ART. You may choose to complete each session with a multiple-choice test. After you have passed a test, fertilityschool.com provides you with your obtained CME points (Continuous Medical Educational points, approved by Dansk Selskab for Obsterik og Gynækologi; Danish Society for OB/GYN). You can then submit them to the official authorities within your speciality. To successfully pass the test and receive CME points, you must answer at least 80 percent of all questions correctly. When the e-learning programme has been completed, fertilityschool.com arranges a 1-day confrontation seminar with experts who have contributed to the programme. This enables everyone to discuss specific items of personal and mutual interest.

The doctor can browse the material in any order, and take the tests at their leisure. When all the tests have been passed, CME points (Continuous Medical Educational points) will be granted and submitted to the official authorities within the speciality.

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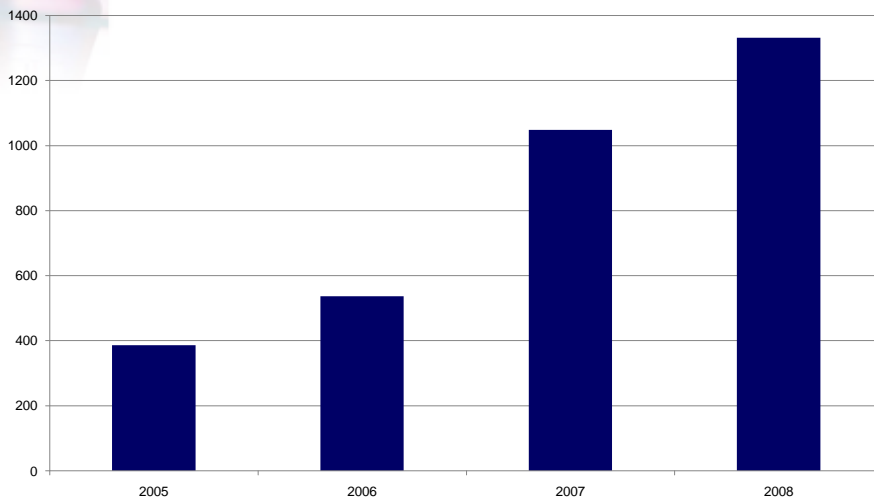
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