

# Periodic Graphics

A collaboration between C&EN and  
Andy Brunning, author of the popular  
graphics blog *Compound Interest*

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online

To see more of  
Brunning's work, go to  
compoundchem.com.  
To see all of C&EN's  
Periodic Graphics,  
visit [cenm.ag/  
periodicgraphics](http://cenm.ag/periodicgraphics).

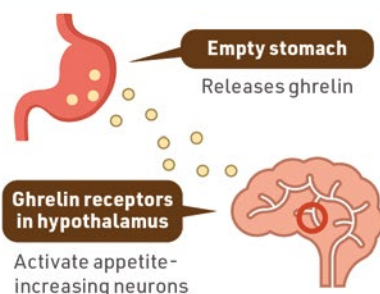
## Hunger, digestion, and feeling full



What makes us feel hungry, why do our mouths water at the smell of food, and what makes us feel sleepy after eating a lot? Here we look at what happens in the body before, during, and after a big meal.

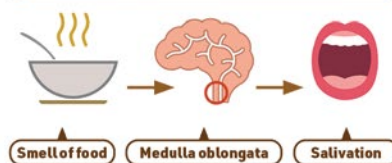
### Hunger and salivation

The hormone ghrelin, released mainly by the stomach, causes feelings of hunger.



Stomach rumbling is caused by the migrating motor complex (MMC). The MMC is a pattern of electrical activity triggered by the hormone motilin, and it causes contractions that sweep indigestible substances from the stomach and through the small intestine.

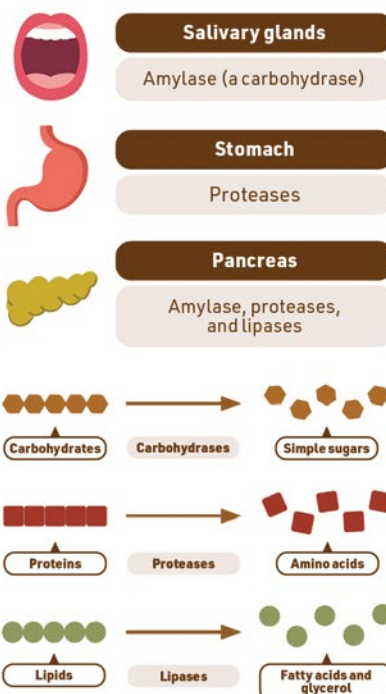
### How food makes our mouths water



The smell of food sends signals to the brain's primary salivary centers in the medulla oblongata. Neurotransmitters then signal glands to produce saliva.

### Eating and digestion

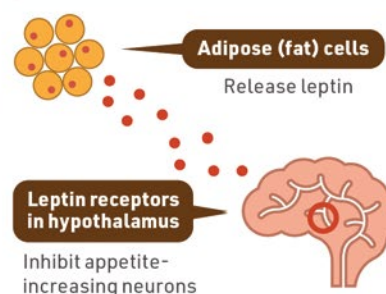
Mechanical and chemical digestion break down the food we eat. Enzymes are produced in several locations in the digestive system and break up different biological molecules.



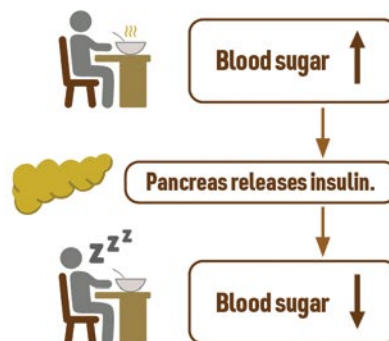
Hydrochloric acid in the stomach helps break down food and kills bacteria.

### Feeling full

Eating causes fat cells to release the hormone leptin, making us feel full.



Eating big meals can make us feel tired. This is due to the effect of carbohydrates on blood sugar levels. Consuming carbs raises blood sugar, which the body regulates by releasing insulin. Insulin causes blood sugar levels to drop, causing feelings of tiredness.



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