FARP : Dragon Anatomy and Muscular Structure

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So, you clicked on this link, you must want to know about a dragon's muscular structure? Now, before I get started, I want to say one thing. Since dragons are open to many interpretations, and look wildly different at times, this guide may or may not be for you. I attempt to break down the anatomy of the classical western dragon in such a way that it might conceivably be able to function. I also know I'm no animal anatomy major, heck, I'm justa kid! So my illustrations may not be entirely accurate or even possible. But I tried, and I looked at more than a few books for references, and I hope I have something that will help a few people. This also is not exactly an article for beginners. I don't say 'this is how you draw a dragon'. I don't give very many directions at all! But if you have any basic knowledge on drawing dragons, this should help!

What is a Classical Dragon?

What?!? You don't know what a classical western dragon is? Put simply, it is a scaled reptilian like beast generally seen with two forelegs, two wings, and two hind legs. A perfect example (and what I used as a model) would be Draco from Dragonheart. What!!? You haven't seen Dragonheart?!? Then get ye gone, foul -- I mean, I've graciously provided a picture for you to view. As you can see, he has all the characteristics of the classical dragon.

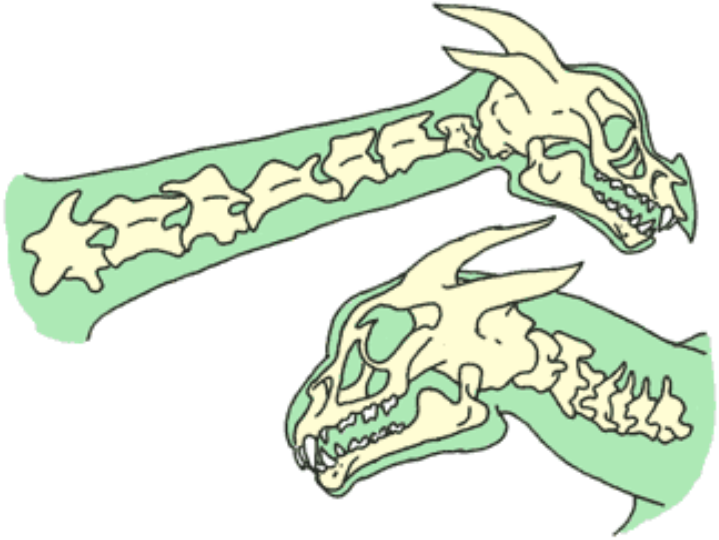
(If you want to see more Draco pictures, go here!)

From the Inside Out

The best way to figure out the anatomy of any creature is to work from the inside out. That is, from the skeleton to the muscles to the skin. Below is a skeletal system, modeled from a cheetah, giraffe, and various birds. You can click on any picture to enlarge it.

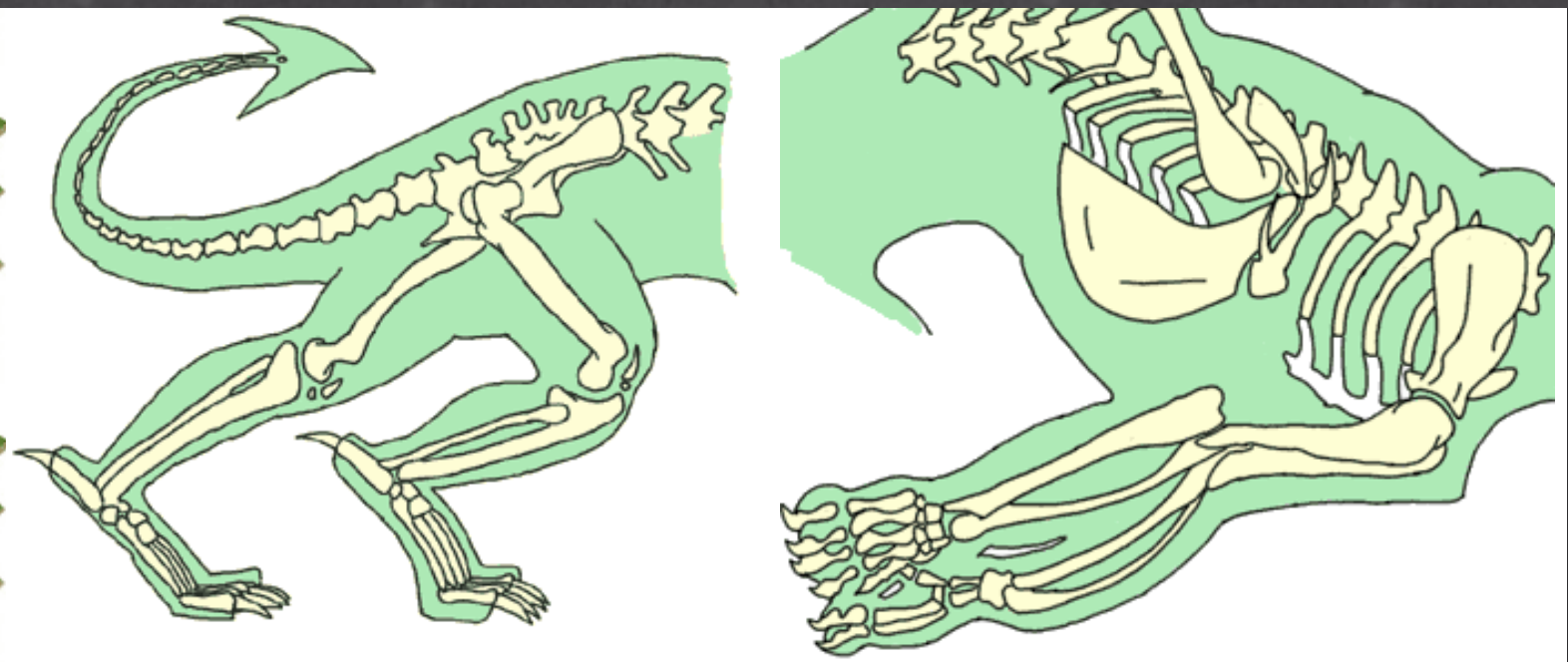
The Skull and Neck

As you can see, I've included both a long and short neck version of the dragon, mostly because the muscular structure of the two is vastly different. Since I based my dragon skeleton on that of a mammal, the neck only has seven vertebrae, no matter what the length. The teeth in this picture are also mammalian teeth.



Front and Back

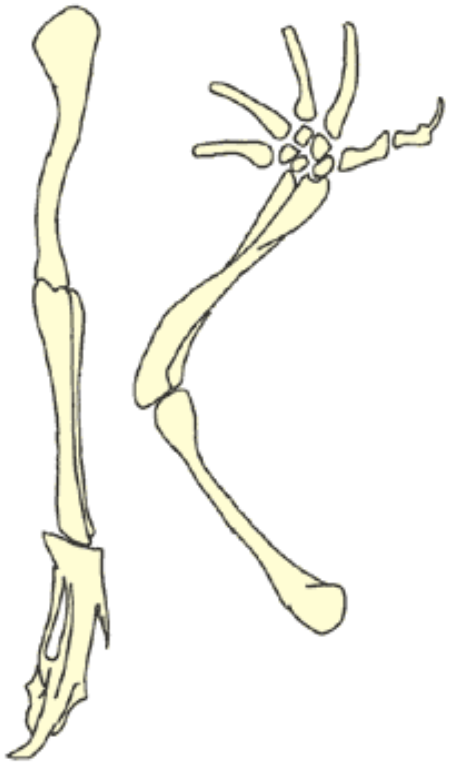
The front end, I suppose what many people would call the tough area, because it contains the area of anatomy for which there is no earthly equivalent. If you would keep in mind for a minute the immense breast muscles on a bird, you'll realize the configuration to the right is impossible. There is barely any room at all for the flight muscles. the configuration below (in my opinion anyway) is much more accurate.



As you can see, I completely separated the flight bones from the foreleg bones to allow for the largest possible flight muscles. The front section is modeled after a light agile cheetah (though the dragon would theoretically have hollow bones to allow for less weight). The back section is modeled after a hawk. I found it impossible to combine the two sections as each bone is necessary for the operation of the different muscles. For example, the large flight muscles need both the wishbone and keel for anchorage. The back end of the dragon was a fairly simple thing to figure out, since it is not exceptionally different like the front end. It is essentially the hind end of a cheetah with a slightly modified tail.

Wings

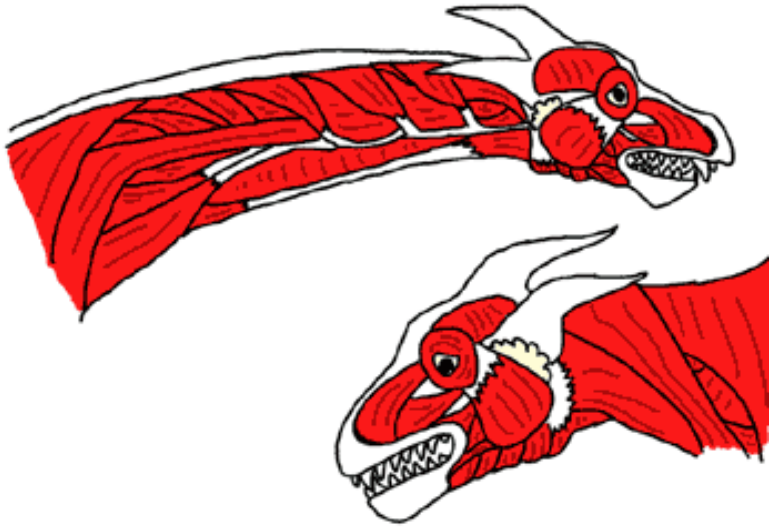
The wings were not too difficult to figure out either. There are two types though, a bat wing and a bird wing. (Note that the fingers are cut off in the bat wing) Each different type of wing has its own strengths and weaknesses. I neglected to illustrate a pterosaur wing, mostly because it is rarely drawn on a dragon. Wings are also mostly bony, not overly many muscles on them, so I didn't draw musculature studies for them.



Fleshing out the Beast

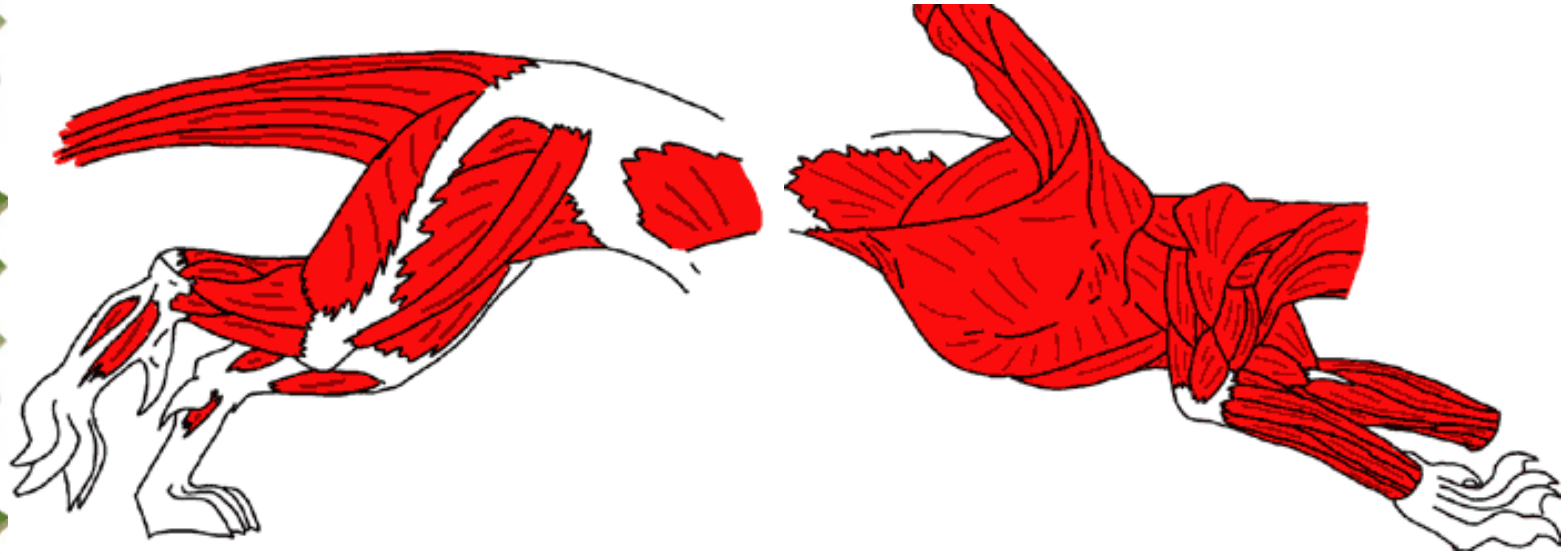
The Skull and Neck (Once again)

The skull, as you can see, has powerful muscles surrounding the jaw, giving the dragon an immensely powerful bite. If you will notice, I also drew these two dragons with reptilian teeth. The neck of the short dragon is based on that of a cheetah, once again. The muscular structure of the long necked dragon was a bit more difficult. I decided to base it on that of a giraffe (though now I think I should have based it on a snake!).



Back and Front

Once again, the front end of the dragon was quite a bit more difficult to create than the back end. It required both the combination of cheetah and hawk muscles. The result is quite complex, so I highly recommend clicking on the image to view the larger version. The dragon does not have a lot of flexible toward the flight muscles, because to the necessary rigidity of the spinal column. The back end of the dragon, once again, is modeled directly from a cheetah with only slight modifications in the tail. You can actually see some of the muscles on the wings in this picture too.



The Last Step (Skin)

Skin is essentially a thin, well, skin over the muscles. Be sure not to make your dragon overly muscled. Good reference pictures to look at would be, of course Draco, or my own musculature studies. Another good artist to study from would be Martin Knuth. He has excellent knowledge of both draconian and gryphon anatomy.

These musculature studies can be used for dragons, gryphons, even humanoid creatures with wings, with a sufficient amount of modification.

Another good article on the anatomy of dragons can be found here.

A Few More Thoughts...

Okay, this little section is really getting into my own thoughts and ramblings.... Now, obviously even with the large flight muscles, this dragon could not conceivably be able to fly. It needs even larger flight muscles, wings, and less mass in order to do so. So, my challenge to you is to make a unique dragon that would be able to fly (or glide) After a length of thought, I came up with my own. It is still a uniquely different creature, and still large and powerful, but I think it could fly. It does not have any hind legs, because I don't think that they are really essential to the dragon. So what do you think? Have any better ideas? Let me know! :)