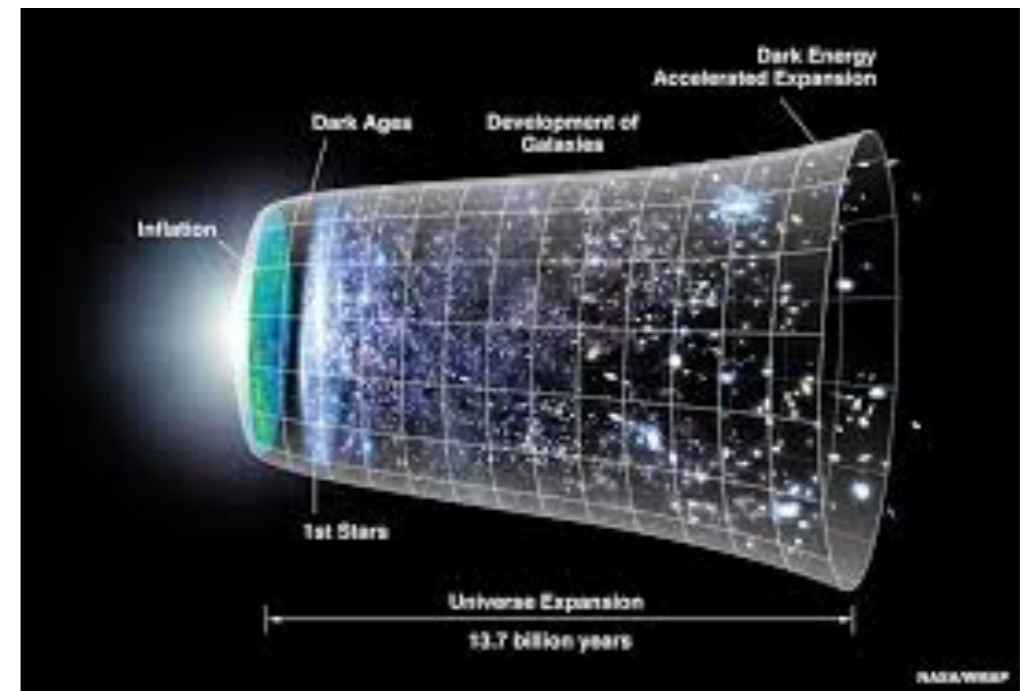
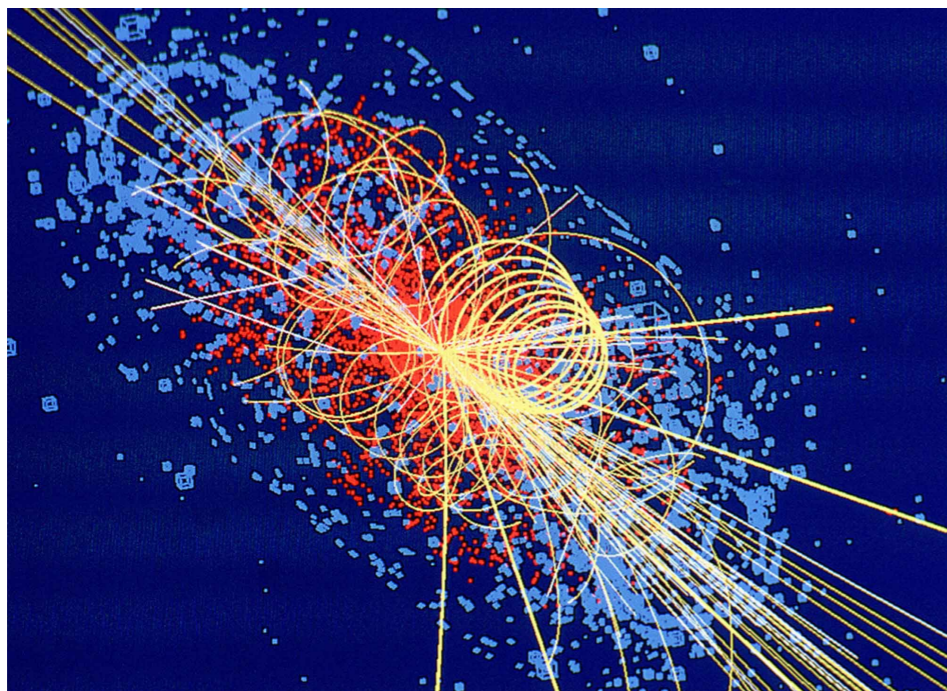
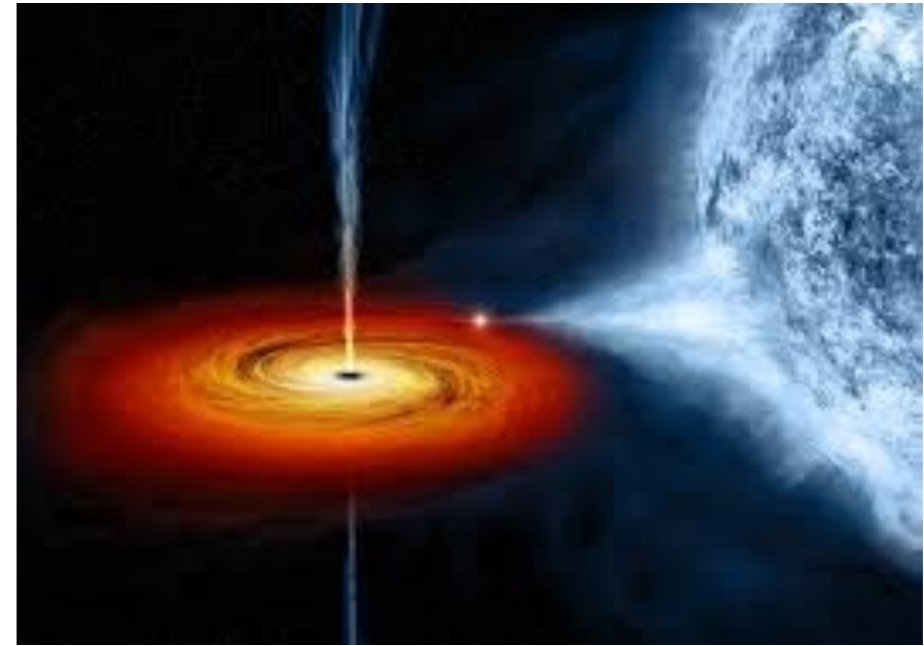
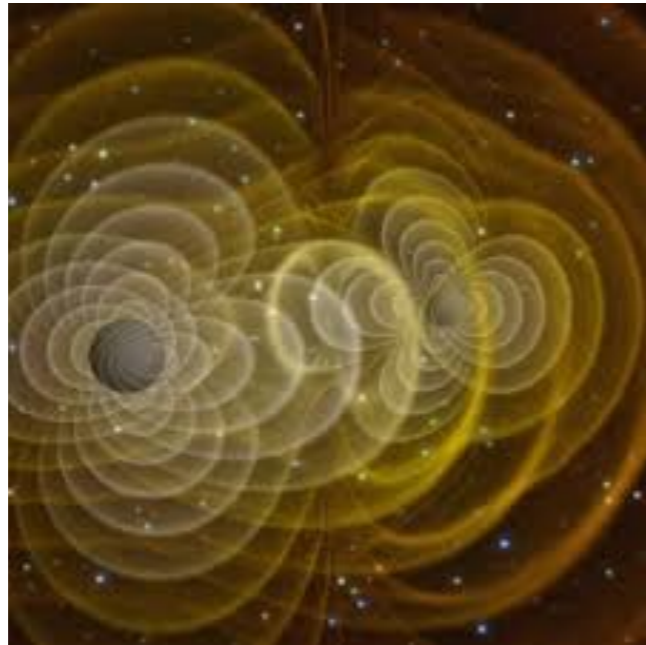


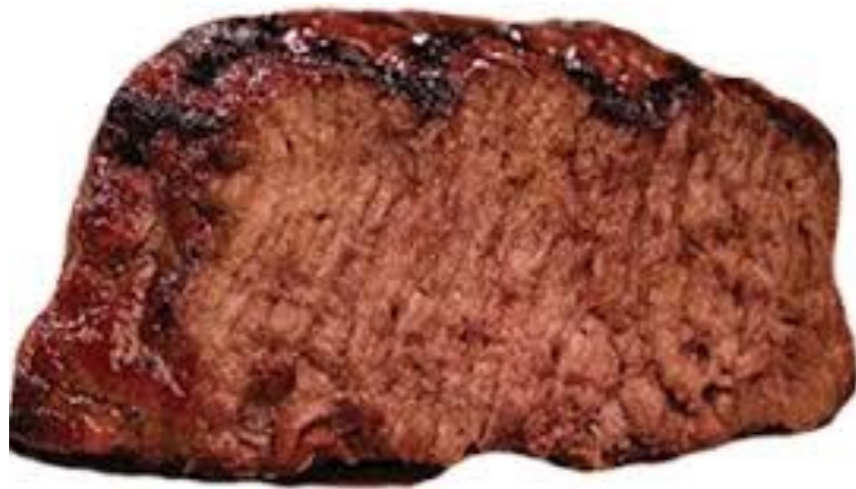
Cooking meat

Let's use some physics

We try to understand the physics of extreme situations...



... but we don't use this to understand what is going on in food



Overview

What is meat?

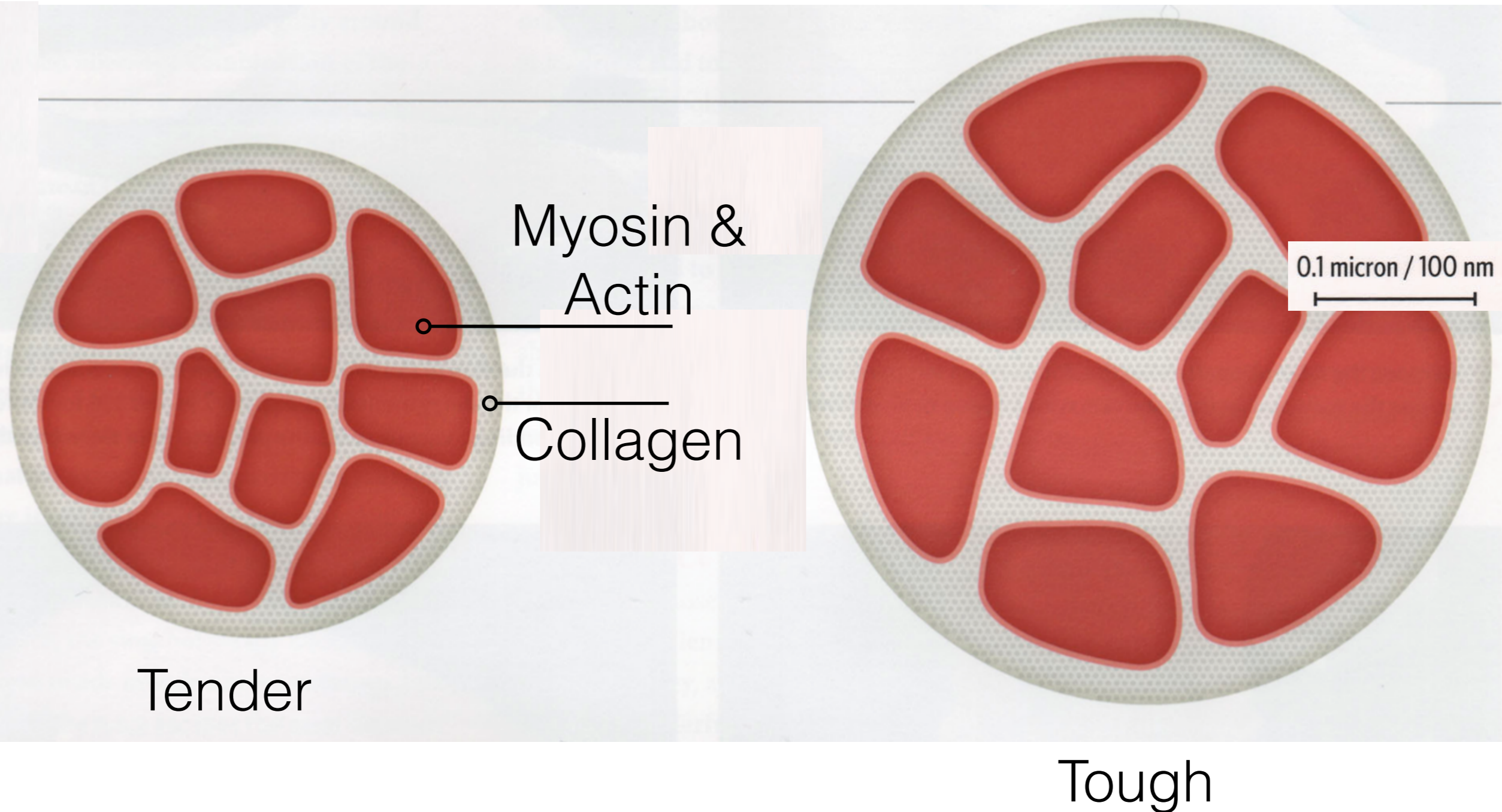
Why cook it?

Examples

Expand your 'parameter space'

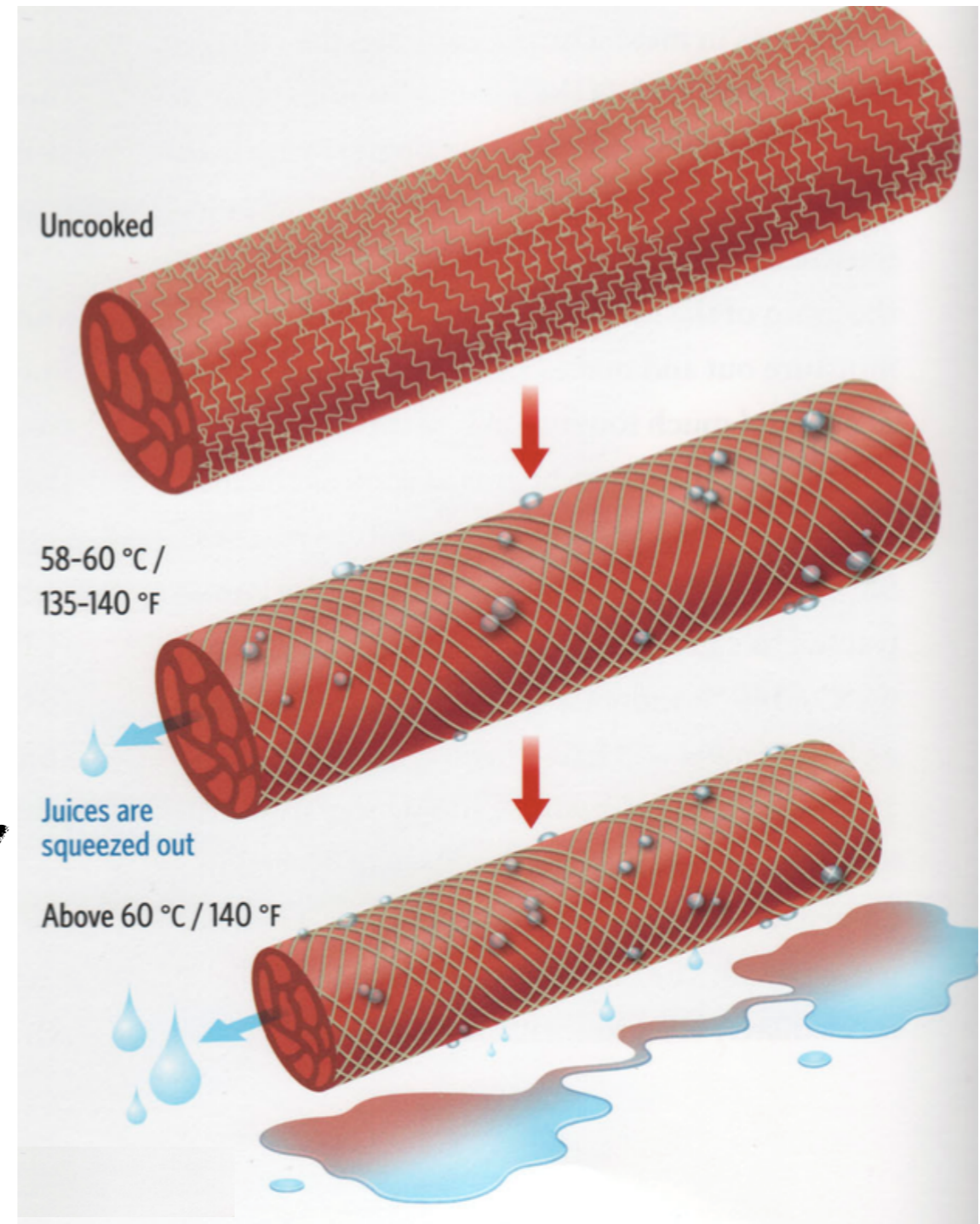
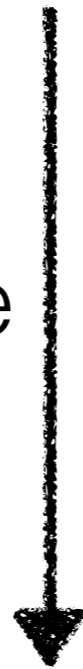


Tough meat contains more collagen than lean meat



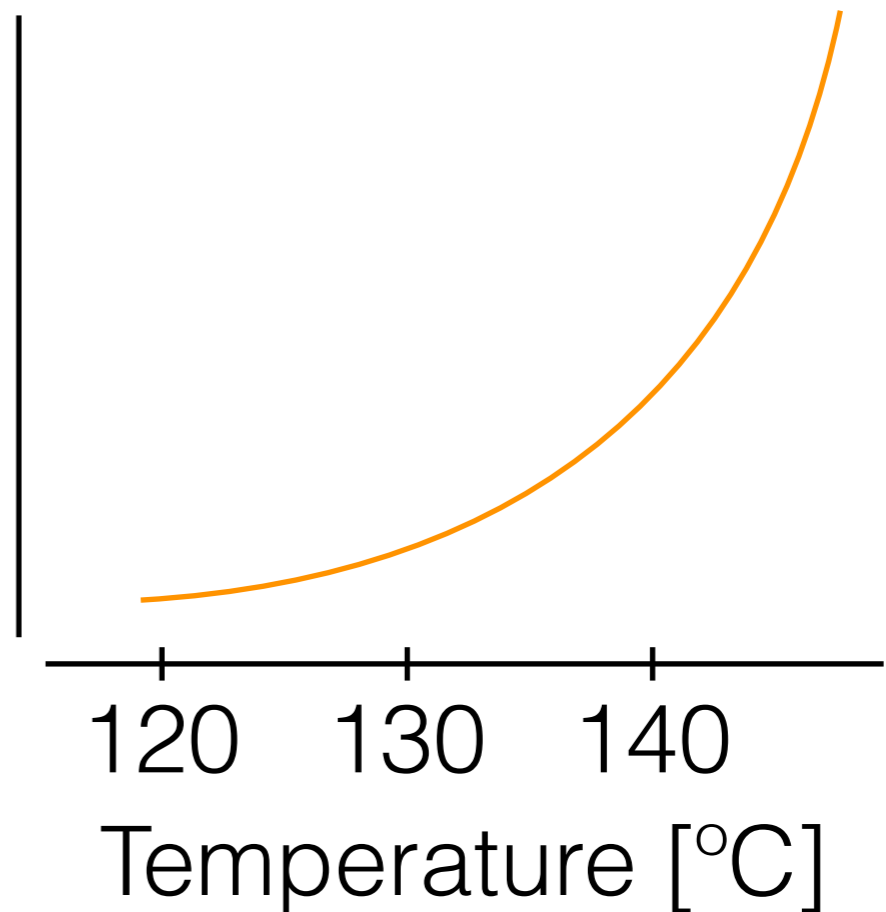
Heat increases molecule vibrations and degenerations

Temperature



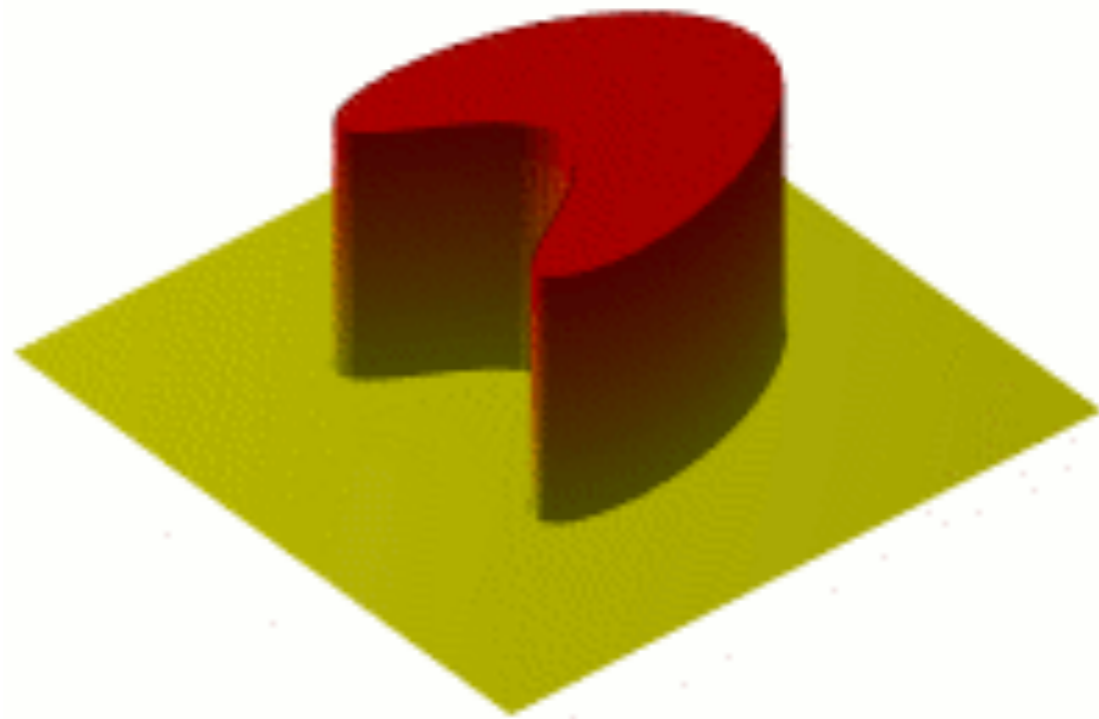
The outside browns as sugars are converted above 140 °C

Browning
rate

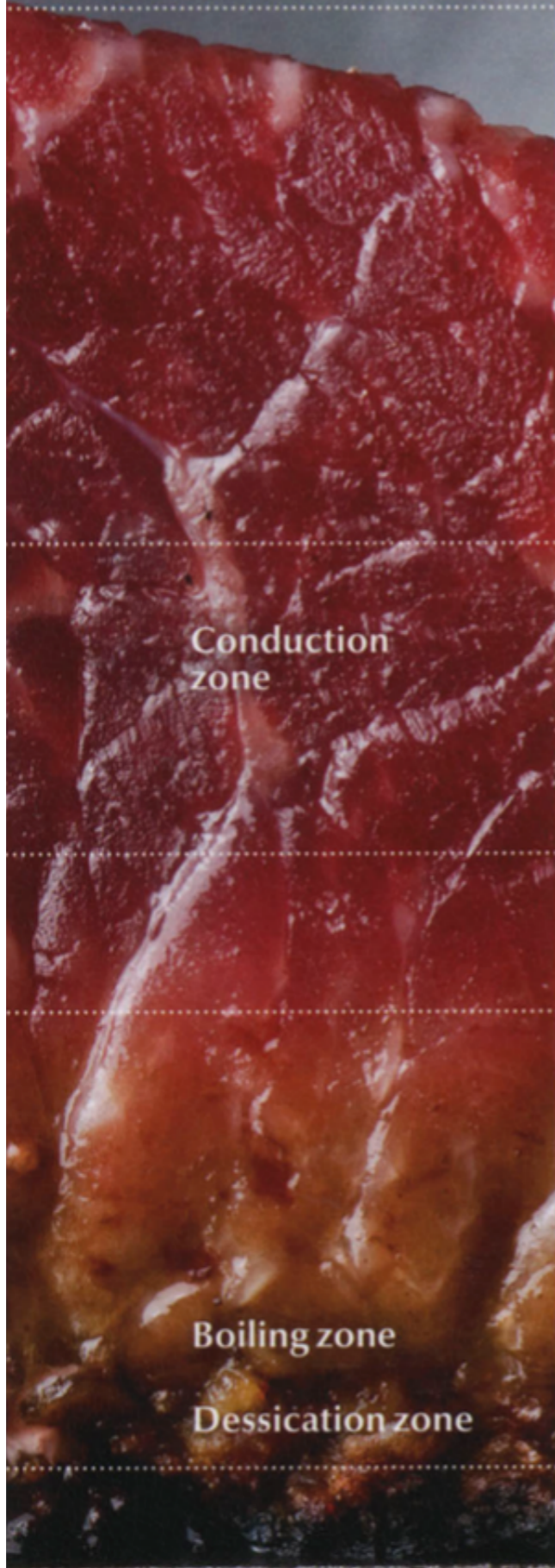


Finally, some physics

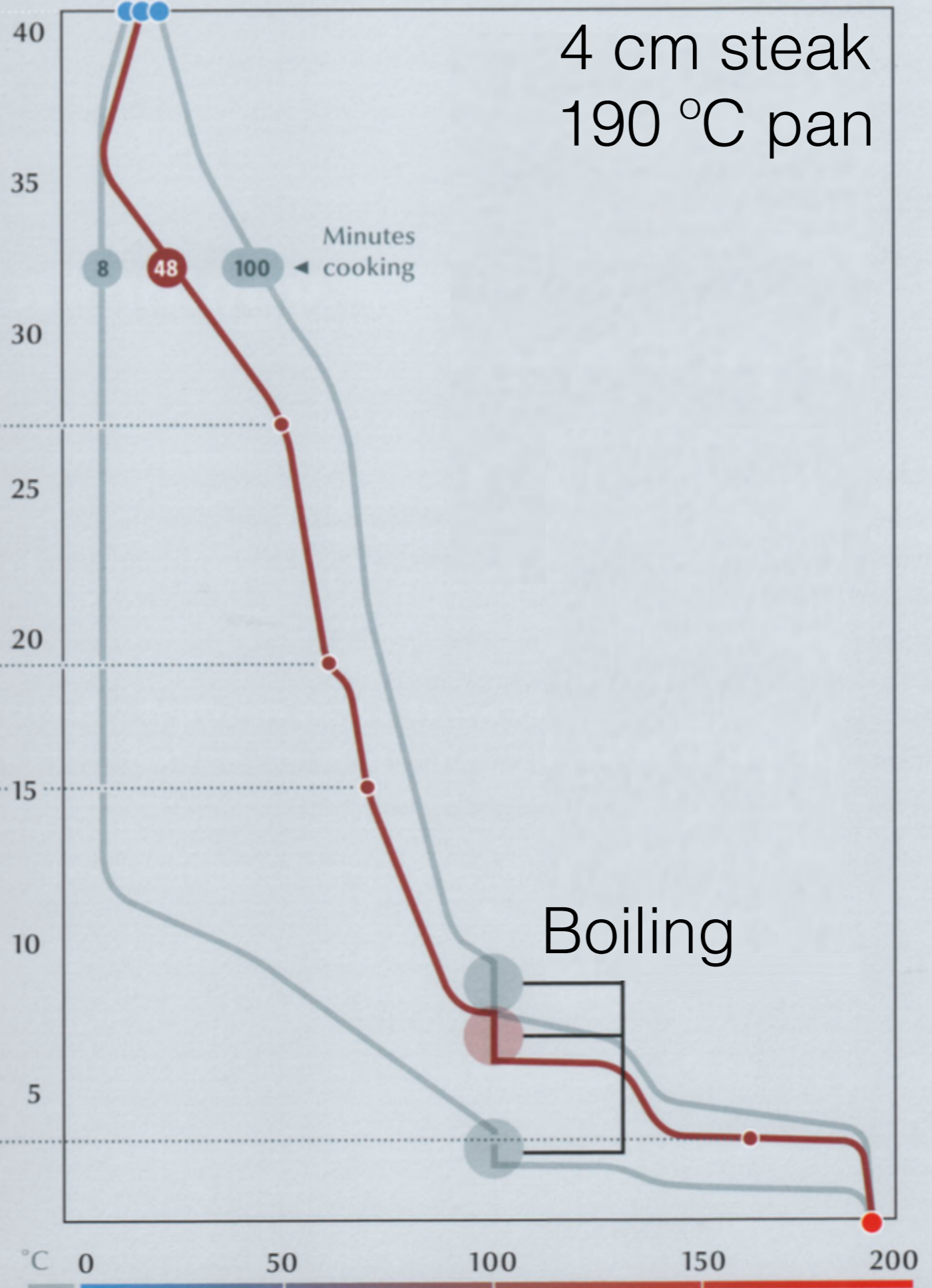
$$\frac{\partial u}{\partial t} = \alpha \nabla^2 u$$



Cooking time: 48 minutes



Millimeters



This online heat equation solver shows your meat throughout the process of cooking

[Cook My Meat](#) [Instructions](#) [About](#)

Recipe:

Name:

Meat type:

Thickness: cm

Starting at: °C

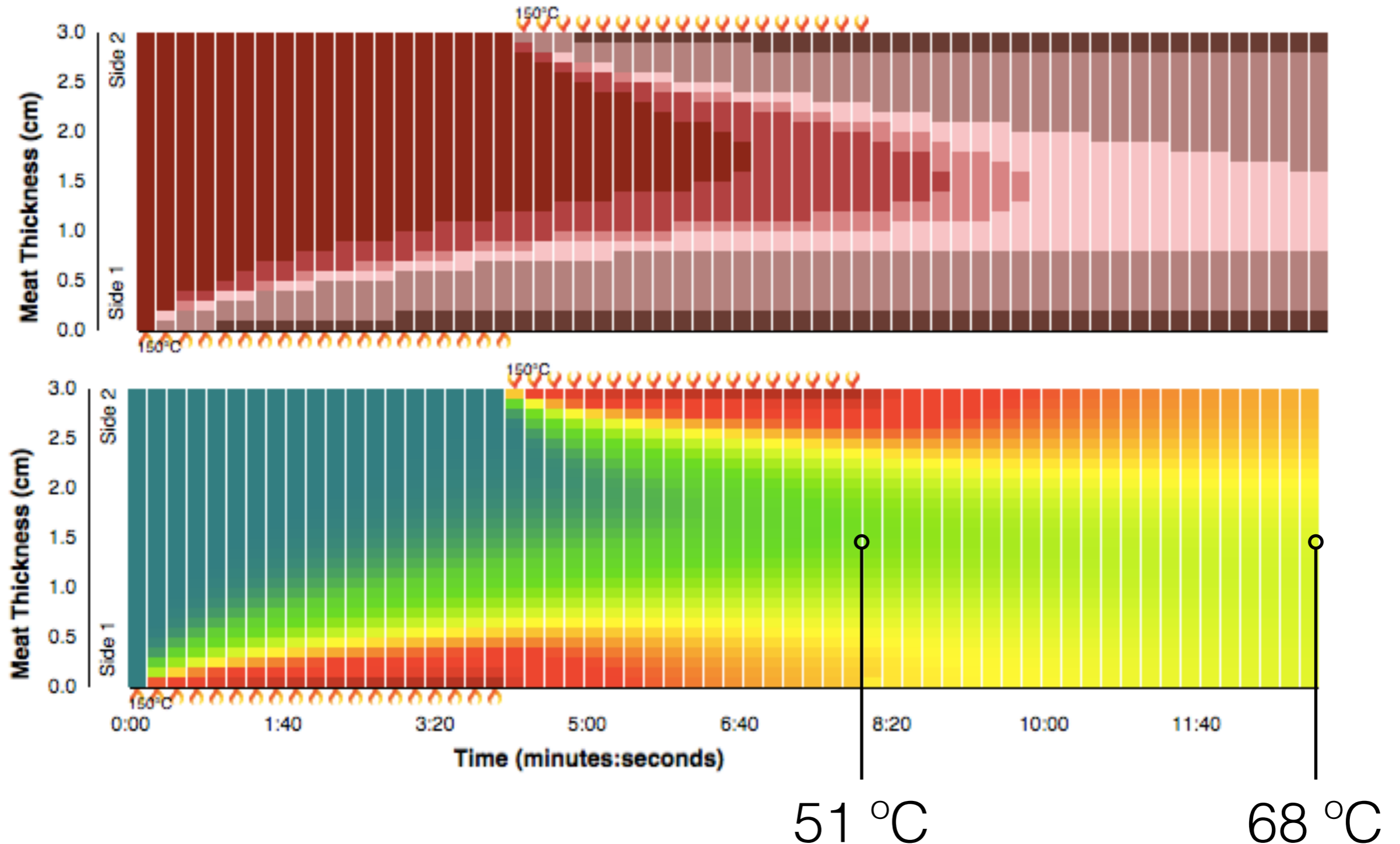
	Side 1		Side 2	min:sec
1.	<input type="text" value="150"/> °C	<input type="button" value="↔"/>	<input type="text" value="23"/> °C	<input type="text" value="4:00"/> <input type="button" value="×"/>
2.	<input type="text" value="23"/> °C	<input type="button" value="↔"/>	<input type="text" value="150"/> °C	<input type="text" value="4:00"/> <input type="button" value="×"/>
3.	<input type="text" value="23"/> °C	<input type="button" value="↔"/>	<input type="text" value="23"/> °C	<input type="text" value="5:00"/> <input type="button" value="×"/>
<input type="button" value="+"/> +	Total:		13:00	

Google

cook my meat

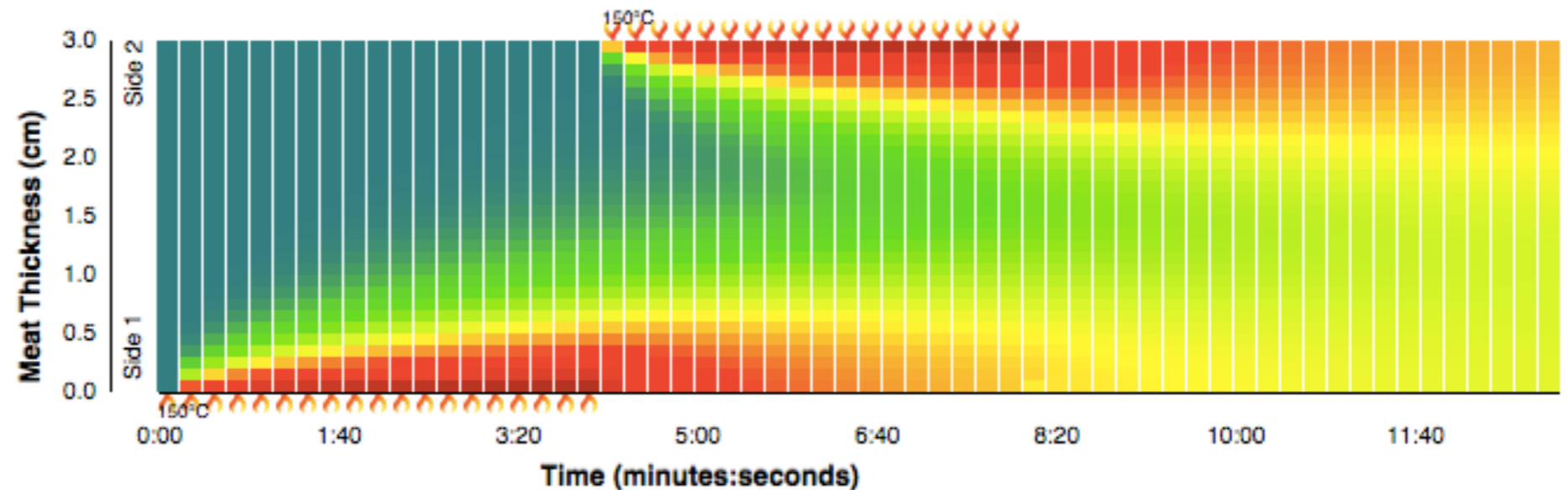


What happens in a steak: 4 minutes a side (+ 5 min. rest)

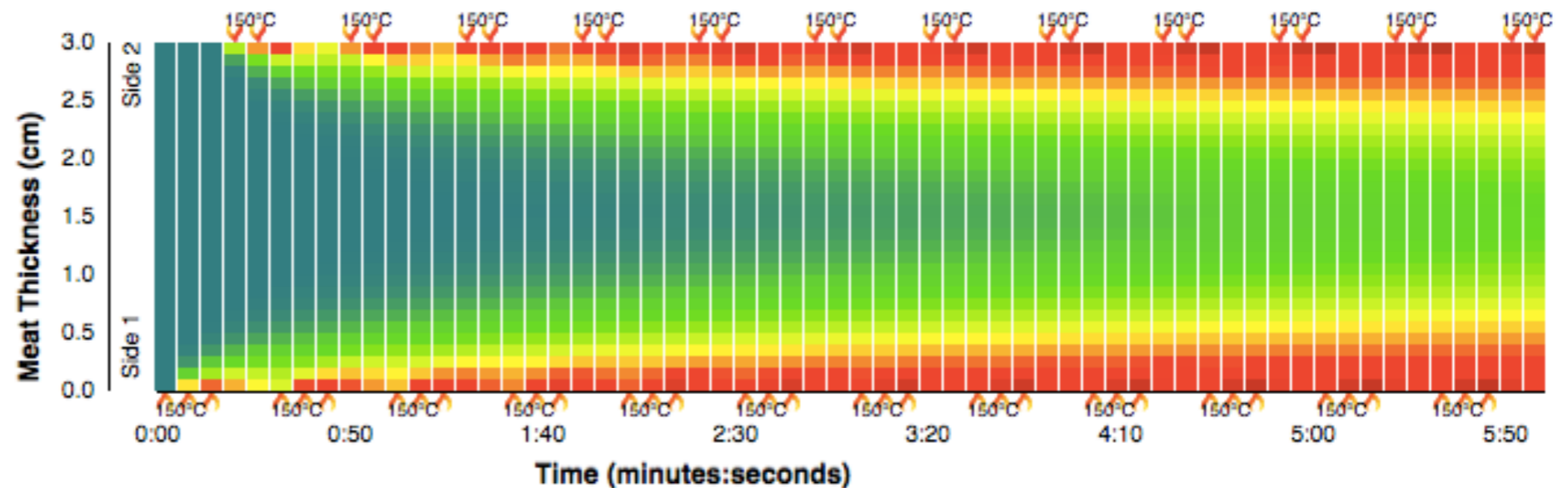


It allows you to compare cooking techniques

4 minutes
a side

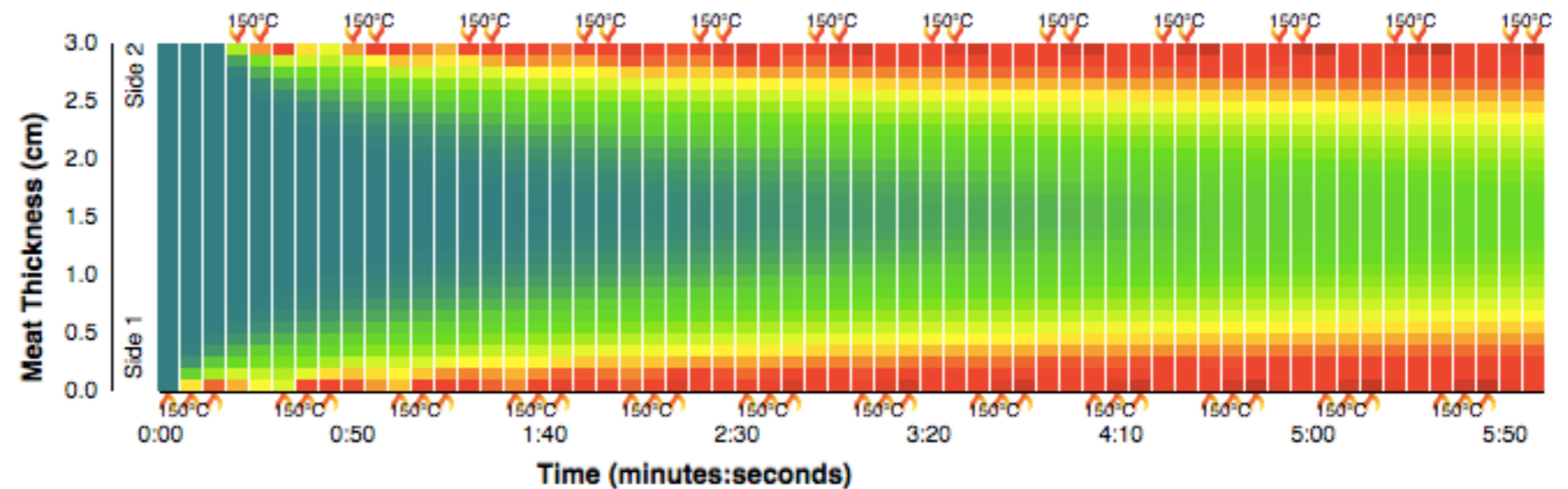


Flip every
15 seconds

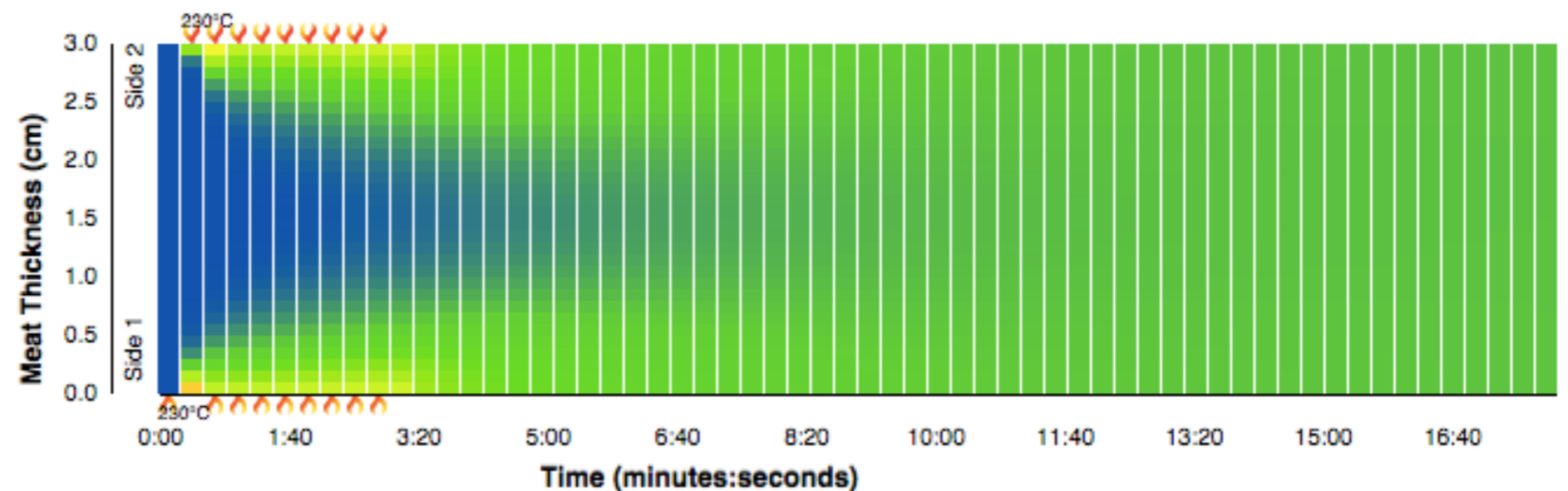


And it allows you to compare cooking techniques

Flip every 15 seconds

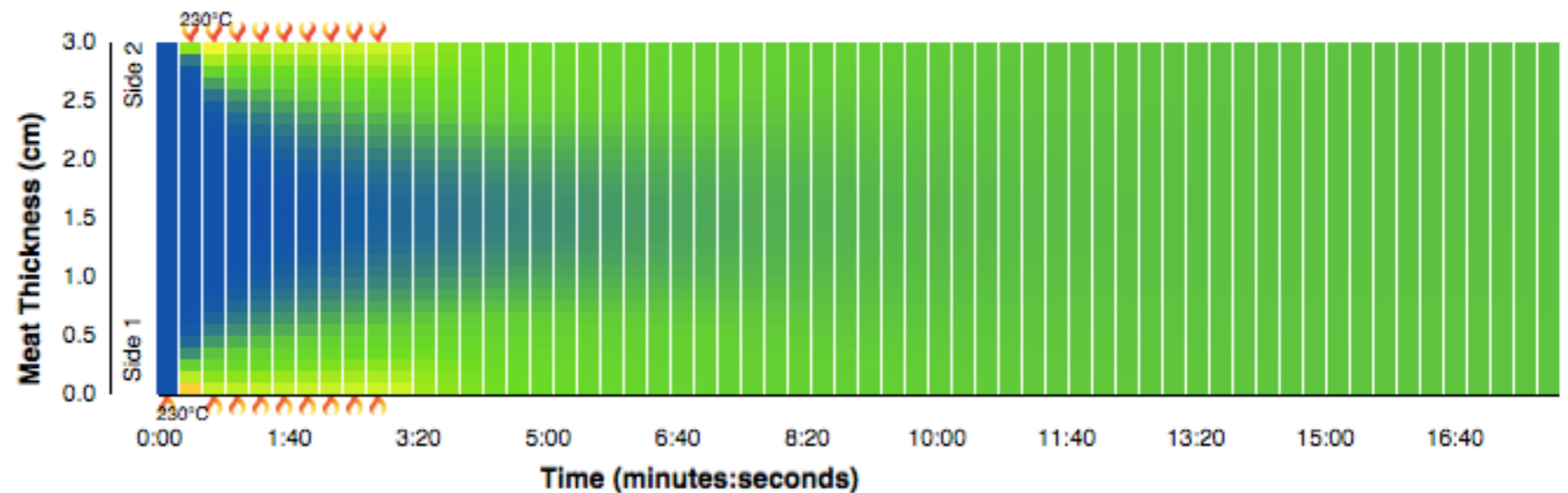


Sear, then cook low

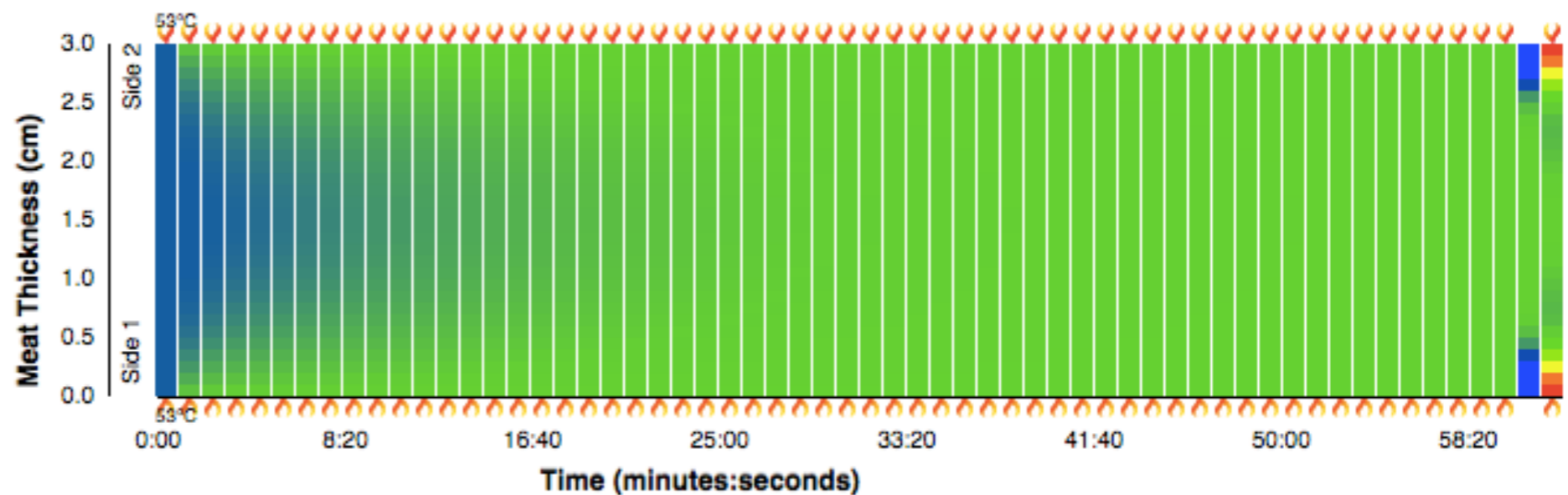


And it allows you to compare cooking techniques

Sear, then cook low

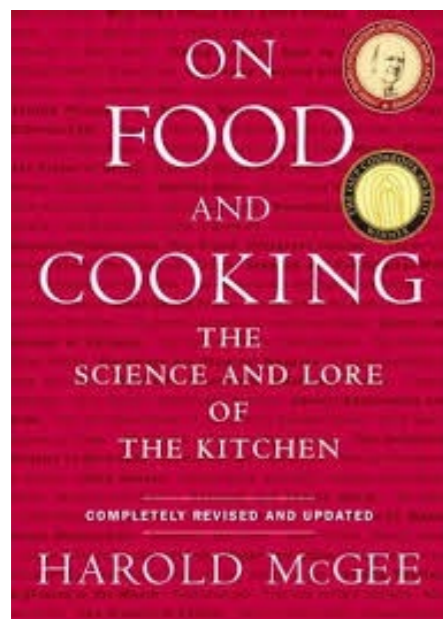


Sous vide,
LN + deep fry

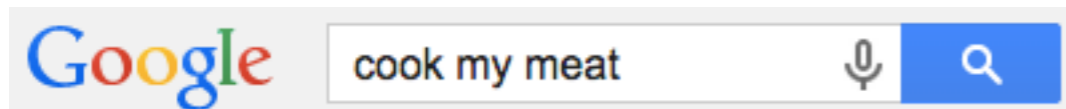


	4 minutes a side	2 minutes a side	flip every 15 seconds	Sear, then cook low	Sous vide, LN + fry
Raw	0%	0%	0%	0%	0%
Rare	0%	37%	30%	53%	67%
Med-rare	0%	13%	10%	7%	7%
Medium	27%	17%	13%	13%	0%
Well done	60%	27%	40%	23%	13%
Browning	13%	7%	7%	3%	13%
Charring	0%	0%	0%	0%	0%

Resources and other stuff



- Brining
- Ageing
- Marinating
- Pressure cooking
- Slow cooking



Cooking Issues

There are enough tools available for cooking

- Rest your meat
- Tender meat requires even heating throughout
- Temperature 'control' is important for the result