A history of Ferring in 60 images

Alan S Harris
Jens Peter Nørgaard
“A picture is worth a thousand words”. First coined by Frederick K Barnard in *Printer’s Ink* in 1921, this phrase it is still used today to convey the importance of images, icons and visuals in our understanding of messages, history and important events.

This book is published during the 60th year of Ferring Pharmaceuticals. First established in 1950 as the Nordiska Hormonlaboratoriet Aktiebolag (Nordic Hormone Laboratory) in two rented 60 m² rooms with a handful of employees in Malmö, Sweden, Ferring today is an international pharmaceutical company with over 3,700 employees across the globe. Ferring is represented in over 45 countries spanning five continents and offers an array of specialty medicinal products for the benefit of patients all over the world.

Many thanks to all who have contributed images and memories for this book. We trust that you will find these images both nostalgic for the past and inspiring for the future.

Alan S Harris and Jens Peter Nørgaard
St Prex and Copenhagen, October 2010
Dr Alan Harris has a PhD in Biopharmaceutics from Uppsala University, Sweden and an MBA from Ashridge Business School, UK. He joined Ferring in 1984 and currently heads Global Projects and Portfolio Management for the Ferring Group. Alan’s other responsibilities include portfolio planning with R&D, co-chairing Ferring’s Business Development Committee and early stage licensing.

Professor Jens Peter Nørgaard qualified as a medical doctor in 1981, and specialised in Urology and Paediatric Surgery. He completed his thesis on Primary Nocturnal Enuresis in 1990. Jens Peter has worked together with Ferring since 1984 on clinical research and has developed treatment strategies for both Primary Nocturnal Enuresis and Nocturia. He joined Ferring in 1996 and currently heads Medical Science Urology within R&D, co-chairing the strategic Urology therapeutic team.
1. ACTH: The founding peptide
2. From oxytocin and vasopressin to dDAVP
3. Legacy and 2nd generation compounds
4. IP: Discoveries, patents, trademarks and logos
5. Bricks and mortar; buildings and companies
6. People come first at Ferring
7. Five Nobel Prizes and their associations
8. Ferring Philosophy and Medicine on the Body’s Own Terms
ACTH: The founding peptide
From slaughterhouses, pigs, drills and pituitaries to the beginning of modern industrial oligopeptide synthesis
Abstract
Up to January 1950 175 cases in all had been treated with ACTH in the USA (Boland, 1950). A number of these cases have been published, mostly in the form of extensive metabolic studies. In Scandinavia reports of only a few cases have been published, but these have been thoroughly investigated. These investigations have been carried out with the aim either of applying as many laboratory tests as possible or investigating some special effect of ACTH, e.g. in a certain disease or on special metabolic processes…
1950s: ACTH extraction begins

Laboratory technician separating pigs’ pituitary glands into the anterior lobes (ACTH) and posterior lobes (oxytocin and vasopressin) before ACTH extraction in order to meet the growing medical demand.

ACTH (Adrenal Cortex Tropic Hormone)
Image courtesy of Claudio Schteingart, FRI
1950s: Supplying the demand

A photograph of technicians filling drug containers in a sterile laboratory. The three technicians are working in Crookes Laboratories, Park Royal, London. Wearing masks, gloves and white overalls, they are working in sterile conditions. They are filling containers with ACTH, a hormone which was found to alleviate rheumatism and rheumatoid arthritis.

The three girls in a glass case, 1953

Footnote:
Three gentlemen by the names of Brian Donovan, Jeffrey Hobbs and Michael Tupholme who were all associated with Crookes Laboratories in the 1970s went on to form Ferring Pharmaceuticals UK in 1975.
Early catalogues of products in Sweden and Germany

Nordiska Hormonlaboratoriet's, and later Ferring AB’s, catalogue of products in the 1950s

It was common in the '50s to list the home telephone numbers (Bostadstelefoner) of the company’s management. Here with the management team of Frederik Paulsen (Scientific Management); Eva Fransen (later Eva Paulsen) (Chemical Research Laboratory); Helmar Hagstam (Factory Manager); Klaus Rerup (Pharmacology Laboratory) and others.

Ferring GmBH’s catalogue of products from its early days in the 1960s

Ferring was first established in Düsseldorf in 1960 before moving to its present site in Kiel. Note the use of an earlier Ferring logo. Of interest is that Ferring AB’s products, Gaviscon® and Postacton® are already on the German market. Note also Ferring’s early interest in infertility treatment with Choragon® and in urology with testosterone.
1960s–1970s: Peptide synthesis at Ferring

Lars Carlsson, who led the first industrial scale peptide synthesis, performed at Ferring in 1961. The white board above Lars Carlsson shows the amino acid sequence of ACTH, with its 39 amino acids, while the patent shows a smaller sequence of ACTH-like peptides produced in the 1970s at Ferring.
ACTH and the synthesis of other peptides

Börje Nordh supervising ACTH production in the Ferring laboratory.

Ted Nordström performing synthesis steps in the laboratory in Malmö.
From oxytocin and vasopressin to dDAVP*

*A rose by any other name would smell as sweet”

Shakespeare’s *Romeo and Juliet*, 1600: (Act II, Scene ii, Part 1–2)
Ferring’s interest in dDAVP (desmopressin INN) came from two sources (a) Ferring’s ability and interest in the synthesis of its parent and sister compounds: vasopressin and oxytocin and (b) the clinical link between ACTH and vasopressin in disorders involving water-balance identified by Frederik Paulsen in the early 1960s.
Two subtle but significant changes to the parent molecule to create desmopressin

The structure of AVP and dDAVP highlighting the changes in positions 1 and 8. Images courtesy of Claudio Schieispert [one representative conformation for illustration purposes]
1968: First publication on desmopressin

**EFFECT OF A SYNTHETIC ANALOGUE OF VASOPRESSIN IN ANIMALS AND IN PATIENTS WITH DIABETES INSIPIDUS**

I. Vávra, A. Machová, Holeček V, Cort JH, Zaoral M, Šorm F.

**Summary**

A synthetic analogue of vasopressin, in which the L-arginine in position 8 has been replaced by D-arginine and the free amino group in position 1 has been removed by replacing the hemicycstine component at position 1 by 3-mercaptopropionic acid, has been tested in rats and dogs, and in patients with diabetes insipidus. Compared with the natural hormone, the antidiuretic potency of the analogue is higher, but pressor activity is decreased, so that the compound is more specifically a “water hormone” than is the mother substance. Not only can it be administered intranasally, as well as by injection, but it also has a prolonged antidiuretic action even as pure substance in aqueous solution.

**The Lancet**

Vávra I, Machová A, Holeček V, Cort JH, Zaoral M, Šorm F.
1976: First publication on DDAVP in the USA

Robinson AG.
DDAVP in the treatment of central diabetes insipidus.


**Abstract**

dDAVP is a synthetic analogue of vasopressin with increased antidiuretic activity and decreased pressor activity. Whereas the antidiuretic-to-pressor ratio of arginine vasopressin is 1, the antidiuretic-to-pressor ratio of dDAVP is 4000. When administered as an intranasal spray, 5 to 20 ug of dDAVP produced eight to 20 hours of antidiuresis in patients with complete central diabetes insipidus. The minimum recommended therapeutic dose resulted in a maximum antidiuresis in most patients. No side effects of the drug were noted in clinical trials. dDAVP thus gives promise of becoming the standard treatment of severe central diabetes insipidus.
1977: Desmopressin in bleeding disorders

Mannucci PM, Ruggeri ZM, Pareti FI, Capitanio A.

Abstract
dDAVP infusion causes a marked increase in factor-VIII-related properties in patients with moderate and mild haemophilia and von Willebrand's disease (vWD). We evaluated whether autologous factor-VIII response might be haemostatically effective, allowing patients to undergo surgery without plasma concentrates. 0·3 ug/kg of dDAVP given before dental surgery was followed by a two to three fold rise in factor-VIII coagulant activity (VIII CA) in four patients. In two, there was no abnormal bleeding after dental extraction, whereas plasma concentrates were necessary to control oozing from the sockets in the remaining two patients. A higher dDAVP dosage (0·4–0·5 ug/kg) in patients with higher starting VIII CA (9% or more) was followed by a more marked response (four to six fold). VIII CA levels up to 100% of average normal were achieved and dental extractions and major surgery were carried out successfully in eight patients. Plasma and urine osmolality showed no consistent variation after drug administration. Thus dDAVP appears a promising pharmacological alternative to plasma concentrates in the management of some patients with haemophilia and vWD.
Abstract
A double-blind study of 18 children aged 6–12 years suffering from primary nocturnal enuresis without signs of underlying organic disease is reported. 20 ug of dDAVP (Minirin) was given intranasally at bedtime. The effect was prompt and satisfactory in 8 children and relatively good in another 8 children. No adverse effects were noted. dDAVP is advocated for temporary use in children with nocturnal enuresis needing immediate help.

Abstract
Diurnal antidiuretic hormone (ADH) levels were studied in 11 enuretics and related to urine production and functional bladder capacity. The study suggests the normal increase in night time ADH levels is absent in enuretics, who show a stable hormone level both day and night. The functional bladder capacity was clearly exceeded at night in 8 of 11 patients. In conclusion, the study adds further evidence that bladder capacity is a major factor in enuresis. Urine volumes that exceed bladder capacity at night may be caused by a lack of diurnal rhythmicity in ADH levels.
Bleeding after cardiopulmonary bypass remains a cause for concern, requiring reexploration of the chest in approx 3% of patients. We examined the possibility that this problem might be alleviated by desmopressin acetate (dDAVP), which increases the plasma level of von Willebrand factor (vWF) and improves hemostasis in mild hemophilia. In a double-blind, randomized trial, we studied the effect of intraoperative dDAVP in 70 patients undergoing cardiac operations. The drug significantly reduced mean blood loss (1317±486 ml in the treated group vs 2210±1415 ml in the placebo group); of the 14 patients whose 24-hour blood loss exceeded 2000 ml, 11 had received the placebo. vWF levels were higher after dDAVP than after placebo. Patients with the most bleeding had relatively low levels of vWF before operation, suggesting a role for this factor in the hemorrhagic tendency induced by extracorporeal circulation. There were no untoward side effects of dDAVP. We conclude that the administration of dDAVP can be recommended to reduce blood loss in patients undergoing complex cardiac operations. The beneficial effect of the drug on hemostasis after cardiopulmonary bypass may be related to its effect on vWF.
In the 1992 statement of the World Federation of Hemophilia’s (WFH) mission, five goals of their ‘Decade Plan’ were stated. The first of these goals was that the Federation:

“will encourage and foster the highest possible levels of diagnosis, comprehensive care and support for persons with haemophilia and related disorders, for all countries throughout the world”.

One of the aims within this first goal was to “promote the availability of desmopressin for all those who might benefit from it”. The World Health Organization went on to include it in the 7th Essential Drug List in 1992.
Dosage form development

The world’s first orally administered peptide in tablet and fast dissolving forms.
Legacy and 2nd generation compounds
Sandmark S (Univ Lund, Sweden). Studies on mechanics and principles of examination for hiatus hernia and gastro-oesophageal reflux.

*Acta Radiologica* 1963;1:29–40

The context of the development of Gaviscon® can be found in the remarkable discovery at Ferring that alginates, when used as an additive to contrast media for patients undergoing X-ray, were found, unexpectedly, to be useful in treating some patients’ co-conditions of oesophageal reflux (heartburn). This led to the development of Gaviscon®. As acknowledged in the 1963 Sandmark paper…

“In co-operation with Helmer Hagstam, Ferring AB, Malmö, a powder (Gaviscon®) consisting of colloidal aluminium hydroxide, magnesium trisilicate…”
Ferring’s interest in LH and FSH stems from the 1970s

Presence of peptide hormones that control gonadotropin secretion in extrahypothalamic areas of the brain.

*Biochem Biophys Res Commun* 1977;79:1207–1211

**Abstract**

The concentration of the luteinizing hormone releasing hormone was highest for the caudate nucleus, intermediate for the hypothalamus and lowest but significant for the cortex. Factor C-LHIH (luteinizing hormone release inhibiting hormone) was indicated for the hypothalamus, cortex and caudate nucleus. The released FSH (follicle stimulating hormone) did not appear proportional to levels of LHRH (luteinizing hormone releasing hormone) by RIA (radioimmunoassay) and may indicate the presence of FSHRH (follicle stimulating hormone releasing hormone).
1977: 5-ASA discovered as a new treatment for IBD

Khan AK, Piris J, Truelove SC.
Nuffield Dept of Clinical Medicine and Radcliffe Infirmary, UK
An experiment to determine the active therapeutic moiety of sulphasalazine.

Abstract
Sulphasalazine (SASP) is of value in the treatment of ulcerative colitis, but its mode of action is unknown. When given orally, nearly all the dose reaches the colon intact, where it is split by bacteria into sulphapyridine (SP) and 5-aminosalicylic acid (5-ASA). An experiment was devised to determine whether SASP is a function of the parent molecule or of these two principal metabolites. Retention enemas of SASP, SP, and 5-ASA were administered to patients with sigmoidoscopic evidence of active ulcerative colitis. The experiment was conducted as a blind controlled trial, each patient having one of the test enemas daily for two weeks. Pronounced histological improvement was observed in approximately 30% of the patients given SASP or 5-ASA, and in only 5% of those receiving SP. We conclude that the active moiety of SASP is 5-ASA and that the SP functions as a carrier ensuring that the 5-ASA is liberated within the colon.
From 1976 to the present day

**Diaf tablet machine**
Ferring’s first tablet machine (Diaf TM 15) was produced from the 1930s to the beginning of the 1960s. Ferring’s tablet machine is from around 1952. At that time problems occurred with the durability of the paint used for these machines. Therefore, Diaf contacted a coach builder from the Danish King Frederik IX’s stables to ask him to help find a durable paint. The final choice was the blue colour that Ferring’s Diaf tablet machine has today.

In the autumn of 1980 the first Pentasa® tablets were produced for a clinical trial in ileostomy patients. To illustrate how small it was at that time the story goes that Ferring was informed that 5 volunteers would take part in the experiment. “However, when Ferring arrived at the Rigshospitalet with 5 tablets, one tablet for each subject, the doctor leading the experiment, Sten Nørby Rasmussen, proudly told Ferring that he had found an additional subject! There was nothing else to do than to go back to Ferring to produce another batch of Pentasa® consisting of only one tablet.”
1970s: Releasing hormones

Schally AV, Arimura A, Kastin AJ et al. 
Gonadotropin-releasing hormone: one polypeptide regulates secretion of luteinizing and follicle stimulating hormones. 
*Science* 1971;173:1036–1038

**Abstract**
A polypeptide isolated from porcine hypothalami stimulates the release of both luteinizing hormone and follicle-stimulating hormone from the pituitaries of several species. This polypeptide has been structurally identified as (pyro)Glu-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH₂ and synthesized. The natural and synthetic materials share biological properties. It appears that this peptide represents the hypothalamic hormone regulating the secretion of both luteinizing hormone and follicle-stimulating hormone.

Ferring offers the full range of all four releasing hormones: CRF, GHRH, LHRH and TRH.
Freeman JG.

**Abstract**
In a randomised controlled trial the effect of intermittent bolus injection of terlipressin, (‘Glypressin’) (2 mg 6-hourly), was compared with that of a constant peripheral intravenous infusion of vasopressin (0.4 units/min) in the management of bleeding oesophageal varices in 19 patients. Failure of vasopressin therapy was defined as continued bleeding of sufficient severity to necessitate the passage of a Sengstaken tube. Bleeding was controlled in 70% of patients treated with Glypressin but in only 9% of patients given vasopressin. The Glypressin group required significantly less blood after randomisation than the vasopressin group. Because of its efficacy, lack of side-effects, and ease of administration, Glypressin appears to be valuable in the management of bleeding varices.
Leyendecker G, Wildt L, Hansmann M.
Pregnancies following chronic intermittent (pulsatile) administration of Gn-RH by means of a portable pump (‘Zyklomat’) – a new approach to the treatment of infertility in hypothalamic amenorrhea.

*J Clin Endocrinol Metab*
1980;51:1214–1217

**Abstract**
In previous studies it could be demonstrated that in severe hypothalamic amenorrhea, which is associated with deficient hypothalamic secretion of Gn-RH, ovarian function could be restored by chronic intermittent (pulsatile) administration of Gn-RH. In order to apply administration of Gn-RH as a new mode of treatment of infertility in hypothalamic amenorrhea on an outpatient basis a portable device (‘Zyklomat’) was constructed consisting of a peristaltic pump, a computerized timing device and a Gn-RH containing bag, which delivers 50 μl of a Gn-RH containing solution once every 90 minutes via an iv catheter. It is the purpose of this paper to present this new treatment and the successful induction of the first two pregnancies in two patients with severe hypothalamic amenorrhea.
1987: Atosiban on its way to Tractocile®

Abstract
A competitive inhibitor of the action of oxytocin on the uterus, 1-deamino-2-D-Tyr-(OEt)-4-Thr-8-Orn-oxytocin, was studied for the first time in 13 patients with established, uncomplicated premature labour. Intravenous infusion of 1–100 µg/min of the analogue was given for 1–10 h and the effect was monitored by external cardiotocography. In all women an inhibition of uterine activity was observed, and in the majority of patients infused with 25 µg/min and a total dose of about 5 mg or more of the drug total inhibition of uterine contractions was achieved. There were no effects on the maternal and fetal pulse rates, nor were there any other side-effects. The results of this preliminary study support the concept of an increased concentration of uterine oxytocin receptors being aetiologically important in uncomplicated premature labour. They also suggest that an oxytocin antagonist could be an interesting therapeutic alternative in the condition, primarily because of the marked selectivity of its effect.

Br J Obstet Gynaecol 1987;94:1040–1044
Abstract
The objective of the present study was to investigate a new hGH (Zomacton) formulation, administered both by a conventional syringe and by a new needle-free device (ZomaJet 2 Vision). All subjects received a sc injection of 1.67 mg hGH as follows: Zomacton 4 mg/ml and 10 mg/ml by conventional syringe (Treatment A and B) or Zomacton 10 mg/ml ZomaJet 2 Vision administration (Treatment C). Bioequivalence was assessed based on log-transformed AUC and C(max) values. The local tolerance assessment revealed no differences between ZomaJet 2 Vision and conventional injections by syringe. Administration of the new formulation administered by use of ZomaJet 2 Vision was found to be bioequivalent based on AUC values. Comparison of the pharmacodynamic profiles (both IGF-1 and FFA) demonstrated bioequieffectiveness. These results support the use of jet injectors as a viable alternative to the traditional injection pens.

Pharmacokinetics and pharmacodynamics of a new formulation of recombinant human growth hormone administered by ZomaJet 2 Vision, a new needle free device, compared to subcutaneous administration using a conventional syringe.

Menopur® and MERiT

Abstract
Background: LH activity may influence treatment response and outcome in IVF cycles. Methods: A randomized trial compared ongoing pregnancy rates in 731 women undergoing IVF after stimulation with highly purified menotrophin (HP-hMG) (n=363) or recombinant FSH (rFSH) (n=368) following a long GnRH agonist protocol. Results: More oocytes were retrieved (p<0.001) after rFSH treatment (11.8) compared with HP-hMG treatment (10.0), but a higher proportion developed into top-quality embryos (p=0.044) with HP-hMG (11.3%) than with rFSH (9.0%). At the end of stimulation, lower estradiol (E2) (p=0.044) with HP-hMG (11.3%) than with rFSH (9.0%). At the end of stimulation, lower estradiol (E2) (p=0.031) and higher progesterone (p<0.001) levels were found with rFSH. The ongoing pregnancy rate per cycle was 27% with HP-hMG and 22% with rFSH. Conclusion: Non-inferiority was established. Pharmacodynamic differences in follicular development, oocyte/embryo quality, endocrine response and endometrial echogenicity exist between HP-hMG and rFSH preparations, which may be relevant for treatment outcome.

Nyboe Andersen A, Devroey P, Arce J-C.
Clinical outcome following stimulation with highly purified hMG or recombinant FSH in patients undergoing IVF: a randomized assessor-blind controlled trial.
Human Reprod 2006;21:3217–3227
Degarelix is discovered
2001–2002: First publications

*J Med Chem* 2001;44:453–467

Broqua P, Riviere PJM, Conn PM, Rivier JE, Aubert ML, Junien JL.
Pharmacological profile of a new, potent and long-acting gonadotropin-releasing hormone antagonist: degarelix.
*J Pharmacol Exp Ther* 2002;30:95–102
In 2010: The product range is extensive
IP: Discoveries, patents, trademarks and logos
1954: Nordiska Hormonlaboratoriet changes to Ferring

Changes in Ferring’s trademarks from the beginning to the present day.
1950s: Faster access to the pituitary

Eva Paulsen invented and patented a special drill to be used in the removal of the pituitary from the pigs' carcasses. With this new tool, it was possible to increase the extraction process from 5 to over 200 pituitaries per hour.

All three hormones were extracted: ACTH from the anterior pituitary gland while vasopressin and oxytocin were extracted from the posterior pituitary gland.
1959–1963

Frederik Paulsen's patent on a rectal delivery device in the late 1950s (the beginnings of KLYX® made later by Ferring A/S in Denmark).
1953–1967: The roadmap – via the USA, the Nobel Prize and the Iron Curtain – to dDAVP
1984–1994: Peptide mimetics at Ferring Research Ltd UK

Thrombin and renin inhibitors for the treatment of cardiovascular disorders discovered by Ferring Research Ltd, UK. These compounds were further developed by Hässle AB of Sweden, later AstraZeneca.
Degarelix is first synthesised

8 November 1996, FRI, San Diego
Degarelix – Firmagon® – is patented

United States Patent
Jiang et al.

<table>
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<th>Patent Number:</th>
<th>5,821,230</th>
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**Abstract**

Peptides are provided which have improved duration of GnRH antagonistic properties and which can be synthesized more economically. These antagonists may be used in the same manner as the compounds of which they are analogs to regulate fertility and to treat steroid-dependent tumors and for other short-term and long-term treatment indications. One particularly effective peptide, a decapeptide analog of the GnRH antagonist Acyline, has the formula: Ac-D-2Nal-D-4Cpa-D-Dpa(methylcarbamoyl)-Ser-D-4Aph (acetyl)-D-4Aph(acetyl)-D-Lal-Lys(isopropyl)-Pro-D-Ala-NH₂. It continues to exhibit very substantial suppression of LH secretion at 96 hours following injection. Other economically attractive and pharmacologically effective analogs have the formulas: Ac-D-2Nal-D-4Cpa-Xaa,Ser-D-4Aph (acetyl)-D-4Aph(acetyl)-L-Leu-Lys(isopropyl)-Pro-D-Ala-NH₂; and Ac-D-2Nal-D-4Cpa-Xaa,Ser-D-4Aph(tetrahydrocortisolyl) -D-4Aph(acetyl)-L-Leu-Lys(isopropyl)-Pro-D-Ala-NH₂, wherein Xaa₃ is D-Gln or Gla.

20 Claims, No Drawings
Bricks and mortar;
buildings and companies
1950s: The beginnings

Frederik Paulsen founded Nordiska Hormonlaboratoriet in 1950 in a 60 m² rented lab/office space in a factory housing diary product manufacturers and other light industries. The premises were close to the large slaughterhouses of both Malmö and Copenhagen ensuring a ready supply of fresh pituitary lobes. The telegram address used the first trademark for ACTH: ACTON.

The factory building in Malmö where Ferring (then the Nordic Hormone Laboratory) first opened.
Ferring’s first owned buildings (01 and 02) designed in typical Frisian style are commissioned and opened in the 1950s.

Advert in the Malmö Newspaper (SDS) on 7 November 1956

‘Runner’

‘Preferably with own bicycle, offered employment with possible extension to apprentice work in the laboratories’
1970s: The Malmö expansion

Sam Matarasso, Eva Paulsen and Frederik Paulsen (Jan Mulder in the background) at the groundbreaking ceremony for a new Ferring building (‘Building 4’) in 1974.

The Ferring buildings in Malmö, Sweden in the late 1970s showing the head office and manufacturing site along with the towered ‘Disponent’ villa in the middle next to the modern packaging and warehouse building at the top right.
1980s and onwards: Ferring R&D centres around the world

- Ferring Research Institute, San Diego, USA
- Ferring HQ, St Prex, Switzerland
- Ferring IPC, Copenhagen, Denmark
- Ferring, Tokyo, Japan
- BTG, Rehovat, Israel
- FIPCUS Parsippany, USA
- Ferring Galenisches Labor AG, Basel, Switzerland
- Ferring Research Ltd, Chilworth, UK (From 2005 Vantia Ltd)
- Ferring IPC, Navi Mumbai, India
Current Ferring production sites around the globe

1. Ferring-Léčiva a.s., Prague (est 1999)
2. Ferring GmbH, Kiel (est 1973)
3. Ferring S.A., St Prex (est 2006)
4. BTG, Rehovat (est 1980; acquired 2005)
5. Ferring Pharmaceuticals (China) Zhongshan, Guangdong (est 2005)
6. Ferring S.A. de C.V., Lerma (acquired 2008)
7. Syntese A/S, Hvidore (est 1992)
Ferring’s headquarters in St Prex in the canton of Vaud, Switzerland

The images on the right shows the sculpture by the Swedish artist Gudmar Olovson next to the rare (in Europe) Gingko biloba tree and, from the interior, an artist’s impression of Ferring’s founding peptides designed in 2006 by Mme Catherine Bolle, Lausanne.

10 facts about the St Prex facility
1. The site was originally an onion field
2. Construction began in November 2003
3. The first commercial batches of Minirin® and Pentasa® were produced in January 2006
4. The entire site is more than 100,000 m², or the equivalent of 20 football grounds
5. The building covers a footprint of 7,500 m²
6. To construct the site, 80,000m³ of soil was removed
7. 410 piles were put in place. During the process, two piling machines spun and tipped over because of the difficulty of getting the piles into the clay soil
8. As much as 14,000m³ of concrete was needed – all of it cast on site
9. 3,100 tonnes of metal were used: 1,500 to reinforce the concrete and a further 1,600 tonnes for the rest of the structure
10. Currently, in October 2010, 490 people work at the St Prex site comprising production and HQ staff

The Ferring HQ in St Prex, inaugurated in July 2006.

‘La Carte des molécules et des cellules’ Catherine Bolle, St Prex 2006 from the molecules drawn by Jerzy Trojnar and Claudio Schteingart, FRI, San Diego.
Ferring around the world: 1950–1993
Ferring around the world: 1994–2009
People come first at Ferring
1960s: The inventor of Gaviscon®

Helmer Hagstam, Technical Director and Head of Production at Ferring AB. Pictured here in the Ferring laboratories working on alginates which led to the discovery of Gaviscon®.
1960s: East meets West

Participants in the first ever international symposium on natriuretic hormones at Smolenice Castle, Slovakia, in 1969 including some figures from the development of dDAVP.

From left to the right: JW Pearce (Canada), B Lichardus (CSSR), A Machová (CSSR, co-author of the first clinically oriented paper on dDAVP), V Pliska (CSSR), I Kraus (CSSR), JH Cort (CSSR, the main negotiator on behalf of CSAV in the case of the sale of the dDAVP patent to Ferring), J Mulder (Sweden, the negotiator on behalf of Ferring in the case of purchasing the patent for dDAVP).
1960s: The inventor of dDAVP

Dr Milan Zaoral using laboratory equipment in Prague in the 1960s to purify desmopressin.

Dr Zaoral (left) receiving the Prize of the Czechoslovak Academy of Sciences in 1971, conferred by Professor Kozesnik, President of the Academy, in recognition of Dr Zaoral’s work on peptide hormone analogues.
1970s: Ferring scientists in the synthesis laboratories

From left to right: Krister Larsson, Jan-Åke Sköldbäck and Jerzy Trojnar at work on peptide synthesis in the Ferring laboratories in Malmö.
Peptide chemists: Colourful, dedicated and engaged

The laboratory group in the 1970s at Ferring, headed by Lars Carlsson.

From left to right: Ray Vavrek, Krister Larsson, Lars Carlsson, Jan-Ake Sköldbäck, Ted Nordström, Björn Skytting, Mats Carlsson, Jan Rochester, Erik Johansson and Klas Nilsson.
Faces at Ferring through the years

Per Melin in the pharmacology labs in Malmö in the 1980s.

Karolina Lawitz in the synthesis labs in Malmö in the 1980s.

Alan Harris lecturing for Ferring in the Netherlands in the 1980s.

Claudio Schteingart, Bob Galyean, Jacek Stalewski and Guangcheng Jiang in the 2000s standing in the historical fume hood in San Diego where degarelix was first synthesised by the Ferring Research Institute.
1960s: International clinical pioneers in the treatment of bleeding disorders and strong advocates of dDAVP

Left to right: Pier M Mannucci (1939–) from Angelo Bianchi Bonomi, Hemophilia and Thrombosis Center, Milan, Italy and Ilsley Ingram (1919–2004) from the Jenner Laboratory at St Thomas' Hospital, London: leading researchers in the field of bleeding disorders, pictured in 1969.

Professor Inga Marie Nilsson (1923–1999) at Malmö Allmänna Sjukhuset, University of Lund, Sweden in the 1980s. Professor Nilsson, with chemists Birger and Margareta Blombäck, pioneered the first treatment in Sweden for haemophilia.
Frederik Dag Arfst Paulsen was born on 30 October 1950 in Stockholm, Sweden. His father was Dr Frederik Paulsen. Frederik Paulsen grew up in Sweden with his father and his father's second wife, Eva Wolf Frandsen (later Eva Paulsen) – one of the founding researchers at Ferring. He attended school in Sweden and then went on to study chemistry at the Christian Albrecht University in Kiel, Germany and business administration at Lund University in Sweden.

Now based in Switzerland, Frederik Paulsen's business interests focus mainly on the Ferring Pharmaceutical Group. He began working in Malmö in 1976, was appointed Managing Director in 1983 and assumed the position of Chairman in 1988. Among his scientific awards are Doctor Honoris Causa, Technology, Lund University, Lund, Sweden; Doctor Honoris Causa, Faculty of Medicine, Christian Albrecht University, Kiel, Germany; Doctor Honoris Causa, Politics, MGIMO University, Moscow, Russian Federation and Honorary Professor, University of Dundee, Scotland, UK.
Ferring’s International PharmaScience Center (IPC), established in Copenhagen, Denmark houses Ferring’s main global development centre. IPC is located in Ørestad in a 20-floor building completed in 2002 by the internationally recognised Danish architect Henning Larsen. It is built mainly of steel and glass and at the beginning of 2003 IPC was granted an award for ‘Building of the Year 2002’.

Royal Visitors from both the Swedish and Danish Royal Families at Ferring International Center in 2007.

From left to right: Prince Henrik, HRH The Prince Consort of Denmark; Queen Silvia, HM The Queen of Sweden; King Carl XVI Gustaf, HM The King of Sweden; Queen Margrethe, HM The Queen of Denmark; Princess Victoria, HRH The Crown Princess of Sweden; Prince Frederik, HRH The Crown Prince of Denmark.
Founding family

Frederik Paulsen
1909–1997

Eva Paulsen
1918–2004

Dr Frederik Paulsen was a Medical Doctor and a highly respected endocrinologist. He was born in 1909 in the port hamlet of Dagebüll on the North Frisian coast. His parents originated from the neighbouring island of Föhr. In 1933 during his studies at Kiel he was harassed by the National Socialists due to his opposing political beliefs. He fled to Sweden via Basel in Switzerland to avoid internment. In Sweden, whose citizen he became in 1941, he laid the foundation of Ferring (1950) through his research on pituitary hormones and established Ferring as the first research group to synthesise these oligopeptides on an industrial scale.

Eva Paulsen graduated in civil engineering from Polyteknisk Læreanstalt in 1942 with chemistry as her specialty. Together with her husband, Frederik Paulsen, Eva Paulsen founded Ferring, which from small beginnings has grown into a well established multinational group. While her achievements were numerous, she will be particularly remembered as a scientist for the invention of production techniques for ACTH from porcine pituitary glands; for the development of the inflammatory bowel disease preparation, Pentasa® and for the reflux medication, Gaviscon®. Eva Paulsen was highly regarded as Chairman of Ferring A/S both for her creativity and the values she established at the company.
Five Nobel Prizes
and their associations
Vincent Du Vigneaud, who first synthesised vasopressin’s sister peptide, oxytocin, in 1953, for which he earned the Nobel Prize for Chemistry.

The remarkable roadmap, via the USA, the Nobel Prize and the Iron Curtain, to desmopressin.
The Nobel Prize in Physiology or Medicine 1977

Andrew V Schally
Veterans Administration Hospital
New Orleans, USA

Roger Guillemin
The Salk Institute
San Diego, USA

“For their discoveries concerning the peptide hormone production of the brain”

Ferring’s work on GnRH agonists and antagonists benefits from this Nobel Prize winning work
Robert Bruce Merrifield, who was awarded the 1984 Nobel Prize in Chemistry for his development of methodology for solid phase peptide synthesis.

Ferring AB’s new R&D and peptide synthesis building which was inaugurated in December 1984 during Professor Merrifield’s visit to Ferring.

The ‘Merrifield method’ is used by peptide chemists throughout the world.
The Nobel Prize in Chemistry 2003

Peter Agre
Johns Hopkins University
School of Medicine
Baltimore, MD, USA

“For the discovery of water channels”

Professor Agre, second from the left, on a visit to Ferring IPC in Copenhagen, Denmark in December 2003.

Ferring’s research into antidiuresis (Minirin®) uses Professor Agre’s Nobel award findings
The Nobel Prize in Medicine 2010

Robert Edwards

“For the development of in vitro fertilization”

Approximately 4 million children have been born thanks to IVF. Since 1978, Louise Brown and several other IVF children have given birth to 2nd generation children; this is probably the best evidence for the safety and success of IVF therapy. Today, Robert Edwards’ vision is a reality and brings joy to infertile couples all around the globe.
Ferring Philosophy and Medicine on the Body’s Own Terms
The Ferring Philosophy*

*The Ferring Philosophy was first introduced in 2004
The Ferring Philosophy*

*The Ferring Philosophy was first introduced in 2004*
‘Läkemedel på kroppens egna villkor’*
Medicine on the Body’s Own Terms

*The expression was first introduced at Ferring AB, Sweden in the 1980s
‘Läkemedel på kroppens egna villkor’*
Medicine on the Body’s Own Terms

*The expression was first introduced at Ferring AB, Sweden in the 1980s
A selection of Ferring products and their trademarks

- Minirin Melt
- Pentasa®
- Firmagon
- Zomacton
- Menopur
- Tractocile
- Glypressin
- Oestrogen
- Desigroil
- Decapeptyl
- Utrogestan
- Norprolac suisse
- Minirin
- Gonapectol
- Lysteda (tranexamic acid)
- Testim 50mg gel
- DDVP (desmopressin acetate)
- Repronex®
- Pabol carbetcon
- Propess
- Gonapectoline
- Bravelle
- Duratocin®
- Octostim
- Prosed
- Lutreleif®
- PICO-SALAX™
- KLYX®
- Choragon®
- Novarel®
- Gaviscon®
- PICOPREP®
- Lutinus
- Ferring