



UNICAMILLUS

Single-Cycle Degree Course in
Medicine and Surgery

ACADEMIC YEAR 2023/2024

**IN VITRO STUDY OF THE ANTIOXIDANT PROPERTIES
OF PRP ON CELLS FROM PEDIATRIC PATIENTS
WITH CRYPTORCHIDISM**

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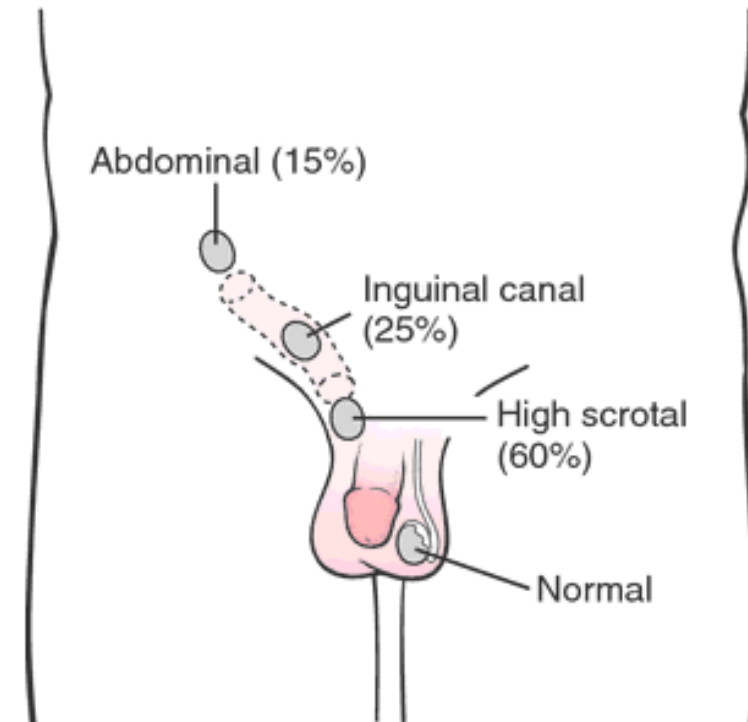
Co-Supervisor Prof.ssa Ilaria Dando

Introduction

In 50% of cases, infertility is attributable to male causes.

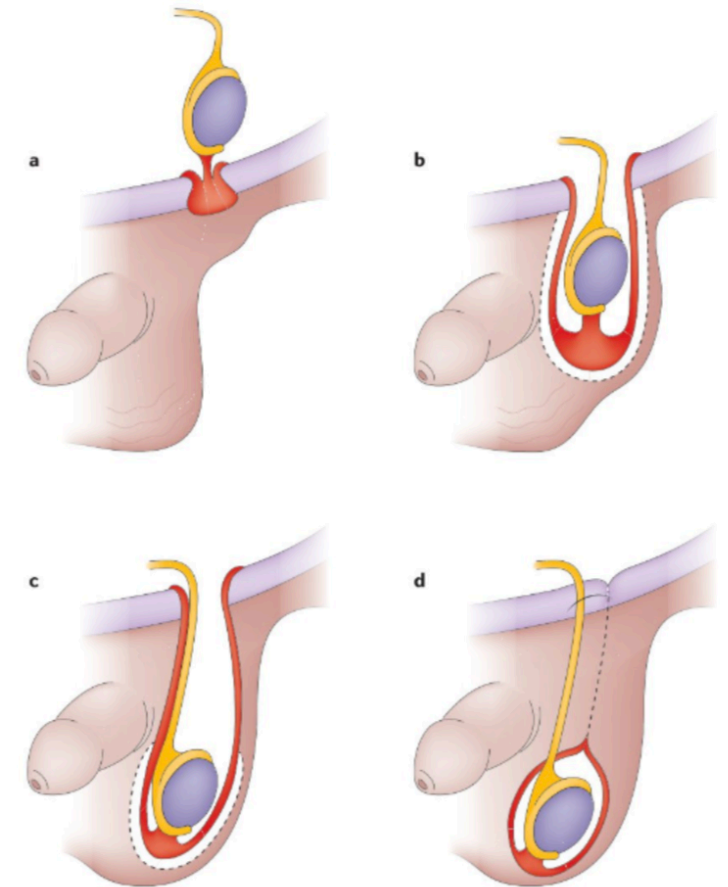
Our study is based on one specific pathology that is **Cryptorchidism**.

- Cryptorchidism is defined as the retention of the testicle in the inguinal canal or abdomen due to failure to descend in the prenatal period.
- Increase of temperature show the correlation with an increase in oxidative stress determining an alteration of spermatogonia's functionality.



Introduction

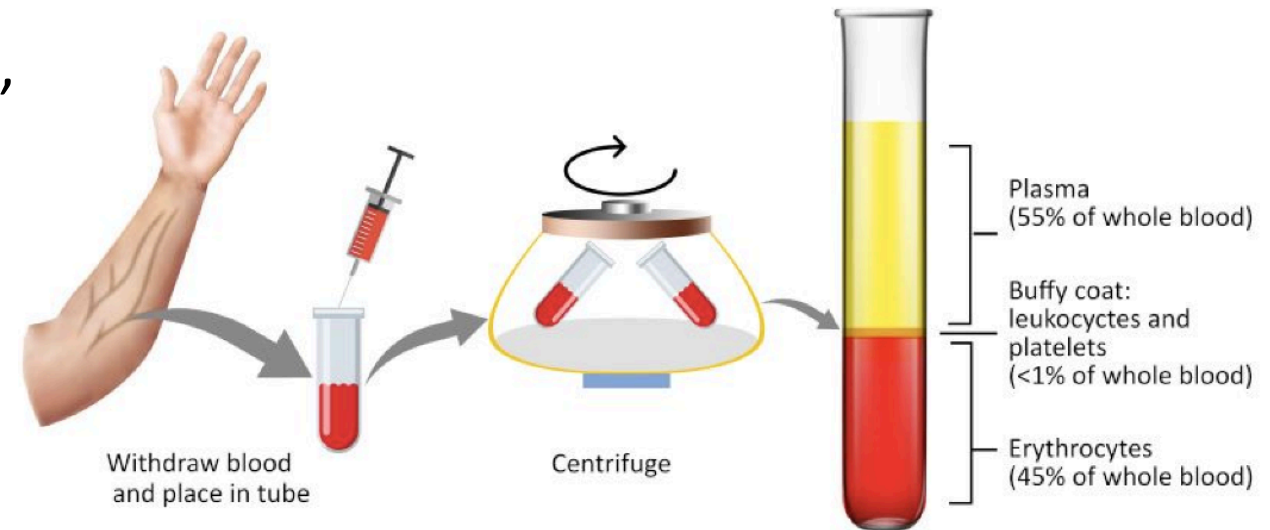
- The expression and role of the androgen receptor (AR) in gubernaculum testis have been deeply investigated during testicular descent alongside the demonstration that AR signaling in gubernacular cells is required for its eversion and outgrowth



Introduction

PRP (Platelet Rich Plasma) is a biological compound from blood.

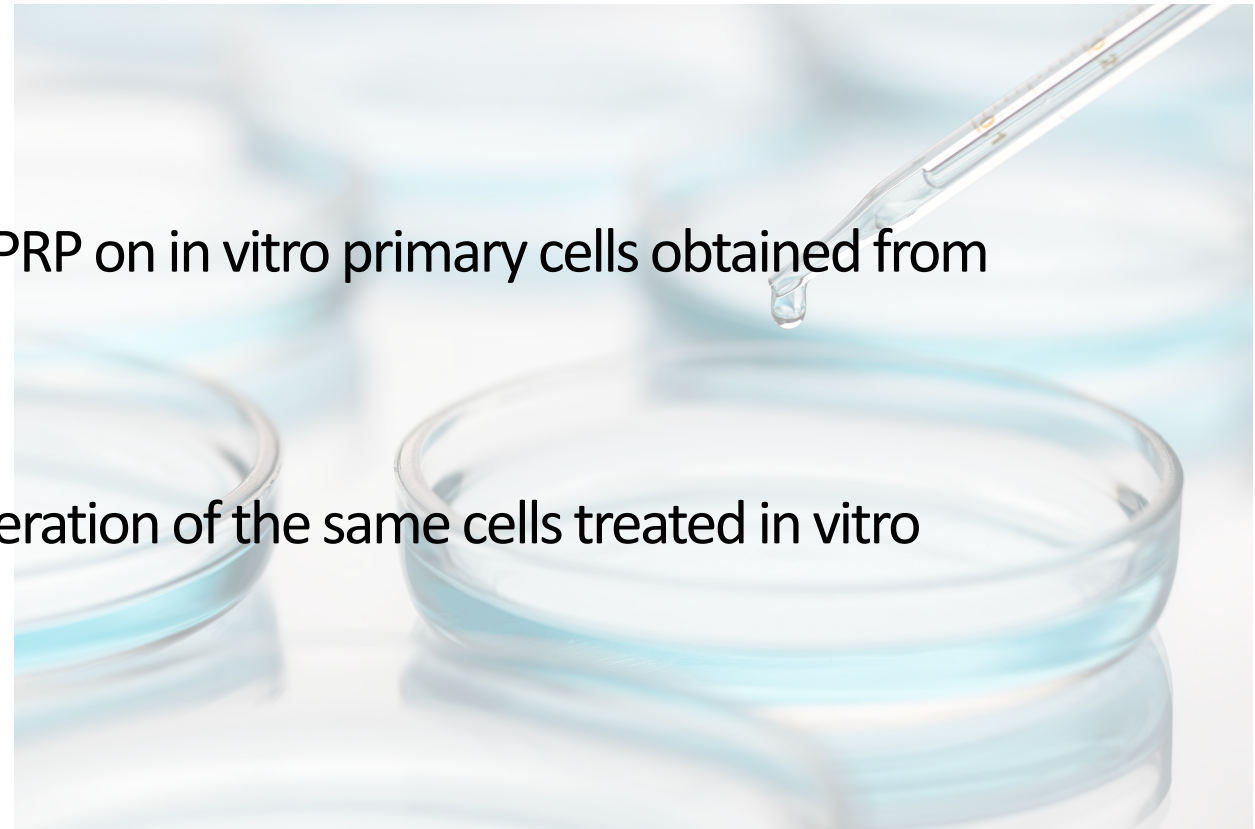
- Its application is thought in orthopedic, dermatological and dental fields.
- Antioxidant property is the principal effect tested in its application.



Aim of the study

The two objectives of our study are:

- Evaluation of the antioxidant properties of PRP on in vitro primary cells obtained from patients from cryptorchidism.
- Evaluation of the effect of PRP on the proliferation of the same cells treated in vitro



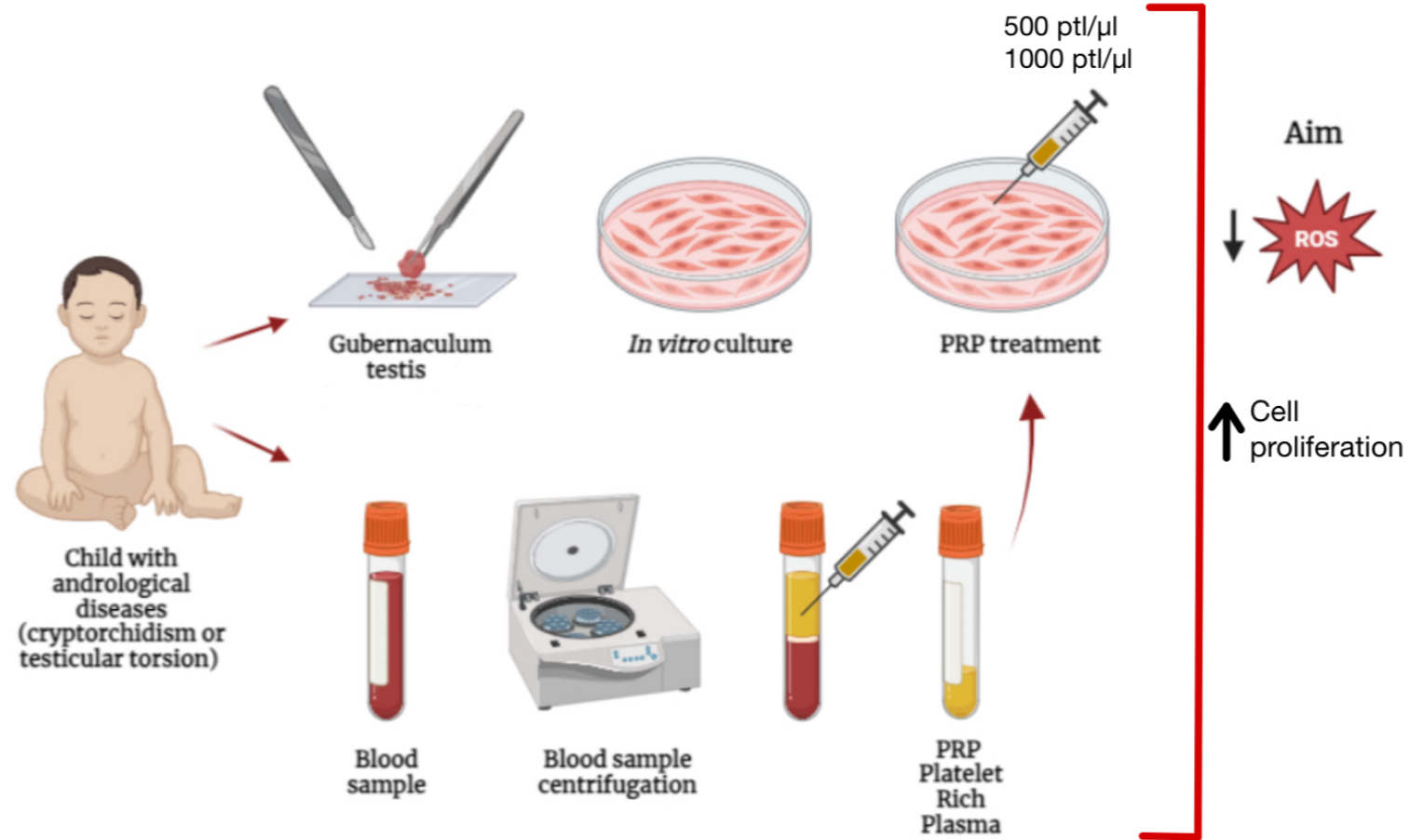
Methods

- Collection of data from four patients analyzing Gubernaculum tissue samples surgically removed during orchidopexy.

IDENTIFICATION	AGE	TISSUE	NOTES
#2	8 years	Gubernaculum	Left unilateral cryptorchidism
#20	24 months	Gubernaculum	Right unilateral cryptorchidism
#94	10 years	Gubernaculum	Recurrent bilateral cryptorchidism
#99	6 years	Gubernaculum	Unilateral cryptorchidism

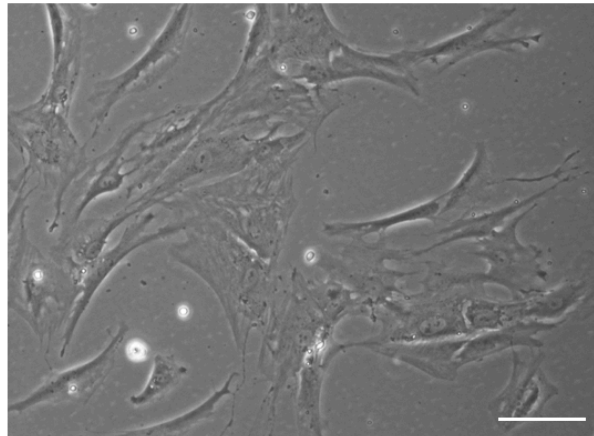
- Why the choice of Gubernaculum tissue?

Methods

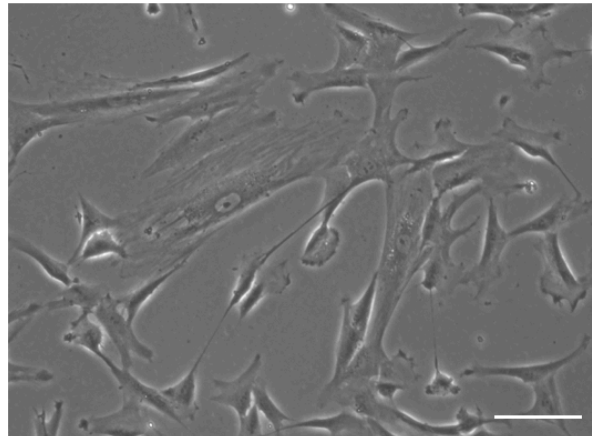


Results

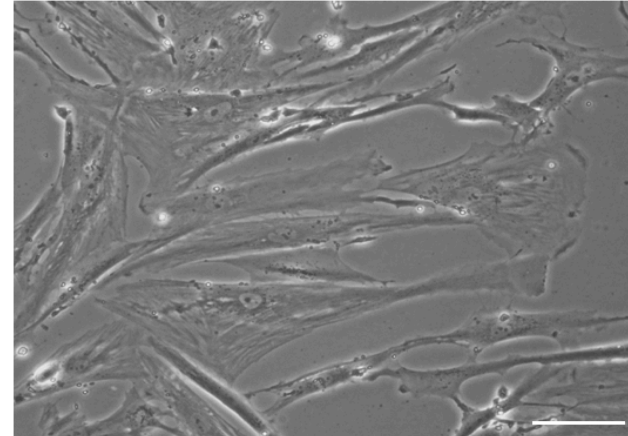
- In vitro Gubernacular biopsies obtained from 4 cryptorchid patients, presenting the typical heterogenic morphology of this tissue.



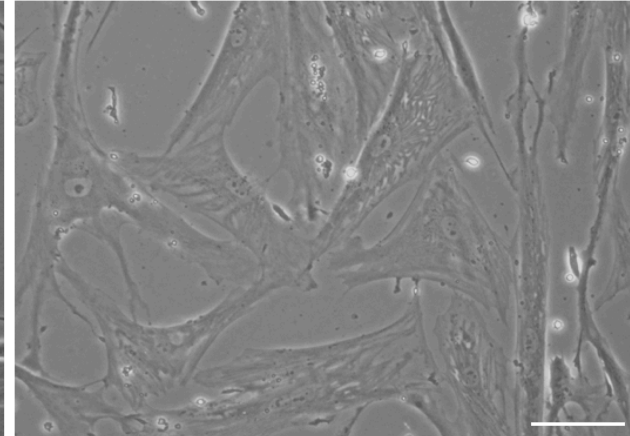
Patient #2



Patient #20



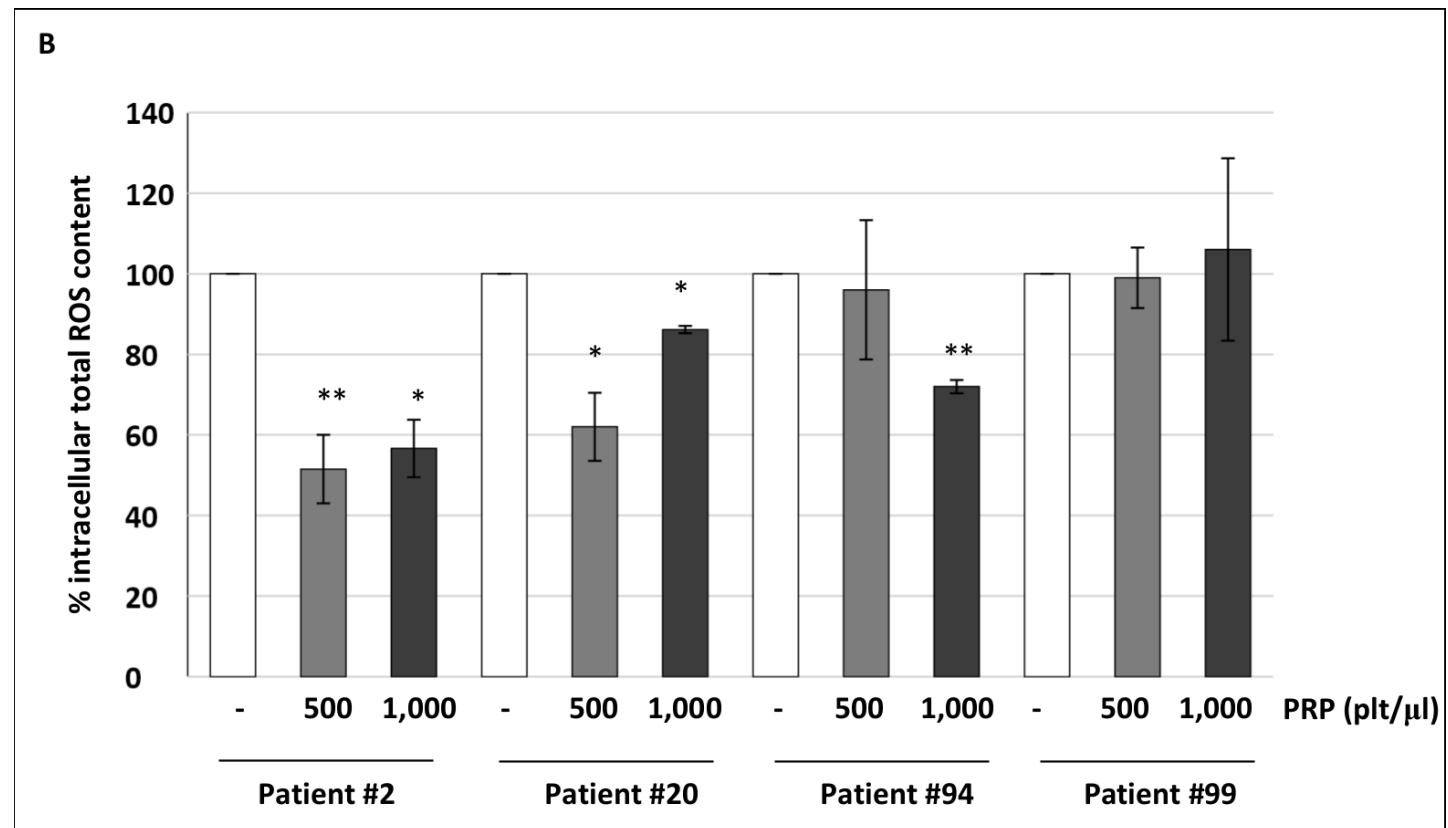
Patient #94



Patient #99

Results

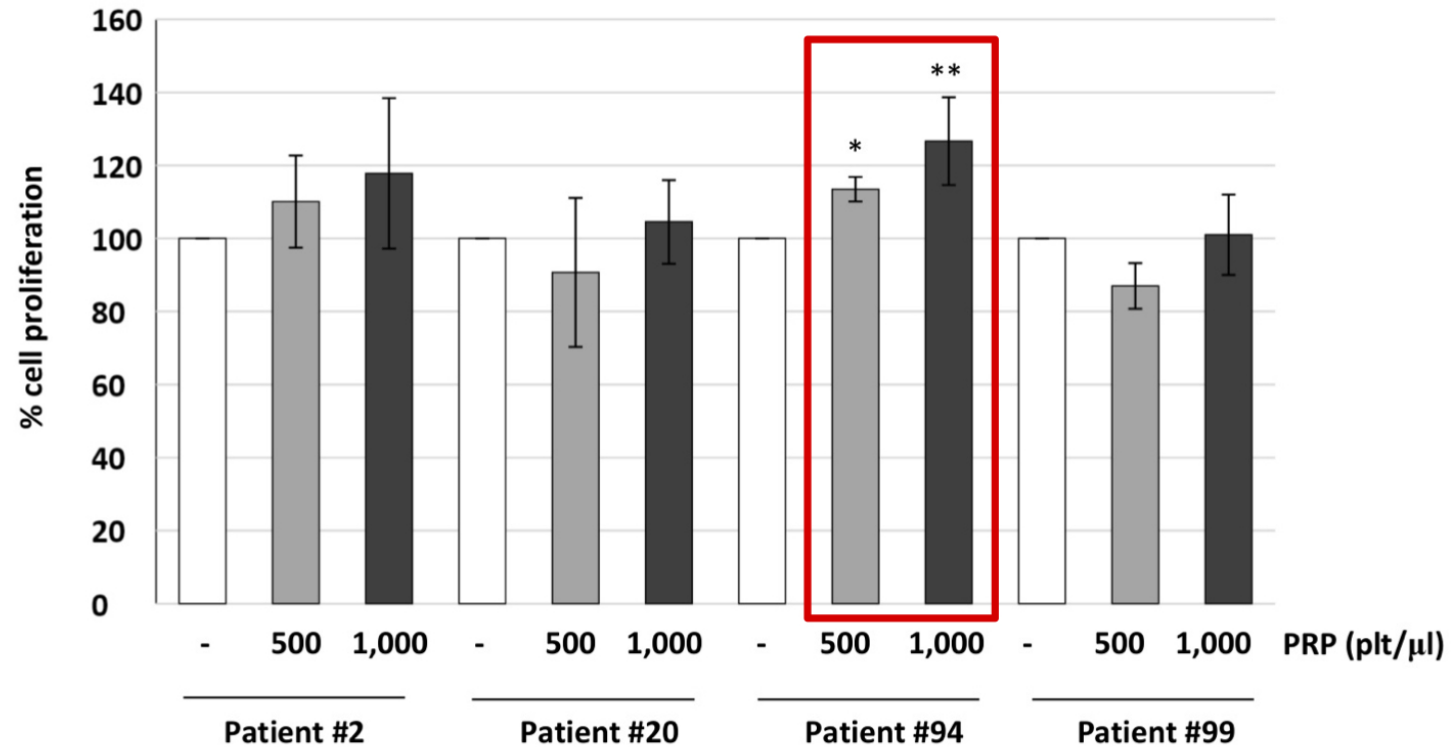
- PRP has antioxidant effect in a patient dependent manner



Results

- PRP has a pro-proliferative effect on cells derived from patient #94

A



Discussion

- PRP is implicated in the antioxidant response detoxifying ROS.
- Confirm in vitro of the PRP's action could, in the future, justify its use in clinical practice as an adjuvant treatment, following surgery.
- Different response may be due to patients themselves, to time or to concentration of treatment.

Discussion

The main limitations of this project are:

- Small number of patients
- Two dosage of PRP (500-1000 pti/ μ l)
- 24 hour of treatment



Conclusions

Our study demonstrated that in vitro administration of PRP results in a significant reduction in the oxidative state of testicular cells of patients affected by cryptorchidism.

This findings could open up new treatment perspectives as adjutant therapy, ensuring a better fertility outcome of patients.

The advantages are safety and inexpensiveness.

**THANK YOU
FOR YOUR ATTENTION!**

