

It is possible to genetically change the nutrient profile of beef

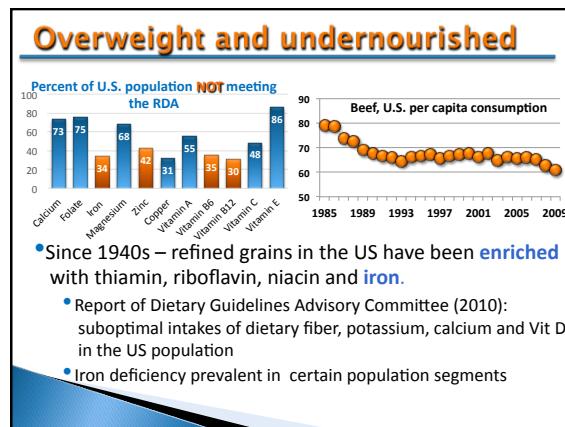
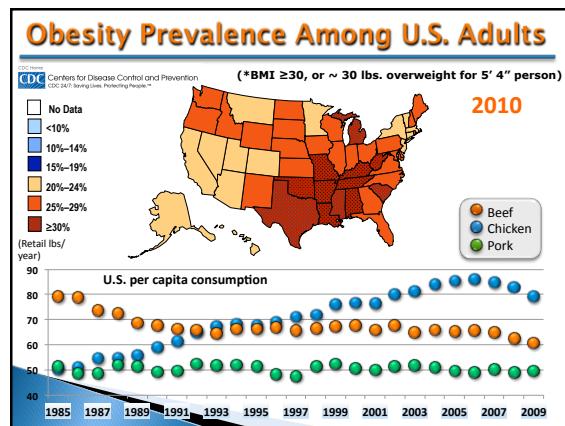
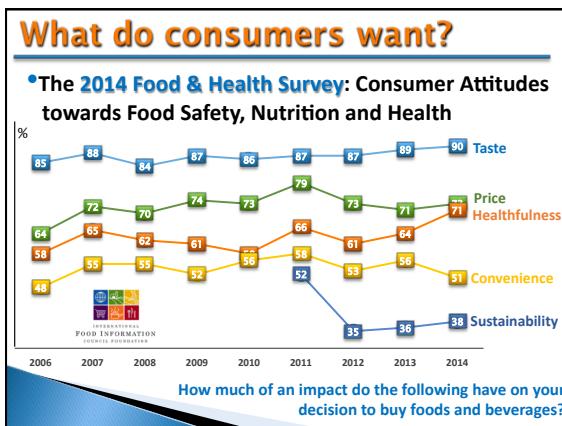
Ralucă Mateescu
Department of Animal Sciences, University of Florida

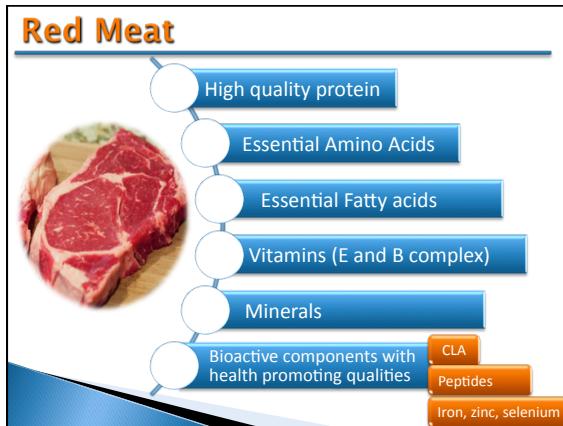
Outline

- Nutrient profile of beef: is it important and why?
- Update on the current nutrient profile of beef
- What can we change and what should we change?

Novel AND Needed

- **Minerals:** iron, zinc, magnesium, potassium, phosphorus
- **Peptides:** carnitine, creatine, carnosine, anserine





Mineral Composition

Beef: great source of iron and zinc

Mineral	N	Mean ± SD (µg/g meat)	% of RDV	Heritability
Calcium	2,260	38.7 ± 19.8	<0.1%	0.00 ± 0.02
Copper	1,980	0.78 ± 0.9	4 - 8%	0.00 ± 0.03
Iron	2,259	14.4 ± 3.0	8-18%	0.54 ± 0.09
Zinc	2,261	38.9 ± 7.9	26%	0.09 ± 0.04
Magnesium	2,274	254.6 ± 43.1	6.4 - 8.5%	0.06 ± 0.04
Manganese	2,000	0.07 ± 0.04	<0.1%	0.01 ± 0.03
Potassium	2,225	3433.5 ± 494.3	10%	0.04 ± 0.03
Phosphorus	2,271	1965.9 ± 278.4	28%	0.03 ± 0.03
Sodium	2,273	489.4 ± 92.9	3.4%	0.18 ± 0.06

Genetic parameters for concentrations of minerals in longissimus muscle and their associations with palatability traits in Angus cattle:
R. G. Mateescu*, A. J. Garmyn*, R. G. Tait Jr., Q. Duan, Q. Liu†, M. S. Mayes‡, D. J. Garrick‡, A. L. Van Eenennaam§, D. L. VanOverbeke*, G. G. Hilton*, D. C. Beitz† and I. M. Reecy‡

Micronutrients: peptides

	Mean ± SD (mg/g meat)	% of RDV	Heritability
Carnitine	3.16 ± 0.94	No RDV, beef one of the best dietary sources	0.01 ± 0.03
Creatine	5.26 ± 0.53	~25% (athletes: 2g)	0.43 ± 0.09
Creatinine	0.21 ± 0.11		0.07 ± 0.04
Carnosine	3.72 ± 0.46	~100% (daily supplements: 200-500 mg)	0.38 ± 0.07
Anserine	0.67 ± 0.13		0.53 ± 0.07

Carnitine *essential nutrient in FA oxidation
*beneficial effects on **exercise capacity**

Creatine *important to muscle energy metabolism
*can enhance muscle performance

Carnosine *significant antioxidant properties

Anserine *possible antioxidant?

Genetic parameters for carnitine, creatine, creatinine, carnosine, and anserine concentration in longissimus muscle and their association with palatability traits in Angus cattle:
R. G. Mateescu*, A. J. Garmyn*, M.A. O’Neil‡, R. G. Tait Jr., A. Abuzaid†, M. S. Mayes‡, D. J. Garrick‡, A. L. Van Eenennaam§, D. L. VanOverbeke*, G. G. Hilton*, D. C. Beitz† and J. M. Reecy‡

