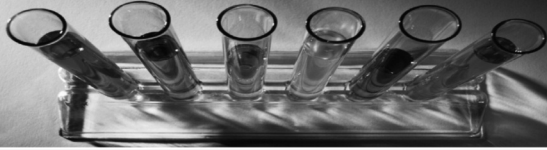


Immune Tolerance by TGF- β



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www.ajou.ac.kr



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1. Introduction

2. TGF- β in male reproduction

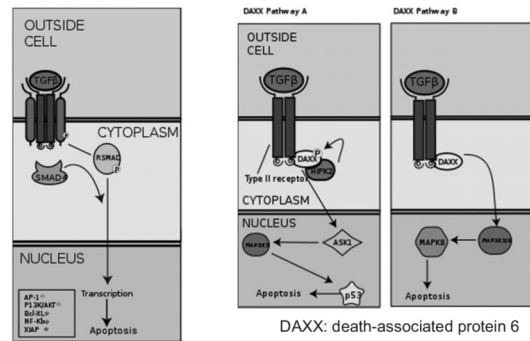
3. TGF- β in female reproduction

4. Discussion

Introduction

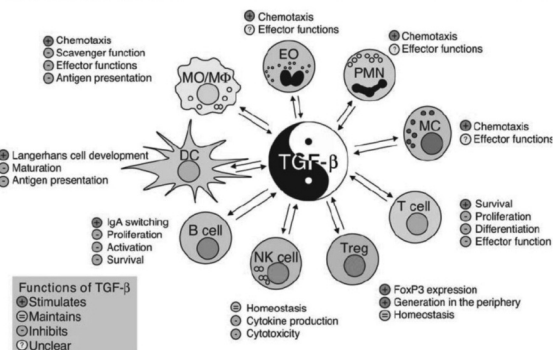
- ❖ Transforming growth factor beta (TGF- β) is a multifunctional cytokine belonging to the transforming growth factor superfamily.
- ❖ Four different isoforms (TGF- β 1 to 4, HGNC symbols TGFB1, TGFB2, TGFB3, TGFB4) and many other signaling proteins produced by all white blood cell lineages.
- ❖ Smads are a class of intracellular signaling proteins and transcription factors for the TGF- β family of signaling molecules.
- ❖ TGF- β induces apoptosis, or programmed cell death, in human lymphocytes and hepatocytes (DAXX pathway).

Introduction



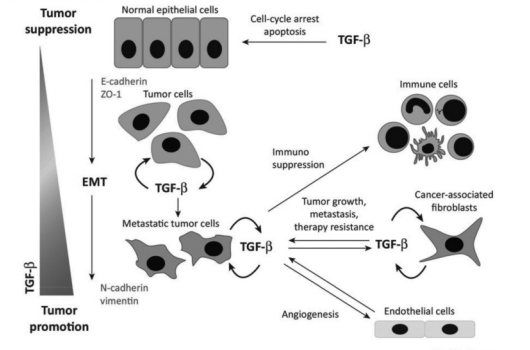
Ingman et al., 2005

Introduction

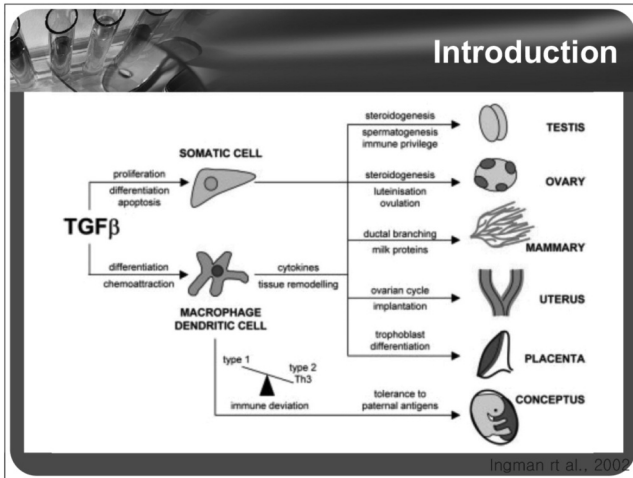


Li et al., 2006

Introduction



Trends in Cancer
Colak et al., 2016



TGF- β in male reproduction

- ❖ Testis function and spermatogenesis
 - TGF- β participates in the cell-cell communication responsible for appropriate development and prevention of premature onset of spermatogenesis and steroidogenesis.
 - TGF- β 3 inhibits expression of proteins mediating formation of tight junctions between Sertoli cells.
- ❖ TGF- β 1 stimulates collagen synthesis by smooth muscle cells from human corpora cavernosa in vitro might be interpreted to imply a role for TGF- β in promoting penile growth.
- ❖ TGF- β in regulating the development of male accessory sex organs.
 - TGF- β limits cell growth and proliferation

TGF- β in male reproduction

- ❖ Seminal plasma(SP)
 - The concentration of TGF- β in the SP is ~400 ng/mL; this value is several-fold higher than in the blood serum.
 - The TGF- β family includes three polypeptides, TGF- β 1, TGF- β 2 and TGF- β 3, all present in human. The TGF- β 1 is the most abundant TGF- β isoform detected in SP.
 - All three TGF β isoforms are present in very high concentrations in seminal fluid and are likely to be key mediators of the postcoital inflammatory response in women

TGF- β in male reproduction

J Assist Reprod Genet (2013) 30:907–911
DOI 10.1007/s10815-013-0033-y

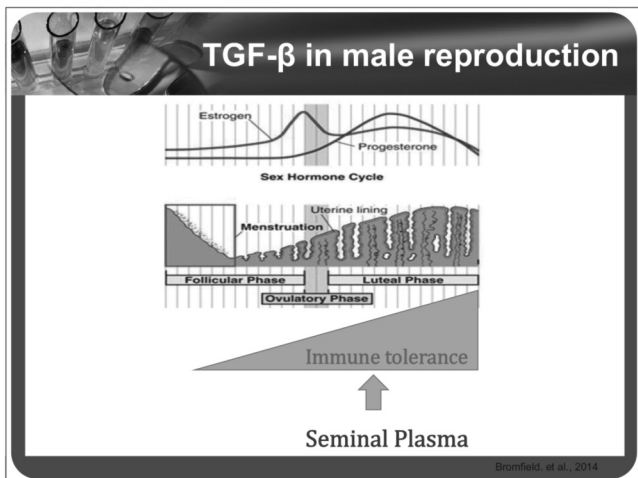
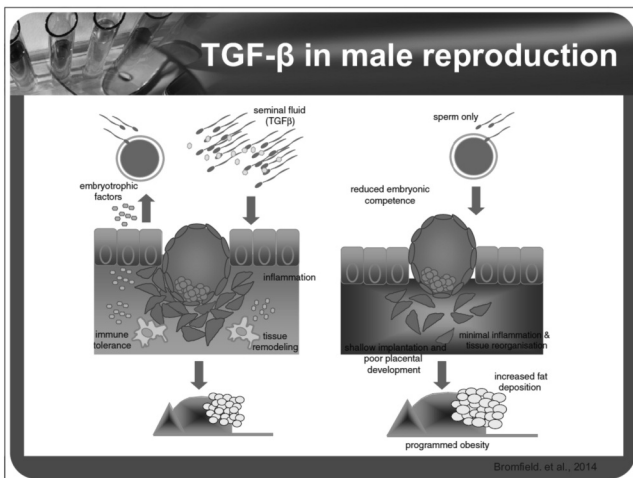
ASSISTED REPRODUCTION TECHNOLOGIES

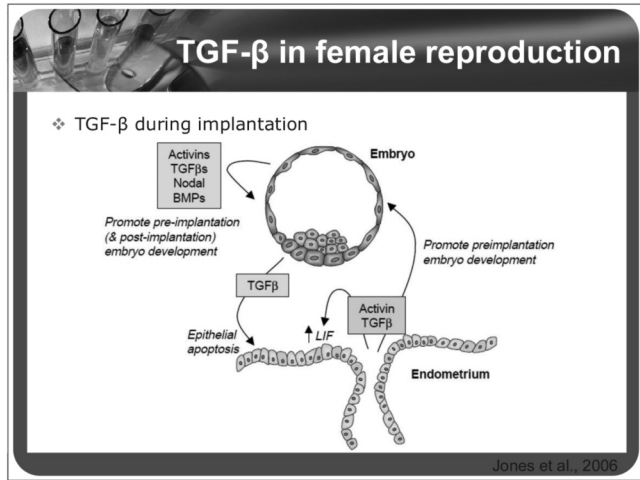
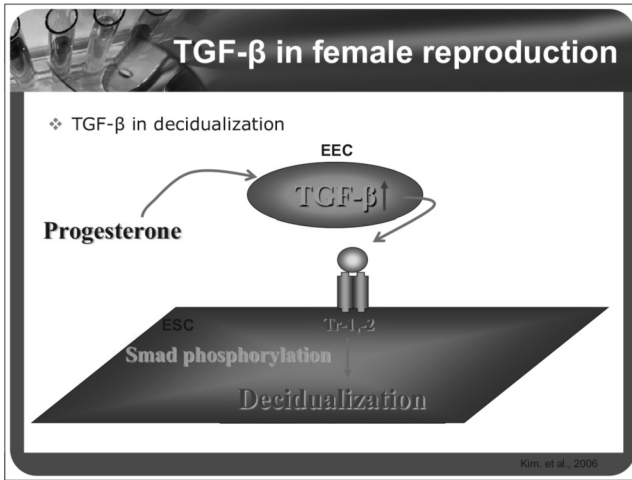
Effect of seminal plasma application to the vaginal vault in vitro fertilization or intracytoplasmic sperm injection treatment cycles—a double-blind, placebo-controlled, randomized study

S. Friedler • I. Ben-Ami • Y. Giladi • D. Strassburger • E. Kasterstein • B. Matalovsky • D. Komarovsky • O. Ben • R. Ben-David • A. Raziel

Table 2 Clinical outcome

	Control	SP	p
Clinical pregnancy rate	34/117=29.1 %	38/103=36.9 %	0.21
Early spontaneous abortion	8/34=23.5 %	5/38=13.1 %	0.25
Ongoing pregnancy rate	26/117=22.2 %	33/103=32.0 %	0.10
Implantation rate	42/248=16.9 %	48/224=21.4 %	0.71





TGF- β in female reproduction

❖ TGF- β in dNK cell

TGF β promotes conversion of CD16⁺ peripheral blood NK cells into CD16⁻ NK cells with similarities to decidual NK cells

Derin B. Keskin, David S. J. Allan, Basya Rybalov, Milena M. Andzel, Joel N. H. Stern, Hernan D. Kopcow, Louise A. Koopman, and Jack L. Strominger*

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