

## Pac Man 101: Vaccinate Against Foreign Invasion

By Kris Ringwall  
Extension Beef Specialist  
NDSU Extension Service



As fall approaches, preparing the calves to move from the prairies to a more intense confined environment is front and center in most producers' minds. This preparation moves to the forefront because herd health is certainly one of the major factors that impact profitability.

The concern seems remote when no health problems are present or at least not evident, but once a problem surfaces, cost factors will soon follow. As with all living things, the only reason any animal can remain living and pursue life is an intact immune system. There isn't a way to systematically be protected from all the negative impacts that surround any living creature without a functioning, responding immune system.

The basic concept of immunity is relatively simple. The body reacts to foreign objects by developing defensive antibodies. In very simple terms, the antibody reminds me of the old game of Pac Man, a computer game created in 1980 by Toru Iwatani while working for Namco, a Japanese company.

The Pac Man was a circular object with a large mouth. The Pac Man really had only one function, to catch and consume little dots. The Pac Man would move up and down channels, not much different than our circulatory system (arteries or veins) and systematically remove all the dots. It was an easy concept to remember (a large body chasing little dots). Pac Man is not much different than nature. A large antibody in the circulatory system is chasing and eating small dot-like intruders. The key to good health is to have the proper Pac Man or antibody present within the living system to catch all the dots or invading bugs, such as viruses, bacteria or other foreign substances.

This is about beef cattle, so let me get back to calves. The goal from now until weaning is to provide assurances that each calf has the needed levels of antibody protection to fend off any dots or disease-like entities. In the biological world, Pac Man is very specific, kind of like feeding a table full of grade school kids who only like certain foods.

Pac Man only consumes very specific dots, just like the antibodies in a calf's system. Each antibody, or immunoglobulin if you like big words, has a very specific task. Antibodies only consume or catch one type of bug (virus, bacteria, etc). In the process of playing the game, new Pac Men need to be created for every new or incoming bug.

In order to prepare the calf for the new bugs, the calf's system needs to be challenged to create new Pac Men or antibodies. This process is called vaccination. Vaccinating injects new or foreign dots into each calf. As these dots enter the circulatory system, internal alarms go off indicating more Pac Men need to be released or produced to meet the oncoming dots or foreign substances.

All a vaccine does is prime the system, so someday, in the event of a real invasion of foreign dots, the Pac Men or antibodies are already fabricated or ready to be called into action. This priming vaccination is generally followed by a second booster vaccination to fine-tune the system into making very specific antibodies or Pac Men.

Immunity is a very complicated process, which is not totally understood even today. Making it work for the benefit of this year's calf crop is the challenge. Now is the time to shop for the appropriate four-way viral, seven-way bacterial and other enhanced vaccination products to give your calves the best chance for survival in the real world.

There are no guarantees, just better odds against sick calves.

May you find all your USAIP ear tags.

Your comments are always welcome at [www.BeefTalk.com](http://www.BeefTalk.com). For more information, contact the North Dakota Beef Cattle Improvement Association, 1133 State Avenue, Dickinson, ND 58601 or go to [www.CHAPS2000.com](http://www.CHAPS2000.com) on the Internet. In correspondence about this column, refer to BT0210.

---



**VACCINATIONS:**  
**Shop Now For Calf Antibodies**