

1. **Basic information:**

*Title of the symposium:* The role of hormone regulated molecular modulators in traumatic responses.

*Meeting:* 49<sup>th</sup> Annual Conference of the International Society of Psychoneuroendocrinology, August 29-31 Milan, Italy.

*Organizers:* Marco Riva & Clemens Kirschbaum

*Venue:* Principe di Savoia Hotel, Piazza della Repubblica, 17 Milano.

## SYMPOSIUM 16

This symposium is sponsored by the **International Society for Neurochemistry**

TIME **Saturday, 31/Aug/2019: 14:30 - 16:00**



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### The role of hormoneregulated molecular modulators in traumatic responses

CHAIRS Marla Sokolowski | University of Toronto  
Hermona Soreq | The Hebrew University  
DISCUSSANT Clemens Kirschbaum | Technische Universität Dresden  
LOCATION Cristalli

### A role for epigenetics in the molecular regulation of behavioral pleiotropy and plasticity

**Marla Sokolowski**  
*University of Toronto*

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### Non-coding RNAs and traumatic memories

**Hermona Soreq**  
*The Hebrew University of Jerusalem*

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### Breaking legacies of stress: Lessons from an olfactory perspective

**Brian Dias**  
*Emory University School of Medicine*

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### Glucocorticoid exposure during hippocampal neurogenesis primes future stress response by inducing changes in DNA methylation

**Nadine Provençal**  
*Simon Fraser University*

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2. **ISN was also listed as a sponsor in the pdf of the conference booklet.**

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3. **Speakers, Titles, and ISN logo in the conference pdf booklet:** (see copies of the program booklet pdf above). In our symposium, each of the speakers thanked ISN for funding, and Hermona Soreq spoke about ISN and the aims of the society to the audience. We could not use the ISN slide deck as it was only received on Sept 13 after the meeting had ended. We are grateful for the support of our highly successful symposium (see below).
4. **History:** The president of the International Society for Psychoneuroendocrinology (ISPNE) and ISPNE2019 meeting organizer Prof. Clemens Kirschbaum (Technical University, Dresden) invited Profs Sokolowski (University of Toronto) and her colleague Soreq (Hebrew University) to organize a symposium that addressed molecular mechanisms that underlie the biological embedding of stressful experiences with a focus on traumatic stress. Prof. Kirschbaum explained the ISPNE society's need for our symposium, saying that it would be preparatory for the ISPNE2020 meeting in Chicago where the society will begin to expand and focus on more mechanistic, molecular neuroscience approaches. ISPNE is comprised of both clinicians and basic scientists who study stress. This provided a compelling opportunity to apply for funds for the symposium from ISN and to advertise ISN at ISPNE2019. As described below Sokolowski organized our interdisciplinary international symposium with four presenters—two senior researchers (Marla Sokolowski and Hermona Soreq) who acted as chairs and two more junior researchers [Brian Dias (Emory University, US., and Nadine Provencal (Simon Fraser University, Canada)]. Prof. Kirschbaum acted as the discussant for the symposium. The symposium was extremely well received. Prof Kirschbaum and others found the presentations highly compelling. Prof. Kirschbaum told the attendees that “the molecular approaches to adversity discussed in our symposium are just what ISPNE clinicians and researchers should incorporate into their thinking and research.” The symposium generated much excitement and discussions from basic scientists and clinicians around two topics in particular. The first was transgenerational inheritance (Brian Dias’s talk). The second area of excitement was about data that suggests that epigenetic marks may poise the genome for future traumatic stresses (Nadine Provencal’s talk). The audience was also inspired by Sokolowski’s primer on epigenetic

mechanisms and her and Soreq's history of research on genetics and epigenetic modification of behavior and traumatic stress, respectively. Many researchers, including for example, Profs Solomon Israel, Carmen Sandi, Jonathan Schafer, Larry Young mentioned that they enjoyed our symposium. A consequence of our ISN sponsored symposium is that the ISPNE leaders asked Hermona Soreq to propose a satellite meeting to precede their forthcoming conference (ISPNE2020) in Chicago, where the principles of molecular neuroscience will be presented for young ISPNE members. This invitation is indicative of our highly successful ISN funded symposium at ISPNE2019, further detailed below.

**5. A short description of the highlights of this symposium:**

During this symposium, the speakers presented their most recent findings of the enigmatic link between trauma and steroid hormones metabolism, by highlighting the joint involvement of several molecular steps along the pathway for gene expression and biosynthetic processes. In the first talk, Marla Sokolowski discussed the importance of gene-environment interplay and the consideration of multiple epigenetic mechanisms in the biological embedding of experience. These include DNA methylation, histone modifications, and microRNAs. She also spoke about how genetic predispositions can act to influence epigenetic modifications bringing a biological perspective to the question of biological embedding of trauma. Hermona Soreq focused on the causal involvement of microRNA regulators in the severity of traumatic syndromes and in the regulation by steroid hormones of brain activities. Special focus was devoted to the role of genetics, in particular, single nucleotide polymorphisms (SNPs), in the non-translated region of target genes of such microRNAs; with the message that such SNPs, alone or in interacting genomic pairs may operate as co-modulators of consequent anxiety disorders. Brian Dias eloquently discussed how experiences of adversity could be trans-generationally inherited. His research uses animal models with translation to observations of multigenerational inheritance of stress in humans. Nadine Provencal combined information from stress biology, genetics, gene expression, epigenetics, and the neuroscience of stress responses to address psychiatric disorders related to trauma. The data she presented was particularly exciting as it demonstrated that during an initial stressful experience, DNA methylation primes or poises the genome for future stressful experiences which results in heightened responses of the glucocorticoid pathway. These new data fit the idea that epigenetic mechanisms such as DNA methylation may, within the life time of the individual, reflect an individual's history of trauma. Together, the findings discussed may open new avenues for the development of personalized and targeted therapies based, for example, on specific-designed oligonucleotides targeted at genomic regulators of steroid hormones synthesis. The symposium ended with a very lively question and answer period, which opened up many avenues for future discussion.

**6. Number of people attending the symposium:** ISPNE is a relatively small, focused meeting. There were concurrent symposia sessions. Approximately 60 people came to our symposium.

7. **Travel subsidies for the speakers of the ISN symposium and budget:**

We were generously allocated \$6,000 USD for our ISN funded symposium in ISPNE2019. The funding allocations are explained below, along with the total cost of the meeting for each speaker. Funding allocations were determined by Prof. Sokolowski according to career stage and distance traveled to the Milan meeting. The budget used for each speaker is specified separately below.

**Symposium Speakers and Budget.**

**Hermona Soreq** (Hebrew University, Israel)

*Allocation from ISN fund: \$700 USD.*

Flight: \$699.99

Meeting Registration: \$625

Hotel: 1198.43- paid from personal sources

Total: \$2523.42

**Marla Sokolowski** (University of Toronto, Canada).

*Allocation from ISN funds: \$1800*

Flight: \$1041.44

Meeting Registration: \$625

Hotel: \$1198.43

Total: \$2864.87

**Brian Dias** (Emory University, US):

*Allocation from ISN funds \$2,000 USD.*

Total cost of the meeting in USD.

Flights- \$1,470

Meeting Registration- \$895

Hotel- \$348

*Total: \$2713*

**Nadine Provencal** (Simon Fraser University, Vancouver BC, Canada):

*Allocation from ISN funds \$2,000 USD.*

Total cost of the meeting in USD.

Fights: \$1853.14

Meeting Registration \$895

Hotel: \$353.28

*Total: \$3101.42*