

**DOES FIBER
MAKE YOU
FAT?**

The Gut's Effect on
Weight and Metabolism

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Low-Carb Breckenridge, 2017

Disclosures

I have no financial interest or affiliation concerning material discussed in this presentation.

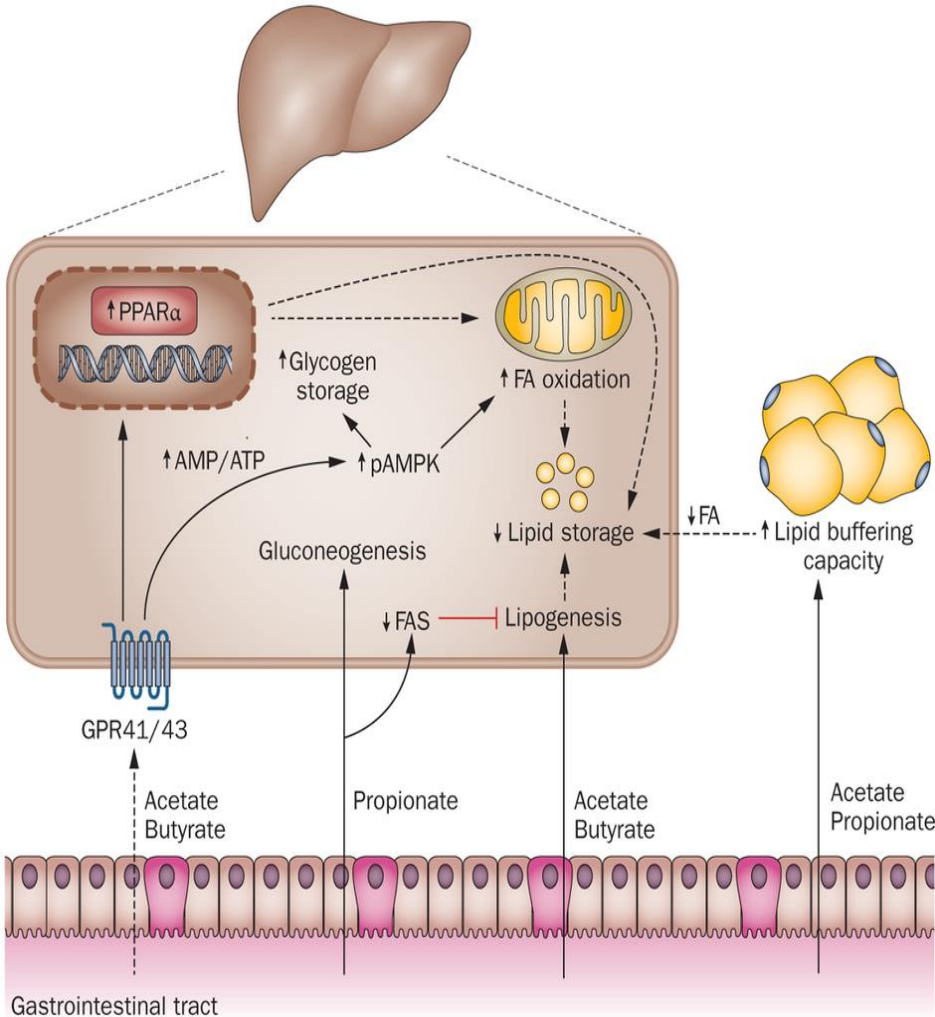




THE LARGE INTESTINE

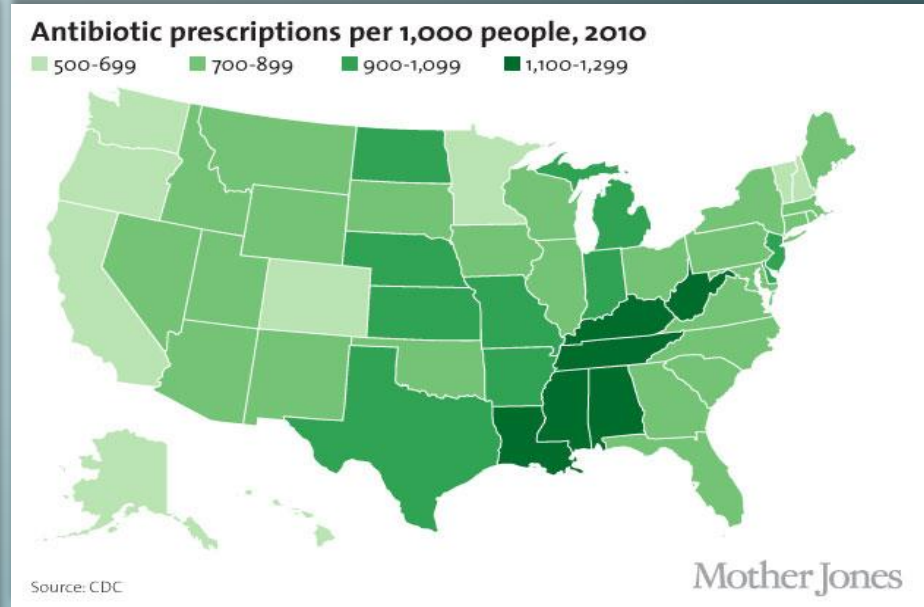
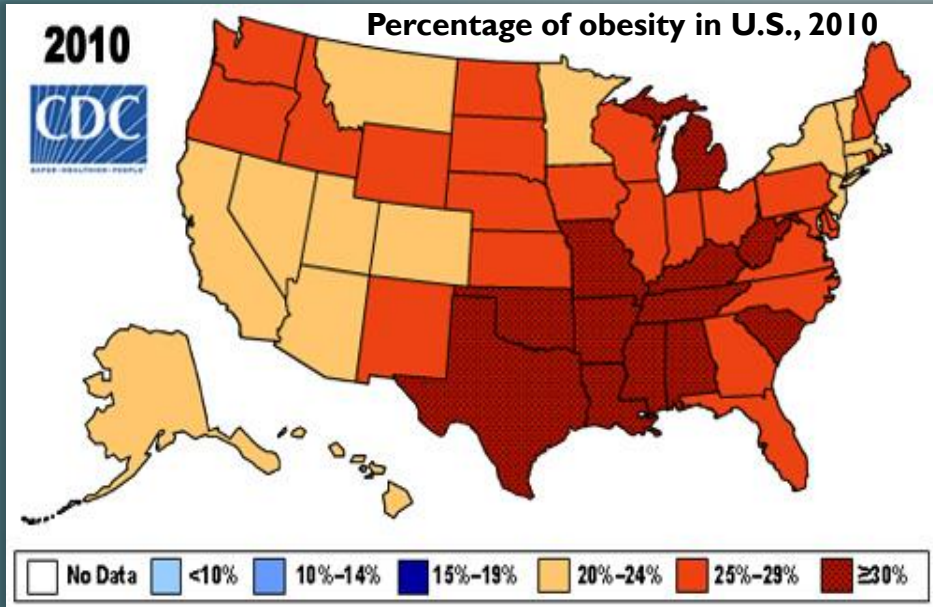
Functions of Short-Chain Fatty Acids (butyrate, acetate, propionate)

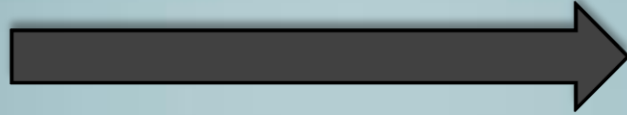
- Provide extra calories extracted from fiber (6-10% daily)
- Increase satiety so YOU can consume less
- Produce energy for enterocytes
- Improve insulin sensitivity
- Enhance immune system (especially butyrate!)





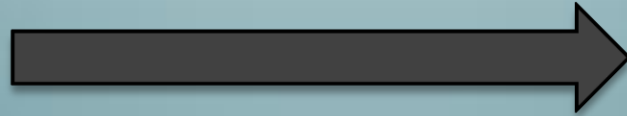
The Deep South

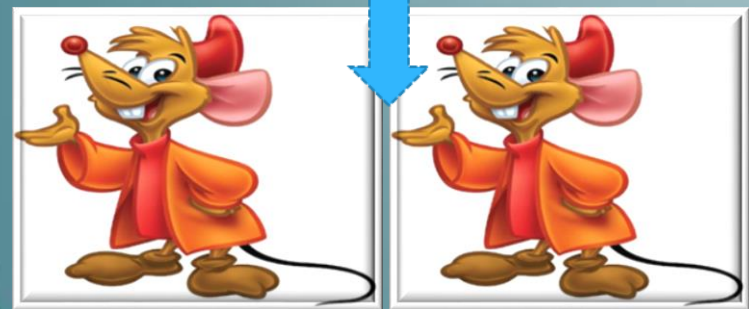
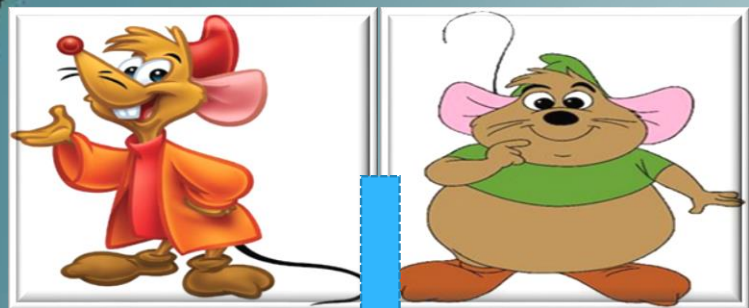




SCIENCE!

Experiment 1



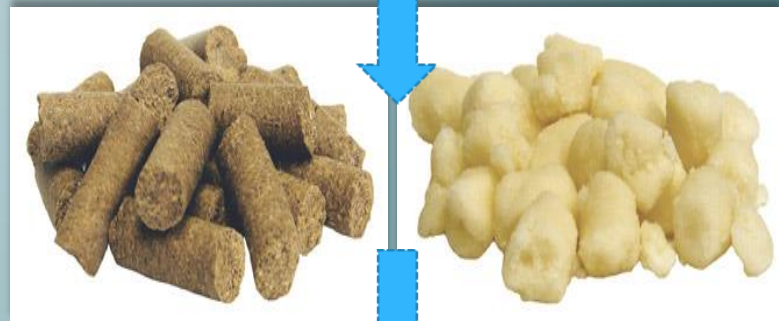


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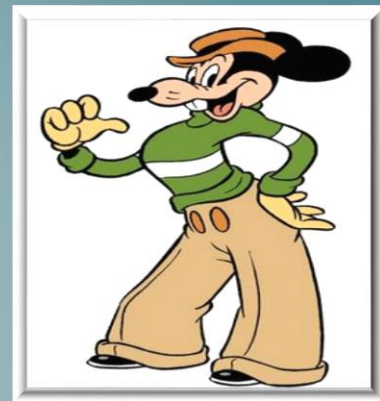




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Experiment 5: STAT

Experiment 6: FatSTAT



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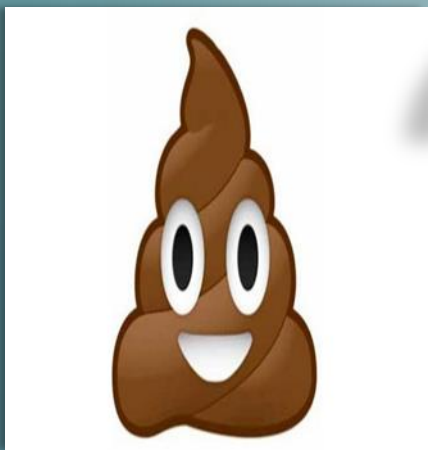
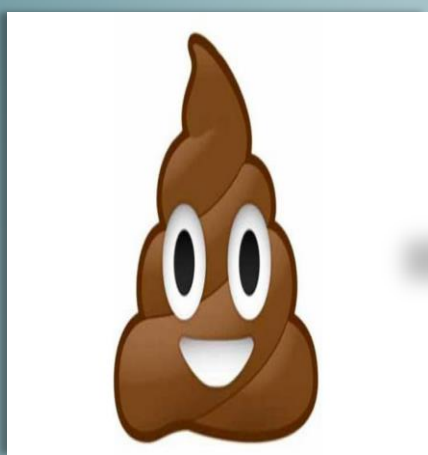


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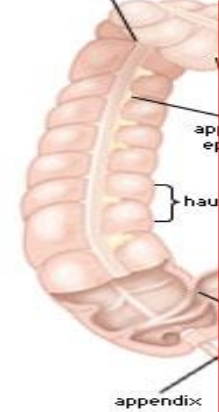


WHY DO WE CARE ABOUT **PREBIOTICS**?

right colic flexure
(hepatic flexure)

left colic flexure
(splenic flexure)

Regions of the large intestine



“Fiber may decrease food intake, slow down food’s absorption in the stomach and small intestine, and then help it exit quickly through the large intestines, all of which are potentially beneficial in treating obesity.” – Dr. Jason Fung

external anal s

internal anal sp

© 2003 Encyclopæ



Comprehensive Stool Evaluation after *low-fiber* ketogenic diet

		Gastrointestinal Microbiome					Reference Range	
Commensal Bacteria (PCR)		Result	QUINTILE DISTRIBUTION					CFU/g stool
		CFU/g stool	1st	2nd	3rd	4th	5th	
Bacteroidetes Phylum								
<i>Bacteroides-Prevotella</i> group		4.7E7						3.4E6 - 1.5E9
<i>Bacteroides vulgatus</i>		5.0E7						<= 2.2E9
<i>Barnesiella</i> spp.		<DL						<= 1.6E8
<i>Odonobacter</i> spp.		1.4E8 H						<= 8.0E7
<i>Prevotella</i> spp.		<DL L						1.4E5 - 1.6E7
Firmicutes Phylum								
<i>Anaerotruncus colitominis</i>		<DL						<= 3.2E7
<i>Butyrivibrio crossotus</i>		<DL L						5.5E3 - 5.9E5
<i>Clostridium</i> spp.		<DL L						1.7E8 - 1.5E10
<i>Coprococcus eutactus</i>		<DL						<= 1.2E8
<i>Faecalibacterium prausnitzii</i>		<DL L						5.8E7 - 4.7E9
<i>Lactobacillus</i> spp.		<DL L						8.3E6 - 5.2E9
<i>Pseudoflavonifractor</i> spp.		4.8E6						4.2E5 - 1.3E8
<i>Roseburia</i> spp.		<DL L						1.3E8 - 1.2E10
<i>Ruminococcus</i> spp.		2.3E7 L						9.5E7 - 1.6E9
<i>Veillonella</i> spp.		2.5E6						1.2E5 - 5.5E7
Actinobacteria Phylum								
<i>Bifidobacterium</i> spp.		<DL						<= 6.4E9
<i>Bifidobacterium longum</i>		<DL						<= 7.2E8
<i>Collinsella aerofaciens</i>		1.3E8						1.4E7 - 1.9E9
Proteobacteria Phylum								
<i>Desulfovibrio piger</i>		<DL						<= 1.8E7
<i>Escherichia coli</i>		4.2E7						9.0E4 - 4.6E7
<i>Oxalobacter formigenes</i>		<DL						<= 1.5E7
Euryarchaeota Phylum								
<i>Methanobrevibacter smithii</i>		<DL						<= 8.6E7
Fusobacteria Phylum								
<i>Fusobacterium</i> spp.		3.9E3						<= 2.4E5
Verrucomicrobia Phylum								
<i>Akkermansia muciniphila</i>		6.4E5 L						>= 1.2E6
Firmicutes/Bacteroidetes Ratio								
<i>Firmicutes/Bacteroidetes (F/B Ratio)</i>		1 L						12-620

Discussion

- Ancestral gut = diverse species-
Should we try to replicate?
- Role of the small intestine
- Is more *better* when it comes to fiber?
 - Rare few do best on zero fiber
- Fecal microbiota transplant?



Steps for a Healthy Gut

- Weed the garden
- Low Carb Amino Acids
- Add in u
- prebiotic
- Cour
- Avo
- incl
- Avo
- and
- over fo
- Avoid a

Low Carb Vegetables



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