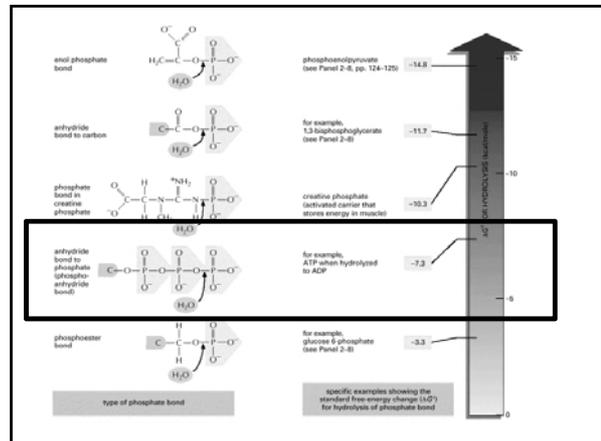
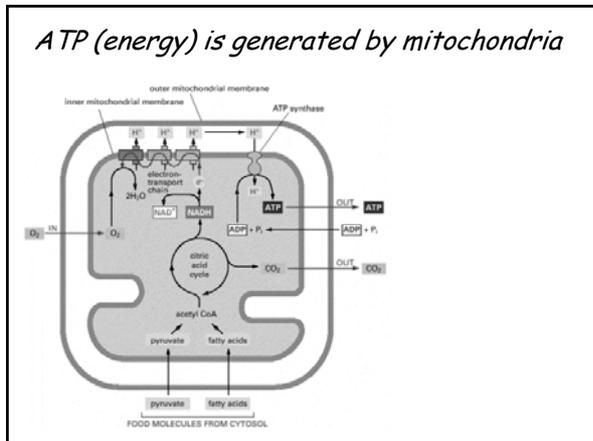


Reasons why a healthy egg is important:

1. Needs to support fertilization.
2. Undergoes meiosis I and II
3. Provides mRNA and proteins to support early embryo development
4. It provides all organelles to support embryo development.
5. It provides the source of all mitochondria in an individual

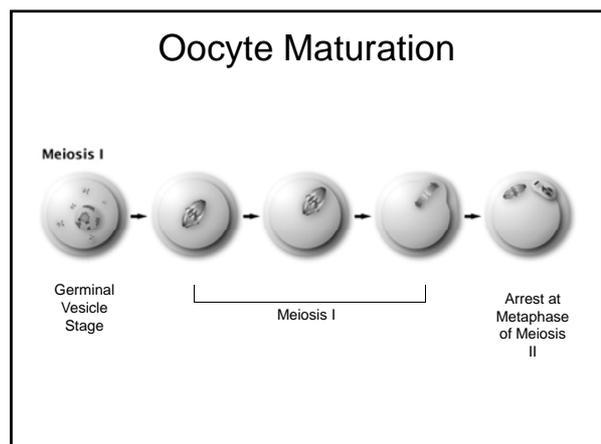
Mitochondria = Energy

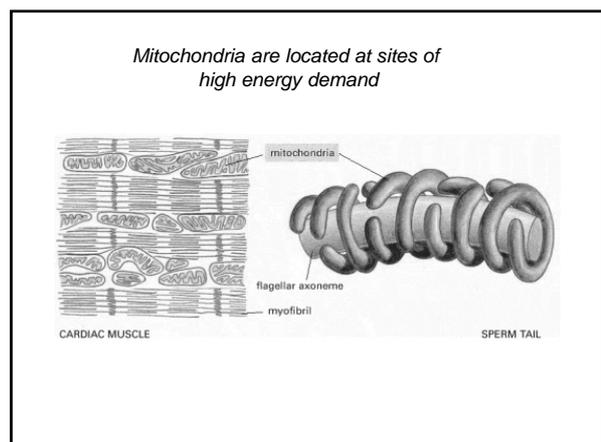
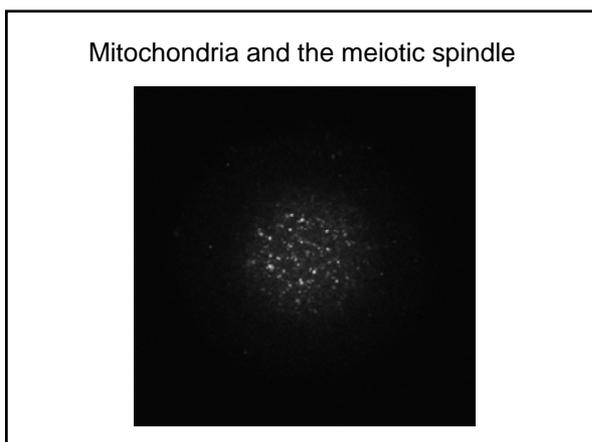
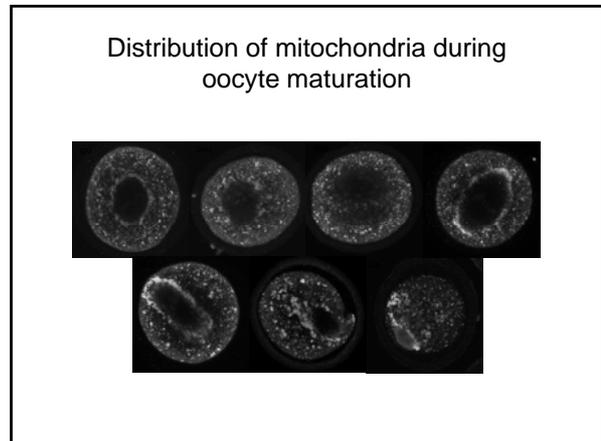
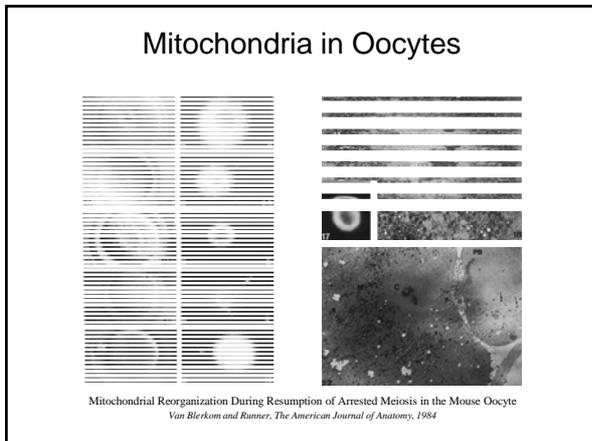


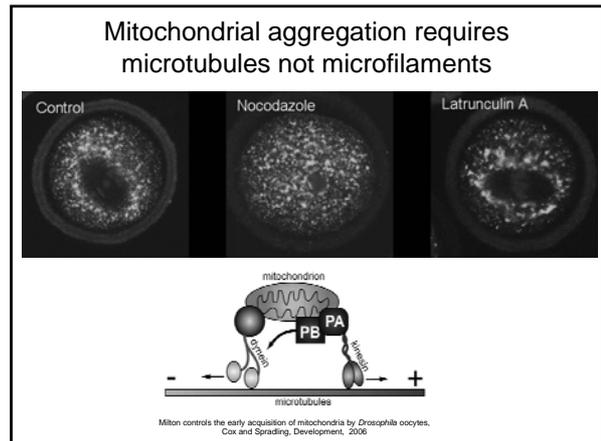
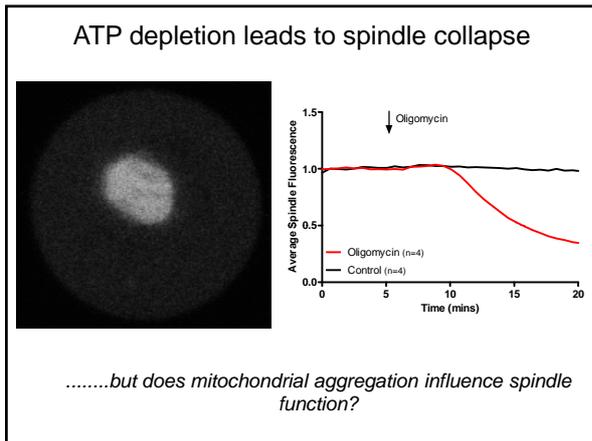
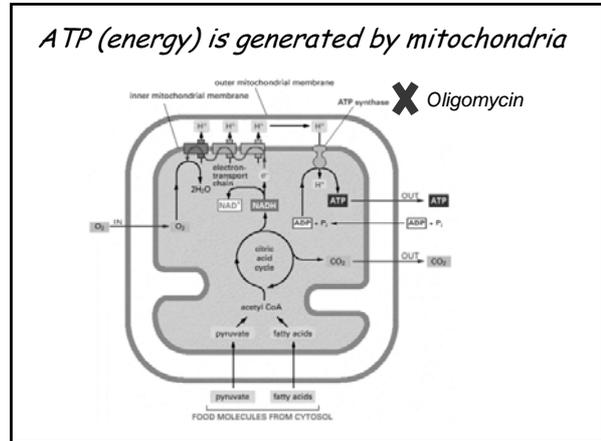
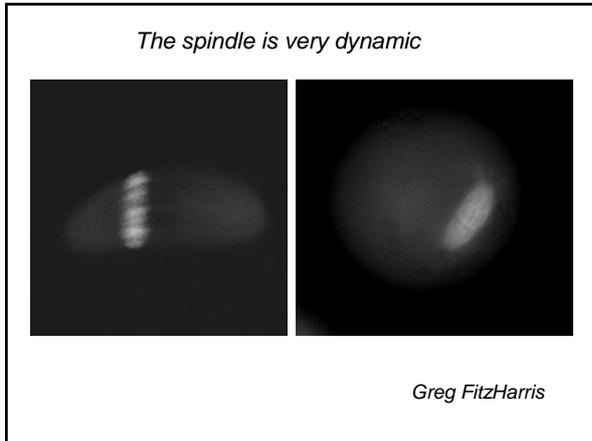
Mitochondria, ATP and the oocyte.

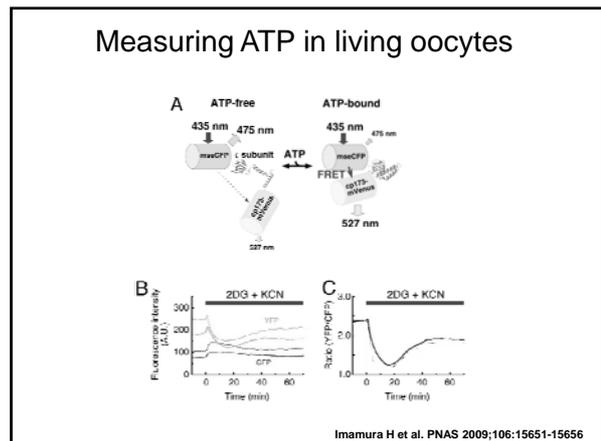
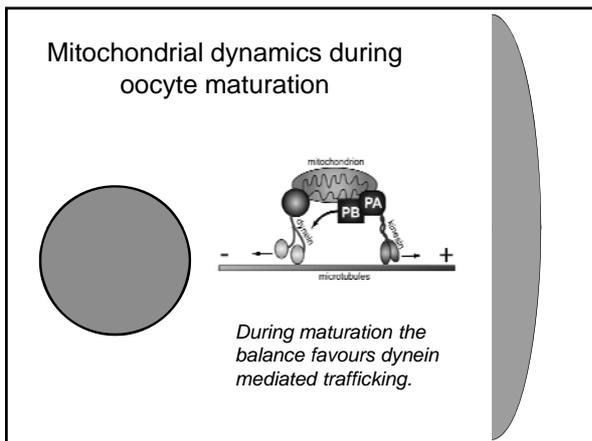
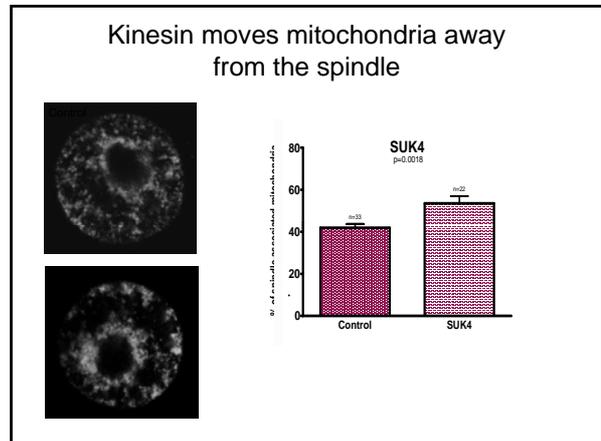
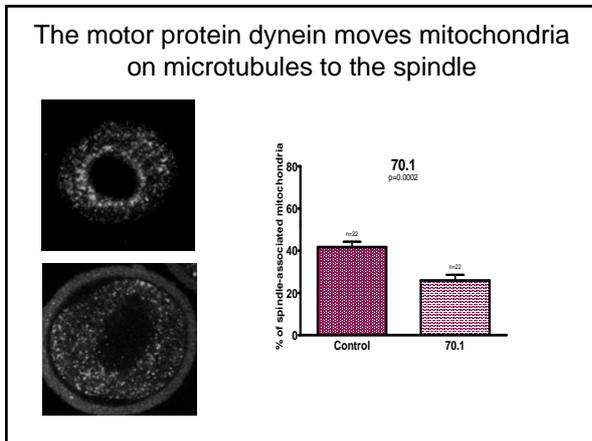
- Mitochondria provide the primary source of ATP for the oocyte
- Oocyte mitochondria expand from 10-100 in primordial follicles to hundreds of thousands in fully grown oocytes
- Mitochondrial dysfunction in the oocyte leads to developmental arrest
- Developmental competence appears to be related to mitochondrial function and ATP levels in the oocyte

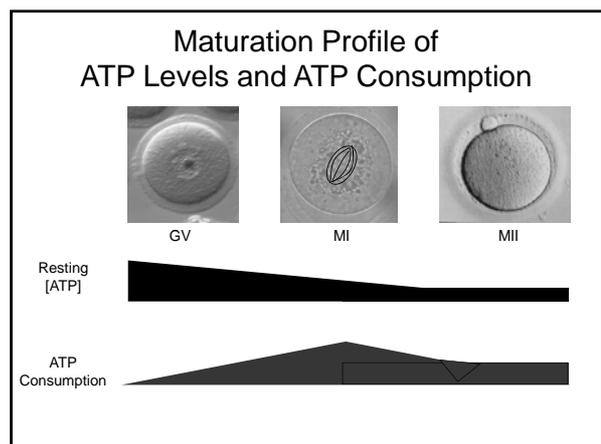
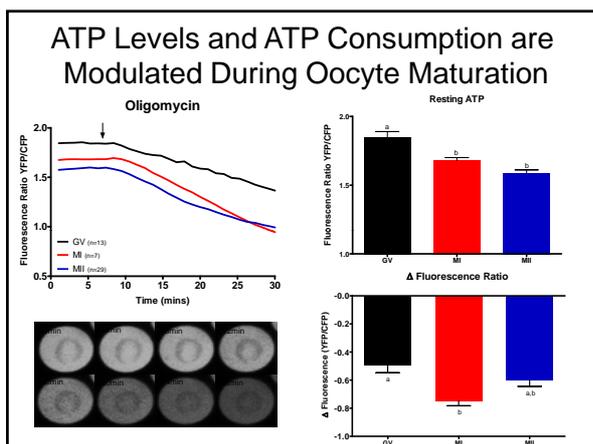
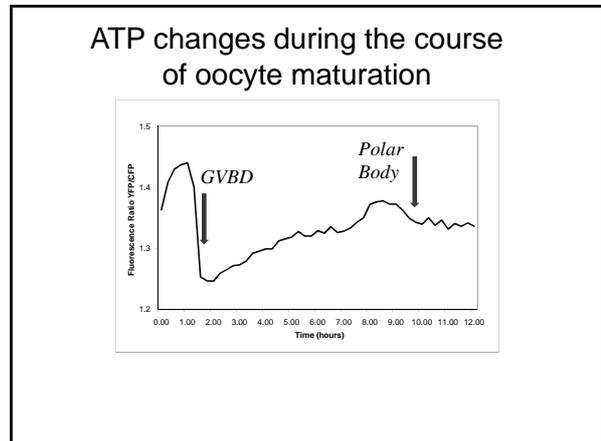
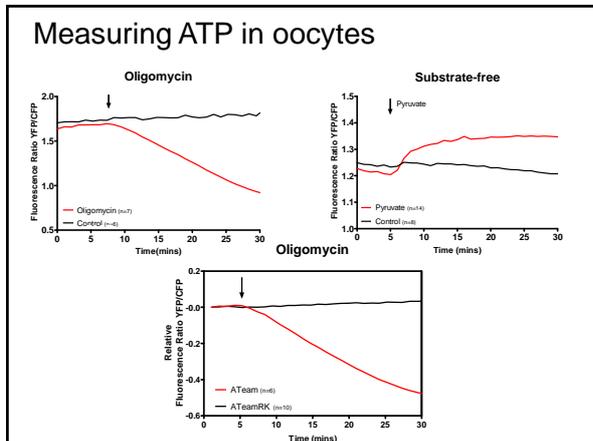
Dunollard et al., Development, 2007



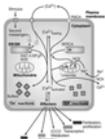
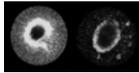
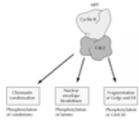








ATP Consuming Processes During Maturation

<p>Spindle formation and migration</p>  <p>Cellular homeostasis mechanisms</p> 	<p>Organelle movement</p>  <p>Phosphorylation events</p> 
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Summary and Perspectives

1. *Oocyte mitochondria are the providers of energy that support embryo development.*
2. *Mitochondria are intimately associated with the meiotic spindle.*
 - aggregation around spindle
 - ATP necessary for spindle dynamics
 - Mitochondria coupled to ER
3. *Mitochondria function is sensitive to the maternal (and in vitro) conditions.*

Featuring the work of.....

Petros Marangos - Calcium signalling and GFP-cyclin
 Greg FitzHarris - ER organization and mitosis
 Guillaume Halet - PH-GFP, PKC-GFP
 Caroline Dalton - ATP and mitochondria
 Remi Dumollard - Mitochondrial physiology
 Tasos Siskoglou - Nuclear PI signalling
 Sophie Brind - InsP3 R downregulation
 Rachel Webb - cAMP in meiosis

Collaborators: mark larman
 karl swann
 tony lai
 keith jones
 michael duchen
 tomo kono