

BRINGING THE LATEST IN PAEDIATRIC ENDOCRINOLOGY TO YOU

Managing adrenal disease

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The adrenal gland integrates neuronal, immune, vascular, metabolic and endocrine signals within a common organ. Central to the stress response system, it orchestrates responses to acute and chronic stress stimuli, so playing a major role in numerous stress-related disorders and pathologies.

This role has become more prominent as a consequence of changing lifestyles in the developed world, which have led to an unprecedented surge in stress-related diseases. Accordingly, the adrenal occupies centre stage in pathophysiology such as the global epidemic of obesity and its sequelae of metabolic diseases and hypertension.

An intact adrenal gland is a prerequisite for survival, including coping with critical illness

and systemic inflammation. Hence, adrenal-related diseases, such as adrenal insufficiency and adrenal tumours, affect numerous critical processes.

There is therefore an increasing health imperative to understand both adrenal function and dysfunction: first to elucidate mechanisms of pathology; secondly to prevent or control disease manifestations; and thirdly to identify potential therapeutic targets and interventions.

Stefan R Bornstein (Dresden, Germany)
Plenary Lecturer, *ESPE 2018*

Find out more in this special issue >

Welcome

The adrenal gland's vital role means we must perform a careful balancing act when addressing hormone replacement. This issue of *ESPE News* examines the latest progress in our understanding and management of adrenal disorders.

We are grateful to two of the plenary lecturers from this year's exciting ESPE Meeting for their contributions to this issue. Stefan Bornstein (Dresden, Germany) 'sets the scene' with our cover story, while Brian Walker (Edinburgh, UK) opens our adrenal discussion on **page 5**. Here, he considers innovative ways of achieving optimum glucocorticoid replacement therapy while minimising side effects.

Now is, of course, the optimum time to register for ESPE 2018 in Athens, Greece, where you can enjoy the talks by Professors Bornstein and Walker and an exceptional array of other plenary lectures. Details are on **page 8**. Remember: early bird registration closes on 22 June at www.espe2018.org.

Our adrenal theme continues on **page 6**, as Richard Ross (Sheffield, UK) explains his project's ingenious solution to providing accurate doses of hydrocortisone for children. With 95.5% of parents preferring these novel granules over their child's usual formulation, this approach is likely to have a huge impact on therapy.

On **page 7**, Svetlana Lajic (Stockholm, Sweden) tackles a controversy. Making use of an IFCAH-ESPE Grant, she has examined the lasting impact of pre- and postnatal corticosteroids in congenital adrenal hyperplasia, and the potential impact of epigenetic factors.

As always, the latest news (**pages 2-3**), research highlights (**page 4**) and dates and deadlines (**page 9**) are also featured. Make sure you apply for the ESPE Research Fellowship or a place at the Diabetes, Obesity & Metabolism School shortly, as their deadlines are imminent!

Your own contributions form an important part of *ESPE News*. We look forward to hearing from you at espe@eurospe.org.

Sarah Ehtisham
Editor, *ESPE News*

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Cover image: human adrenal glands, computer illustration.
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Register now for ESPE 2018! Early bird deadline 22 June



ESPE 2018 takes place in Athens, Greece on 27-29 September. Register by 22 June to benefit from significantly reduced registration fees.

You can find out more about the exciting plans for this year's meeting on **page 8**, where Mehul Dattani (Programme Organising Committee Chair) outlines the programme's highlights.

Register now at www.espe2018.org.

ESPE Council elections

We will be holding an e-vote this summer for ESPE members to elect the Society's next Secretary General. Watch out for further information by email, and please make sure we have your current email address.

ESPE Research Fellowship Deadline 11 June 2018

This Fellowship enables talented young investigators and paediatric endocrinologists to conduct research at leading institutions worldwide. It has helped launch powerful careers at the leading edge of clinical research in our field.

One large grant of €125 000 is available for up to 2 years of research training at a centre of excellence. An additional €15 000 is available for consumables.

Applicants should demonstrate the potential to perform high quality research in any field of paediatric endocrinology, other than projects related to diabetes and obesity, which will not be considered in this call.

Please refer to www.eurospe.org/grants-awards/grants/research-fellowship before applying. Deadline: 11 June 2018. The Fellowship is supported by an unrestricted grant from Novo Nordisk Health Care AG, Switzerland.

ESPE Diabetes, Obesity & Metabolism School 2018 Deadline 1 July!

The deadline is fast approaching for applications to attend the 2018 ESPE Diabetes, Obesity & Metabolism School. This year's event takes place on 30 September–2 October 2018 in Delphi, Greece, immediately after the ESPE 2018 Annual Meeting in Athens.

Themes covered include:

- treatment of paediatric patients with type 1 diabetes
- obesity and metabolic syndrome
- epidemiology and intervention in diabetes
- monogenetic diabetes and other disorders of glucose control

Students will benefit from interactive lectures and small group sessions, enabling networking with peers and senior paediatric endocrinologists.

For more information or to apply see www.eurospe.org/education/diabetes-obesity-and-metabolism-school.

Don't miss the 1 July deadline!



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The Science of Gender 1st ESPE Science Symposium 18–19 October 2018, London UK

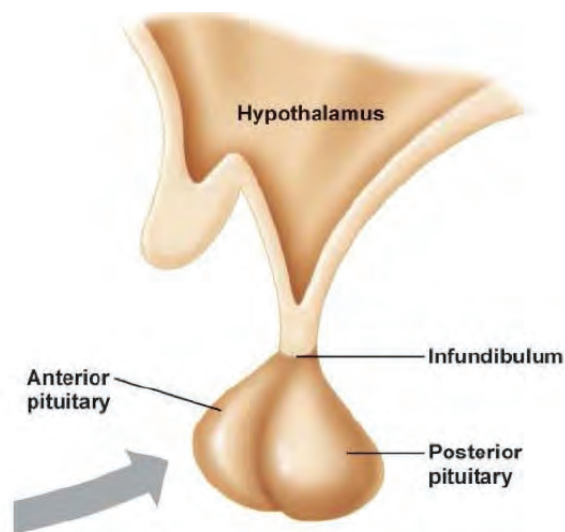
What influences gender development and gender dysphoria? What effects do nature and nurture have? These are the questions we'll be discussing at ESPE's first Science Symposium, as we examine the latest evidence. We will also explore the potential psychological-psychosocial impacts of endocrine treatment for gender dysphoria and the science behind this.

If you would like to attend this exciting new event at Tavistock House, London, UK, on 18–19 October 2018, visit www.eurospe.org/education/espe-science-symposium.

Clinicians and scientists who have completed their doctorate training within the last 8 years can apply for one of 25 fully sponsored places (the deadline for these free places is 31 July). After 31 July, places will be available for a registration fee of €80 (which includes accommodation).

The ESPE Science Symposium is organised with an educational grant from Pfizer.

ESPE e-Learning news



A new chapter entitled 'Hypopituitarism' can now be found in the 'General content' section under 'Pituitary'. It discusses embryology, aetiology of anterior/posterior pituitary-related hormone deficiencies, diagnostic tests and treatment.

A chapter on 'Polycystic ovary syndrome' is now available under 'Puberty', featuring pathogenesis, risk factors, diagnostic criteria, management and long term consequences.



Registration for ESPE e-Learning is free of charge: just visit www.espe-elearning.org.

'Adrenals' in e-Learning

This issue of *ESPE News* has a focus on the adrenal gland. Those of you with an interest in this topic should note that ESPE e-Learning has a chapter on 'Adrenal disorders', which you will find in 'General content'. It discusses the fetal development, steroidogenesis and (patho)physiology, diagnostic approaches and therapeutic interventions concerning adrenal hyper- and hypofunctioning. Four interactive cases are also available. The e-Learning section entitled 'Resource limited countries' features two chapters, 'Adrenal disorders' and 'Adrenal insufficiency', which discuss the subject in the context of primary, secondary and tertiary healthcare levels. Vignettes (short interactive cases) will be added shortly.



See www.espe-elearning.org.

Bringing you recent highlights from the world of research


CRISPR/Cas9 to the rescue in fragile X syndrome?

Fragile X syndrome (FXS) is the most common genetic form of intellectual disability in males. It is caused by silencing of the *FMR1* gene associated with hypermethylation of the CGG expansion mutation in the gene's regulatory region.

In this study, Lui *et al.* restored *FMR1* expression for the first time, adopting recently developed DNA methylation editing tools using a modified CRISPR/Cas9 system. They successfully removed methylation from CGG repeats at the *FMR1* locus in multiple FXS patient-derived induced pluripotent stem cells. Furthermore, epigenetic editing rescued the electrophysiological abnormalities of FXS neurones, and the reactivation of *FMR1* was found to be maintained in edited neurones *in vivo* following transplantation into mouse brain.

The reversion of gene inactivation by epigenome editing may perhaps be a therapeutic strategy for disorders that involve epigenetic silencing.



 Read the full article in Lui *et al.* 2018 *Cell* 172 979–992

The impact of severe selenium deficiency on thyroid hormone

In Graves' disease (GD), the balance between intra- and extracellular oxidants and antioxidants is disturbed. Researchers in Berlin consequently conducted a double-blind, placebo-controlled, randomised supplementation trial to assess the safety and efficacy of adjuvant selenium (Se) intake on clinical course and serological parameters in GD.

The efficacy of antithyroid drugs (ATD) was compared with their therapeutic effects in combination with supplemental Se. Untreated hyperthyroid patients with GD ($n=70$) were randomly assigned to receive methimazole (MMI) either with placebo or with Se (as 300µg oral sodium selenite per day) for 24 weeks.

The response rate, the number of patients with normal thyroid-related hormones, and the decrease in serum levels of thyroid-related autoantibodies at week 24, as well as the high relapse rate after completion of ATD therapy, were comparable in both trial arms. Se-related side effects were not observed.

Addition of a relevant daily dose of Se to MMI was not found to positively impact the clinical course and the serological parameters of Se-sufficient, hyperthyroid patients with GD.

 Read the full article in Kahaly *et al.* 2017 *Journal of Clinical Endocrinology & Metabolism* 102 4333–4341

Gut microbiota and development of type 1 diabetes

In this review, Knip & Honkanen describe the involvement of the gut microbiota at two steps in the evolution of type 1 diabetes. First, the intestinal tract is colonised by a microbial community unable to adequately educate the immune system. The infant consequently acquires susceptibility to immune-mediated diseases, including type 1 diabetes. Secondly, the young child seroconverts to positivity for diabetes-associated autoantibodies.

This is preceded or accompanied by a decrease in the diversity of the intestinal microbiota, and an increased abundance of *Bacteroides* species. These changes affect the disease process, promoting progression towards overt type 1 diabetes.

The authors hypothesise that, by providing specific probiotics, one can affect the colonisation of the newborn intestinal tract or strengthen immune education in early life. For example, human milk oligosaccharides or modified starches from a dietary intervention can function as nutrients for 'healthy' bacteria. Modulation of the intestinal microbiome thus holds the promise of effective protection against human type 1 diabetes.

 Read the full article in Knip & Honkanen 2017 *Current Diabetes Reports* 17 105

Cyproheptadine in Silver-Russell syndrome

In Silver-Russell syndrome (SRS), children are not only short, but also underweight and malnourished, with patterns of poor eating often from infancy. Management has always included nutritional management before initiation of growth hormone (GH) therapy.

Colleagues in Paris investigated whether cyproheptadine, an orexigenic antihistamine, promotes appetite, weight gain and growth in SRS. Of 34 children with SRS who received cyproheptadine, 23 took the drug alone, while the other 11 received it in conjunction with enteral nutrition, GH therapy or as a combination of all three.

Cyproheptadine was started at a mean age of 2 years and increased gradually to 0.25mg/kg per day orally over the first 4 weeks. After 1 year of treatment, gains in overall length/height and weight were observed (W: +1.1 SDS; H: +0.5 SDS). Weight improved in 21 patients (91%) by at least +0.5 SDS, and in 12 (52%) by at least +1 SDS. The treatment was well tolerated: only 2 patients stopped due to side effects of irritability.

The study demonstrates significant improvements in growth velocity and nutritional status with cyproheptadine prior to initiation of GH therapy.

 Read the full article in Lemoine *et al.* 2018 *Journal of Pediatric Gastroenterology & Nutrition* 66 306–311

Adrenal replacement therapy: what you give versus how you give it

You don't have to spend long training in endocrinology before you discover how poor we are at replacing corticosteroids in patients with adrenal insufficiency (AI). So, how can we do better?

“

Corticosterone could be especially effective at suppressing undesirably high ACTH levels in CAH, without paying the price of GC toxicity.”

Glucocorticoid (GC) replacement therapy has poor outcomes in children and adults. The risk of acute adrenal crisis remains unacceptably high, and chronic risks include growth retardation, osteoporosis, obesity, hypertension, cardiovascular disease and poor quality of life. Many of these are shared with patients with spontaneous or iatrogenic Cushing's syndrome, and can be attributed to chronic overexposure to GCs.

Patients with congenital adrenal hyperplasia (CAH) appear especially prone to complications of GC excess. Despite having biochemical markers – adrenal androgen levels – against which to titrate the dose, recent cohort studies in children and adults confirm that only a minority achieve biochemical control, and there is an excess of obesity, hypertension and metabolic dysfunction which is correlated with the dose of GCs. Moreover, in patients receiving synthetic GCs – particularly dexamethasone – the risk of adverse effects appears even higher.

Addressing the challenge of GC toxicity

Some have advocated frequent careful measurement of cortisol to generate 'cortisol day curves', but conventional hydrocortisone (i.e. cortisol) tablets produce a short-lived peak of cortisol in the blood, and lack the pharmacokinetic properties required to mimic the physiological circadian rhythm, unless taken unfeasibly frequently.

Modified release preparations, such as Plenadren® (Shire Pharmaceuticals, London, UK) and Chronocort® (Diurnal, Cardiff, UK), can achieve more physiological profiles, but they too have been criticised as they cannot mimic the ultradian pulses of cortisol which occur every couple of hours in health. Trials of cortisol infusion using insulin pumps are intended to overcome this deficiency but have yet to provide compelling evidence.

Evidence to date suggests that whatever cortisol exposure is achieved by these approaches, efficacy goes hand-in-hand with toxicity.

Can we dissociate efficacy from toxicity?

Cortisol activates intracellular corticosteroid receptors which are present in virtually every mammalian cell

and regulate expression of many genes. In the field of anti-inflammatory steroid therapy, much work has gone into searching for 'selective glucocorticoid receptor modulators' (SGRMs) which facilitate regulation of genes involved in suppressing inflammation more so than those involved in inducing metabolic toxicity. In principle, an SGRM which suppressed *POMC* expression, and hence adrenocorticotrophin (ACTH) secretion, with greater potency than it affected any other genes, could be uniquely useful in patients with CAH.

It would be much simpler, however, to consider whether some steroids might achieve higher concentrations in some cells than in others. In the early 2000s, the ATP-binding cassette transporter ABCB1 (p-glycoprotein) was found to be expressed on the blood-brain barrier and to export cortisol and dexamethasone from the brain.¹ Crucially, however, ABCB1 does not export corticosterone, the principal GC in rats and mice, which is present at about 5–10% of the levels of cortisol in human blood. More recently, we showed that another transmembrane transporter, ABCC1, exports corticosterone but not cortisol from adipose tissue.² This suggests that, in tissues expressing more ABCB1 than ABCC1 (e.g. brain), there will be greater accumulation of corticosterone than of cortisol, while the opposite will be true in tissues expressing more ABCC1 than ABCB1 (e.g. adipose tissue and bone).

Corticosterone as a replacement therapy

This indicates that corticosterone could provide an alternative to cortisol (i.e. hydrocortisone) as a replacement therapy. Corticosterone has the potential to act as effectively as cortisol in most tissues, but to be exported from tissues where cortisol induces adverse effects, including adipose tissue and bone. Moreover, corticosterone is predicted to be more effective than cortisol in the brain, including in the hippocampus and hypothalamus, where it can mediate suppression of the hypothalamic-pituitary-adrenal axis.

Thus, corticosterone could be especially effective at suppressing undesirably high ACTH levels in CAH, without paying the price of GC toxicity in peripheral tissues.

The pharmacokinetics of corticosterone in humans dictate that a modified release preparation would be required. Unfortunately, no suitable product currently exists for clinical trials, but we now aim to pursue this approach.

Brian R Walker

Pro-Vice-Chancellor and Chair of Medicine, Newcastle University, Newcastle upon Tyne, UK, and Honorary Professor, University of Edinburgh, Edinburgh, UK

Brian Walker will be delivering his plenary lecture 'Dynamic control of tissue glucocorticoids – lessons for optimising replacement therapy' at ESPE 2018. Book now at www.espe2018.org.

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1. Karssen et al. 2001 *Endocrinology* 142 2686–2694.
2. Nixon M et al. 2016 *Science Translational Medicine* 8 352RA109.



Brian Walker

New hope: hydrocortisone granules for children

The 2017 European Commission report on paediatric medicines stated, 'There is a broad consensus that children deserve access to medicines that have been specifically developed and researched for their use.' Despite this, children with adrenal insufficiency (AI) usually receive crushed tablets of hydrocortisone.

In Europe, hydrocortisone is only licensed in 10 and 20mg tablet doses, and children require doses of 1–2mg. Pharmacists or parents compound hydrocortisone either by tablet crushing or by using hydrocortisone base. A recent study reported that 21.4% of hydrocortisone compounded batches failed to meet European Pharmacopoeial guidelines on net mass or drug content, and that 3.6% contained no hydrocortisone! When parents crush tablets the results are worse.

This can lead to severe clinical consequences, with poor disease control due to under-treatment and Cushing's syndrome due to over-treatment. Sucrose or lactose is often added to compounded tablets to mask hydrocortisone's bitterness, leading to adverse effects on dental health and in children with lactase deficiency. Thus, there is a need for a licensed paediatric formulation of hydrocortisone.

The TAIN project

The TAIN (Treatment of AI in Neonates) Consortium addressed development of such a formulation. It was led by the University of Sheffield (UK) with input from Diurnal Ltd (Cardiff, UK), Charité Universitätsmedizin (Berlin, Germany), Glatt GmbH (Binzen, Germany), ADD Technologies (Reinach, Switzerland), Simbec Research Ltd (Merthyr Tydfil, UK), the University of Birmingham (UK) and Genetic Alliance UK (London, UK). It was awarded an EU-FP7 Grant to take a paediatric formulation of hydrocortisone from concept to a paediatric use market authorisation (PUMA).



TAIN Consortium meeting, January 2017

“
95.5% of
parents said
that they
would prefer
hydrocortisone
granules
over their
child's usual
formulation.”



Richard Ross

A formulation was designed for neonates, infants and children using multiparticulate granules. The granules are presented within a transparent capsule that is opened for dosing, allowing for 0.5, 1.0, 2.0 and 5.0mg doses to be accurately administered directly onto the tongue or as sprinkles on soft food. The granules are so small that even the 0.5mg capsule contains ~900. Each granule has an inert cellulose core, a hydrocortisone layer and an external taste-masking layer to disguise the bitterness of hydrocortisone.

Clinical studies

Development was under a European Medicines Agency Paediatric Investigation Plan to show bioequivalence of granules to a marketed 10mg hydrocortisone (Auden McKenzie, Wakefield, UK) at phase 1, followed by a phase 3 study demonstrating appropriate exposure in paediatric patients.

Bioequivalence was demonstrated in a crossover study in 16 dexamethasone-suppressed healthy adult males. The phase 3 study at Charité Universitätsmedizin initially examined 12 patients with AI aged 2–6 years. Following analysis of safety outcomes, a further 6 infants with AI aged 1 month–2 years were included. After analysis of safety in this second cohort, a further 6 neonates with AI aged <28 days were studied.

Patients received a morning dose of hydrocortisone granules identical to their normal dose of compounded hydrocortisone (median dose 2mg). In all children, cortisol increased from baseline to a C_{max} at 60min. The rapid absorption and clearance of cortisol were similar to findings in previous studies of children dosed with immediate release hydrocortisone and the cortisol C_{max} was similar to peak concentrations in children with intact hypophyseal-pituitary-adrenal axes.

The granules were well received by parents and children; 95.5% of parents said that they would prefer hydrocortisone granules over their child's usual formulation. Following the phase 3 study, subjects could choose to continue in a safety extension study. At 1 year, patients on hydrocortisone granules had good disease control, no abnormal progression in pubertal status, and growth as expected.

Current status

In February 2018, a European PUMA was granted for a hydrocortisone granule preparation as replacement therapy for paediatric AI from birth to <18 years old. This is the first licensed treatment in Europe specifically designed for children with AI, and is only the fourth approved PUMA. This project is an example of great collaboration between centres across the EU taking a drug concept from bench to bedside.

Richard JM Ross

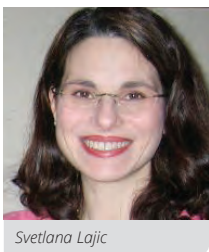
Professor of Endocrinology, University of Sheffield, Sheffield, UK, and Chief Scientific Officer, Diurnal Ltd, Cardiff, UK

Further reading

Neumann et al. 2018 *Clinical Endocrinology* 88 21–29.

Resolving a controversy: prenatal CAH treatment

Hundreds of European children at risk of congenital adrenal hyperplasia (CAH) have been treated with prenatal dexamethasone (DEX) to reduce congenital malformations, but the treatment remains controversial.



Svetlana Lajic

Prenatal DEX therapy for CAH appears efficient in reducing virilisation in affected girls. For decades it was considered safe, but recent data show that it may involve somatic and cognitive risks. Studies in animal models indicate that prenatal glucocorticoid (GC) treatment leads to metabolic and behavioural disturbances. It is therefore important to investigate its long term consequences.

Children with CAH have lifelong GC replacement therapy. Despite attempts to mimic the normal diurnal cortisol rhythm, multiple episodes during their upbringing will result in infra- or suprphysiological GC levels. These may, in time, affect growth, metabolism and cognition.

We therefore investigated risks associated with pre- and postnatally administered GCs. Our multidimensional approach tested the hypothesis that prenatal DEX treatment and postnatal chronic GC treatment have a negative impact on multiple physiological systems, such as metabolism and brain structure and function. We further hypothesised that DEX induces long-lasting epigenetic changes which underlie the functional effects.

Prenatal dexamethasone

We investigated cognition and behaviour in children (7–17 years) treated with DEX in the first trimester because of a risk of CAH, but who did not have CAH (34 cases, 66 controls). Treated girls showed cognitive deficits in working memory domains, both verbal and visual-spatial, indicating a sex-dimorphic effect. They also exhibited a poorer verbal intelligence and spatial visualisation compared with population controls.¹

The same group of children was assessed using questionnaires to estimate behavioural problems and psychopathology. They were found to be well-adapted without major behavioural problems. However, the first trimester-treated girls scored more highly than controls on almost all measures of anxiety.²

This led us to investigate cognitive profile, psychopathology and autistic traits over time. A subgroup of children who had reached adulthood were retested (23 cases, 58 controls). As adults, first trimester DEX-exposed subjects catch up on measures of working verbal memory and impulse inhibition, and perform at the same level as non-DEX-treated adult controls.³ The underlying compensatory neurostructural or neurofunctional mechanisms are not known, and are

being investigated. Preliminary results indicate that first trimester-treated individuals have affected limbic structures.

Postnatal glucocorticoids

We investigated the impact of postnatal GC treatment on cognition and behaviour. Adult patients with CAH (55 cases, 58 controls) had impaired performance in tests measuring verbal and visual-spatial working memory, and inhibition. In measures of fluid intelligence/non-verbal logical reasoning, males with CAH performed more poorly than control males. Patients with salt-wasting CAH performed equally compared with patients with simple virilising CAH. However, patients with a null genotype performed more poorly than those with a non-null genotype, and significantly worse in fluid intelligence/non-verbal logical reasoning. Women treated with DEX prenatally performed worse on most cognitive measures than did women with CAH who had not been treated prenatally.⁴ Patients with CAH seem to develop cognitive impairment with time, emphasising the importance of optimising treatment throughout the lifespan.

Effects on fetal programming

To explore the effects of DEX on fetal programming, we performed quantitative DNA methylation measurements of genomic DNA from T-cells with the Infinium Human Methylation 450K BeadChip Array (Illumina, San Diego, CA, USA). We aimed to identify a set of candidate differential methylated regions to provide insights into DEX-affected regions, laying the ground for mechanistic models of DEX action during embryogenesis.

We identified >10 000 differentially methylated probes (DMPs) associated with DEX treatment, and almost as many associated with a DEX x gender interaction. DMPs were enriched in intergenic regions near epigenetic markers for active enhancers. Functional enrichment of DMPs was mostly associated with immune functioning and inflammation, but also with non-immune-related functions. DMPs were also identified in genes involved in the regulation and maintenance of methylation.⁵

In summary, prenatal DEX treatment and postnatal GC treatment affect cognition. DNA methylation is altered after prenatal DEX treatment. This may have implications for the future health of the exposed individual. We conclude that first trimester DEX treatment of fetuses at risk of CAH should not be performed.

Svetlana Lajic

Paediatric Endocrinology Unit, Karolinska Institutet/
Karolinska University Hospital, Stockholm, Sweden

This research was supported by a €95 000 grant from the IFCAH-ESPE Fund. See www.eurospe.org/grants-awards/grants/ifcah-espe-grant.

References

- Wallensteen et al. 2016 *Journal of Clinical Endocrinology & Metabolism* **101** 3838–3846.
- Wallensteen et al. 2018 *Hormones & Behavior* **98** 219–224.
- Karlsson et al. 2018 *Psychoneuroendocrinology* **91** 68–74.
- Karlsson et al. 2017 *Clinical Endocrinology* **87** 651–659.
- Karlsson et al. 2016 *ESPE Abstracts* **86** P-P1-37.

“
We further hypothesised that dexamethasone induces long-lasting epigenetic changes which underlie the functional effects.”



ESPE 2018: Narrative and Precision Medicine in Paediatric Endocrinology

Megaron Conference Centre, Athens, Greece
27–29 September

ESPE 2018 is set to be a scientifically vibrant and exciting meeting, with something of interest to you all.

A rich mix of clinical and basic science, the programme focuses on novel advances in paediatric endocrinology and the wider field of medicine.

We have increased the number of plenary lectures to eight (see panel, above right). As you can see, they encompass diverse topics and are presented by internationally renowned speakers.

You will also enjoy:

- 10 symposia, focusing on novel advances in clinical and basic science
- the 1st ESPE ENDO-ERN Symposium, updating you on the exciting new European Reference Network
- new 'How Do I...?' sessions, where expert clinicians discuss management of common paediatric endocrine conditions (details shown in the righthand column)

- our new Young Investigators session, featuring novel research data from several ESPE award winners and grant recipients
- special sessions covering Working Groups, Novel Advances, Controversies, Meet the Expert and *Yearbook of Pediatric Endocrinology* – plus much more besides

Find out about these and other sessions at www.espe2018.org. Many networking opportunities will also be available, including the ESPE Connect stand.

So visit Athens in September for a great scientific and networking event in a city famed for its beauty, culture and history!

Mehul Dattani
Chair, Programme Organising Committee

Plenary lectures at ESPE 2018

Oncofertility: from bench to bedside to babies

Teresa Woodruff (USA)

Oxytocin and the healing power of love

Sue Carter (USA)

Novel aspects in the pathophysiology of obesity

Christos Mantzoros (USA)

Prediction, identification and treatment of early stage type 1 diabetes

Anette-Gabriele Ziegler (Germany)

Dynamic control of tissue glucocorticoids – lessons for optimising replacement therapy

Brian R Walker (UK)

Personalised treatments using gut microbiome and clinical data

Eran Segal (Israel)

Adrenal gland microenvironment in health and disease

Stefan Bornstein (Germany)

Turner syndrome: new insights from prenatal genomics and transcriptomics

Diana Bianchi (USA)

'How do I...?' sessions at ESPE 2018

These 15-minute sessions with clinical experts will help you answer:

'How do I...?'

- interpret a low vitamin D concentration?
- differentiate between constitutional delay in growth and puberty and hypogonadotropic hypogonadism?
- manage an adolescent with type 1 diabetes and microalbuminuria?
- manage a child with a thickened pituitary stalk?
- manage a child with physical disabilities who has a low bone mineral density?
- investigate a clinically euthyroid child with a thyroid nodule?

Future meetings

See www.eurospe.org/meetings for details of all future meetings



57th Annual ESPE Meeting

27–29 September 2018

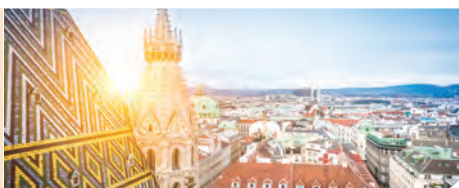
Athens, Greece



58th Annual ESPE Meeting

19–21 September 2019

Vienna, Austria



59th Annual ESPE Meeting

10–12 September 2020

Liverpool, UK



OTHER EVENTS

SEPTEMBER

ESPE Summer School

Delphi, Greece
24–26 September 2018

ESPE Diabetes, Obesity & Metabolism School

Delphi, Greece
30 September–2 October 2018

OCTOBER

1st ESPE Science Symposium

London, UK
18–19 October 2018

ESPE Caucasus & Central Asia School

Bishkek, Kyrgyzstan
22–25 October 2018

NOVEMBER

ESPE Maghreb School

Algeria
19–24 November 2018

DEADLINES

JUNE

Caucasus & Central Asia School Steering Committee member applications

1 June 2018

ESPE Research Fellowship applications

11 June 2018

ESPE 2018 early bird registration

22 June 2018

JULY

Diabetes, Obesity & Metabolism School applications

1 July 2018

Early Career Scientific Development Grant applications

31 July 2018

ESPE Science Symposium applications for free places

31 July 2018

Membership renewals 2018

If you haven't renewed your ESPE membership for 2018, please make sure you do so to retain access to all the amazing benefits of Society membership.

As well as providing you with an international forum for networking and collaboration, ESPE gives you fantastic scientific and educational opportunities, including access to funding, reduced ESPE Meeting registration fees and participation in our schools and e-Learning Programme.

Renew today at www.eurospe.org/membership – and remember to recommend ESPE to your colleagues too!

ESPE

European Society for
Paediatric Endocrinology

Improving care of children with
endocrine diseases by promoting
knowledge and research

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ESPE Newsletter

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