

# Bechara George Mfarrej

## ESR 8 Milan



- M.Sc. Molecular Biology in Beirut (2004)
- 2-year experience in Boston (2009-2011):
  - Basic science projects: transplant and pregnancy mouse models
  - Management of a clinical trial consortium's central lab
- 1-year experience in Munich (2012): ischemia-reperfusion mouse model
- Experience in murine fetomaternal tolerance and immune monitoring of renal transplant subjects
- Interest in tolerance mechanisms particularly those induced by T regulatory cells (Tregs) and their therapeutic potential



# Treg therapy in AID: from bench to mouse and then to humans

BENCH: identification and characterization of human and murine Tr1 cells

- Groux *et al.*, Nature 1997
- Gregori *et al.*, Blood 2010
- Gagliani *et al.*, Nat Med 2013

Characterization of Tr1 cells and FoxP3+ Treg cells in immune-mediated diseases

MOUSE: transplant tolerance mediated by Treg cells

- Battaglia *et al.*, Diabetes 2006
- Gagliani *et al.*, Diabetes 2010
- Gagliani *et al.*, PLoS One 2011
- Gagliani *et al.*, Am J Transplant 2013

- Definition of cells mediating Treg/Tr1 cell recruitment/generation and cytokine milieu
- Application to other autoimmune models

HUMAN: The One Study ([www.onestudy.org](http://www.onestudy.org)): clinical trial with donor-specific Tr1 cells for inducing tolerance after kidney transplantation

- Defining the role of different immunosuppression regimens on Tr1 cells in vivo: survival, proliferation, function, ...
- Characterization of graft-infiltrating cells

# Plan for next year

- Taking part in conferences and workshops:
  - EUREKA program
  - BSM 2013 (Basic Science Meeting of European Society for Organ Transplantation, Nov. , Paris): poster presentation
  - The One Study meetings
- Providing expertise in:
  - human/mouse Treg cells in healthy conditions and immune-mediated diseases:
  - ability to collect human samples: peripheral blood (adult and pediatric), pancreatic lymph nodes, kidney biopsies (post-transplant), spleen, pancreas-infiltrating cells, tonsils, ...
  - mouse models: autoimmune diabetes, islet transplantation, humanized mice
  - neutrophils in Type 1 diabetes
- Looking for expertise in:
  - in vivo migration
  - analyzing graft-infiltrating cells/microenvironment in human/mouse settings
  - Treg/APC interplay in vivo
  - other models of immune-mediated diseases to study Treg function and activity

