

7th Conference on Recent Advances in
the Prevention and Treatment of Childhood and Adolescent Obesity

Prebiotic supplementation
during pregnancy/lactation
alters fecal/cecal microbiota and
reduces antibiotic-associated
obesity risk in rats

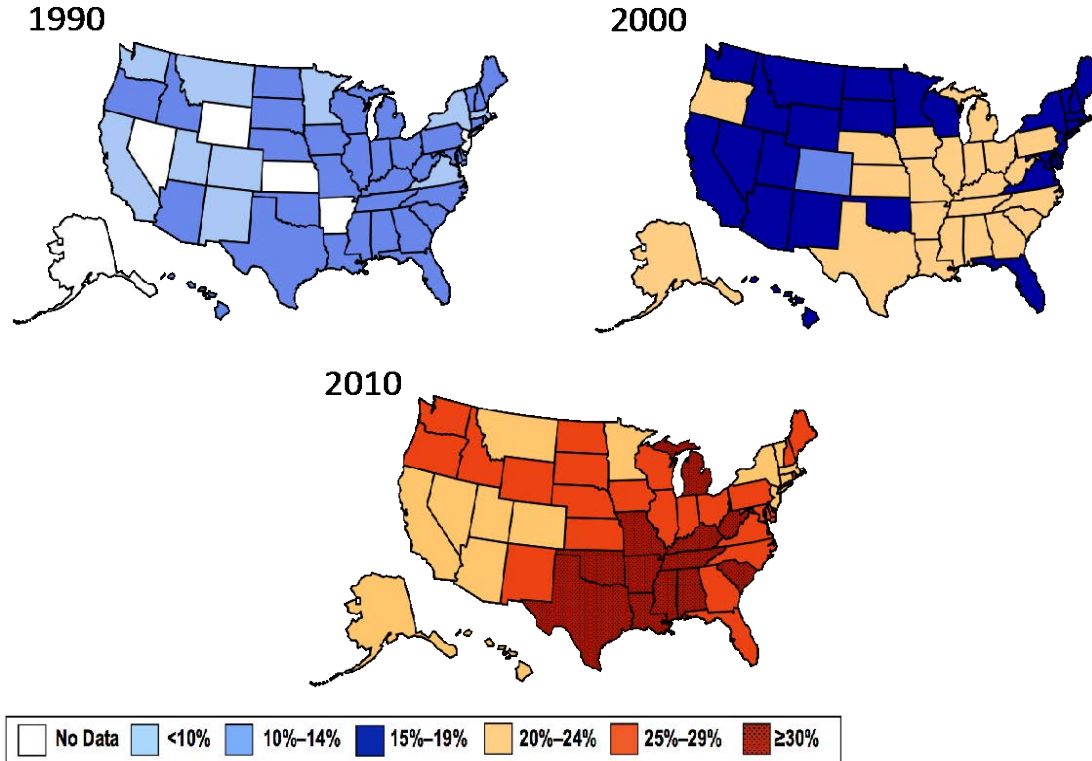
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October, 2018



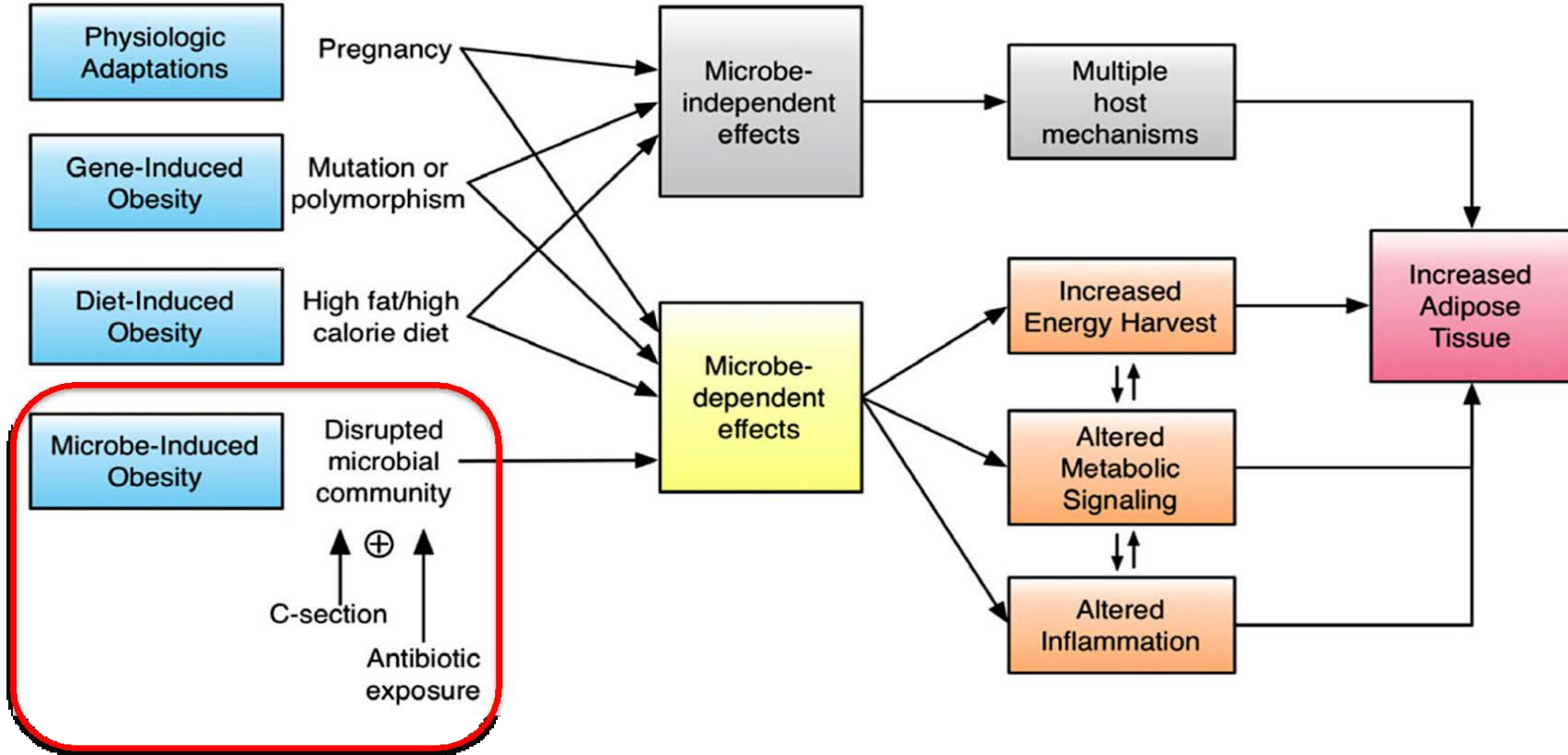
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Obesity trends in USA and worldwide



- Worldwide obesity has more than doubled since 1980
- 500 million obese adults
- 42 million obese children (under the age of 5)

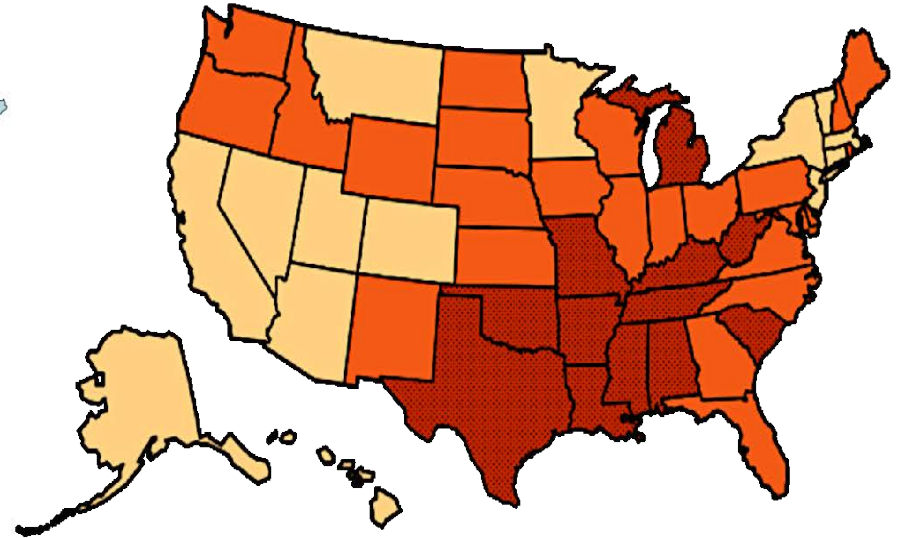
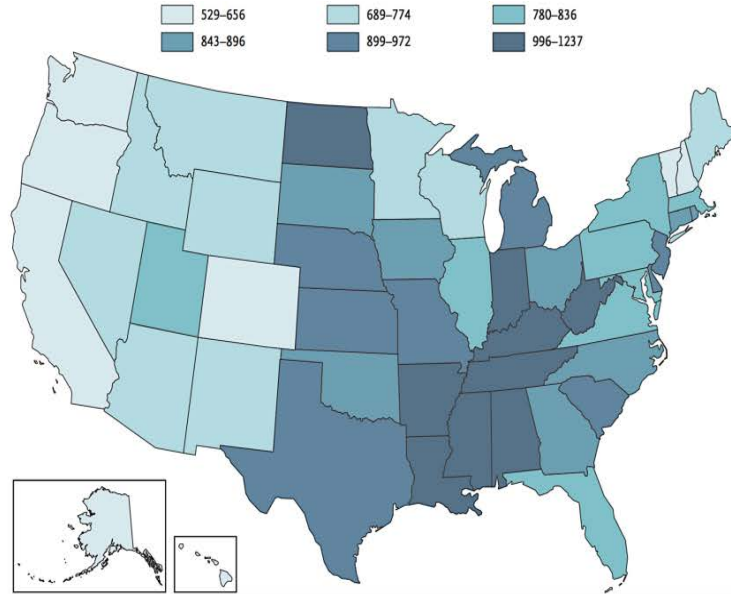
Pathways in microbe-induced obesity



Drug Molecule (Age: 0 – 17 years)	Pediatric Patients (M)
<u>Amoxicillin</u>	18 292 768
<u>Azithromycin</u>	10 171 046
Albuterol	7 343 063
<u>Amoxicillin/clavulanate</u>	4 454 926
<u>Cefdinir</u>	4 308 857
<u>Cephalexin</u>	4 009 275

- **On average:**
 - 3 prescriptions by the age of 2 years
 - 10 prescriptions by the age of 10 years
 - 17 prescriptions by the age of 20 years

Antibiotic prescription vs. obesity rates in the USA, 2010



Hicks, Taylor and Hunkler. NEJM 2013, 368: 1461.

Source: CDC Behavioral Risk Factor Surveillance System, CDC.

- Could we prevent obesity associated with early life antibiotic exposure?

- **Beneficial Effects (humans and rodents):**
 - Improvements in metabolic health
 - Lower body weight and fat mass
 - Reduced inflammation
 - Increased satiety hormones



40 g/100 g



18 g/100 g



7 g/100 g

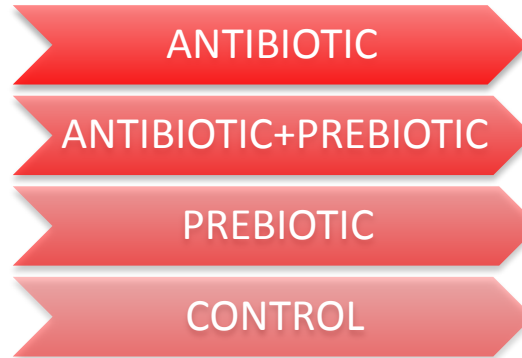


1 g/100 g

DAMS



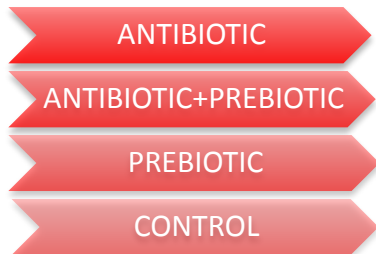
3rd week of pregnancy



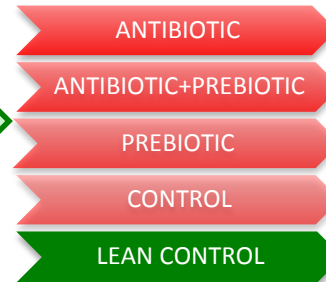
End of lactation

OFFSPRING

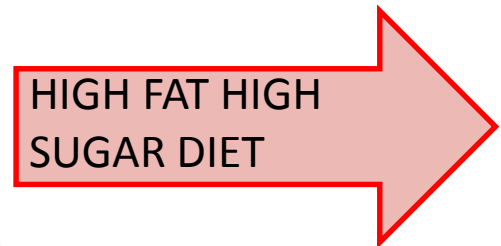
AT WEANING

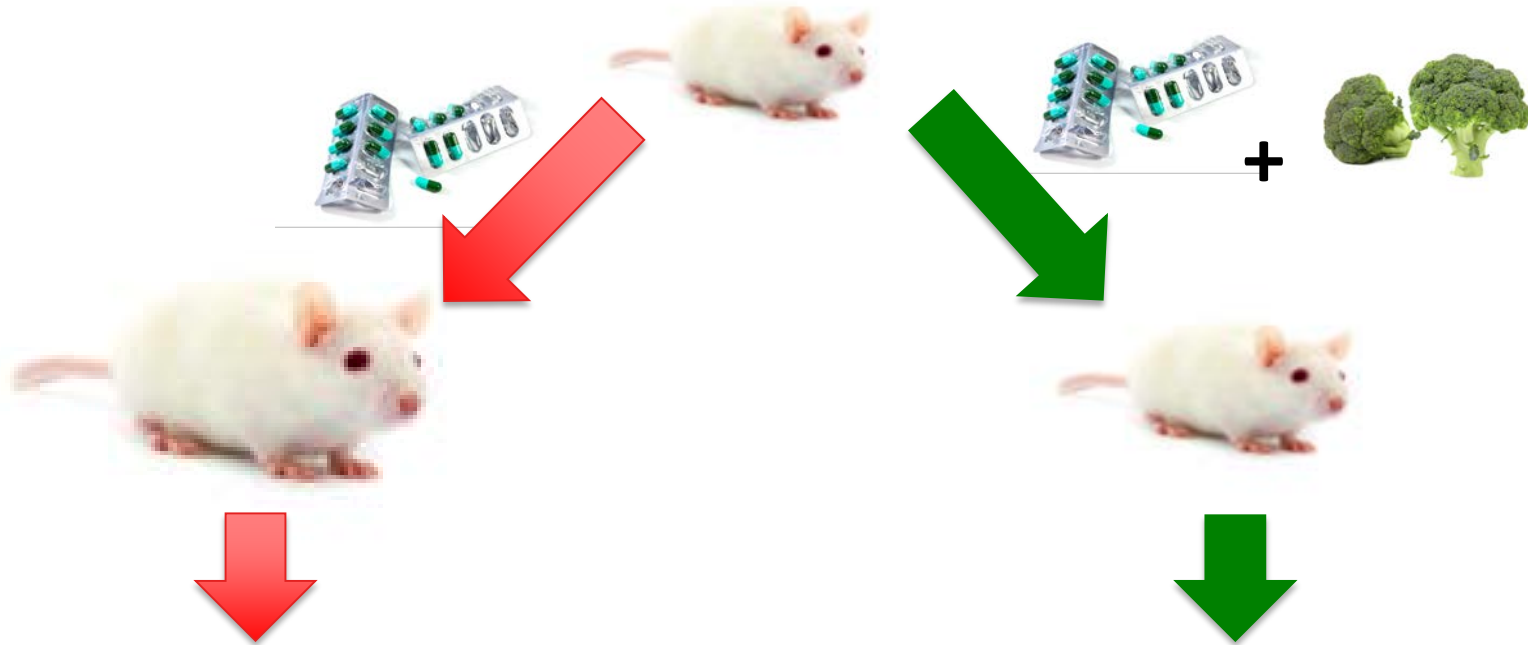


10 WEEKS



18 WEEKS





Obese offspring

Lean offspring

Co-administering prebiotic diet with antibiotics prevents weight gain associated with antibiotic exposure in rats

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