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Master Degree in Medical
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Tatiana Guzzo & Teresa Fabiola Miscioscia

*Organic Chemistry Unit and NMR Platform
Colosseum*

Researchers in Organic Synthesis and
Medicinal Chemistry

**Combinatorial Chemistry Centre of
Technology C4T S.C.a.r.l Roma (RM)**

Company mission: Development of
Drug Discovery project. Competences in
Medicinal Chemistry and Organic
Synthesis, the activities cover different
sectors of chemical research: design and
synthesis of original scaffolds;
development/ optimization of new
synthesis methods; innovative strategies
for patent exemplification works.

Focus on Endocannabinoid system (ECS) and varicocele: innovative and predictive markers of fertility towards improving diagnostic and therapeutic approach in treating of male infertility

- The aim of the research is to identify, through a training course on *in silico* studies, system biology, biological and chemical application innovative and predictive molecular markers of fertility by analysing the molecules of Endocannabinoid System (ECS), with the future prospect of creating a diagnostic device to be placed on the market. Therefore, in this study, an animal model (rat) was used in which the varicocele was experimentally induced (Ministry of Health authorization n° 301/2015-PR).

- The Research products will be enhanced through:
 - 1) dissemination initiatives (scientific publications, initiatives for communicating results to the general public, drafting and public discussion of the doctoral thesis),
 - 2) technology transfer activities (patent, development of prototypes and / or production of medical devices, activation of academic / university spin-offs).



- Co-projecting: C4T has co-projected the research and training conducted during the PhD programme by providing the structure, several computational chemical software and solid skills in Medicinal Chemistry and Organic Synthesis to study the endocannabinoid system (ECS).
- Training: C4T followed and offered to the PhD student a constant training to improve her abilities on the company reality and computational methods, especially on the use of software for the molecular docking.
- Research: C4T has contributed to the research project by evaluating several agonist of CB2 receptor to improve the knowledge of the chemical interaction and mimic the biological events. This collaboration is still in progress and could offer the opportunity to transfer this notable research into innovative products to the scientific community, offering help in treatment of varicocele and consequently increasing the quality of patients' life and in reproductive medicine.
- Technological transfer: The company intends to develop, in a long-term vision, some molecules as agonist of CB2 receptors with the collaboration of UNiTe and University of Leiden.



Publications

- **Perruzza D**, Bernabò N, Rapino C, Valbonetti L, Falanga I, Russo V, Mauro A, Berardinelli P, Stuppia L, Maccarrone M, Barboni B. *Artificial Neural Network to Predict Varicocele Impact on Male Fertility through Testicular Endocannabinoid Gene Expression Profiles*. [Biomed Res Int](#). 2018 Nov 13; 2018:3591086. eCollection 2018 DOI: 10.1155/2018/3591086





Scientific meeting

- Human Amniotic-Derived Stem Cell Transplantation in a Rat Varicocele Model”
Scientific Annual Meeting Society of reproductive investigator (SRI) 12-16 Marzo 2019
Paris, Poster presentation, Conference book (rif. T-258 pag.223)





1. **66th Annual meeting 2019 Award conference Society Reproductive Investigator (SRI);** Giorgio Pardi Foundation Awards for Junior Scientist as three best young worthy investigators coming from Italian Universities presented at the Award Ceremony during the SRI Annual Scientific Meeting