

Bob Wayne Evolutionary Genomics of Dogs, NAIA Colorado Conference, 2010

Bob Wayne likes dogs. He likes them because of their diversity and their uniqueness. He likes them because of the possibility to study their origins in relation to their evolutionary framework.

Dr. Wayne presented a difficult subject with ease as he described the evolution of dogs manifested by their genetic data. He said that analysis suggests a Mid East origin for modern dogs through their ancestors, the Middle Eastern Gray Wolf.

Research by Dr. Wayne and other evolutionary biologists compared genetic data from 85 breeds against similar data from 2,000 wild gray wolves worldwide (from North America, Europe, the Mid East and Asia. They analyzed more than 48,000 genetic markers and were able to compare 48,000 different locations on those genes to analyze how the breeds were related to each other and to wolves.

Wayne noted that previous research suggested that dogs' ancestors were centered in East Asia, but this new research concludes that the Middle Eastern gray wolves and some European gray wolves were more likely to be modern dogs' ancestors, which, he said, was consistent with archaeological records. Dogs were found in ancient human burial sites... in one case a pup was found curled up in the arms of a buried human.

They found, Wayne continued, that different breeds were developed through need and use. Crossing sight-hound breeds to develop a specific dog for a specific use is an example of breeding for distinct needs and purposes. The same would apply to small terriers, herding dogs, hunting dogs and others.

There were exceptions in this crossing of breeds, such as the toy dogs. Toy dogs, he continued, started with large dogs crossed with a miniature to make a dwarfed breed, mixing the genetic backgrounds.

Although dogs are uniquely different, geneticists are finding the much of the diversity comes from a simple genetic basis. Short-legged dogs have short legs due to one unique gene. Different genes are responsible for leg size, small size, fur types, coat patterns and colors. Most dogs' different phenotypes come down to just a few genes and these are mixed with different breeds to create new breeds.

More information on the Genome project may be found here:

Dog Wolf Genome Project http://research.nhgri.nih.gov/dog_genome/

<http://www.broadinstitute.org/mammals/dog>

