

# Accessing the testicular germ cell secretome with "combinatorial omics": a major breakthrough in deciphering the germ cell-sertoli cell dialogue

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#### **Abstract's Content View**

Back to Abstract list

Print

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ACCESSING THE TESTICULAR GERM CELL SECRETOME WITH "COMBINATORIAL OMICS": A MAJOR BREAKTHROUGH IN DECIPHERING THE GERM CELL-SERTOLI CELL DIALOGUE

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Background: The complex structural organization of the mammalian testis creates particular difficulties for studying its organization, function, and regulation. Spermatogenesis that takes place in the seminiferous tubules is an intricate and specialized process whose control incorporates juxtacrine, paracrine and endocrine factor information, and is conditioned by the successive activation and/or repression of thousands of genes and proteins.

It has been yet established that germ cells modulate somatic Sertoli cell function via diffusible proteins. However, the impossibility to maintain germ cells in vitro makes it difficult to study their secretome. Interestingly, within the seminiferous tubules, germ cells and Sertoli cells are surrounded by the testicular fluid (TF), which probably contains factors involved in the germ cell-somatic cell crosstalk.

Methods: An innovative approach combining TF collection by microsurgery, fluid pre-fractionation, shotgun mass spectrometry and "combinatorial omics" was used to decipher and mine the rat and ram testicular fluids. Over 1400 non-redundant proteins were identified and their presence in TF was further correlated with the transcriptome of isolated testicular cells so as to confirm their cellular origin.

Results: Secreted proteins were identified and scored using the Secreted Protein Database. We demonstrate here that a subset of proteins is actively secreted by germ cells into the TF. Potential known partners of these germ cell-secreted proteins were proposed using protein network data available via certified public repositories and Sertoli cell proteins expressed on plasma membranes were selected for further studies. Coexpression of potential germ cell-Sertoli cell protein partners was validated by immunohistochemistry.

Conclusion: Here we identify novel interacting protein partners involved in the germ cell-Sertoli cell crosstalk. We also demonstrate that "combinatorial omics" is a powerful approach to characterize the testicular germ cell secretome that was so far technically inaccessible.

Disclosure of Interest: None Declared

Back to Abstract list

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### **Posters**

- P1334 HIGHER LEVELS OF PROTEIN IDENTIFICATION USING CHIP BASED NANOLC COLUMNS Eike Loge
- P1335 INCREASED THROUGHPUT IN PROTEOMIC NANO LC-MS ANALYSIS USING LC CHIPS WITH TWO-COLUMN SWITCHING Eike Loge
- P1336 REVEALING DYNAMIC PROTEIN KINASE COMPLEXES VIA CROSSLINKING, SDS-PAGE AND MASS SPECTROMETRY

  Elena Rudashevskaya
- P1337 FUNCTIONAL CHARACTERIZATION OF HMGA/NPM INTERACTION Elisa Maurizio
- P1338 SYSTEMS ANALYSIS OF BUDDING YEAST FERMENTATION AND RESPIRATION Emmanuelle Becker
- P1339 ACCESSING THE TESTICULAR GERM CELL SECRETOME WITH "COMBINATORIAL OMICS": A MAJOR BREAKTHROUGH IN DECIPHERING THE GERM CELL-SERTOLI CELL DIALOGUE Emmanuelle Com
- P1340 QUANTITATIVE PROTEOME PROFILING COMPARISON OF LACTOFERRIN TREATED AND DELTA-LACTOFERRIN EXPRESSING MDAMB-231 CELLS USING A SILAC APPROACH Esthelle Hoedt
- P1341 INTERACTOME OF AMYLOIDOGENIC IMMUNOGLOBULIN LIGHT CHAINS (LC) IN CARDIAC CELLS Francesca Lavatelli
- P1342 PHOSPHORYLATION OF S158 OF PROTEASOME BETA1 SUBUNIT REGULATES ITS ROLES IN DEGRADATION OF BOTH NON-UBIQUITYLATED AND UBIQUITYLATED P27KIP1
  Fugiang Yuan
- P1343 THE USE OF PROTEOMICS TO ELUCIDATE THE TOLEROGENIC HUMAN DENDRITIC CELL PHENOTYPE INDUCED BY 1,25-DIHYDROXYVITAMIN D3 AND DEXAMETHASONE Gabriela Bomfim Ferreira
- P1345 LARGE SCALE STUDY OF SUB CELLULARLY DISTINCT PROTEOMIC AND PHOSPHOPROTEOMIC DATA DURING POLARIZED CELL MIGRATION

  Georgios Fengos
- P1346 ANALYSIS OF HUMAN EMBRYONIC STEM CELLS "DEPOSITOME"
  Gilles Lajoie
- P1347 CLICK CHEMISTRY-BASED CAPTURING OF CROSS-LINKED PEPTIDES FOR COMPREHENSIVE AND

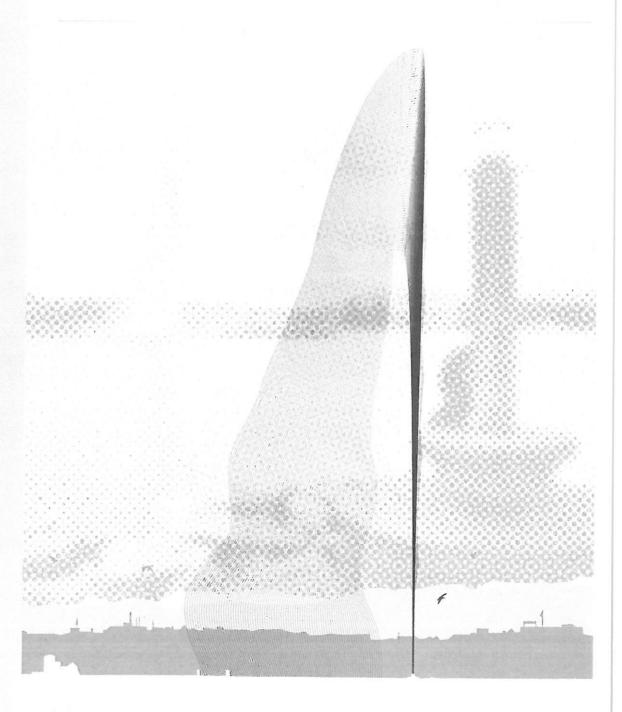
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## Translational Proteomics





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