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LVIII Annual Meeting of the Argentine Society for Biochemistry and Molecular Biology Research

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PROGRAM AT A GLANCE

	Tuesday 8th	**Wednesday 9th**	**Thursday 10th**	**Friday 11th**
8:30 - 10:30		**Oral Communications** "Sala Magna" Microbiology "Sala Plumerillo" Plants "Sala Horcones" Lipids - Neurosciences	**Oral Communications** "Sala Magna" Plants "Sala Plumerillo" Microbiology "Sala Horcones" Cell Biology	**Oral Communications** "Sala Magna" Cell Biology "Sala Plumerillo" Plants - Biotechnology "Sala Horcones" Signal Transduction – Enzymes
10:30 – 11:00		*"Sala Magna"* Round Table Surf your career Coffee break	Coffee break	Coffee break
11:00 - 12:30		*"Sala Magna"* Plenary Lecture **Dr. Ernesto Podesta**	*"Sala Magna"* Plenary Lecture **Dr. Mario Feldman**	*"Sala Magna"* Plenary Lecture "Cono Sur" **Dr. Rodrigo Gutierrez**
12:30 - 14:30	Registration	Free time for lunch	Free time for lunch	Free time for lunch
14:30 - 16:30		**Symposium** "Sala Magna" Signal Transduction "Sala Plumerillo" Plants "Sala Horcones" Young Investigators	**Symposium** "Sala Magna" Lipids "Sala Plumerillo" Microbiology "Sala Horcones" Young Investigators	**Symposium** "Sala Magna" Cell Biology "Sala Plumerillo" Plants "Sala Horcones" Short Plenary Lectures
16:30 – 17:00		Coffee break	Coffee break	Coffee break
17:00 – 19:00	"Sala Magna" *Opening Ceremony* *Plenary Lecture Alberto Sols.* **Dra. Isabel Varela Nieto**	POSTERS (Central Hall)	POSTERS (Central Hall)	POSTERS (Central Hall)
19:00 - 20:30	"Sala Magna" Plenary Lecture **Dr. Craig Roy**	"Sala Magna" Plenary Lecture Hector Torres **Dra. Ana Belén Elgoyhen**	"Sala Magna" Plenary Lecture Ranwel Caputto **Dra. Alejandra del Carmen Alonso**	"Sala Magna" Plenary Lecture **Dr Maximiliano Gutierrez**
20:30 22:00	Welcome Cocktail *Central Hall*		SAIB Society Annual Meeting	Awards presentation and Closing Ceremony

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LI-01

THE PAIR CERAMIDE-1-PHOSPHATE/CERAMIDE KINASE REGULATES INTRACELLULAR CALCIUM CONCENTRATION DURING SPERM EXOCYTOSIS

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Before fertilization, spermatozoa must undergo calcium-regulated acrosome exocytosis in response to physiological stimuli such as progesterone and zona pellucida. Our laboratory has elucidated the signaling cascades accomplished by different sphingolipids during human sperm exocytosis. Recently, we established that ceramide increases intracellular calcium by activating different channels and stimulating sperm exocytosis. However, whether ceramide induces exocytosis on its own, activation of the CerK/C1P pathway, or both is still an unsolved issue. Here, by using functional assays, we demonstrate that C1P addition induces exocytosis in intact, capacitated human sperm. Real-time imaging in single-cell and calcium measurements in sperm population show that C1P needs extracellular calcium to induce intracellular calcium increase. The sphingolipid triggers cation-influx through Catsper, VOC, and SOC channels. However, requires calcium efflux from internal stores through IP3R and RyR to achieve sperm secretion. For the first time, we report the presence of the ceramide kinase (CerK) in spermatozoa, the enzyme that catalyzes C1P synthesis. Furthermore, CerK exhibited calcium-stimulated enzymatic activity during sperm secretion. Exocytosis assays using a CerK inhibitor demonstrate that ceramide induces sperm exocytosis, partly due to C1P synthesis. Importantly, progesterone requires C1P to trigger the acrosome exocytosis. This is the first report, implicating the bioactive sphingolipid C1P in the physiological pathway of the sperm acrosome reaction.

LI-02

THE BIOSYNTHESIS OF SPHINGOLIPIDS WITH VERY-LONG-CHAIN PUFA IS ENHANCED BY TESTOSTERONE IN SPERMATOGENIC CELLS

Santiago Valtierra, Florencia Ximena; Paternolli, Aldana; Oresti, Gerardo Martín
INIBIBB, CONICET-UNS y Dpto. Biología, Bioquímica y Farmacia, UNS, Bahía Blanca, Argentina.

Ceramide (Cer), sphingomyelin (SM), glucosylCer (GlcCer), and complex glycosphingolipid species with very-long-chain PUFA (VLCPUFA), in nonhydroxy (n-V) and 2-hydroxy (h-V) forms, characterize the spermatogenic cell lipidome in rodents. The h-V/n-V ratio increases with differentiation from pachytene spermatocytes (PtS) to round spermatids (RS) and further stages. We first established that PtS and RS in culture are able to synthesize de novo Cer, SM, and GlcCer autonomously, and then studied the influence on such synthesis of testosterone, alone and after adding the medium conditioned by Sertoli cells (SCM). Using [^{3}H]16:0 as precursor, the formation of [^{3}H]Cer and [^{3}H]SM species with VLCPUFA was quite active, especially n-V SM. The label was mostly in the sphingoid base, 16:0, and a part was in [^{3}H]VLCPUFA. *De novo* synthesis inhibition affected distinctly the [^{3}H]SM/[^{3}H]Cer ratios in PtS and RS. The genes CerS3, SMS1, SMS2, and GCS diverged in expression with differentiation. Testosterone stimulated the de novo biosynthesis of n-V [^{3}H]SM in PtS and increased the [^{3}H]Cer/[^{3}H]SM labeling ratio in RS. Supplementation of testosterone-containing medium with the SCM robustly stimulated these reactions. Testosterone also stimulated the expression of two fatty acid elongases and fatty acid 2-hydroxylase. We speculate that germ cells must have a form of receptor to testosterone. The SCM effect is consistent with one of the known secretory products from Sertoli cells, most likely the androgen-binding protein, facilitating the availability of the hormone to germ cells, but we cannot rule out other molecules or even structures (e.g. exosomes) that might be present in the SCM. Supported by SGCyT UNS-PGI-UNS [24/B272 to GMO], FONCyT, [PICT2017-2535, PICT2020-02056 to GMO].

LI-03