The J Game – Vaccinate

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The summer may be hot, but, believe it or not, fall is fast approaching. Fall is the typical time for getting calves prepared to meet the rigors of weaning and shipping. A plan, if not already in place, needs to be developed so it can be applied when the time is right.

The Dickinson Research Extension Center is getting ready to ship some calves. A quick review of the vaccination efforts at the center notes that the calves were vaccinated for viral and bacterial invaders in the spring during branding. The calves will be vaccinated again prior to weaning and at weaning.

The development of a vaccination program involves consulting with a veterinarian. The goal is to prepare calves so they will be better able to withstand the rigors of weaning, marketing and subsequent comingling at the new feed yard.

There are many products that produce the "desired response" when administered according to label directions. The phrase "desired response" is a mouthfull. Although memory can be very misleading and, over time, the relevancy of older thoughts and technology can change, the term "J" always comes to mind when a "desired response" is sought for a particular vaccination program.

Back in graduate school days, actually back before much of the molecular genetics world was known, the J game was at work. The reason for the J game was to add diversity to living organisms so they could respond to the many viral and bacterial invaders that are constantly trying to put us down.

That doesn't include several other pathogenic classes of organisms that are not our friends. The terms were simpler and perhaps easier to understand. One of the more interesting, yet difficult, sessions utilized a text titled "Biochemistry" by Lubert Stryer.

This particular edition, published in 1981, provides some understanding of what the "desired response" looks like. The "desired response" is a functional protein given the broad name of "antibody." These antibodies, more appropriately called immunoglobulins, are not easy to visualize. One immunoglobulin is generally drawn schematically as a Y. The Y is not just J genes, it actually has several components.

Within the Y are two types of chains, heavy and light. There are five types of heavy chains and two types of light chains. These chains may seem simple, but are not. Within the chains, some parts are called constant, which means they change little in how they are made up and some parts are called variable, which means they can vary.

The variable chains contain amino acid sequences that are not the same and do not remain constant. This variance adds increased diversity to the structure of the various antibodies.

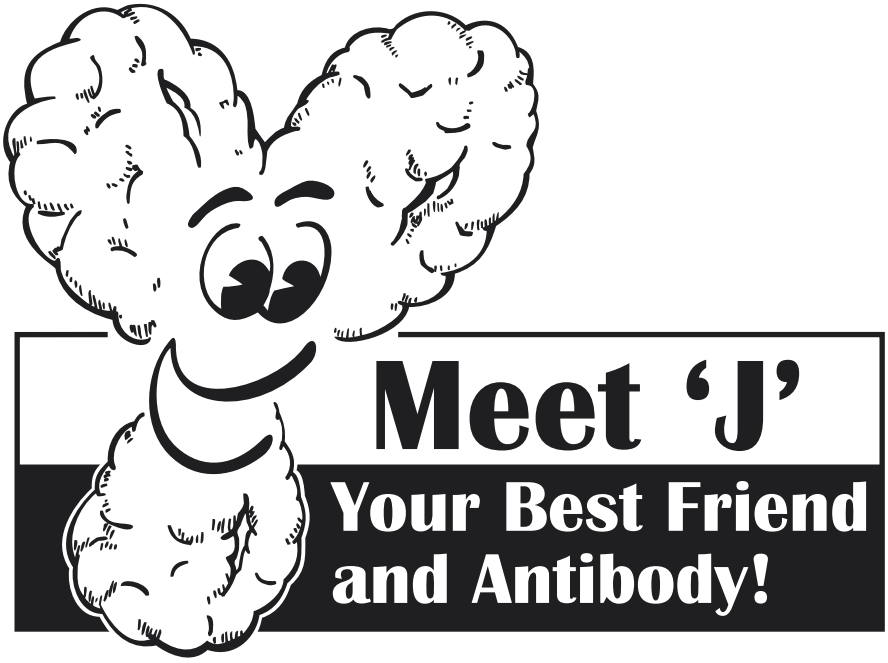
If things are not complicated enough, there are the "J" genes that join the variable and constant segments of the light and heavy chain, in other words, the J game, all adding to the confusion of the 'desired outcome' when a set of calves are vaccinated with a particular vaccine or antigen.

Without going out on a limb to far, if a producer actually figured all the different ways an antibody can be configured, in other words, how many different ways could you combine the constant, variable and J regions of an antibody, the answer would be in the billions. Sorry if this is confusing, but the bottom line is still true; vaccinate your calves to produce antibodies that will protect them against the handful of commonly known viral and bacterial invaders and then manage your calves so that they will prepare themselves to produce a good antibody response against all those invaders that are not named. The world is not a simple place, but calves are geared up to survive, especially when all the right tools are put in their toolbox.

Good luck! And, if you thought tagging calves is difficult, tagging is nothing compared with antibodies.

May you find all your ear tags.

Your comments are always welcome at *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* on the Internet. In correspondence about this column, refer to BT0310.


Meet ‘J’
Your Best Friend
and Antibody!